

Lindab **Atrium Plana**

Radiant cooling- and heating panels
Installation instructions



Installation instruction

Atrium Plana

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1.2 Symbols



Hot water



Heavy Load - 2 man job -
It is recommended to use
a "lift" for mounting.



Cold water



Hand-pull

2. Control of delivery

2.1 Before starting

Read through the entire installation instruction before commencing installation in order to determine which parts that needs to be performed and in what order to be done.

Lindab is a supplier of complete water products, but we offer also a wide range of accessories which suit perfectly to our water products simplifying your installation work, e.g. different type of hangers, push fittings, closing valves, thermostatic valves and actuators, flexible hoses, customized regulation components, customized cabling and more. See also the separate document "[Accessories](#)."

Lindab will also provide you with a full ventilation system, with a wide range of Lindab Safe components. See also "Air Duct Systems."

2.2 Safe operation

Beware of sharp edges, especially of the coils (beams only). Always wear thin gloves and protective clothing.

All existing safety regulations must be observed when working with Lindab water products. Check the weights of the beams or the panels with the installation instruction before carrying.

2.3 Receipt of goods

Start by checking that the delivery is complete according to the order and that everything listed on the consignment note has been delivered. Then carry out a review of the products and make sure that nothing was damaged during transportation. If you discover damage that has occurred during delivery, it must be notified immediately.

Lindab is not responsible for costs associated with the replacement of products, that have been installed in any way other than shown in these installation instructions.

2.4 Unloading of goods

The beams and panels are normally delivered packed on wooden pallets. Lift the pallets carefully with a fork lift and place them on a dry and plain surface/ground. If the beams are delivered in single boxes, wooden blocks should be placed on the ground at one-metre intervals (or a pallet), before the boxes are been placed to store. Lindabs water

products must be stored on a plane surface in a dry and well ventilated place, preferably indoors. If they have to be stored outdoors, protect them with a waterproof cover and store them protected from rain beneath a roof or other until they are fitted.

2.5 Handling / Carrying

The beam or panel must be handled with care, ensuring that it will not be scratched or bended during transportation, preparation and installation.

Always carry the beams or panels piecewise into the building. Keep the product in the package as long as you can.

Never use piping connections or edges to lift them, neither when you unpack them nor when you carry them towards the construction site.



Do not place the product directly on the floor. Use the protective corners from package or other clean means from package to place the product before installation.

Be careful if you must carry a long panel horizontally; if the panels are bended lengthwise, the profiles may be deformed and the piping could loosen from the panel. When opening the box with a knife, be careful not to damage the product.

Each beam or panel is equipped with protective film to avoid any damage during transportation and handling on building site. The film needs to be removed before commissioning the products.



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2.6 Tools

To install the beam, panel or facade unit, the following tools are required.



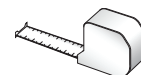
Knife



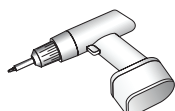
Gloves



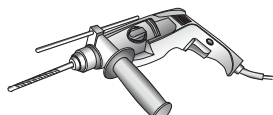
Shoes with soft soles



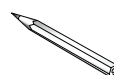
Tape measure



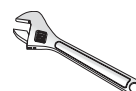
Drill machine



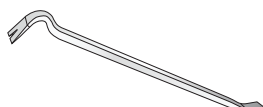
Percussion drill



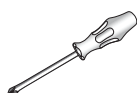
Pencil



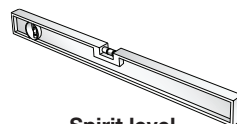
Spanner



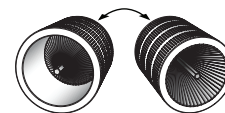
Crowbar



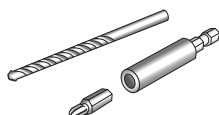
Screwdriver



Spirit level



Deburring tool



Bits and drills



Vacuum cleaner



Dust-cleaner

2.7 Installation

It is important to use the correct hangers and the recommended amount for all installation principles. Different possible installation principles are shown in the installation instruction and hangers from Lindab should be used to ensure, that they are intended for the purpose and are safe to use.

Lindab's water products can be ordered, to be adapted to a wide range of different ceiling systems, please check installation instruction to ensure best adaptation.

The Lindab water products should always be installed separately hanged up from the recessed ceiling. The weight of the product should not be covered by the ceiling system.

Use plastic folio or other to protect the product during on site construction continually to keep the products in best condition and avoid any scratches.

2.8 Where to find additional instructions or technical documentation

In the following chapters we will refer to additional technical documents or/and instructions by a certain keyword written as a link.

You can also find relevant related documents with our Lindab Quick selection tool:

1. Visit www.lindQST.com
2. Select "documentation"
3. Select product
4. Find relevant documents under "Related documents"

2.9 Cleaning after assembly / before commissioning

Please remember to remove plastic folio and other protection material before commissioning and clean the product before hand over.

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2.10 Packing, unpacking guideline



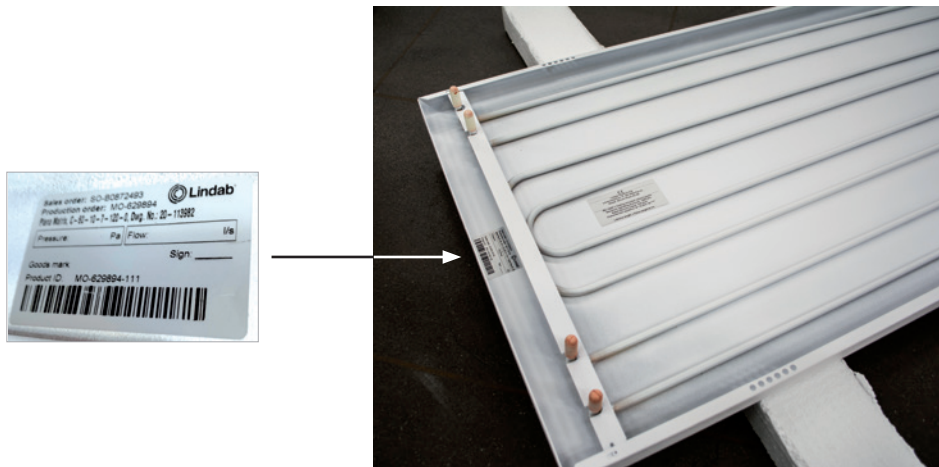
! Never use water pipe connections for lifting



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2.11 Product labelling



2.12 Order code

Product	Atrium Plana C	120	10	1	3.6m	0
Type: C, H, HC						
Width: 40, 60, 90 and 120 cm						
Water connection: 10 mm						
Connection type: 1, 7						
Length: 0.6 – 1.2 – 1.8 – 2.4 – 3.0 – 3.6 m						
Perforation:						
0 = no (std.)						
1 = slot M6						
2 = full M6						
3 = slot U8						
4 = full U8						

2.13 Order code examples

2.14 Label

On the label you'll find:

- Sales order: Order identification number
- Production order: Production order no.
- Goods mark: Marking noted on order
- Product ID: Product number
- Sign: To be signed when checked and commissioned on site



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2.15 Contents of order

Standard package/order contains:

- Beam/panel
- Plus features (pre-installed in factory)
- Accessories (separate in smaller box)

2.16 Plus features

2.17 Accessories

Here are some general accessories. For full range and order numbers, see separate [Accessories](#) document. Go to "8. Accessories" in this document to find accessories order numbers.

