

Lindab **Plafond XD**

Exposed active chilled beam

Installation instructions



Installation instruction

Plafond XD


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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

 Magnets

 Lock / unlock

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. 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.

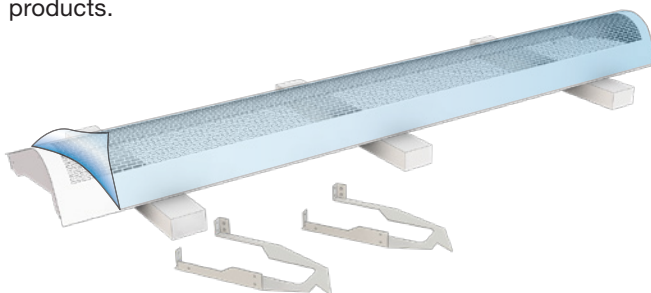
Never use piping connections or edges to lift them, neither when you unpack them nor when you carry them towards the construction site.



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 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.



Installation instruction

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2.6 Tools

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



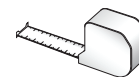
Knife



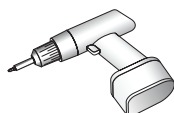
Gloves



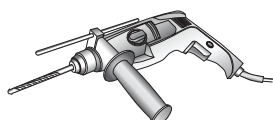
Shoes with soft soles



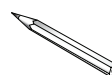
Tape measure



Drill machine



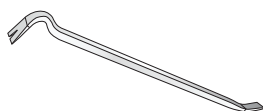
Percussion drill



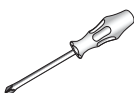
Pencil



Spanner



Crowbar



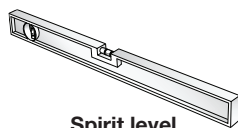
Screwdriver



Vacuum cleaner



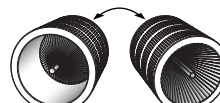
Dust-cleaner



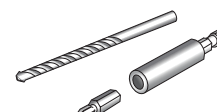
Spirit level



Lindab PC410
(Order no: 103344)



Deburring tool



Bits and drills

2.7 Installation

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

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"

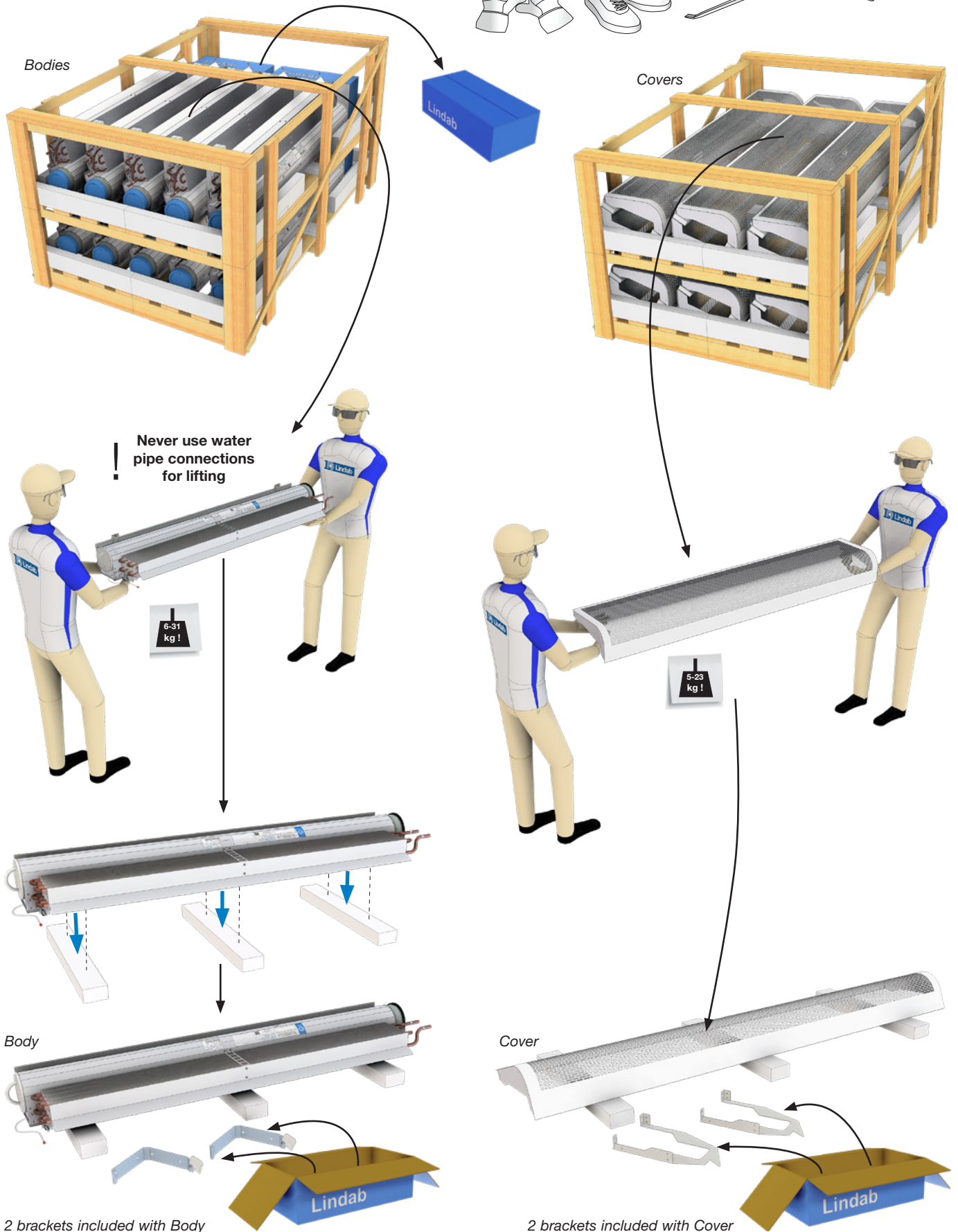
2.9 Cleaning after assembly / before commissioning

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

Installation instruction

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2.10 Packing, unpacking guideline



2 brackets included with Body

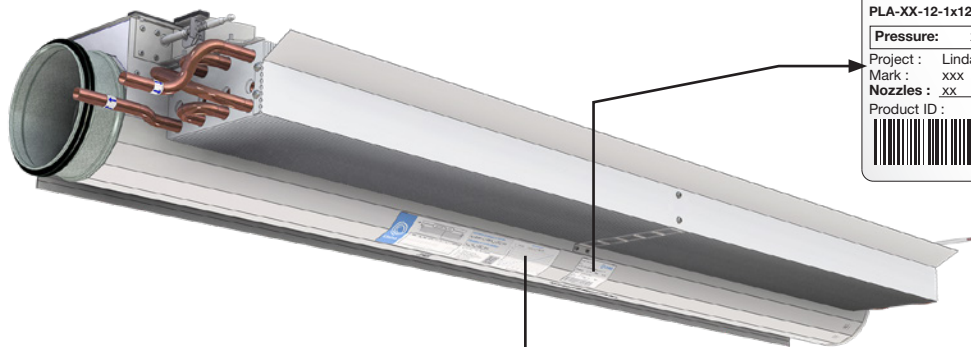
2 brackets included with Cover

Installation instruction

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2.11 Product labelling

Body



Order : xx-xxxxx
 Pos : xx
 PLA-XX-12-1x125-AXX-080X-x.x-xx-xx-Xx

Project : Lindab lucermemarken
 Mark : xxx
 Nozzles : xx Plugs : xx Sign :
 Product ID : xxxxxxxx

Pressure: xx Pa Flow: xx l/s

JetCones Pos. 0-9

Date	Δp_{stat} [Pa]	q_a [l/s]	1	2	k_{max}	Signature
22-03-05	60	20	5	5	4.028	<i>Maria Weber</i>

Rev.Plafond-XD-JetCone-20211213

Calculation of primary airflow rate
 $q_a = (0.089 \times J_{cp} + 0.2) \times k_{max} \times \sqrt{\Delta p_{stat}}$ [l/s]

Calculation of JetCone position
 $q_{a,max} = k_{max} \times \sqrt{\Delta p_{stat}}$ [l/s]

$f_{cp} = q_a / q_{a,max}$ $J_{cp} = \text{Read diagram}$

q_a = Primary airflow rate [l/s]
 Δp_{stat} = Static nozzle pressure loss [Pa]
 $q_{a,max}$ = Max. airflow at JetCone position 9 [l/s]
 k_{max} = K-factor at JetCone position 9
 f_{cp} = JetCone position factor
 J_{cp} = Average JetCone position

Adjustment diagram

Plafond XD $J_{cp} = (q_a / q_{a,max} \times 11.25) - 2.25$

Label when JetCone system has been ordered.

Date	Δp_{stat} [Pa]	q_a [l/s]	n_{open} [pcs]	n_{plug} [pcs]	Nozzle size	Signature
22-03-05	60	20	91		6	<i>Maria Weber</i>

Rev.Plafond-XD-Nozzle-20220331

Calculation of primary airflow rate
 $q_a = n_{open} \times k_{a/n} \times \sqrt{\Delta p_{stat}}$ [l/s]

Calculate no. of open nozzles needed
 $n_{open} = q_a / (k_{a/n} \times \sqrt{\Delta p_{stat}})$ [l/s]

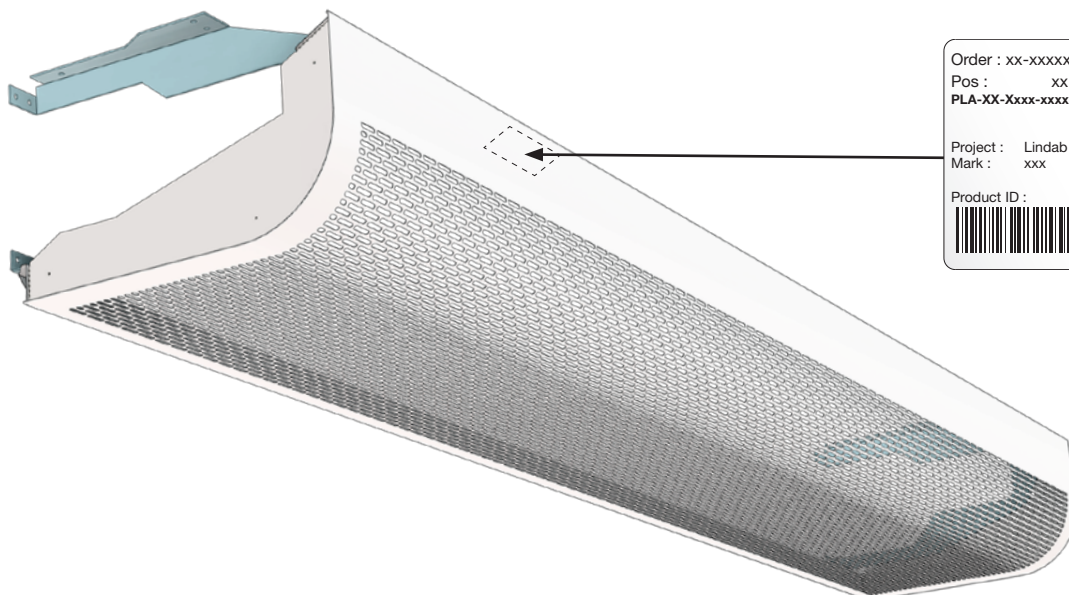
q_a = Primary airflow rate [l/s]
 Δp_{stat} = Static nozzle pressure loss [Pa]
 n_{open} = Number of open nozzles [pcs]
 n_{plug} = Number of plugs [pcs]
 $k_{a/n}$ = k-factor one nozzle

Nozzle size	$k_{a/n}$
4	0.01318
6	0.02929
8	0.05974

Label when no JetCone system has been ordered.

The product is factory pre-set with the customer-demanded primary air flow rate and static pressure loss settings. The label both records and guarantees the settings with personal signature of the responsible Lindab employee.

Cover



Order : xx-xxxxx
 Pos : xx
 PLA-XX-XXXX-XXXX-XXX-9003 x.x m

Project : Lindab lucermemarken
 Mark : xxx

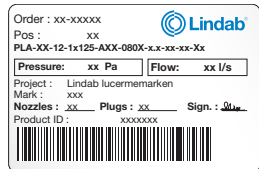
Product ID : xxxxxxxx Sign :

Installation instruction

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2.12 Order codes

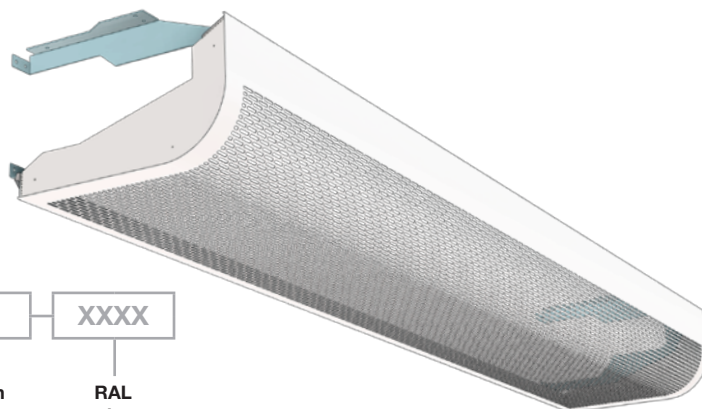
2.12.1 Plafond XD Body order code



PLA	XX	12	1x125	XXX	XXXX	X.X	XX	XX	XX
Type	Water connection	Air connection	Connection type	Battery code	Nominal product length	Static nozzle pressure	Primary air flow rate	JetCone position	
FC FW*	Ø12 mm	1x125 mm	A1L A3L A1R A3R	0800, 804 0800: Cooling 2-pipe. 0804: Cooling and heating 4-pipe.	0.8 m - 3.2 m in steps of 0.1 m.	30-120 Pa	1-90 l/s	P0, P1, P2, P3, P4, P5, P6, P7, P8, P9 or NR	

* incl. Top Cover PLA-TC

2.12.2 Plafond XD Cover order code



PLA-FC	Xxxxx	XXXX	XXX	XXXX
Cover type	Cover length	Perforation type	RAL colour	
Alea, Badge, Clyp, Cubo, Gap, Trac, Zune	200 mm - 3600 mm in steps of 1 mm	NON, SLO, DOX M6F, SQU	9003 Other colours on request.	

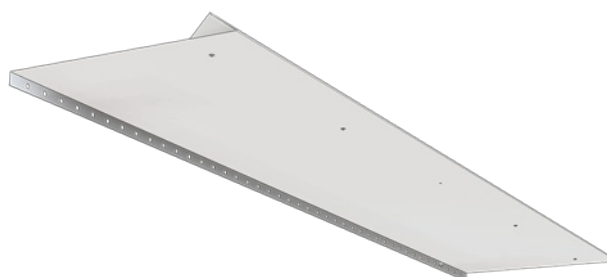
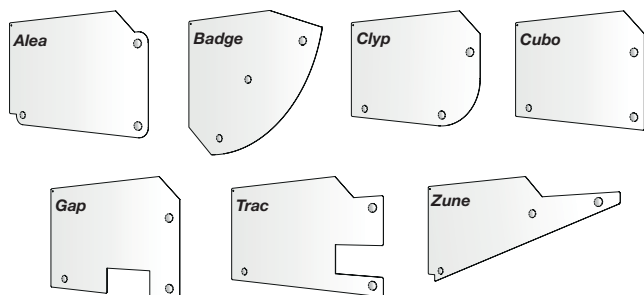
2.12.3 Plafond XD design end-gables order code

PLA-DG	Xxxxx	9003
Cover type	RAL colour	
Alea, Badge, Clyp, Cubo, Gap, Trac, Zune	9003 Other colours on request	

2.12.4 Plafond XD Top Cover order code**

PLA-TC	X.X
Nominal Body length [m]	

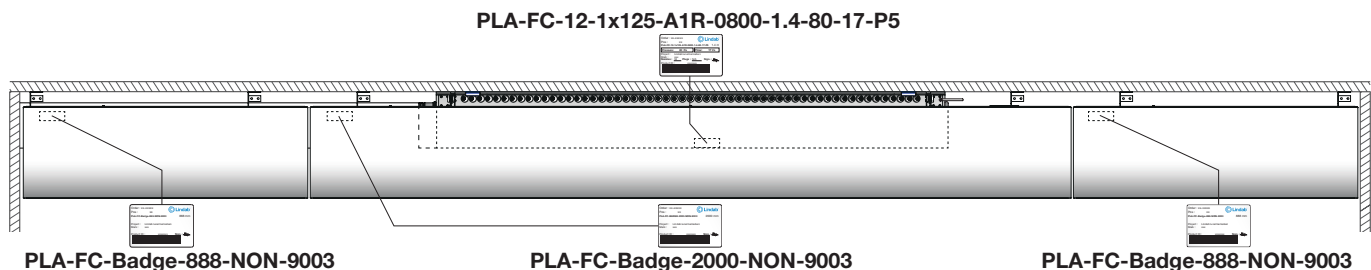
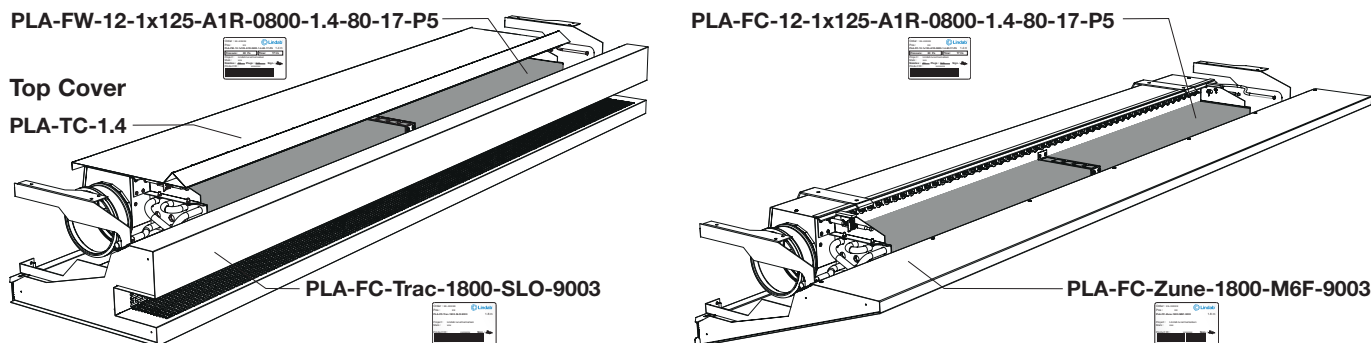
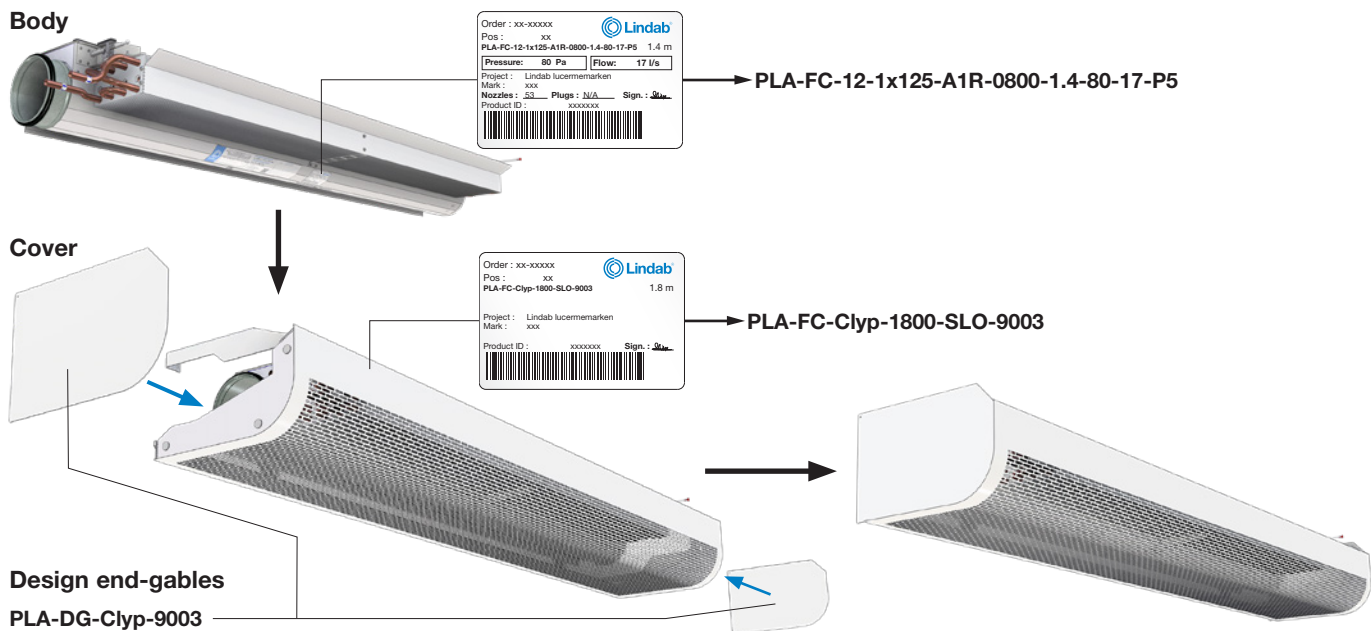
** is included when Body type PLA-FW is ordered!



Installation instruction

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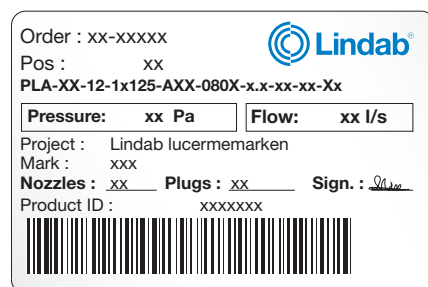
2.13 Order code examples



2.14 Label

On the label you'll find:

- Order: Order identification number
- Pos.: Order position
- Product: Product configuration and product length
- Data: Preset static nozzle pressure [Pa] and primary airflow rate [l/s]
- Project: Project name
- 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 packages/order contains:

- Beam, (Bodies, Covers, design end-gables and Top Covers in separate packages).
- Plus features (pre-installed in factory)
- 4 pcs./Body of copper insets (separate in smaller box)
- Accessories (separate in smaller box)

2.16 Plus features

The plus features offer a wide range of combination with pre-installed accessories integrated into the product on production site. This reduces the installation time on site.

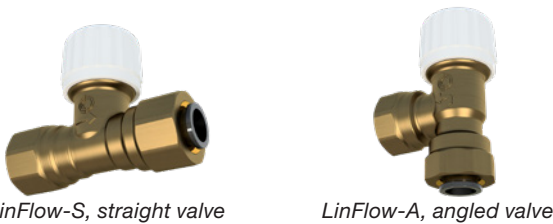
2.16.1 Inlet faceplates

Not relevant for Plafond XD

2.16.2 Outlet front grilles

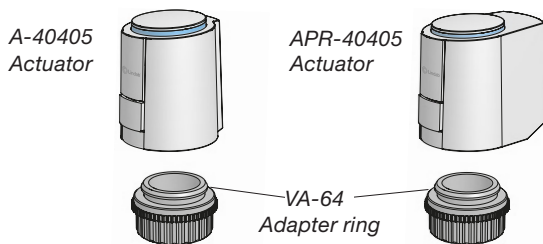
Not relevant for Plafond XD

2.16.3 Integrated valves



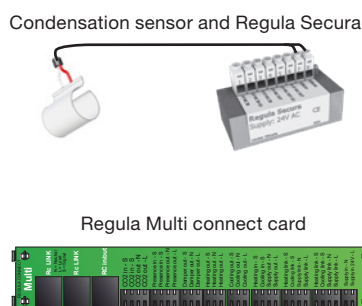
See [LinFlow-A](#) and [LinFlow-S](#) for details.

2.16.4 Thermoelectric actuators



The actuators can be pre-installed on the integrated/enclosed valves and connected to the integrated Regula connect card /Regula Secura (plus feature). Go to [Actuators](#) for details. See also [Adapter ring](#).

2.16.5 Integrated Regula components



Go to [Regula](#) for details.

2.16.6 Airguides

Not relevant for Plafond XD.

2.16.7 Heating

Available as standard for Plafond XD. Cooling and heating 4-pipe (battery type 0804).

2.17 Accessories

Here are some general accessories. For full range and order numbers, see separate [Accessories](#) document. The components under 2.16.3 to 2.16.5 are also available as accessories. Go to "8. Accessories" in this document to find accessories order numbers.

2.17.1 Threaded rod kit (Hangers)

Not relevant for Plafond XD

2.17.2 Flexible hoses



Order no: See [Accessories](#)

2.17.3 Transformer



Order no: See [Transformers](#)

2.17.4 Tectite fittings

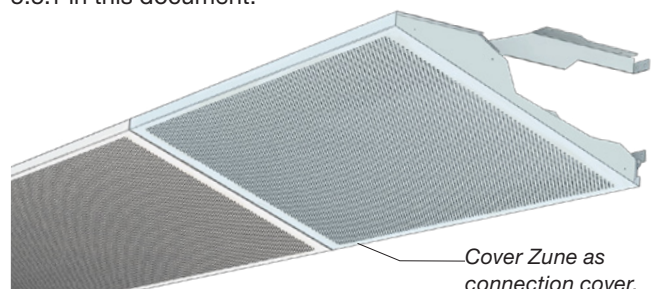


Order no: 647690, 884050 and 642623 (12 mm).

see [Accessories](#)

2.17.5 Connection covers for Plafond XD models

There are no special Connection covers available, as standard Covers for Plafond XD can be used. For details go to 5.5.1 in this document.



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Plafond XD

3. Product specification

3.1 Product description

Plafond XD is an exposed, 1-way active chilled beam and can be standardly prepared for ventilation and cooling (2-pipe connection) or cooling and heating (4-pipe connection).

The Plafond XD consists of a technical Body and Cover in seven different designs.

3.2 Dimensions

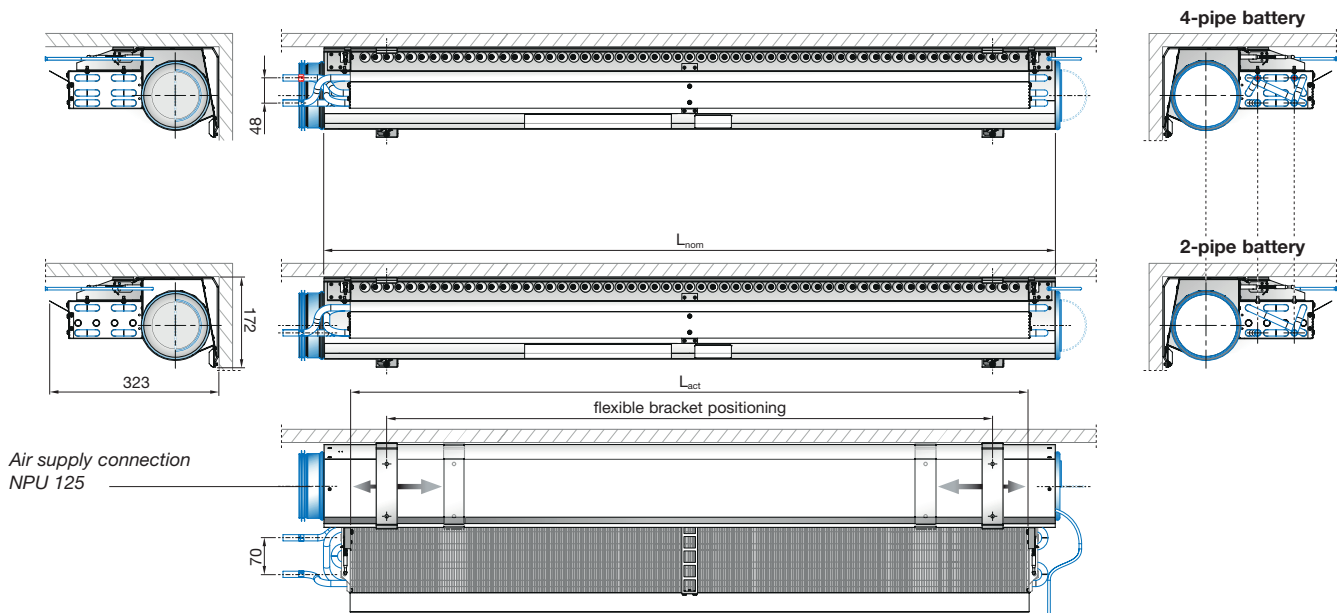
3.2.1 Body dimensions

L_{nom} = nominal length (ordering length) = 800 to 3.200 mm

L_{act} = the active length of the battery

$$L_{act} = L_{nom} - 100 \text{ mm}$$

A1R



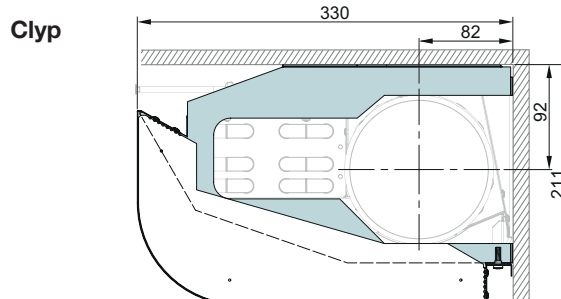
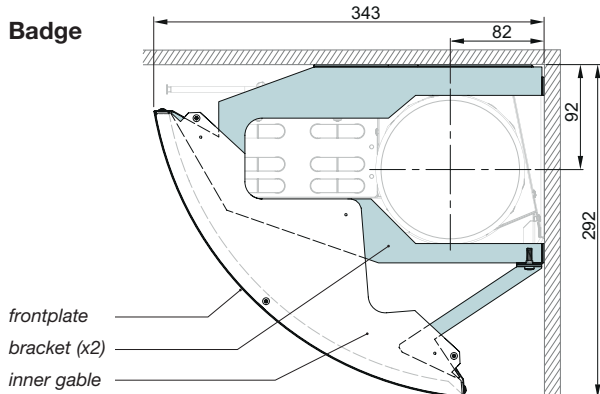
Dimensions valid for all Plafond XD Bodies. Water pipe placement and dimensions, see 4.1.7.

Installation instruction

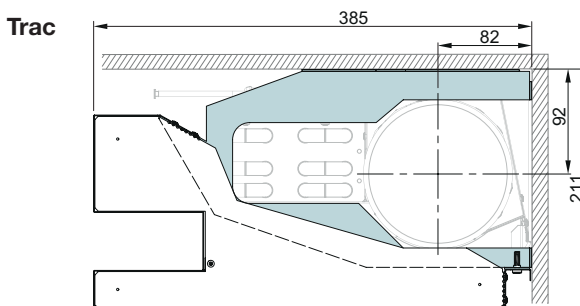
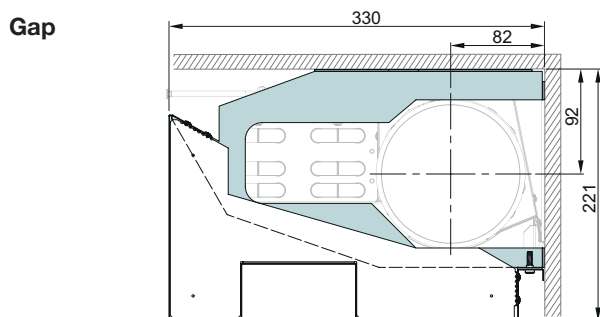
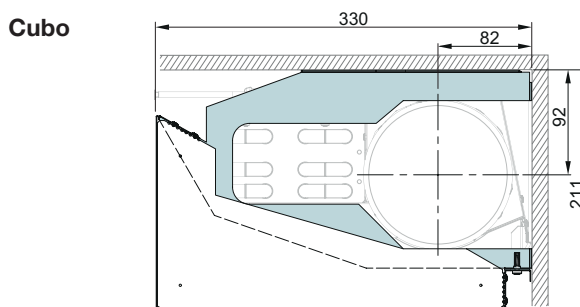
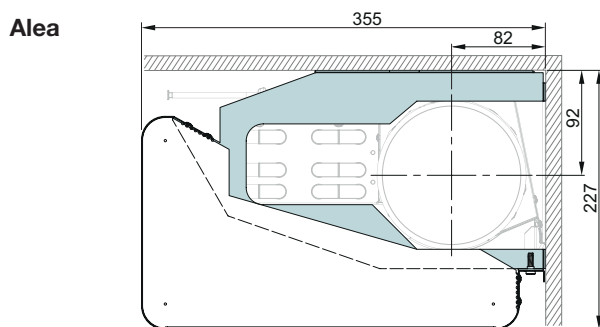
Plafond XD

3.2.2 Cover dimensions

Classic Covers



Design Covers

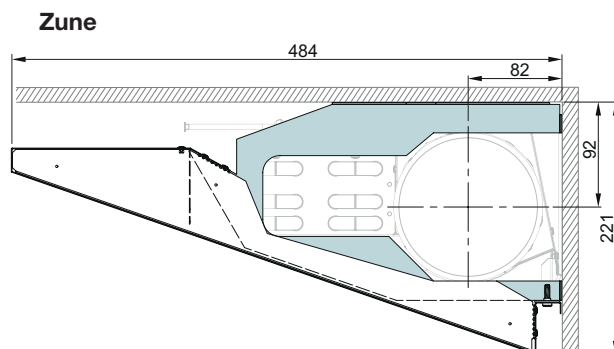


Lengths L_{cov} :

Body Covers: $1.200 \text{ mm} \leq L_{cov} \leq 3.600 \text{ mm}$.