2.17.1 Threaded rod kit (Hangers)

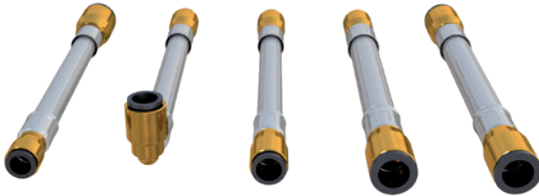


M8 x4 per beam when $L_{nom} \leq 2700$ mm

M8 x6 per beam when $L_{nom} > 2400$ mm

Go to 5.4 "Preparation for installation on the product" for more details. Order no: See [Accessories](#).

2.17.2 Flexible hoses



Order no: See [Accessories](#).

2.17.3 Transformer



Order no: See [Transformers](#).

2.17.4 Tectite fittings



See [Accessories](#).

Installation instruction

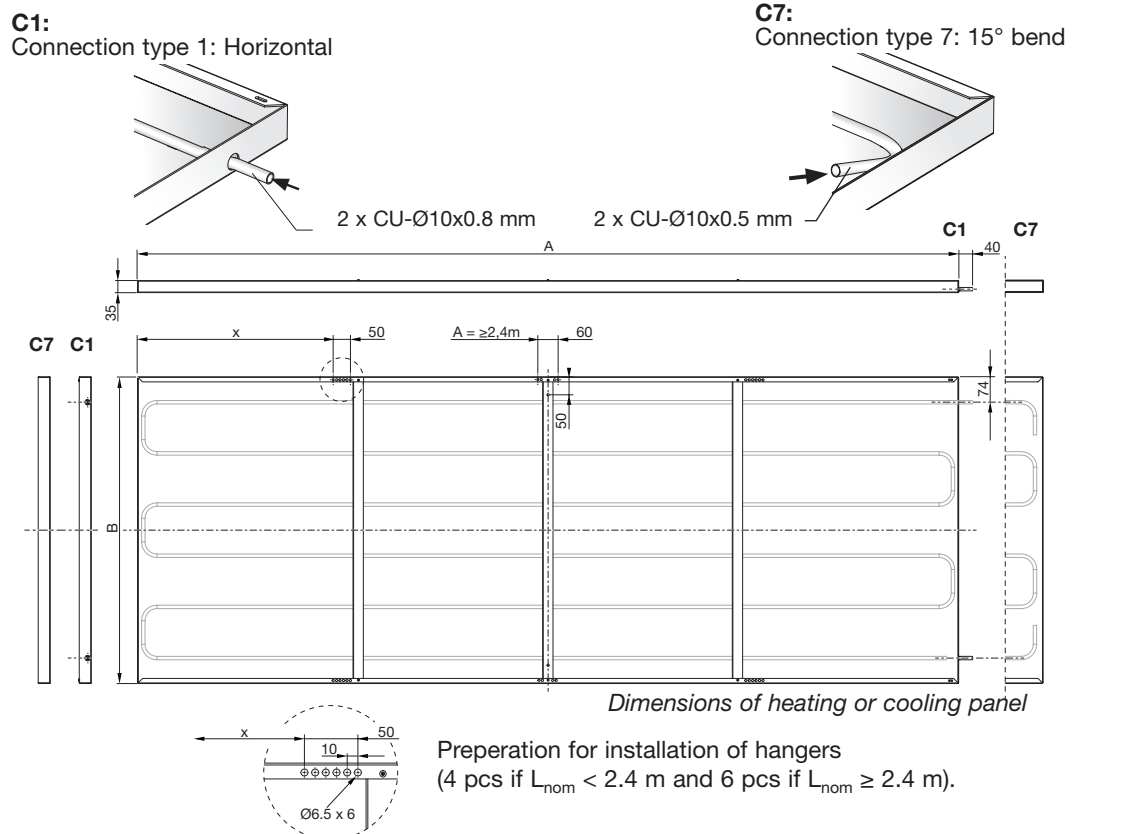
Atrium Plana

3. Product specification

The Lindab Atrium Plana is a simple yet powerful radiant panel, with an uncomplicated design that ensures that the Atrium Plana does not draw attention on the building and interior design. The water pipes are made of copper. Nevertheless, water should be oxygen-free to prevent corrosion. It is made out of a thin aluminium plate with laser welded copper pipes on top. Atrium Plana is available as standard, in fine textured powder coating in signal white RAL 9003 or in pure white RAL 9010, gloss value 5 ± 1 . Other RAL colours on request. H- and HC panels are insulated with white extruded polystyrene foam and should not be placed in direct sunshine or underneath other heating- or ignition sources. Sparks and smoke must be avoided. (manufactured without the addition of CFC or HCFC gas i. e. freons). When heating is of minor importance.

3.1 Dimensions

3.1.1 Heating or cooling 2-pipe water connection



Type	B Width	Dry weight	Water content	L _{nom}					
				600	1200	1800	2400	3000	3600
	[mm]	[kg / m]	[l / m]	A [mm]					
C-40 / H-40	392	2.1	0.4022	588	1188	1788	2388	2988	3588
C-60 / H-60	592	3.0	0.8044						
C-90 / H-90	892	5.4	1.2066						
C-120 / H-120	1192	7.5	1.6088						
	x [mm]			119	269	419	204	204	204
	Expansion at *HW: + 55/45°C			0.7 mm/m					
	Expansion at *HW: + 80/60°C			1.2 mm/m					
	Copper pipes quality			EN 12735-2 CU-DHP					
	Pressure class			PN10					

Type C-/H- cooling or heating panel, specific measures and other data - *HW: Hot Water
Tolerances for deflection: 2 mm deflection per 1 m off panel length/width.