Connection Covers: $200 \leq L_{cov} \leq 3.600 \text{ mm}$
(ordered seperately)

All the Covers come with two included brackets for easy installation independently of the Plafond XD Body. Go to 5.5 and 5.5.1 in this document for details for installation details.

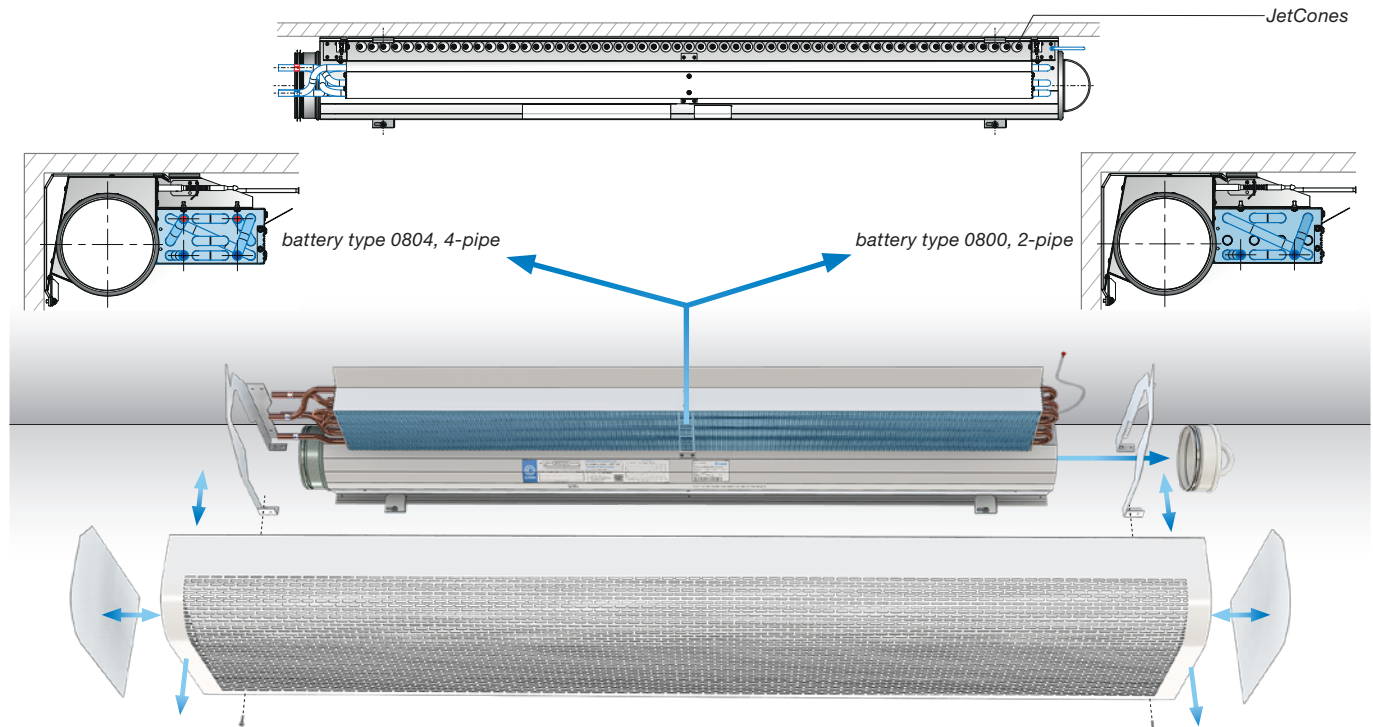


The chosen Plafond XD Cover design will determine the outer dimensions of your Plafond XD, hiding the Body, connections and accessories.

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3.3 General structure



3.4 Material data

Type	Plafond XD
Copper pipes, quality	EN-12735-2 CU-DHP
Pressure class	PN10

Table 1. Material data.

Performance value	Function	Batery type CC HH	PLA-FC Dry weight [kg/m]	PLA-FW Dry weight [kg/m]	Water content cooling [l/m]	Water content heating [l/m]	Water content total [l/m]
Maximal cooling or heating	2-pipe	08 00	8.0	9.5	1.0		1.0
Maximal cooling and maximal heating	4-pipe	08 04	9.5	11.0	1.0	0.5	1.5

Table 2. Specific measures for the water circuit.

Possible battery configurations for Plafond XD Body :
 4-pipe: 0804
 2-pipe: 0800

Cover type	Cover weight [kg/m]	Design end-gables* weight (2 pcs.) [kg]	Cover brackets** weight (2 pcs.) [kg]
PLA-FC-Alea	5.4	0.7	1.0
PLA-FC-Badge	5.2	0.7	
PLA-FC-Clyp	4.6	0.7	
PLA-FC-Cubo	4.8	0.7	
PLA-FC-Gap	5.4	0.7	
PLA-FC-Trac	6.4	0.7	
PLA-FC-Zune	5.8	0.7	

* The design end-gables are ordered separately and must match ordered front Cover design (see "Specifications" page 35). Whether you need one or two design end-gables depends on your installation principle (see page 19).

** Two brackets are always included when ordering a Plafond XD Cover.

Table 3. Plafond XD Covers, design end-gables and brackets, weight for all different types.

Installation instruction

Plafond XD

3.5 Environmental Declarations

Please follow the links below:

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

3.6 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.

3.7 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.

3.8 Air quality

Primary supply air have to be clean, dry and filtered before reaching the beam.

3.9 Capacity test

Lindab's active chilled beams are Eurovent-certified and tested according to EN-15116.

Please visit Plafond XD on www.lindQST.com and see [Eurovent](#) for more details.



Installation instruction

Plafond XD

4. Connections

4.1. Water connections

Flow indication arrows are shown on the inlet and return pipes in order to assist the installer.

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.

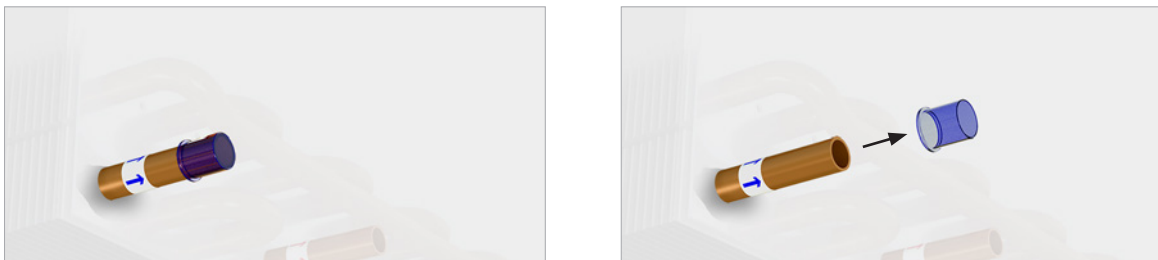
When connecting a panel or a beam with the piping system either a push-on fitting or a compression coupling should be used. Lindab have tested and recommends John Guest push on fittings as well as push-on fittings from Tectite (available as accessory. See [Accessories](#)).

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

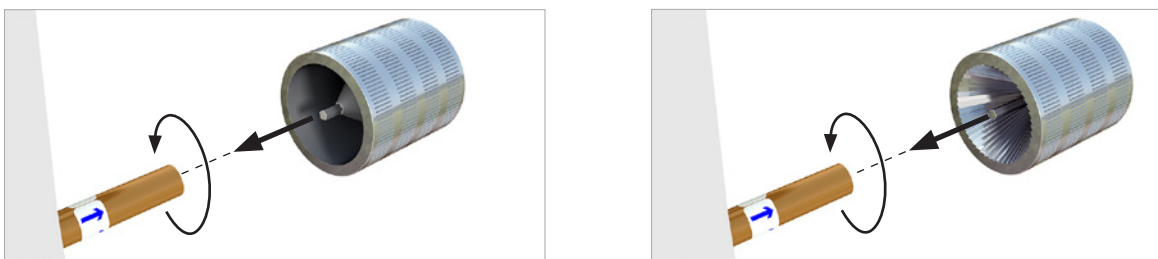
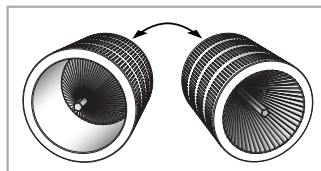
NB! Every control valve can create sound when it is installed directly connected to the water in- or outlet (or into the piping in close distance to the in- or outlet of the water product). To avoid unwanted sound generation we recommend to always use a Lindab control valve [LinFlow-A](#) (angled) or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



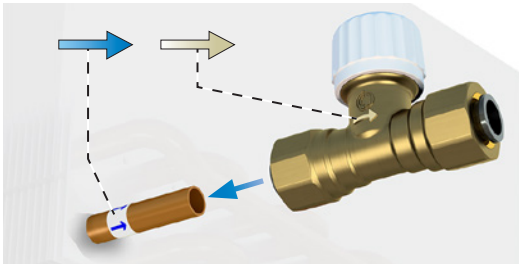
- Always remember to do a leakage test after assembly of the pipe work.

Installation instruction

Plafond XD

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 cabling to Regula Connect card). Cooper inserts aren't required!
- Please refer to the suppliers manual.

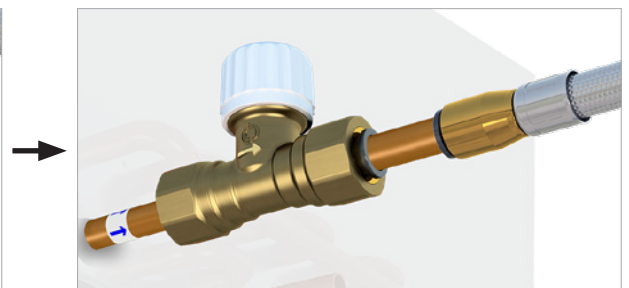
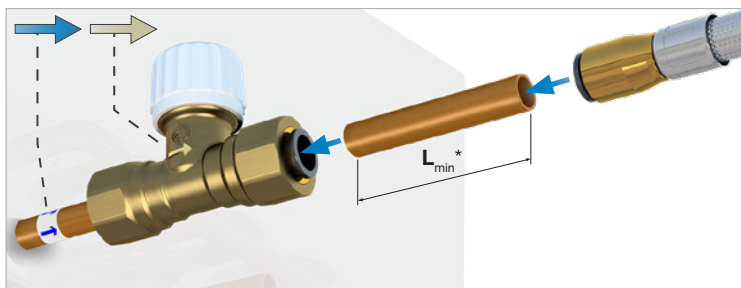
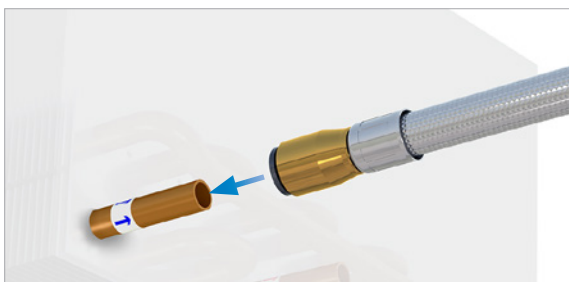


4.1.3 Compression fitting

- 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

Plafond XD

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

All the Plafond XD active chilled beams can have either a "2-pipe water connection" or a "4-pipe water connection".

The 2-pipe water connection beam contains one water circuit only (cooling or heating).

All water pipe connections are $\varnothing = 12$ mm.

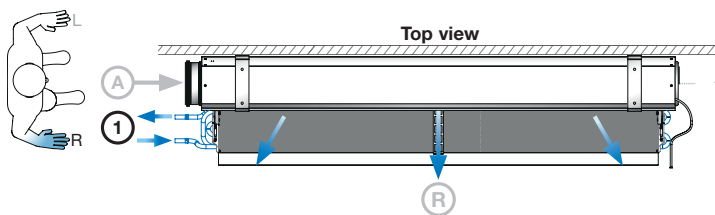
Plafond XD body with one water circuit, 2-pipe water connections, cooling or heating.

Identify the couplings and connections for air and water.

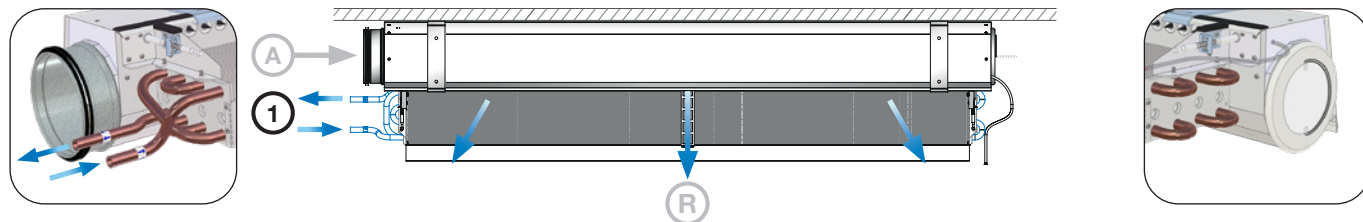
Standing in front of the air connection side of the Plafond XD Body so you are looking into the air connection and following the air distribution through the nozzles into the room.

A = Horizontal air connection.
1 = Water connection on same side as air connection.
3 = Water connection on opposite side of air connection.
L = Air distribution is to the left.
R = Air distribution is to the right.

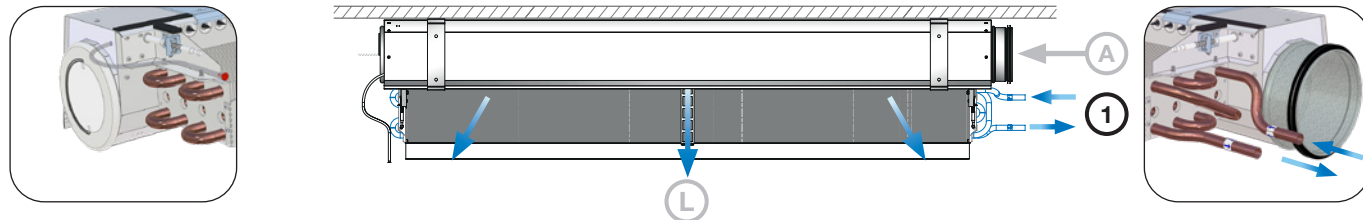
Basic connection types:
 A1L, A1R, A3L, A3R



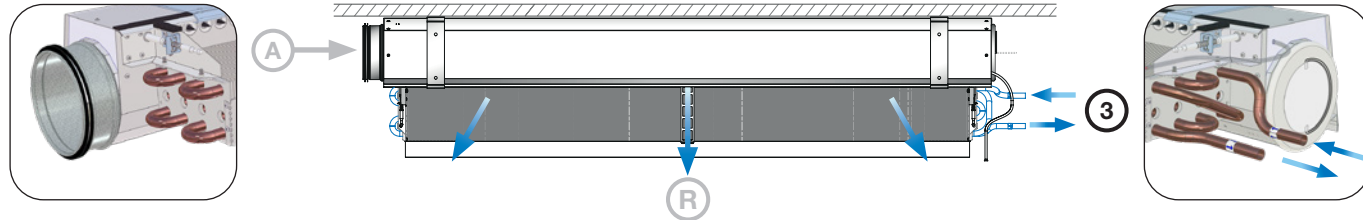
A1R



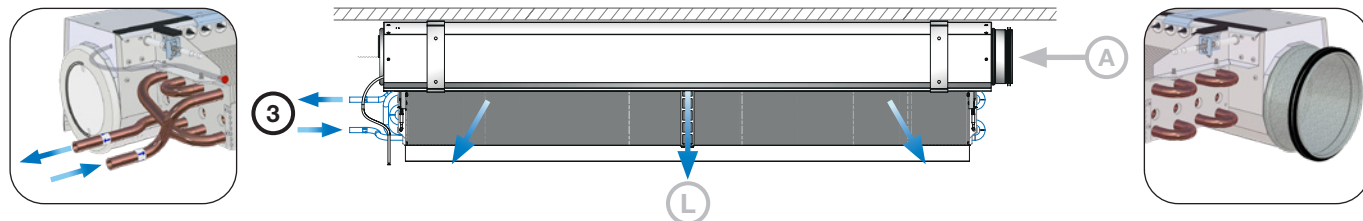
A1L



A3R



A3L



Installation instruction

Plafond XD

4.1.6 Possible connections water cooling and heating (4-pipe, standard)

Plafond XD active beams with "4-pipe water connection" contains two water circuits, one for heating and one for cooling.

All water pipe connections are $\varnothing = 12$ mm.

Plafond XD body with two water circuit, 4-pipe water connections, cooling and heating.

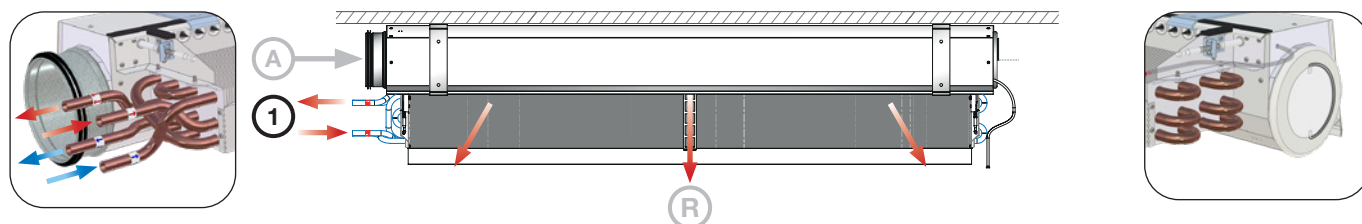
Identify the couplings and connections for air and water.

Standing in front of the air connection side of the Plafond XD Body so you are looking into the air connection and following the air distribution through the nozzles into the room.

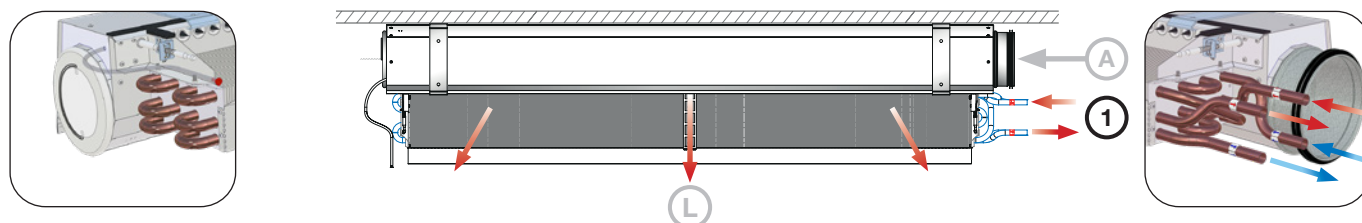
A = Horizontal air connection.
1 = Water connection on same side as air connection.
3 = Water connection on opposite side of air connection.
L = Air distribution is to the left.
R = Air distribution is to the right.

Basic connection types:
 A1L, A1R, A3L, A3R

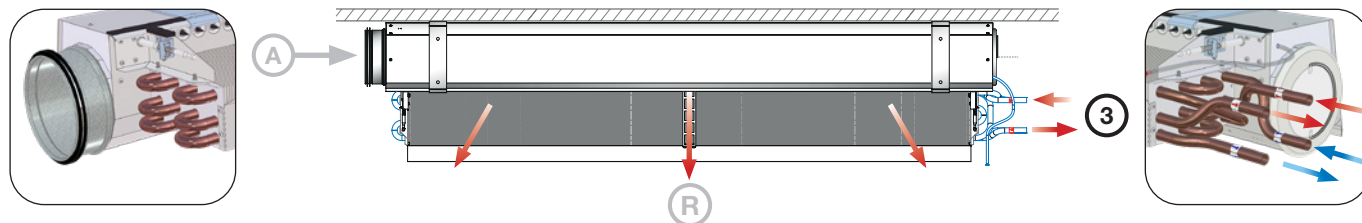
A1R



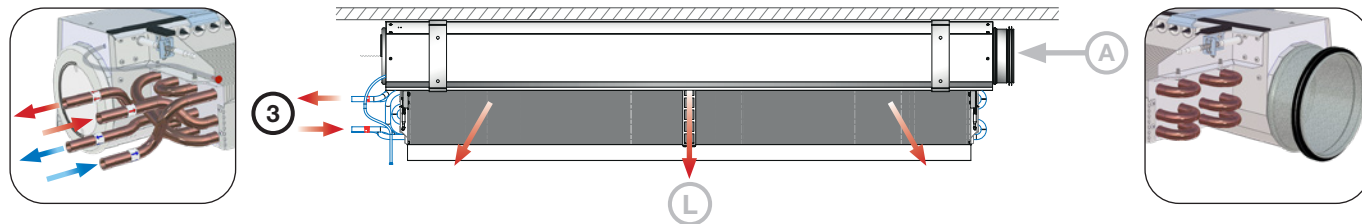
A1L



A3R



A3L

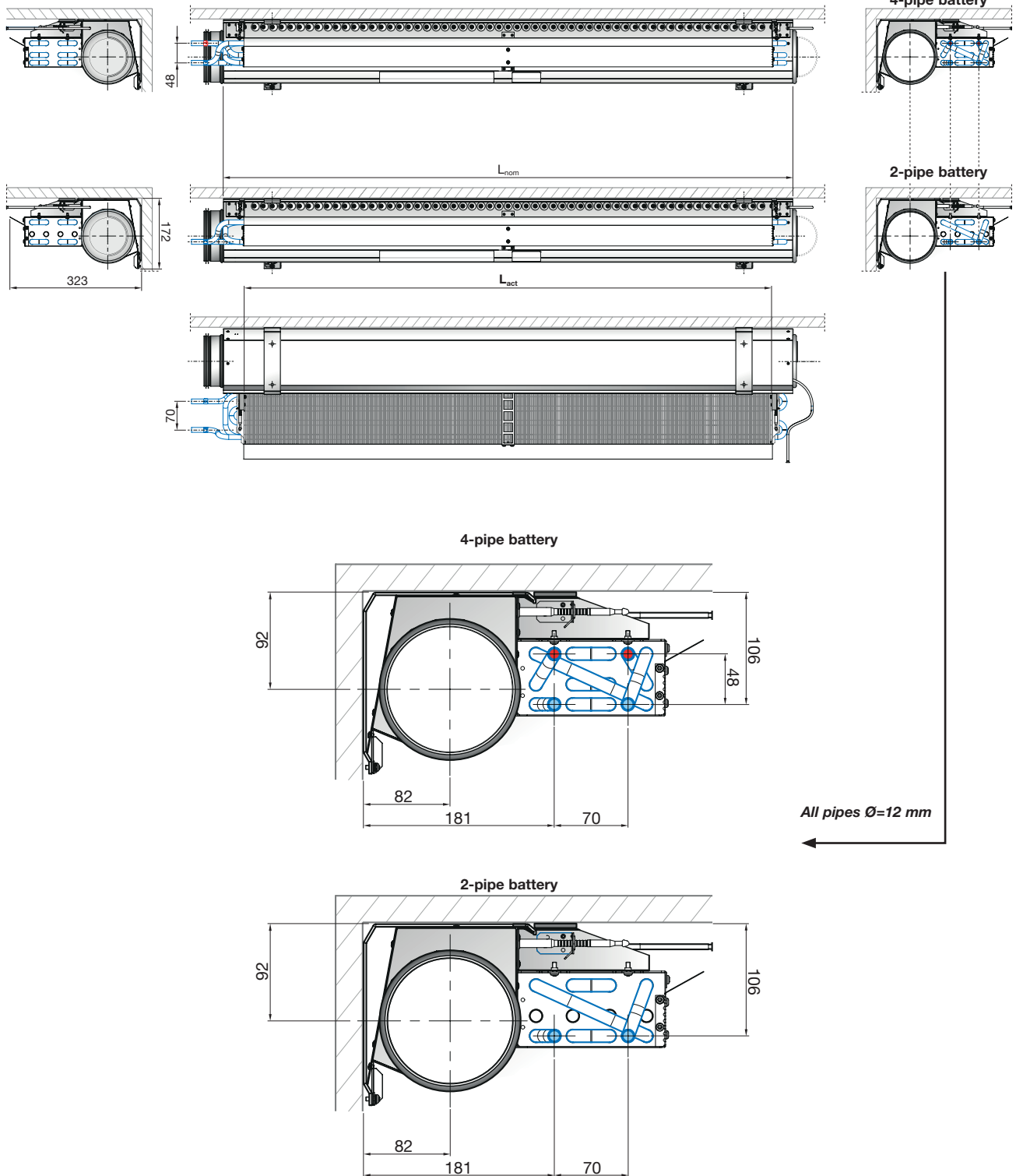


Installation instruction

Plafond XD

4.1.7 Water pipe dimensions and placement.

A1R



Dimensions valid for all Plafond XD Bodies.

Installation instruction

Plafond XD

4.2 Air connections.

4.2.1 Air connection installation

The primary air supply must be connected with instructions from a ventilation specialist. Lindab's chilled beams can beneficially be used together with Lindab's Safe® duct systems.

We recommend a flexible duct connection, like Lindab DRATMFU-125, to balance out different installation heights or directions between connection and duct and avoid sound will be diverted from piping system to the ceiling.

4.2.2 Possible connections supply air

The horizontal (A) supply air connections are equipped with NPU-125 with Lindab SafeClick® as a standard.

The NPU-125 can be replaced by a BKU-125-90 for air supply connection through ceiling (vertical) or wall (side).



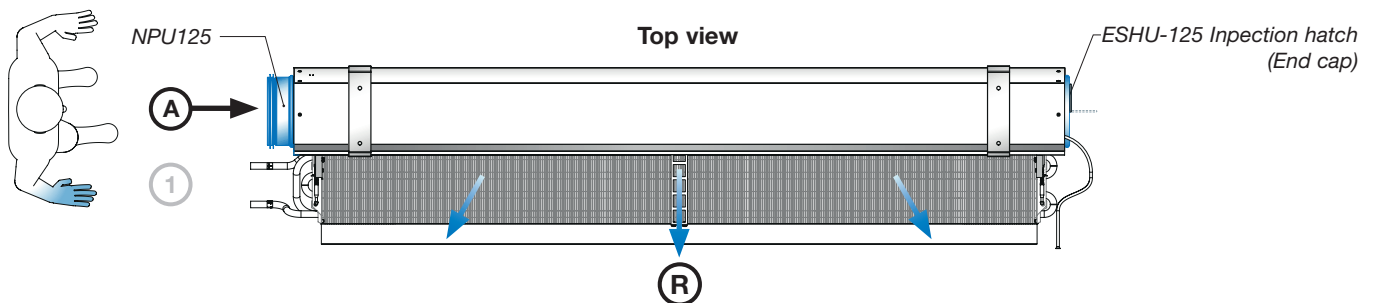
Identify the couplings and connections for air and water.

Standing in front of the air connection side of the Plafond XD Body so you are looking into the air connection and following the air distribution through the nozzles into the room.

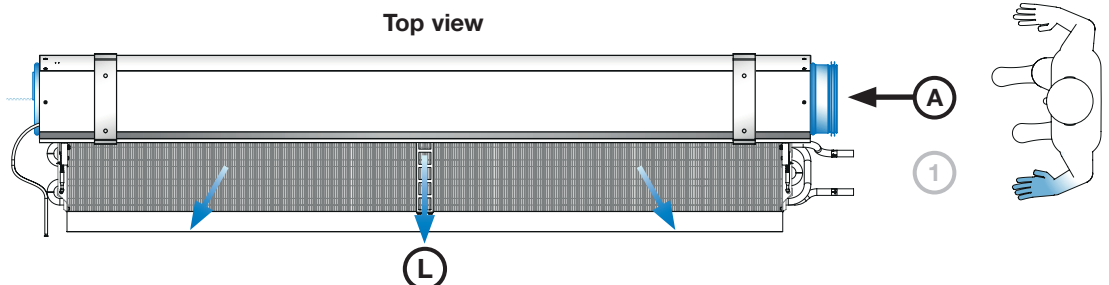
A = Horizontal air connection.
1 = Water connection on same side as air connection.
3 = Water connection on opposite side of air connection.
L = Air distribution is to the left.
R = Air distribution is to the right.

Basic connection types:
 A1L, A1R, A3L, A3R

A1R The supply air (A) is distributed through the nozzles into the room to your right side.



A1L The supply air (A) is distributed through the nozzles into the room to your left side



4.2.3 Possible connections extract air (plus feature, XP-60 models only)

Not relevant

4.3 Possible combinations of connections (standard)

Possible Plafond XD connections,
 Supply air (A) and water (1, 3).
A1L, A1R, A3L, A3R

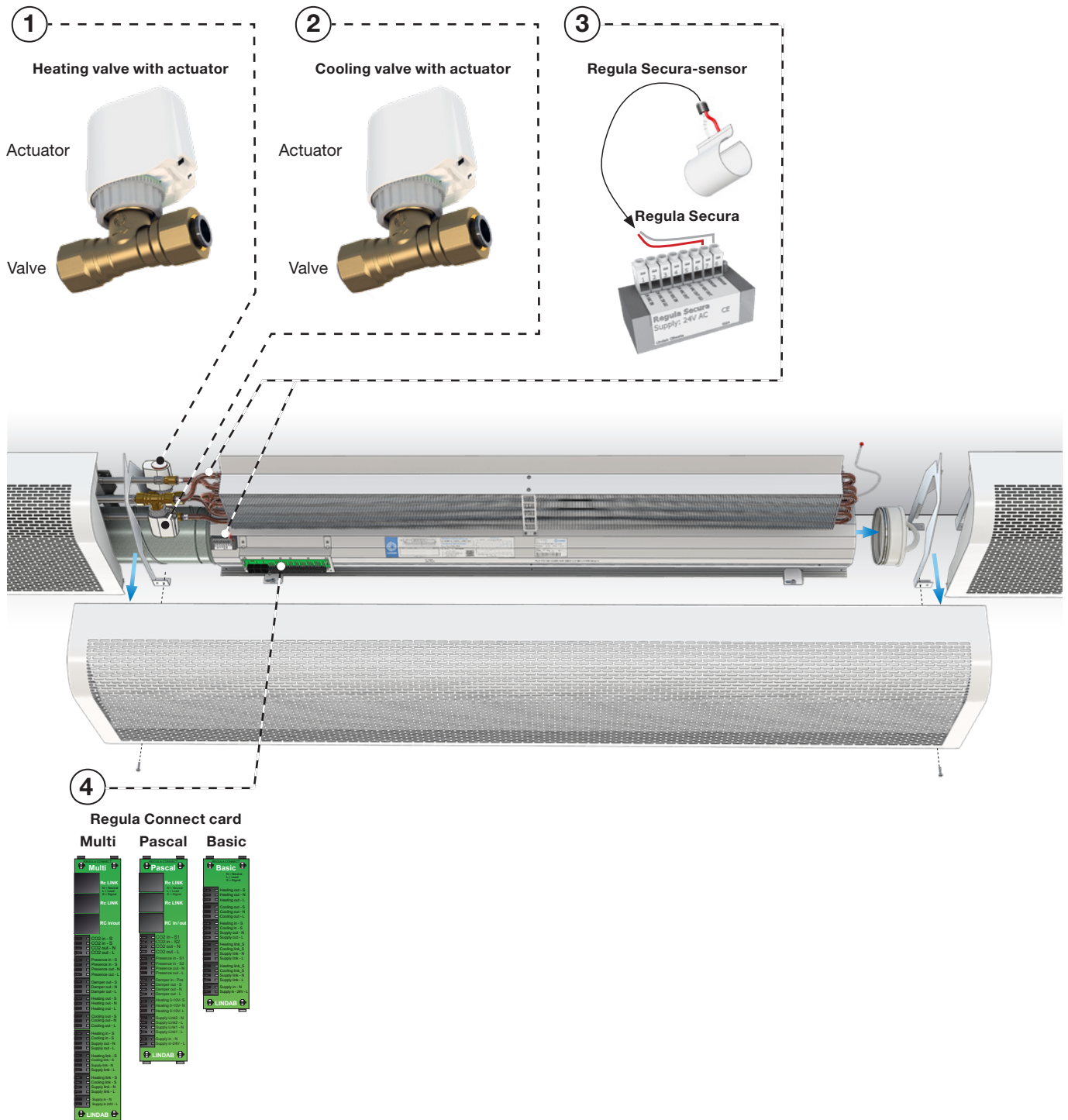
Installation instruction

Plafond XD

4.4 Electrical connections (Plus features)

Electrical connections on the beam are only necessary, when plus features are chose. When plus features are ordered they are installed from factory. The components are always installed near the water-connection at the end of the beam. For further information, see [Regula](#).