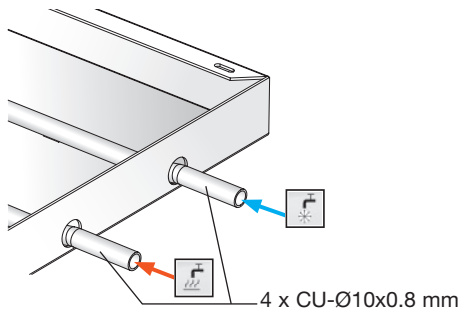
Installation instruction

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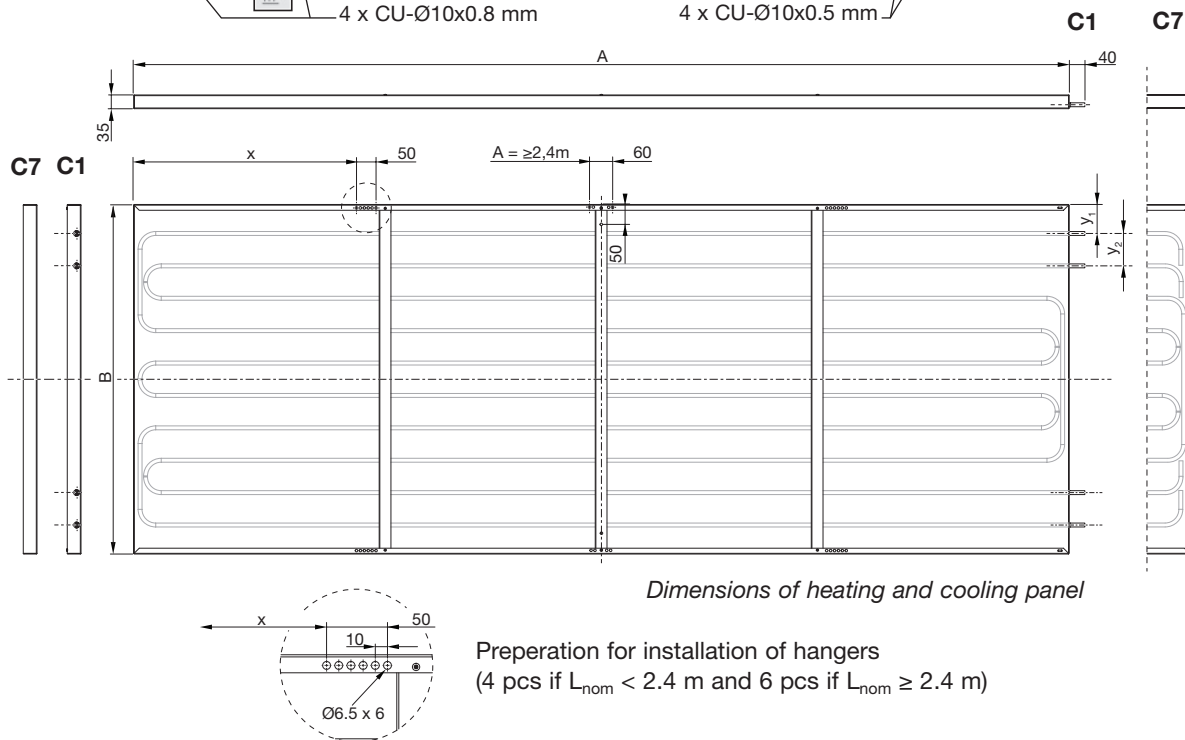
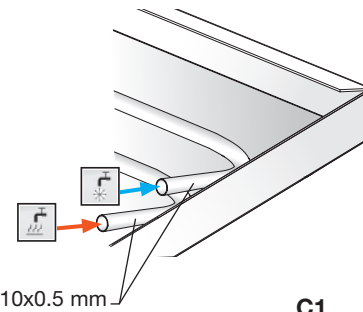
Dimensions

3.1.2 Type HC- combined heating and cooling (4-pipe water connection).

C1:
Connection type 1: Horizontal



C7:
Connection type 7: 15° bend



Preparation for installation of hangers
(4 pcs if $L_{nom} < 2.4$ m and 6 pcs if $L_{nom} \geq 2.4$ m)

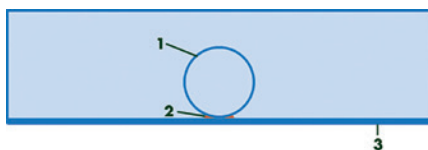
Type	B Width	Dry weight	Water content	y ₁	y ₂	L _{nom}					
						600	1200	1800	2400	3000	3600
	[mm]	[kg / m]	[l / m]	[mm]		A [mm]					
HC-40	392	2.2	0.844	74	81	588	1188	1788	2388	2988	3588
HC-60	592	3.2	1.6088	37	68						
HC-90	892	5.5	2.011	74	83						
HC-120	1192	7.6	2.4132	74	95						
	x					119	269	419	204	204	204
	Expansion at *HW: + 55/45°C					0.7 mm/m					
	Expansion at *HW: + 80/60°C					1.2 mm/m					
	Copper pipes quality					EN 12735-2 CU-DHP					
	Pressure class					PN10					

Type HC- combined heating and cooling panel, specific measures and other data - *HW: Hot Water.
Tolerances for deflection: 2 mm deflection per 1 m off panel length/width.

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3.2 General structure



Atrium Plana panel - Copper pipe [1] laser welded [2] on aluminium front plate [3]

3.3 Material data

Type	Plana Matrix
Copper pipes, quality	EN-12735-2 CU-DHP
Pressure class	PN10

3.4 Environmental Declarations

Please follow the links below:

- [Building product declaration](#)
- [Declaration of conformity](#)

3.5 Pressure Class

The waterborne products in Lindab, active chilled beams (battery products), passive chilled beams (battery and strips products), facade units (battery) and radiant panels (strips and panels) are produced according to pressure class PN 10 according to EN 1333: 2006.

This means the maximal working pressure for the products at a water temperature of 20°C must not exceed 10 bar.

3.6 Water quality

Lindab recommend water treatment and quality to be according to VDI 2035-2.

- The water preparation and maintenance for the chilled beam water circuit must be handled by a specialist.
- To prevent corrosion, the water circuit must be airtight.
- The water system must also be equipped with aerators to remove any build-up air in the system.
- The water must be oxygen free, to prevent corrosion.
- The water system must be filled with potable water that complies with the "EC directive 98/83/EC."
- The pH value of water must be between approximately 6-9 pH.
- The water velocities should not exceed 1 m/s, and should be kept as close to the nominal flow as possible to minimize noise and optimise the energy yield.
- Use in-line strainers to remove dirt particles from the water.
- If the water contains any additive inhibitor, then it must be appropriate to use with copper and solder.

3.7 Air quality

3.8 Capacity test

Atrium Plana panels are tested according to EN-14240: 2003, EN-14037-2: 2016 and EN-14037-5: 2016 at accredited to EN ISO/ IEC 17025 notified body by DIBt according to (EU) No. 305/2011 NB 1428, WSPlab, Stuttgart, Germany and are CE-marked.

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4. Connections

4.1. Water connections

If the control valves have been ordered separately, a special direction of the flow must be upheld to ensure correct flow through the control valve. Please note the flow direction indicator on the valve to insure correct installation in relation to the desired flow.

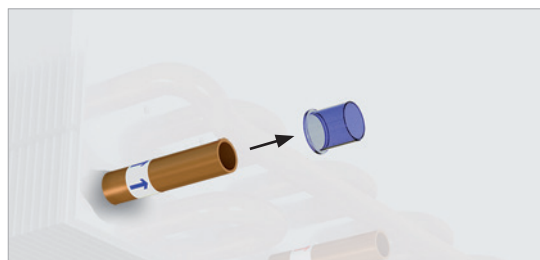
When connecting a panel or a beam with the piping system either a push-on fitting or a compression coupling should be used. Lindab have tested and recommends John Guest push on fittings as well as push-on fittings from Tectite (available as accessory. See [Accessories](#)).

To avoid sound being transported over the beam, we recommend to use our flexible hoses between the piping and the beam connections. See [Accessories](#).

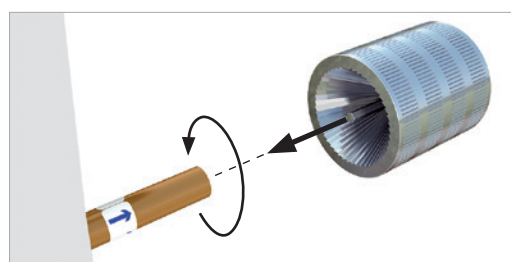
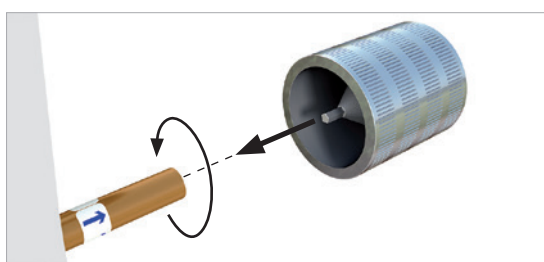
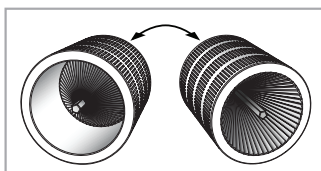
NB! Every control valve can create sound when it is installed directly connected to the water in- or outlet (or into the piping in close distance to the in- or outlet of the water product). To avoid unwanted sound generation we recommend to always use a Lindab control valve [LinFlow-A](#) (angled) or [LinFlow-S](#) (straight) and calculate the beam with the valve in [LindQSTwaterborne calculator](#).