4.4.1 Regula components on the beam

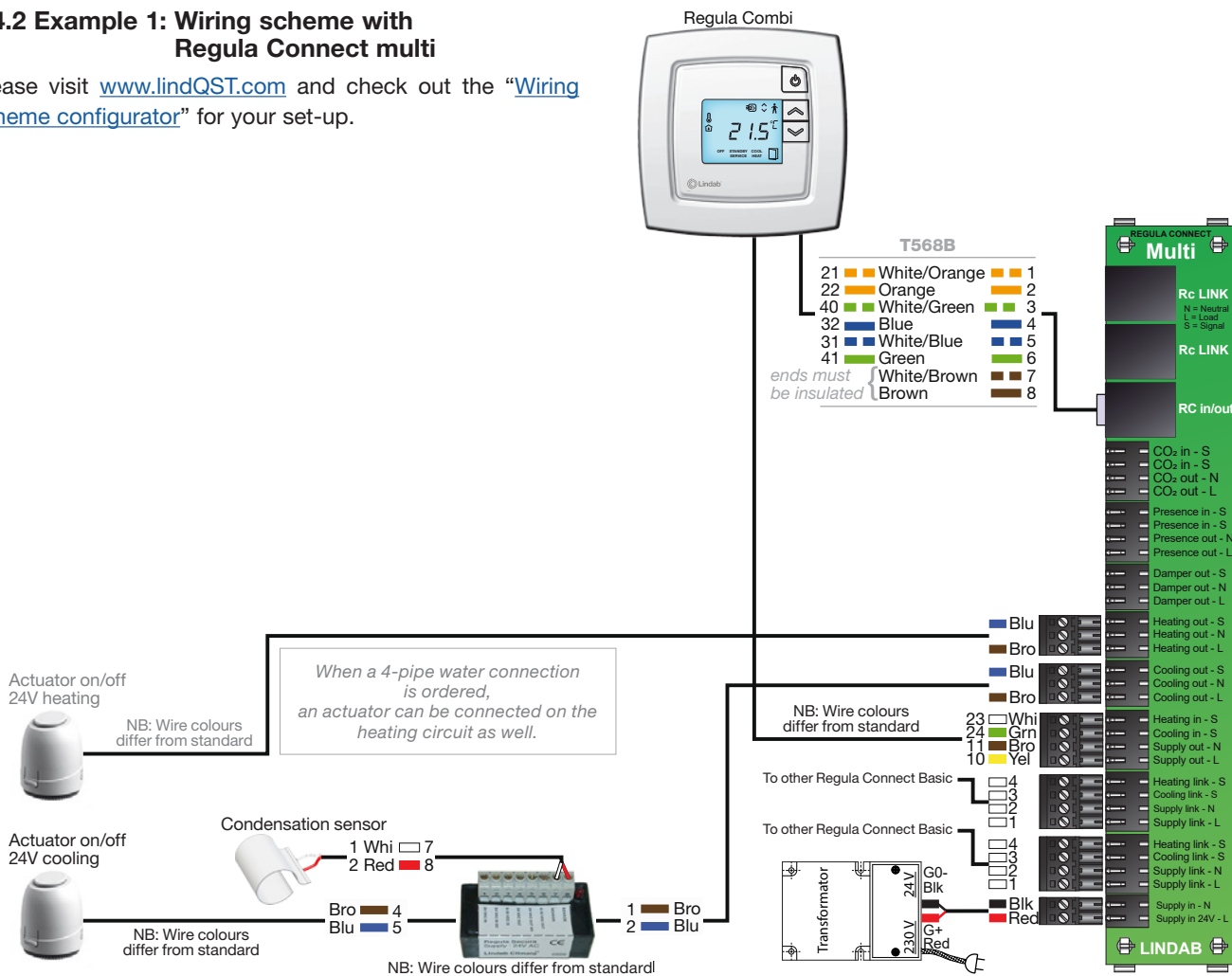


Installation instruction

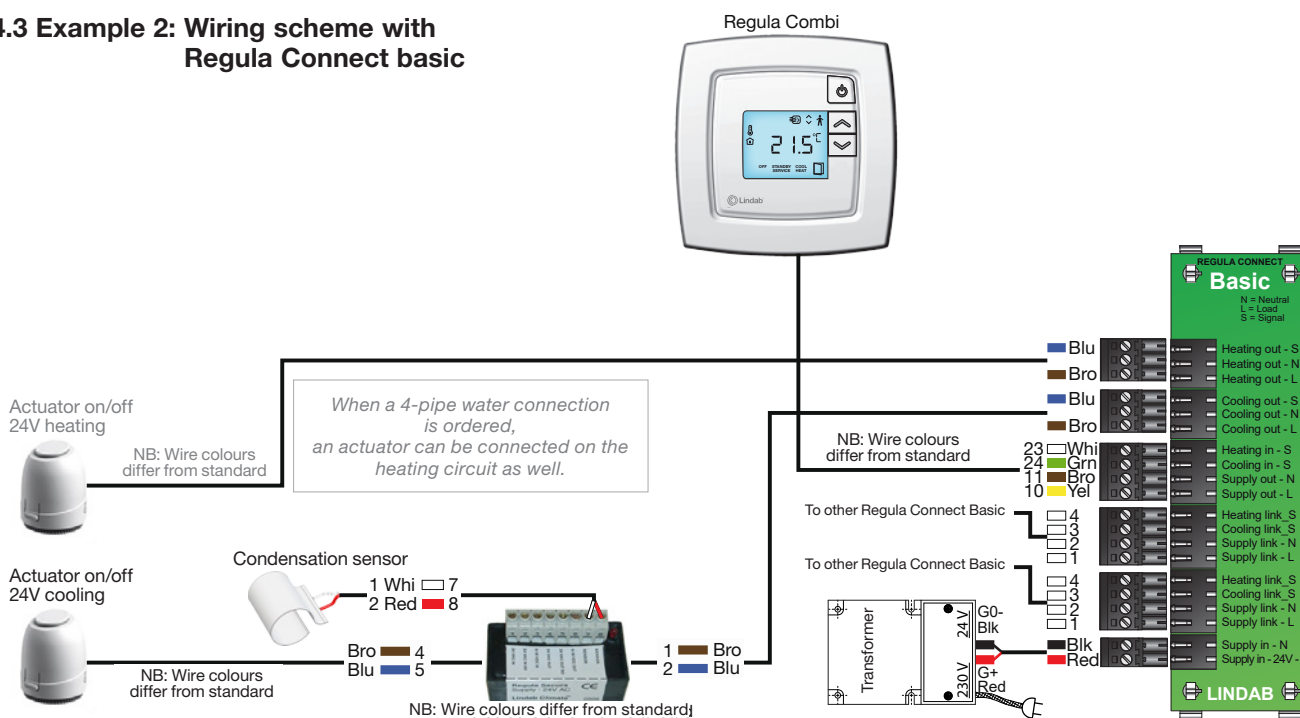
Plafond XD

4.4.2 Example 1: Wiring scheme with Regula Connect multi

Please visit www.lindqst.com and check out the "Wiring scheme configurator" for your set-up.



4.4.3 Example 2: Wiring scheme with Regula Connect basic



Installation instruction

Plafond XD

4.4.4 Regula Connect on the beam

Connect cards are pre-installed when the beam is ordered with plus features. See [Regula Connect](#) for more details.

Regula Connect Basic



Regula Connect Pascal



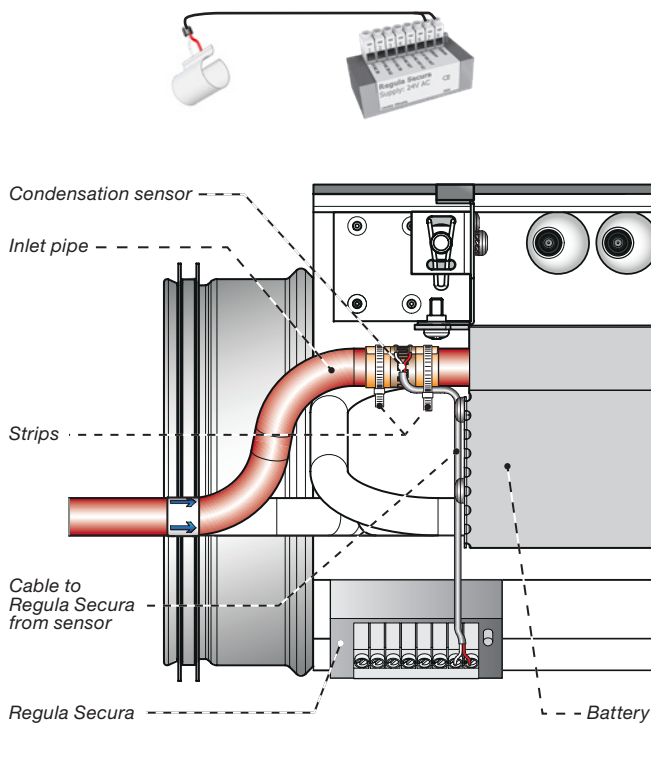
Regula Connect Multi



4.4.5 Regula Secura on the beam

Regula Secura is pre-installed when the beam is ordered with plus features. See [Regula Secura](#) for more details.

Condensation sensor and Regula Secura



4.4.6 Valves and Actuators on the beam

Description, see 2.16 .

4.4.7 Regula Combi on/with the beam

Not relevant for the Plafond XD

4.4.8 Actuators

Description, see 2.16.

Installation instruction

Plafond XD

5. Installation of product

5.1 Handling of product

For the handling of the product please refer to 2.5.

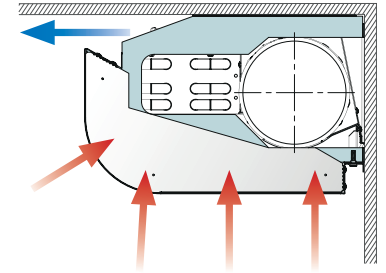
5.2 Adaption to ceiling systems

Not relevant for the Plafond XD

5.3 General installation principles

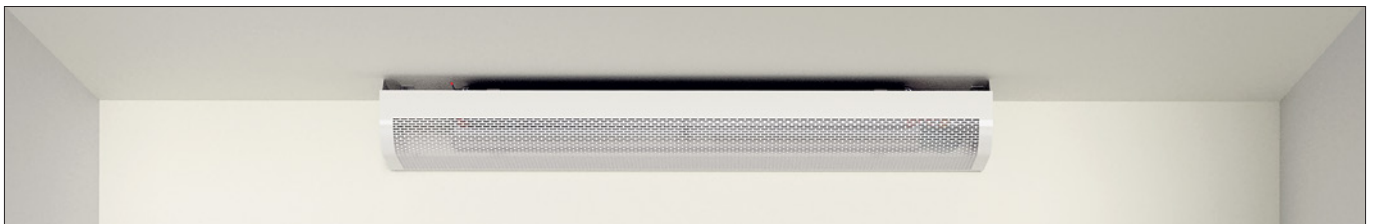
5.3.1 Installation on the wall, sealed to the ceiling (FC)

The Plafond-XD-FC Body is installed on the wall, directly sealed to the ceiling without the need of a Top Cover (TC). The air distribution is horizontal along the ceiling (coanda-effect). The warm inlet room air enters through the Cover perforation or slot and the cooled air is distributed horizontally along the ceiling.



Plafond XD-FC installation on the wall, sealed to the ceiling (FC).

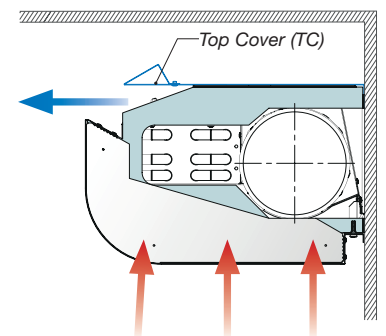
The air distribution is horizontal along the ceiling. Installation principle "Beam" having two exposed inner end-gables. Design end-gables should be ordered separately to hide inner gables, air and water connections.



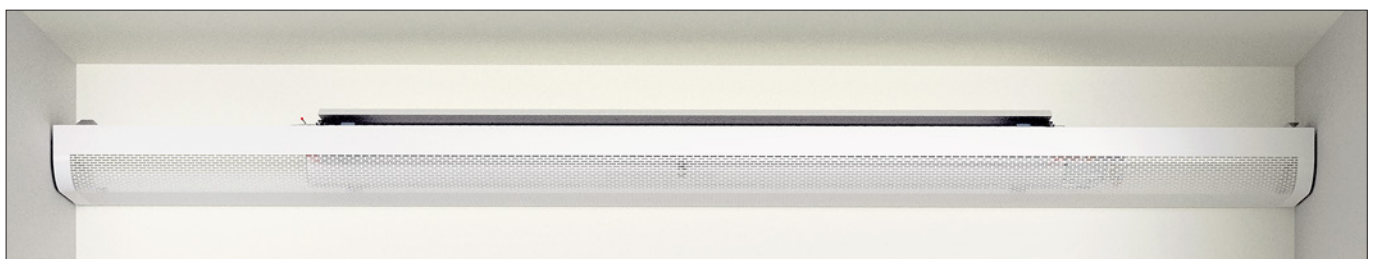
Plafond XD-FC (with Cover type Clyp), installation on the wall, sealed to the ceiling (FC) without the need of a top Cover (TC).

5.3.2 Installation on the wall, with distance to the ceiling (FW)

The Plafond-XD-FW Body is installed on the wall, with distance to the ceiling with the need of a Top Cover (TC), which is part of the delivery. The air distribution is horizontal along the ceiling. If a coanda-effect will be maintained depends on static nozzle pressure loss, primary air flow rate, air temperature and distance to the ceiling. The FW installation demands a Top Cover to secure the horizontal air distribution.



Picture 8. Plafond XD-FW installation on the wall, with distance to the ceiling (FW).



Plafond XD mounted on the wall with distance to the ceiling (FW).

Installation instruction

Plafond XD

5.4 Preparation for installation on the product

The Body must always be installed before the Covers. All necessary brackets are included in your order.

The Plafond XD Body must always be covered by a *single* Cover. Two Covers are not allowed to overlap the Body. If the distance to the wall can not be covered by the max. Cover length an additional *connection* Cover must be ordered (see 5.5.1).

Be carefull when dimensioning lengths of especially your Covers. See table showing min. and max length of the different Plafond XD components.

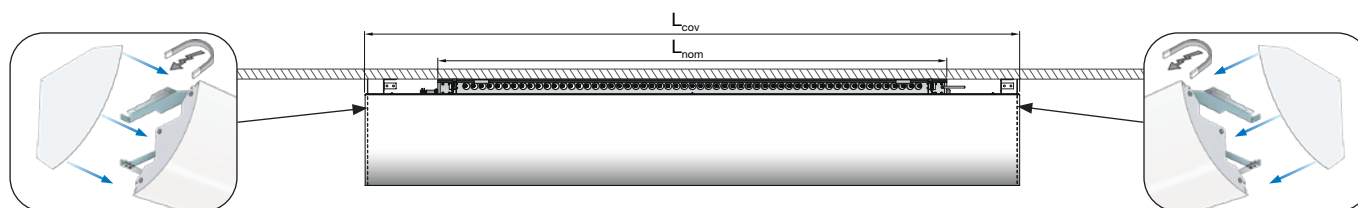
Length of		Min. [mm]	Max. [mm]
Body	L_{nom}	800	3.200
Cover	L_{cov}	1.200	3.600
Connection Cover	L_{cov}	200	3.600

Table 4. Min. and max. lengths of Bodies and Covers.

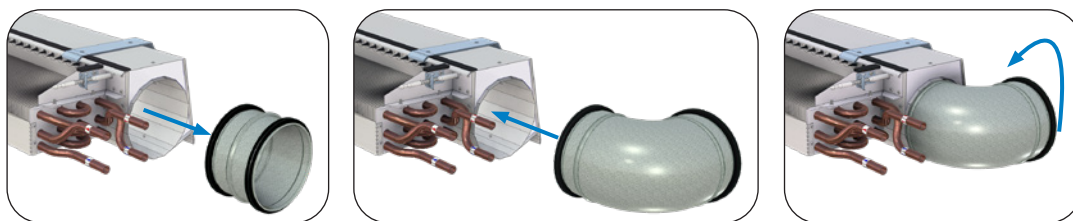
Following rules and guidelines below will secure a fast troublefree installation.

Length of single Plafond XD Cover:

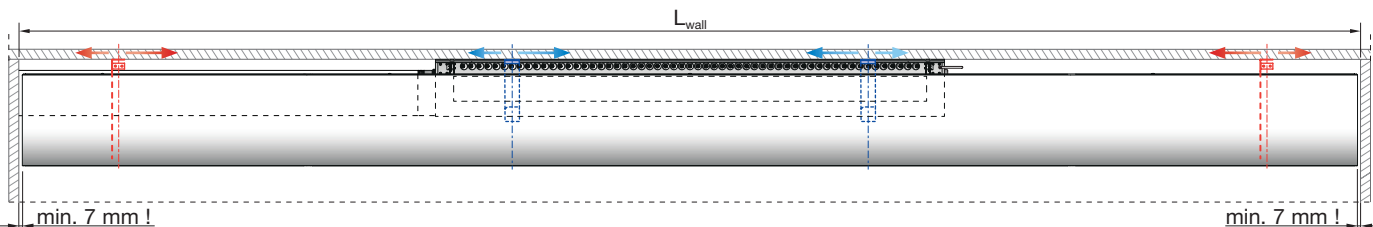
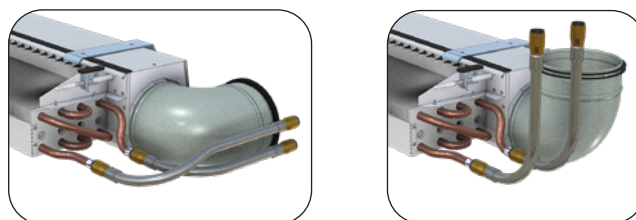
$$L_{cov} = 1.200 \text{ mm} \leq L_{nom} + 400 \text{ mm} \leq 3.600 \text{ mm}.$$



Installation principle "beam". This type of installation will need two design end-gables like shown above. To be ordered seperately! This type of installation also demands air connection leading directly into the back wall or ceiling. Replace body NPU with bend BKU, to be ordered seperately!



Lindab recommends our Flexible hoses and fitting range for water in- and outlet pipe connections.



Installation principle "wall to wall". This type of installation will need no design end-gables. However you must as a minimum subtract 7 mm every time your Cover will meet the wall. Here it may be possible to keep the NPU depending on your projected duct and piping.

NB! note the Body brackets (in blue) and the Cover brackets (in red) always are included and can be positioned freely. The Cover brackets however are not allowed to overlap the Body.

Example 1: Calculating single Cover length

$$L_{wall} = 3.400 \text{ mm}$$

Descision: Body $L_{nom} = 1.600 \text{ mm}$

$$L_{cov} \text{ wall to wall} = ?? \Rightarrow \text{Calculate } L_{cov} = 3.400 \text{ mm} - 7 \text{ mm} - 7 \text{ mm} = L_{cov} = 3.386 \text{ mm}$$

To order:

Body $L_{nom} = 1.600 \text{ mm}$

Cover $L_{cov} = 3.386 \text{ mm}$

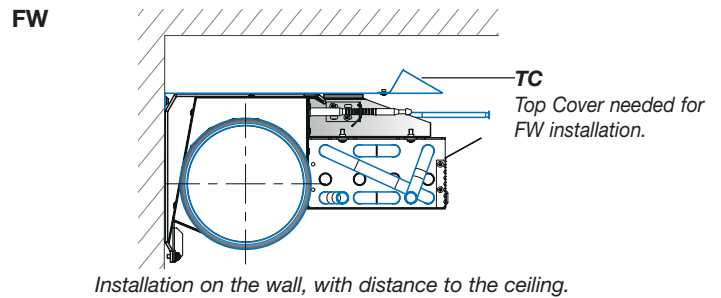
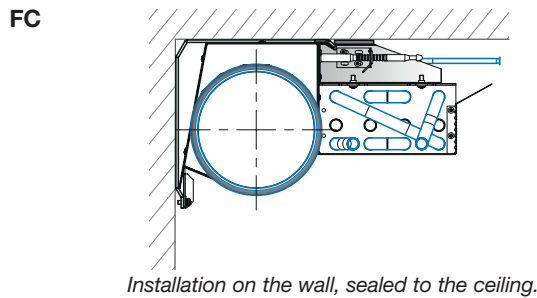
All brackets will be included.

NB! When adding connection Covers you also have to pay attention calculating your Cover lengths, see 5.5.1

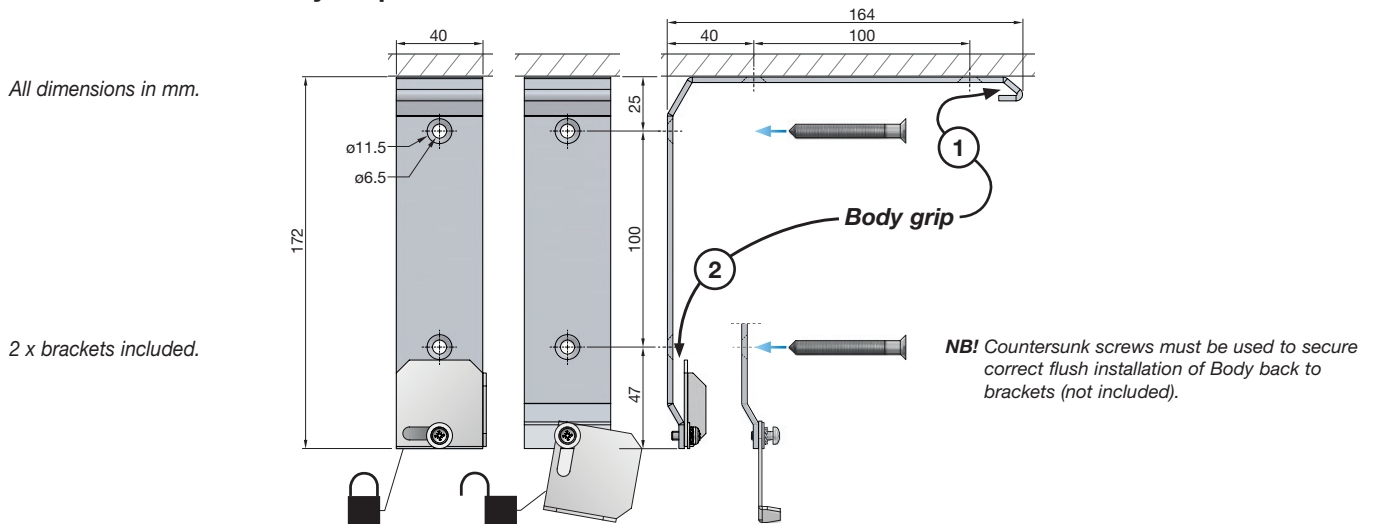
Installation instruction

Plafond XD

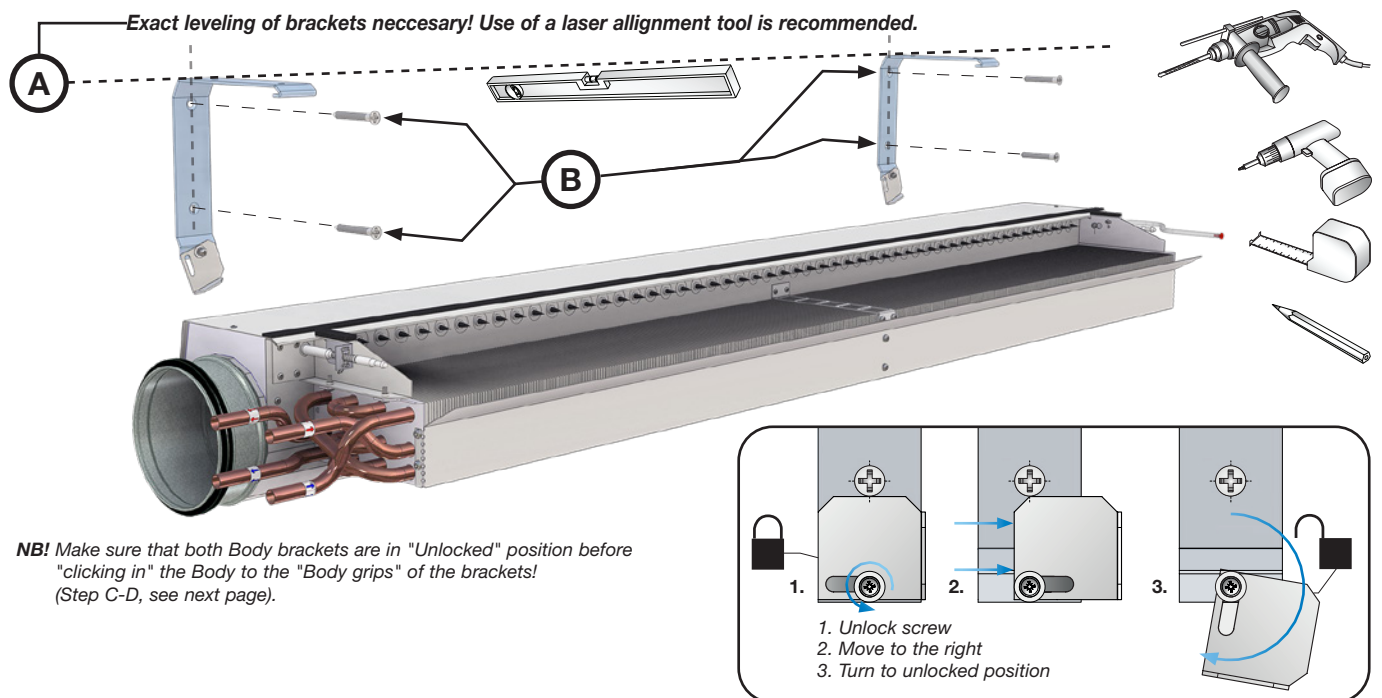
5.5. Basics steps of installing the product



5.5.1 Dimensions of Body suspension brackets



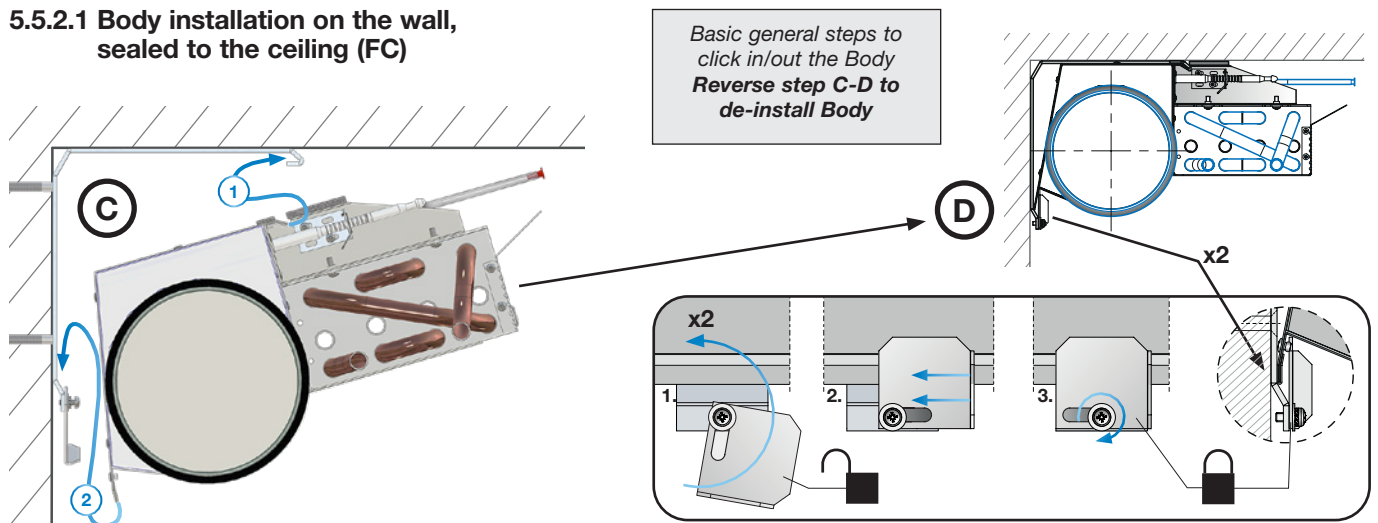
5.5.2 Body installation



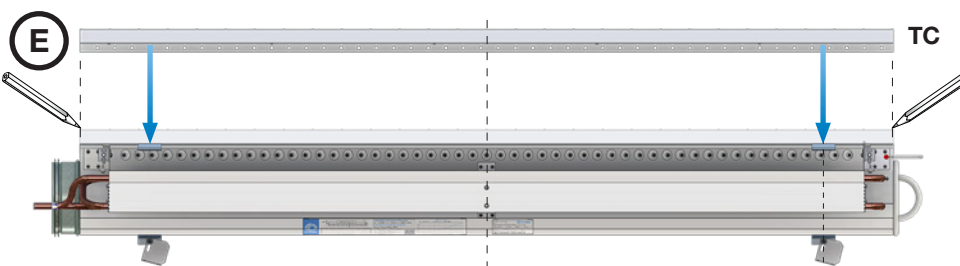
Installation instruction

Plafond XD

5.5.2.1 Body installation on the wall, sealed to the ceiling (FC)



5.5.2.2 Body installation on the wall, with distance to the ceiling (FW)



NB! The FW installation demands a Top Cover (TC) to obtain correct airflow. The TC MUST be centered over the Body.

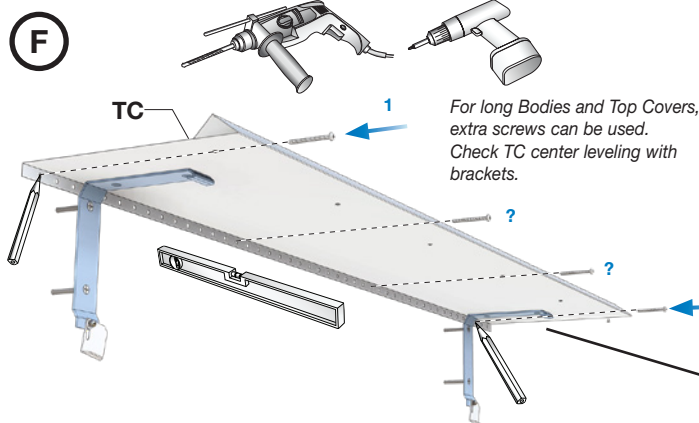
C-D Follow basic steps above to snap your Body into place and lock it.

E Test fit the TC, placing it on the top of the Body brackets carefully aligning it with the Body. Mark up the placement.

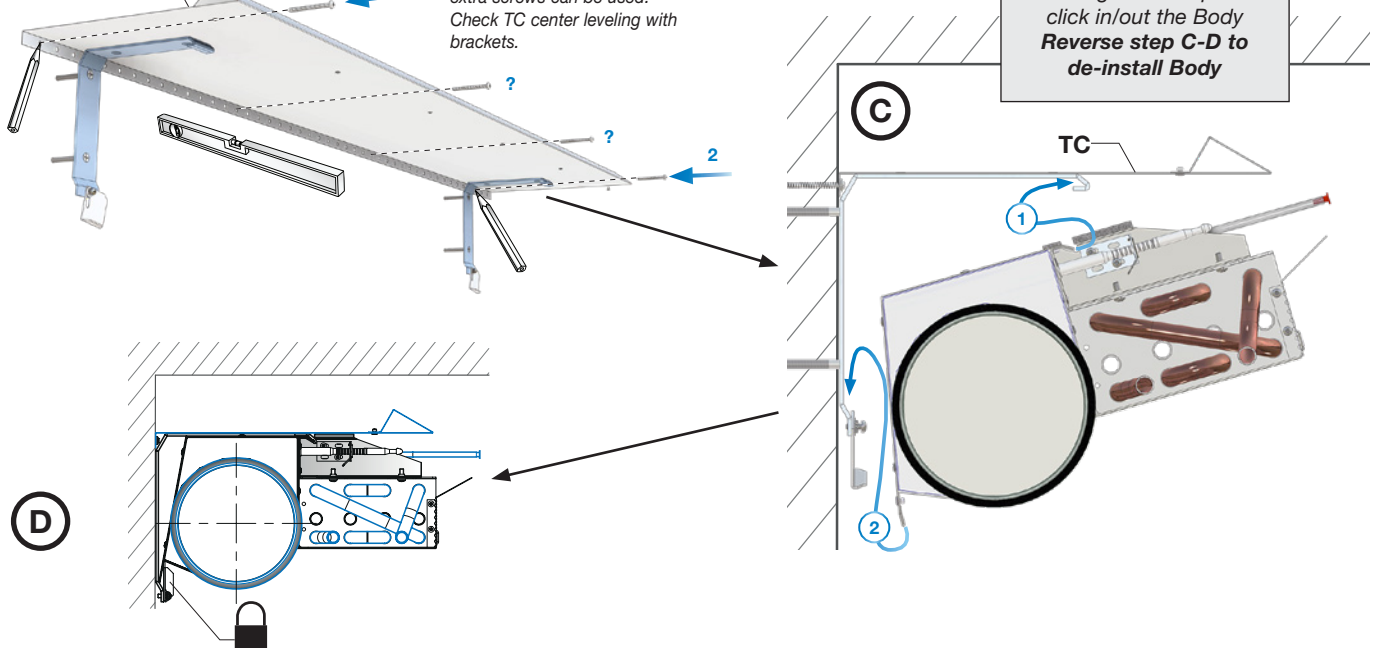
D-C Reverse step C-D above to de-install the Body again.

F Mark up holes for screws and install the TC.