4.1.1 Before installation

- Notice! The connection pipes are internally soft-welded, therefore it is not allowed to solder the beam to the pipes. For other than Lindab fittings and valves, please consult the installation guide for the specific fitting for further details on proper installation.
- Both inlet- and return pipes are covered by a plastic or rubber protection cover, which must be removed before installation.



- After removing the protection cover, make sure that the pipe is intact and undamaged, especially at the pipe end, as even small dents and scratches potentially pose a risk of leakage in the system.
- Eventually deburr the pipe ends on the inside and the outside, using a deburring tool before installation.



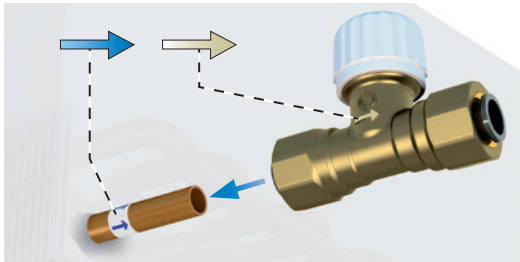
- Always remember to do a pressure test after assembly of the pipe work.

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4.1.2 Push-on valve

- Mount a push-on valve to the pipe. Make sure the valve has the correct flow direction (see indication arrow on the valve) and that you have the correct valve, when integrated valve has been chosen (see indication on valve or follow cabelling to Regula Connect card). Cooper inserts aren't required!
- Please refer to the suppliers manual.

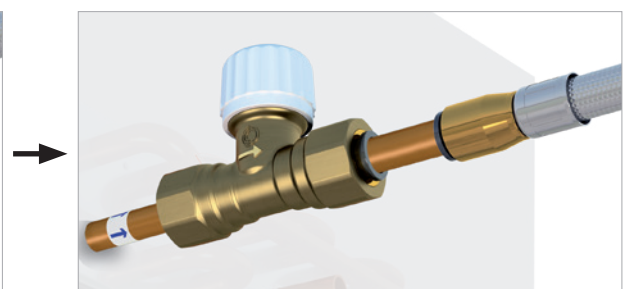
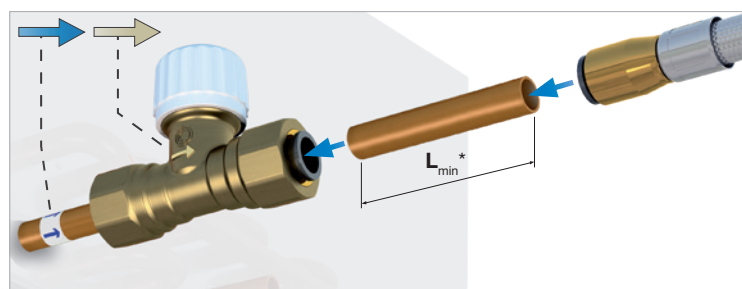
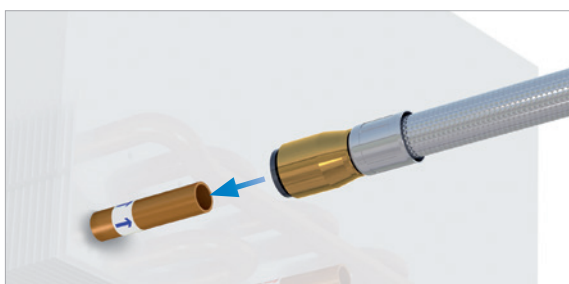


4.1.3 Compression fitting

- While mounting a compression fitting, the pipe will be exposed to a big amount of force, creating a risk of crushing the pipe. To ensure that the pipe won't be crushed when mounting the compression fitting, a copper insert must be inserted into the pipe (always part of the delivery).
- The copper insert should be placed inside the pipe on the beam. Always support the copper pipe coil when inserting the copper insert into position.
- Mount a compression coupling and/or a valve to the pipe. Don't stress the nut too much, since this may crush the pipe.
- Please refer to the suppliers manual.

4.1.4 Flexible hoses

- Our flexible hoses with straight ends can be used with both push-on and compression fitting.
- We recommend to use our flexible hoses with push-on fittings, for easier and faster mounting.
- For the connection to an enclosed valve with integrated push on coupling a flexible hose with straight end (male) or with push on (female) and a short copper pipe can be used.
- Please refer to the suppliers manual.



* $L_{min} = 70 \text{ mm}$ (to ensure you can open the couplings again).

Lindab flexible hoses are available with straight end (male) for direct connection to Lindab valves also.