C-D Follow basic steps above to snap your Body into place and lock it.



**Basic general steps to click in/out the Body
Reverse step C-D to de-install Body**



Installation instruction

Plafond XD

5.5.3 Cover installation (single Cover)

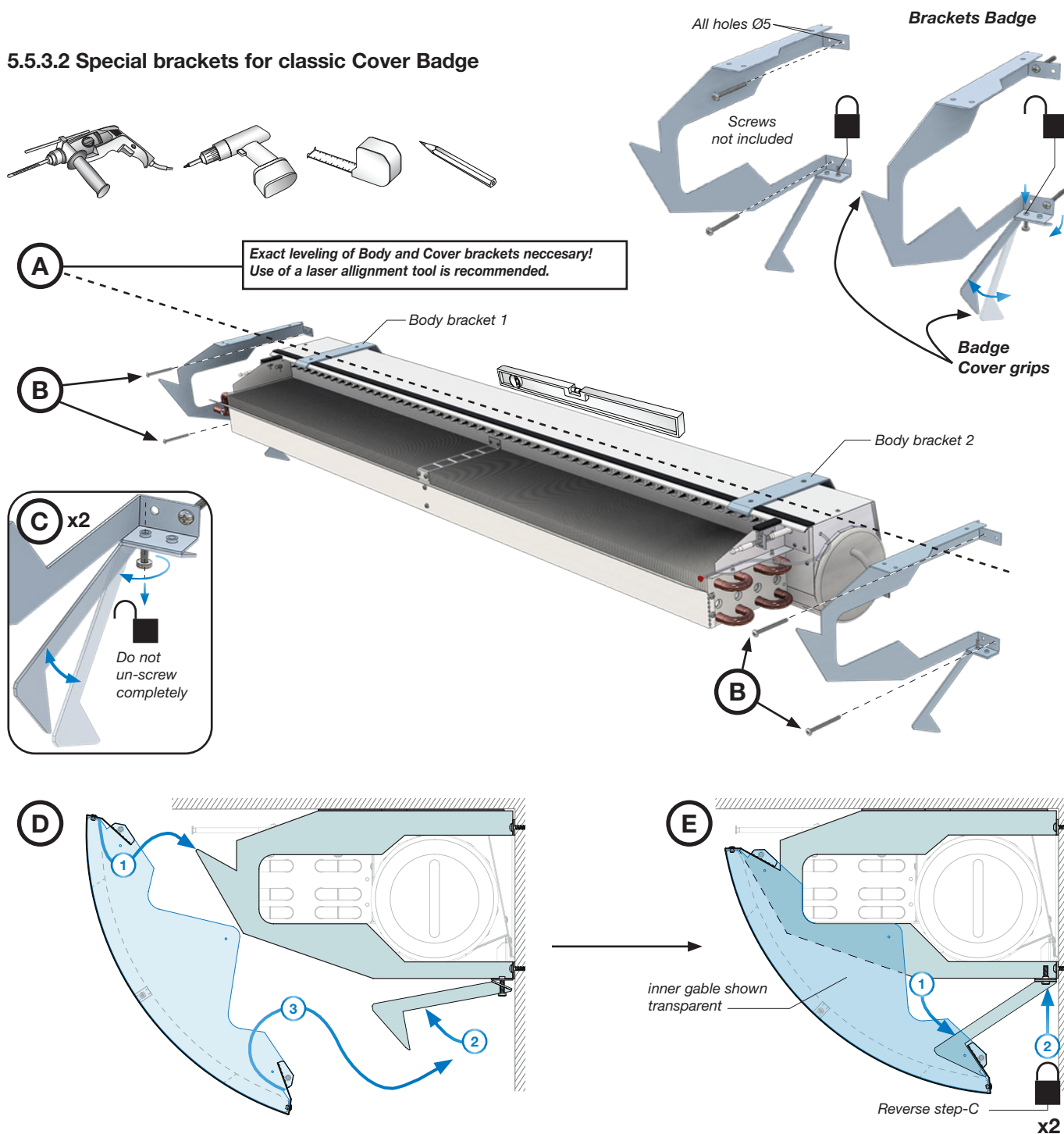
All 7 Cover types are supplied with 2 two brackets each by default. See 3.2.2 for overview of the different Plafond XD Covers. All Cover brackets must be aligned with the Body brackets!

5.5.3.1 Recommendations

See also 5.4 for basic rules and guidelines.

- Body Cover should be min. 400 mm longer than L_{nom} of Body (to enable all connection possibilities incl. A3L and A3R connections).
- Every Cover has two own brackets (incl. in delivery).
- Cover brackets positioning with distance to Body (min. 100 mm).
- Min. 7 mm distance/gap to a wall.

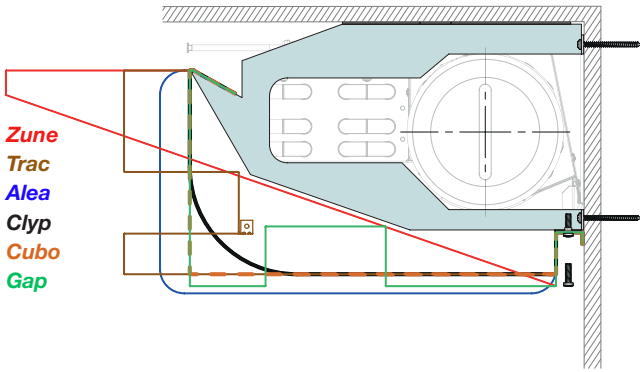
5.5.3.2 Special brackets for classic Cover Badge



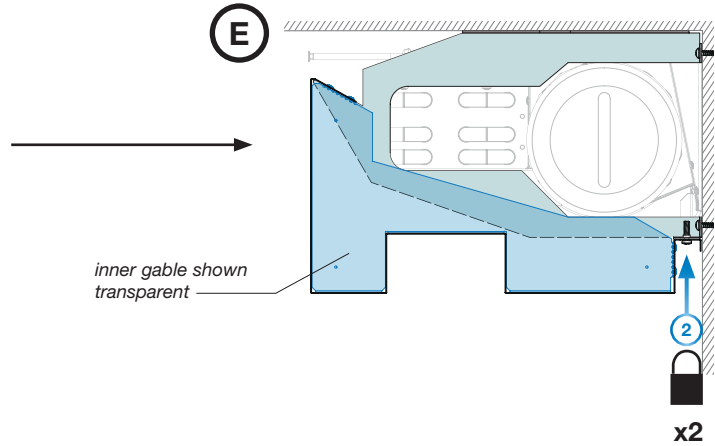
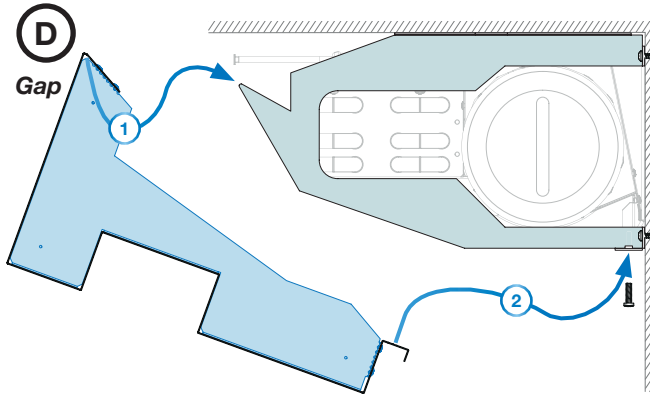
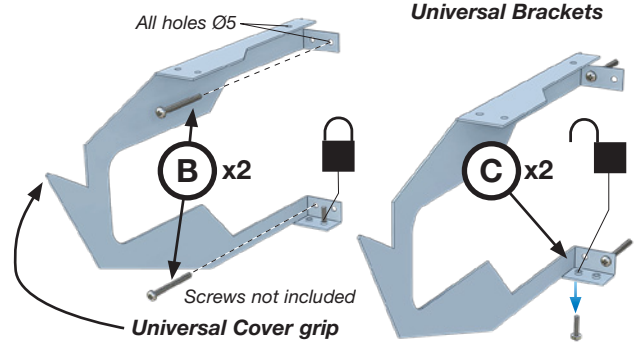
Installation instruction

Plafond XD

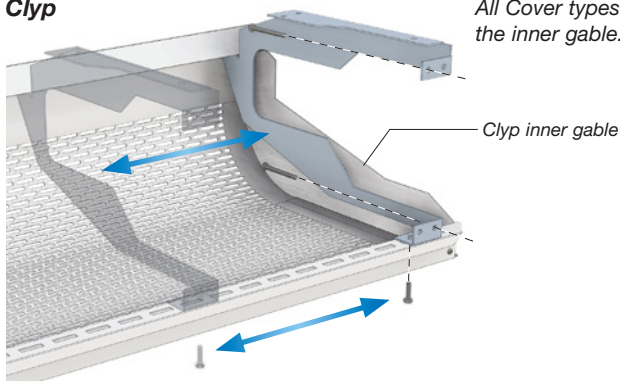
5.5.3.3 Universal brackets for all other Covers, Alea, Clyp, Cubo, Gap, Trac and Zune



A Exact leveling of Body and Cover Brackets necessary!
See step A on previous page.

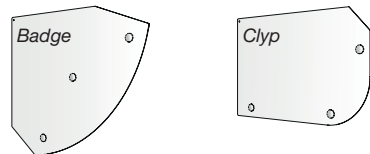


Clyp

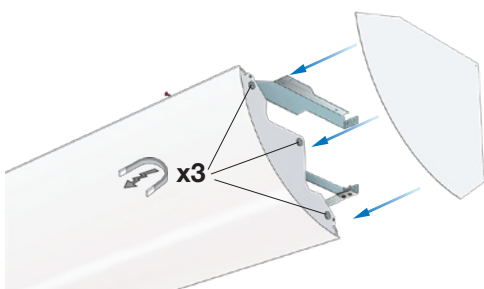
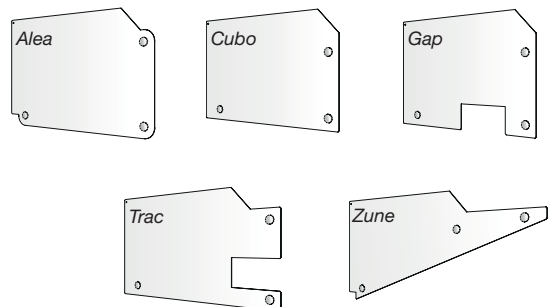


All Cover types can have brackets placed freely, but normally they should be placed close to the inner gable. Specially when Cover have minimum length, (Body length + 400 mm).

Design end-gables for classic Badge and Clyp Covers



Design end-gables for the design Covers



Design end-gables ordered separately. No tools needed, magnets included for toolless installation.

Installation instruction

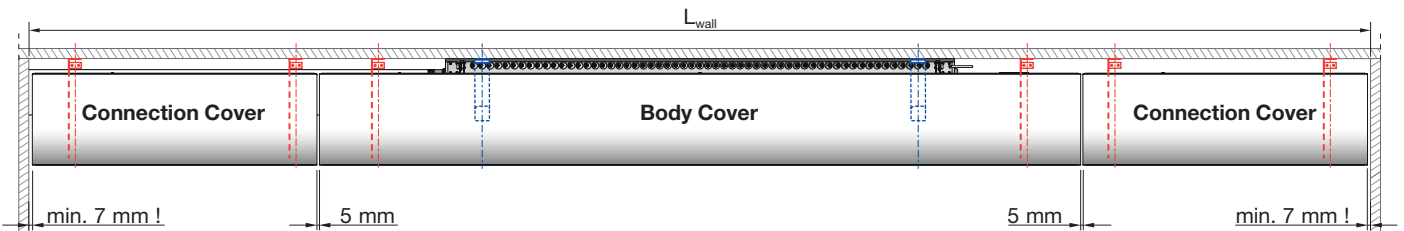
Plafond XD

5.5.4 Installation of connection Covers

Installation of connection covers is the same as when covering the Body with a single Cover. However when using connection Covers it is even more important to be careful when dimensioning the length of your Covers. See calculation example below and check 5.4 "Preparation for installation of the product", following the basic guide lines given.

5.5.4.1 Recommendations

- A Body must always be covered by an own (Body-)Cover.
- Body Cover should be min. 400 mm longer than L_{nom} of Body (to enable all connection possibilities incl. A3L and A3R connections).
- Connection Cover min. 200 mm.
- Cover brackets positioning with distance to Body.
- Min. 7 mm distance/gap to a wall.
- Exactly 5 mm distance/gap between two covers.



Body brackets shown in blue and Cover brackets in red. All brackets must be aligned with care, see 5.5, it is best to use laser equipment for alignment.

The "5 mm distance" between Covers should be kept at all times, this will ensure a perfect finish

The "7 mm distance" between Cover and wall must be kept as a minimum, you can however choose a longer distance depending on the state or inaccuracies of your walls. Be accurate measuring L_{wall} since this will be the basis dimension when doing a simple calculation finding Cover length(s) for your chosen solution.

Example 2: Calculating Cover lengths using installation above

$L_{wall} = 3.800 \text{ mm} \Rightarrow$ more than one Cover needed

Decision: Body $L_{nom} = 1.400 \text{ mm}$, Body Cover $L_{cov} = 2.000 \text{ mm}$,
2 identical Connection Covers with $L_{cov} = ?? \Rightarrow$ Calculate

$$L_{cov \text{ total}} = 3.800 \text{ mm} - 2.000 - 7 \text{ mm} - 5 \text{ mm} - 5 \text{ mm} - 7 \text{ mm} = 1.776 \text{ mm}$$

$$L_{cov} = L_{cov \text{ total}} / 2 = 888 \text{ mm}$$

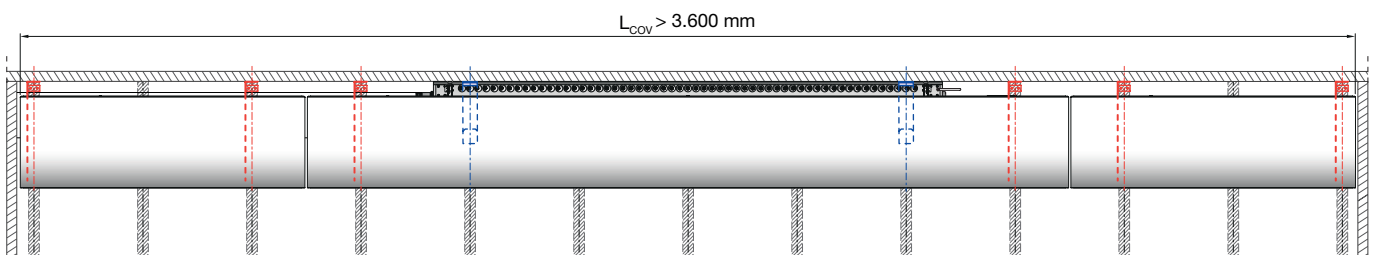
To order:

1 x Body $L_{nom} = 1.400 \text{ mm}$

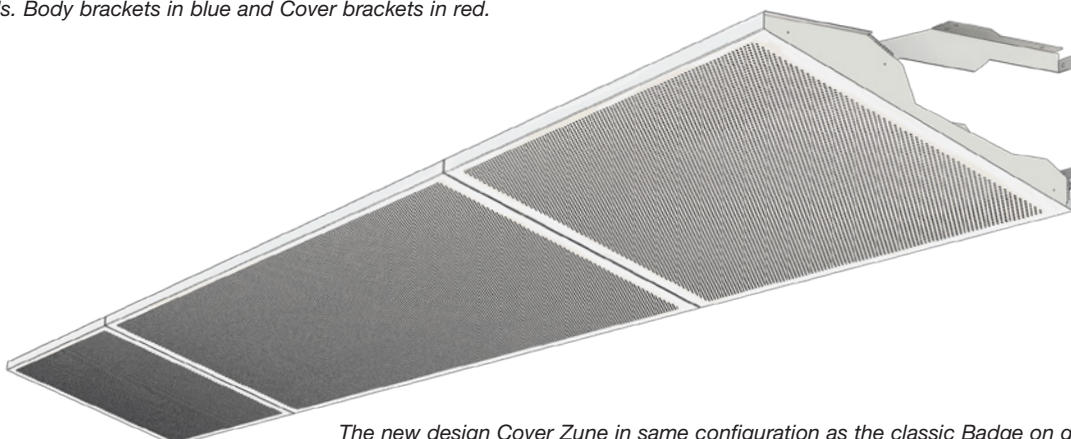
1 x Cover $L_{cov} = 2.000 \text{ mm}$

2 x Cover $L_{cov} = 888 \text{ mm}$

All brackets will be included.



The flexible brackets included make the PLA-XD ideal for installing on gypsum walls. Body brackets in blue and Cover brackets in red.