Installation instruction

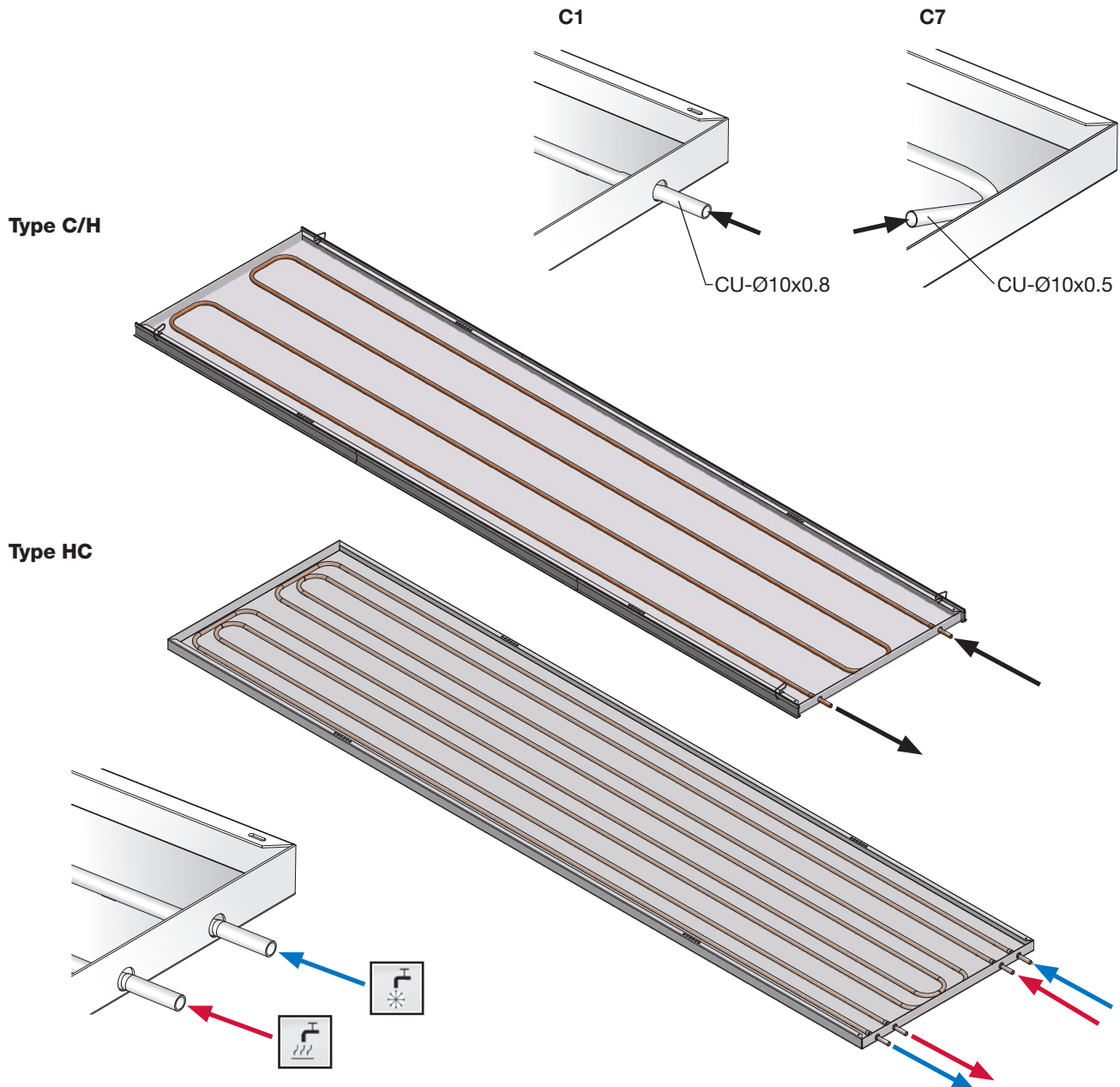
Atrium Plana

4.1.5 Possible connections water cooling or heating (2-pipe, standard)

All the Atrium Plana radiant panels can have either a "2-pipe water connection" or a "4-pipe water connection" as standard (see 4.1.6). The 2-pipe water connection beam contains one water circuit only (cooling or heating).

All water pipe connections are $\varnothing = 10$ mm.

Connect water with push-on or compression couplings or similar. Use the support sleeves. Do not solder! (see chapter 4.)



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5. Installation of product

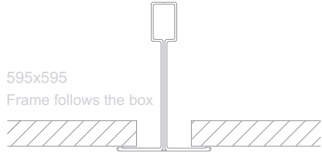
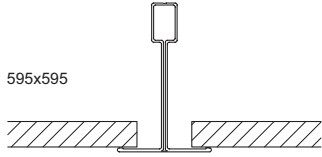
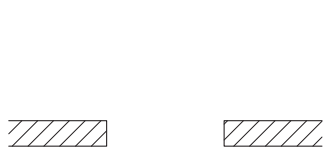
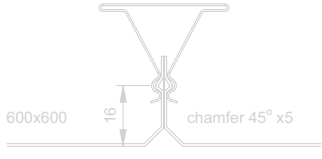
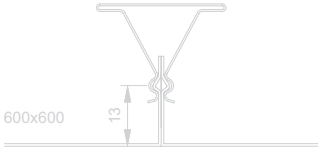
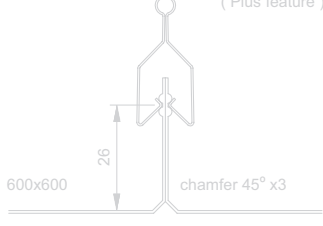
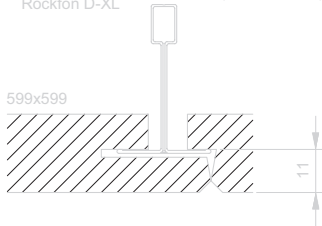
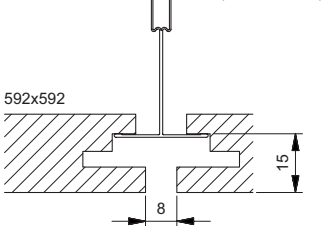
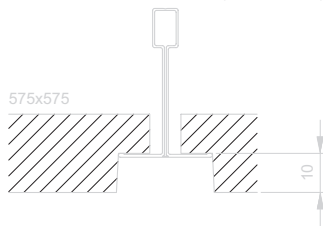
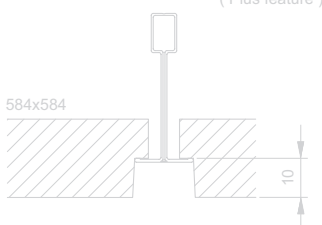
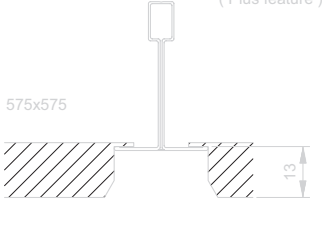
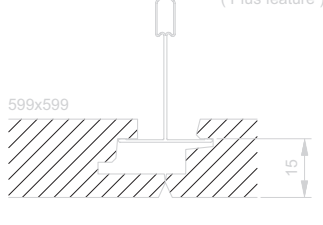
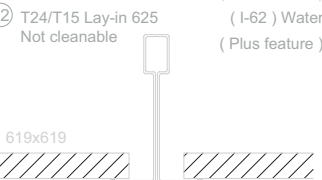
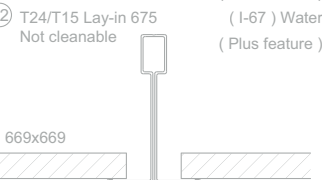
5.1 Handling of product

For the handling of the product please refer to 2.5.

5.2 Adaption to ceiling systems

5.2.1 Ceiling systems

Atrium Plana is ready for ceiling system 1 only, for others please contact local Lindab contact for further explanation/support.

<p>① T24/T15 lay-in 600 (I-60) Water Danotile T24/T25 Ecophon T24 Rockfon A24</p>  <p>595x595 Frame follows the box</p>	<p>② T24/T15 lay-in 600 (I-60) Water Not cleanable</p>  <p>595x595</p>	<p>③ Permanent ceiling (L-60) Water (Plus feature)</p> 
<p>④ Dampa Clip-in bevelled edge (X-60) Water (Plus feature)</p>  <p>600x600 16 chamfer 45° x5</p>	<p>⑤ Dampa Clip-in square edge (K-60) Water (Plus feature)</p>  <p>600x600 13</p>	<p>⑥ Luxalon SQ Clip-in (X-60) Water (Plus feature)</p>  <p>600x600 26 chamfer 45° x3</p>
<p>⑦ Danotile Contur Ecophon D Rockfon D-XL (X-60) Water (Plus feature)</p>  <p>599x599 11</p>	<p>⑧ Ecophon Focus DG (J-60) Water (Plus feature)</p>  <p>592x592 15 8</p>	<p>⑨ Rockfon E10 24 Ecophon - E / T24 (Y-60) Water (Plus feature)</p>  <p>575x575 10</p>
<p>⑩ Rockfon E10 15 Ecophon - E / T15 (Z-60) Water (Plus feature)</p>  <p>584x584 10</p>	<p>⑪ Danotile Markant (Y-60) Water (Plus feature)</p>  <p>575x575 13</p>	<p>⑭ Ecophon Focus DS Rockfon Sonar X (X-60) Water (Plus feature)</p>  <p>599x599 15</p>
<p>⑰ T24/T15 Lay-in 625 (I-62) Water (Plus feature)</p> <p>⑱ T24/T15 Lay-in 625 Not cleanable (I-62) Water (Plus feature)</p>  <p>619x619</p>	<p>⑳ T24/T15 Lay-in 675 (I-67) Water (Plus feature)</p> <p>㉑ T24/T15 Lay-in 675 Not cleanable (I-67) Water (Plus feature)</p>  <p>669x669</p>	

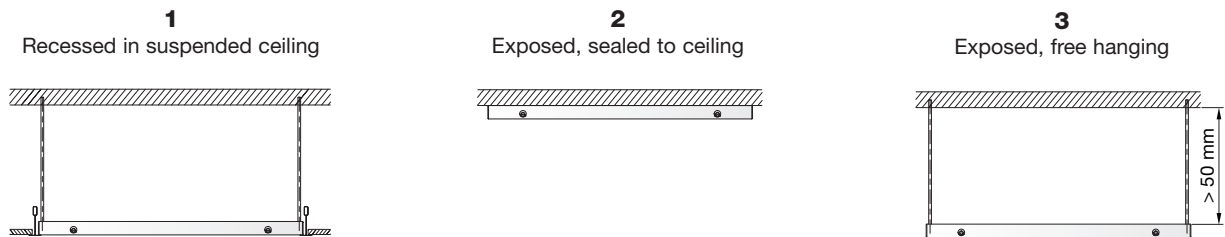
Installation instruction

Atrium Plana

5.3 General installation principles

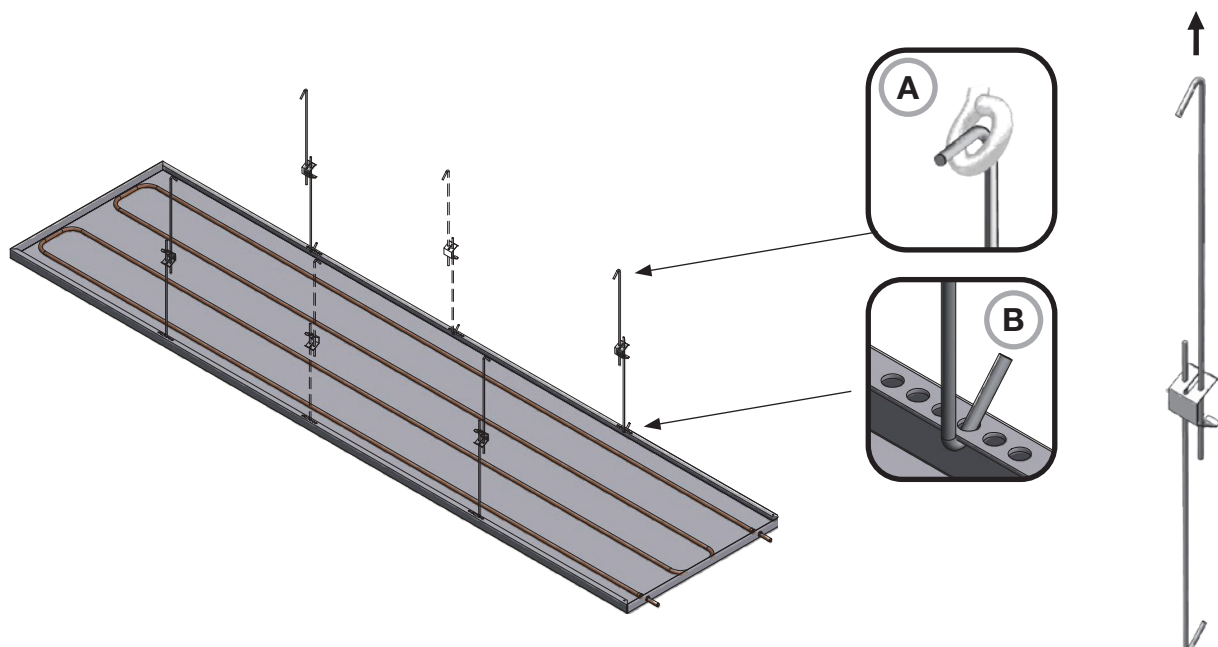
Atrium Plana is installed either exposed or recessed in a suspended ceiling.

Installation types



5.4 Preparation for installation on the product

5.4.1 Mounting accessories – Pendulum



Pendulum:

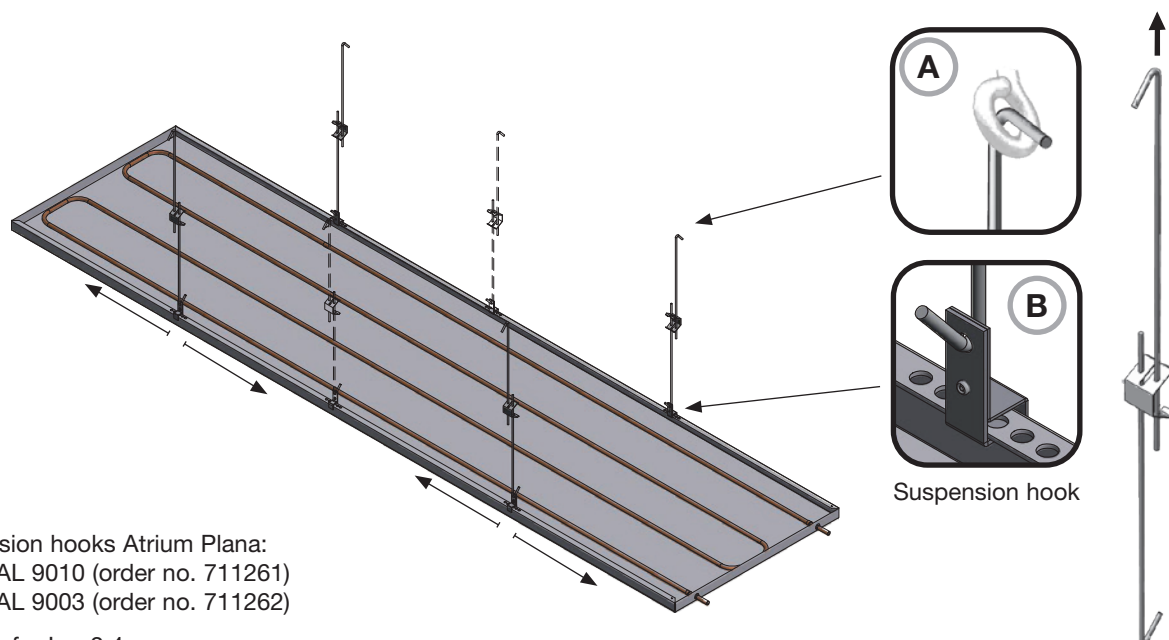
- 1 pc, 180-300 mm (order no. 642480)
- 1 pc, 540-1000 mm (order no. 646742)
- 1 pc, 1750-2000 mm (order no. 653454)

- 1. 4 pcs for $L < 2.4 \text{ m}$
- 2. 6 pcs for $L \geq 2.4 \text{ m}$

Installation instruction

Atrium Plana

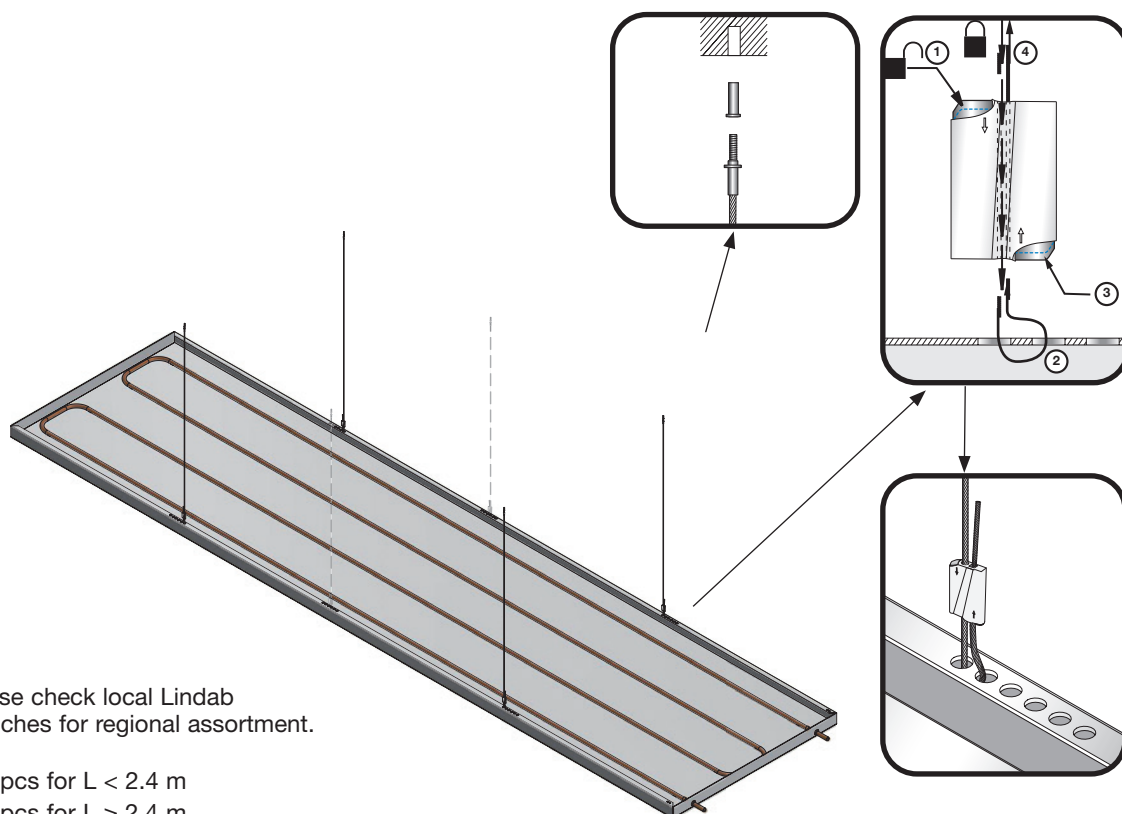
5.4.2 Mounting accessories – Pendulum + Suspension hook



Suspension hooks Atrium Plana:
1 pc, RAL 9010 (order no. 711261)
1 pc, RAL 9003 (order no. 711262)

- 1. 4 pcs for $L < 2.4$ m
- 2. 6 pcs for $L \geq 2.4$ m

5.4.3 Mounting accessories – Wiring hanger system



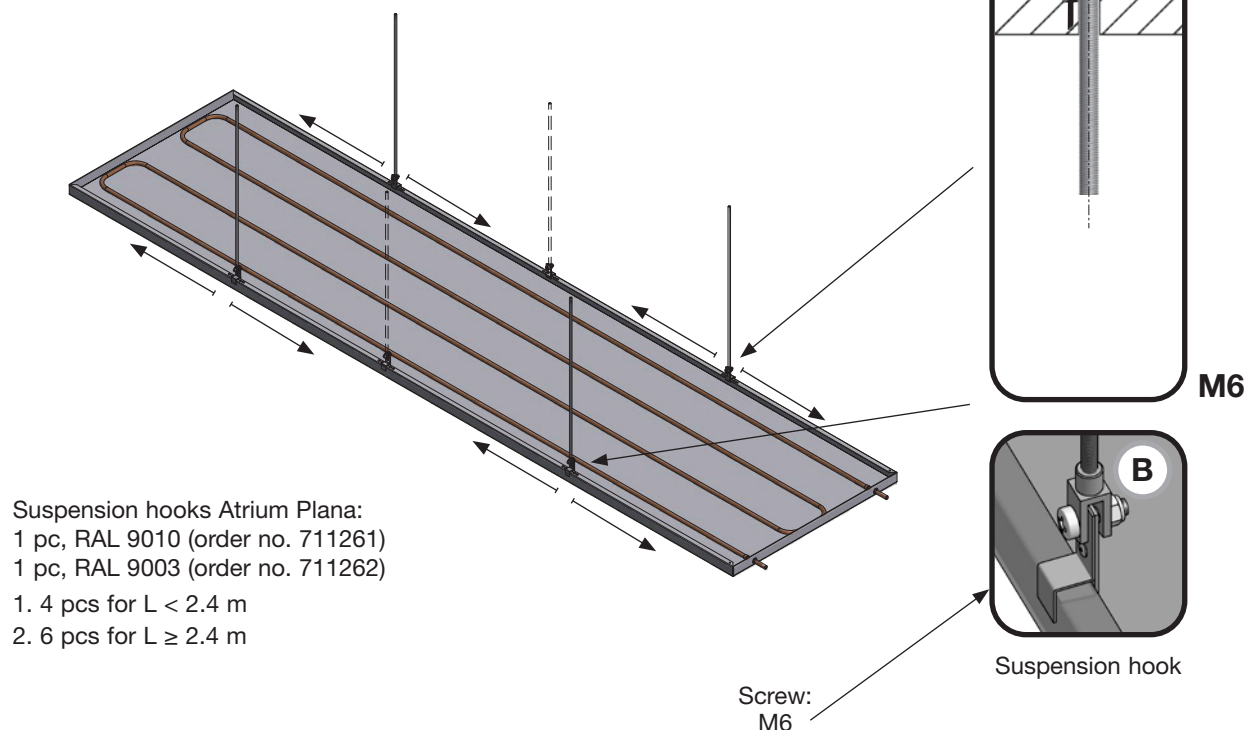
Please check local Lindab branches for regional assortment.

- 1. 4 pcs for $L < 2.4$ m
- 2. 6 pcs for $L \geq 2.4$ m

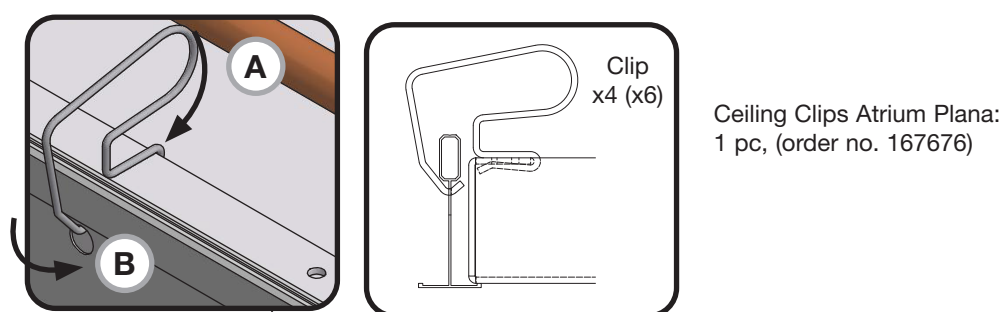
Installation instruction

Atrium Plana

5.4.4 Mounting accessories – Threaded rod M6 + Suspension hook



5.4.5 Mounting in ceiling



1. 4 pcs for $L < 2.4$ m
 2. 6 pcs for $L \geq 2.4$ m

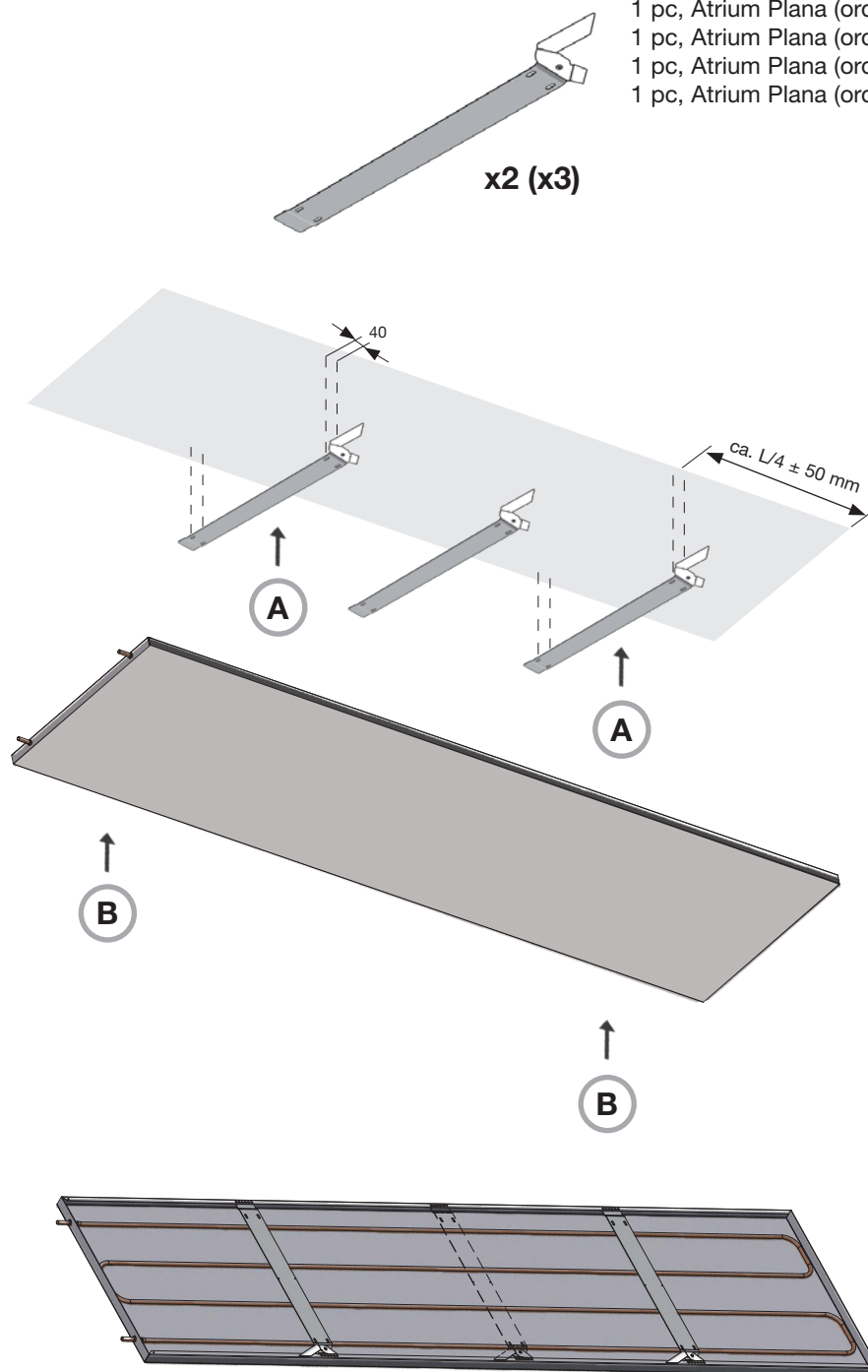
The ceiling clips are not included in the delivery and can be ordered as separate accessories.

Installation instruction

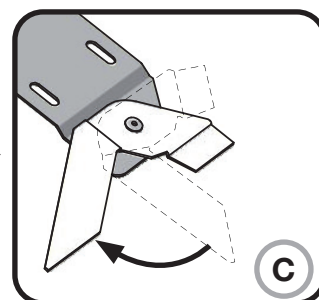
Atrium Plana

5.4.6 Mounting direct to concrete

Mounting brackets:
 1 pc, Atrium Plana (order no. 167671)
 1 pc, Atrium Plana (order no. 167670)
 1 pc, Atrium Plana (order no. 167673)
 1 pc, Atrium Plana (order no. 167672)



1. 4 pcs for $L < 2.4 \text{ m}$
2. 6 pcs for $L \geq 2.4 \text{ m}$



Installation instruction

Atrium Plana

6. Adjustment and commissioning

6.1 Airflow and pressure

6.2 Adjustment of air distribution pattern

6.3 Measuring air pressure and calculating the air flow

6.4 Water flow rate

6.4.1 Pre-setting of valves

All the control valves are delivered not set. The presetting has to be done on site.

For the presetting of valves, please see [LinFlow-A](#) (Angled) and [LinFlow-S](#) (Straight) water valves documentation.

6.4.2 Balancing strategy

Lindab recommends always balancing the water system to guarantee thermal comfort in all areas, to avoid noise nuisance problems and to save energy. A hydraulic balance is obvious to ensure that all the beams (panels or facade units) in the system will always be supplied with their required (planned) water flow rates.

Lindab refers to the proportional method, where all beams (panels or facade units) are balanced to the same proportion of the requested water flow rate.

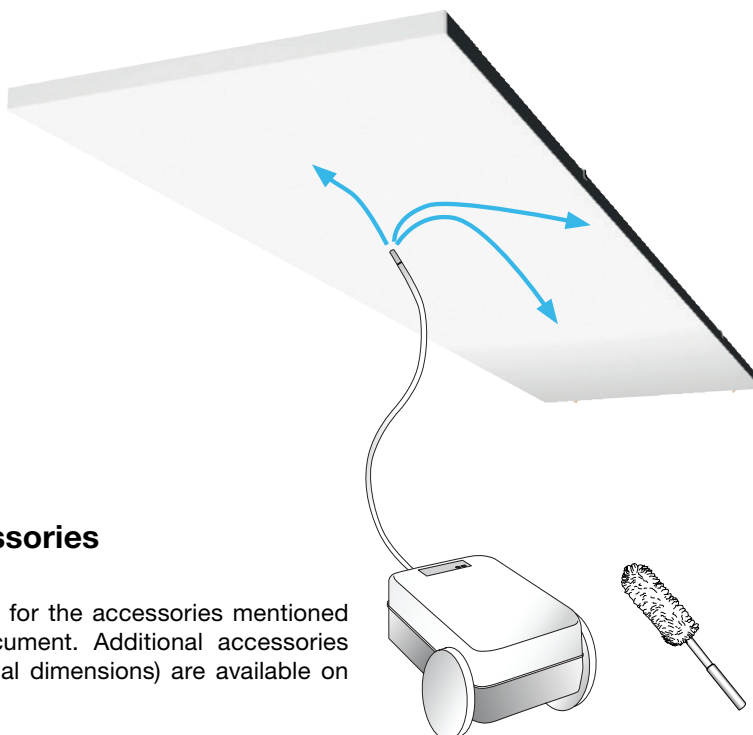
7. Maintenance

The interval of cleaning depends on the indoor environment where the panel is placed.

Under optimal conditions the panels only need cleaning every 5 years.

Cleaning instructions

- Only use lukewarm water and a mild detergent.
- When cleaning from above, the ceiling plate next to the panel must be removed
- then it will be possible to clean the panel from above



8. Accessories

Ask Lindab for the accessories mentioned in this document. Additional accessories (or additional dimensions) are available on request.

Check also Lindab's [Accessories](#) document.



Most of us spend the majority of our time indoors. Indoor climate is crucial to how we feel, how productive we are and if we stay healthy.

We at Lindab have therefore made it our most important objective to contribute to an indoor climate that improves people's lives. We do this by developing energy-efficient ventilation solutions and durable building products. We also aim to contribute to a better climate for our planet by working in a way that is sustainable for both people and the environment.

[Lindab](#) | For a better climate