The new design Cover Zune in same configuration as the classic Badge on gypsum wall above.

6. Adjustment and commissioning

6.1 Airflow and pressure

The product has a factory pre-set of both primary airflow rate and static pressure loss, so normally an on-site adjustment is not necessary. The pre-setting is recorded on the product labels as shown under chapter 2.11 and we recommend to record all on-site changes with date and signature to always find the actual setting status.

NB! The static pressure loss must be maintained by the ventilation fan to reach designed capacities. Therefore, measuring the static nozzle pressure (see 6.3.1) should be sufficient to guarantee the correct primary air flow rate.

6.1.1 JetCone adjustment pins


The airflow can be adjusted by either opening or closing nozzles when using the two JetCone adjustment pins. Even an asymmetrical air pattern can be achieved by setting pins in different positions (see 6.1.3).

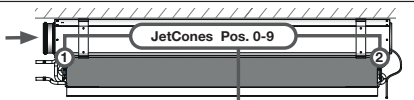
NB! For a simple but effective system, without flexibility need in primary airflow adjustment, the beam can be ordered without Lindab's JetCone system. The Body will then be produced with a fixed number of open nozzles, according to the desired static pressure (Pa) and primary airflow demand (l/s).

The primary airflow setting is fixed and cannot be changed!

6.1.2 Finding values for JetCone adjustment pins

The factory pre-adjusted values for the JetCone adjustment according to your order(-code) can be found on the table on the label:





JetCones Pos. 0-9

Date	Δp_{stat} [Pa]	q_a [l/s]	1	2	k_{max}	Signature
22-03-05	60	20	5	5	4.028	<i>Marc Velho</i>

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Calculation of primary airflow rate


$$q_a = (0.089 \times J_{cp} + 0.2) \times k_{max} \times \sqrt{\Delta p_{stat}} \text{ [l/s]}$$

Calculation of JetCone position

$$q_{a \ max} = k_{max} \times \sqrt{\Delta p_{stat}} \text{ [l/s]}$$

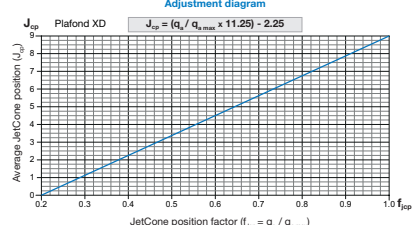
$f_{jcp} = q_a / q_{a \ max}$ $J_{cp} = \text{Read diagram}$

q_a = Primary airflow rate [l/s]
 Δp_{stat} = Static nozzle pressure loss [Pa]
 $q_{a \ max}$ = Max. airflow at JetCone position 9 [l/s]
 k_{max} = K-factor at JetCone position 9
 f_{jcp} = JetCone position factor
 J_{cp} = Average JetCone position



Adjustment diagram

$J_{cp} = (q_a / q_{a \ max} \times 11.25) - 2.25$



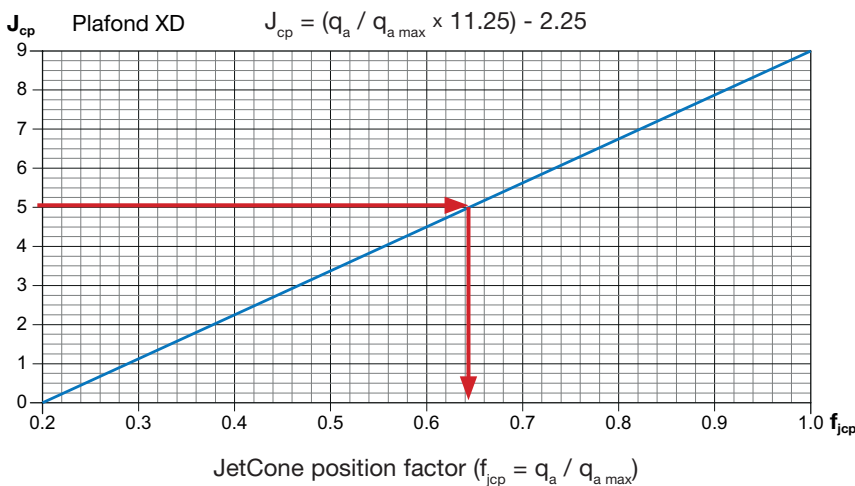
Average JetCone position (J_{cp})

JetCone position factor ($f_{jcp} = q_a / q_{a \ max}$)

Example 1: Check the factory setting

- Beam (order code): PLA-FC-12-1x125-A1L-0804-2.4-60-20-P5
- Static nozzle pressure loss: $\Delta p_{stat} = 60$ Pa (to double check/measure the actual Δp_{stat} see 6.3.1)
- Primary airflow rate: $q_a = 20$ l/s
- K-factor at JetCone position 9: $k_{max} = 4.028$ (to be taken from Plafond XD Body label! See above and chapter 2.11)

Adjustment diagram



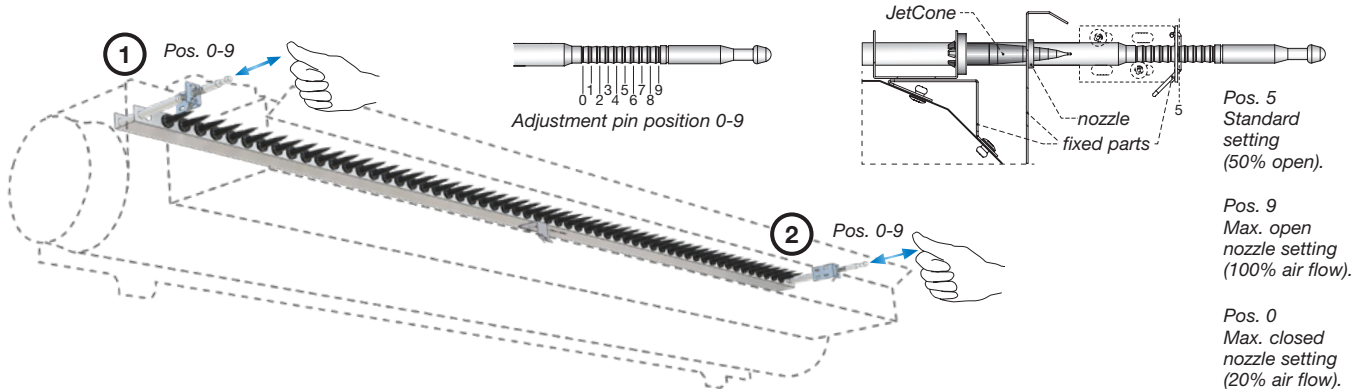
$$q_a = (0.089 \times J_{cp} + 0.2) \times k_{max} \times \sqrt{\Delta p_{stat}} \text{ [l/s]}$$

$$q_a = (0.089 \times 5 + 0.2) \times 4.028 \times \sqrt{60} = 20 \text{ [l/s]}$$

Installation instruction

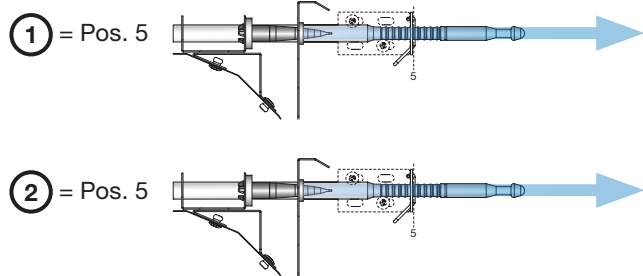
Plafond XD

6.1.3 Adjusting air flow and pressure with JetCone pins



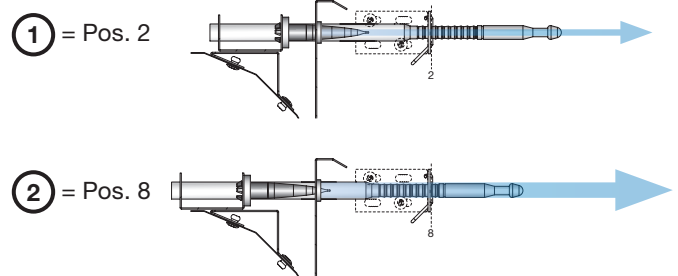
Symmetric adjustment

$$J_{cp} = 5 = \frac{5 + 5}{2} = \frac{10}{2}$$



Asymmetric adjustment

$$J_{cp} = 5 = \frac{8 + 2}{2} = \frac{10}{2}$$

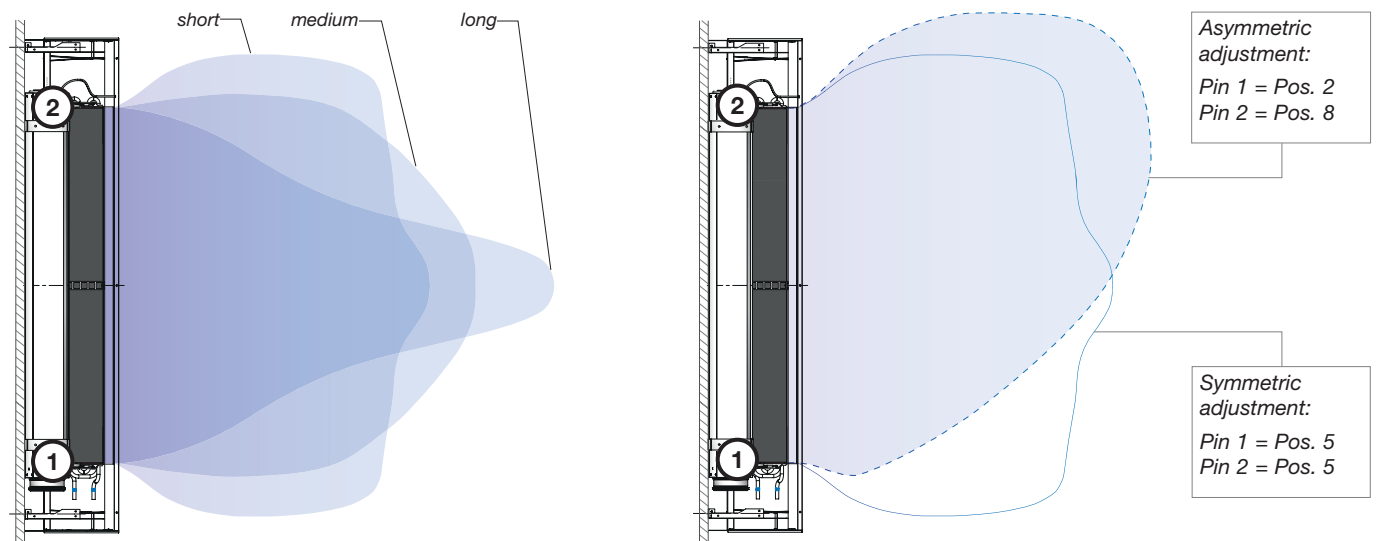


6.2 Adjustment of air distribution pattern

Plafond XD comes as standard with fixed (pre-ordered) angled JetCone Nozzles, which provides a perfect air spread pattern that reduces draft risk without losing capacity.

For different purposes, you can order Plafond XD with 3 different air patterns as short, medium and long air throws. The default setting is short.

NB! The chosen air distribution pattern is set by production, is fixed and cannot be changed on site. However, you can achieve an asymmetrical air distribution pattern with/when JetCone air adjustment system has been chosen.



Factory set air distribution patterns shown with symmetric adjustment pin settings (5 - 5).

Air distribution pattern "short" with asymmetric adjustment pin settings (2 - 8).

Installation instruction

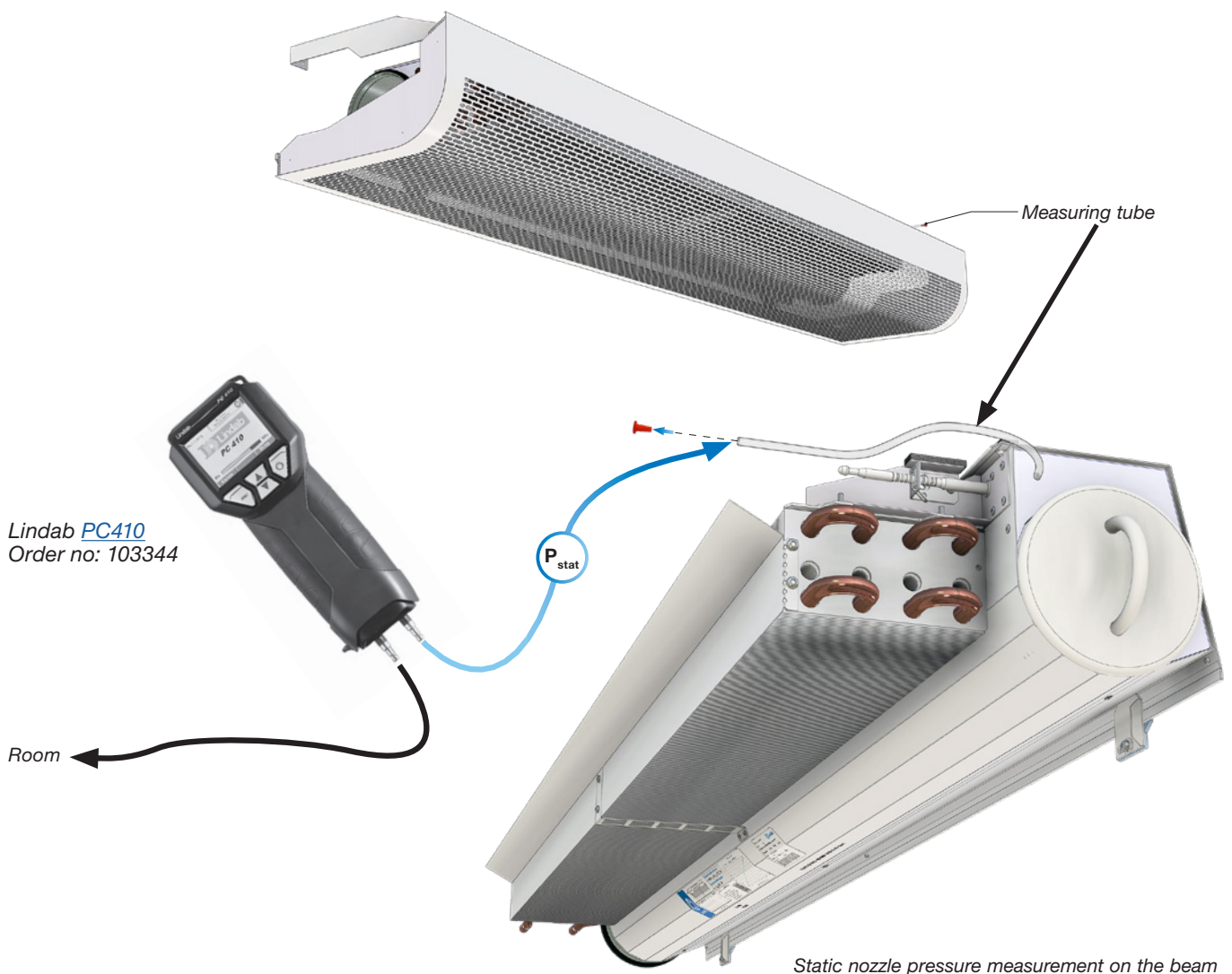
Plafond XD

6.3 Measuring air pressure and calculating the air flow

To double check the primary airflow rate, the static nozzle pressure must first be measured. The static nozzle pressure is the air pressure available at the nozzles.

6.3.1 Measuring static nozzle pressure and air pressure

1. To measure the air pressure, a manometer, (analogue or digital) will be needed. Lindab recommends PC410.
2. Connect the measuring device with the measuring tube of the beam.
3. Read of the static nozzle pressure from the manometer (PC410).



6.3.2 Calculating the actual air flow

6.3.2.1 With JetCone air adjustment system

1. Measure the static pressure loss Δp_{stat} .
2. Read the settings of the two JetCone adjustment pins to find the average JetCone position J_{cp} of the pins.
3. Locate the diagram on the Plafond XD Body, (see chapter 2.11, also see next page)
4. Calculate the current primary air flow by using the measured static nozzle pressure loss Δp_{stat} and the average JetCone position J_{cp} (see chapter 6.1.2 Finding values for JetCone pins, Example 1).

$$q_a = (0.089 \times J_{cp} + 0.2) \times k_{max} \times \sqrt{\Delta p_{stat}} \text{ [l/s]}$$


Installation instruction

Plafond XD

6.3.2.2 Without JetCone air adjustment system

1. Measure the static pressure loss Δp_{stat} .
2. Locate the diagram on the Plafond XD Body, and read the setting with number of open nozzles n_{open} and k-factor one nozzle $k_{a/n}$ (according to nozzle size) from label (see below and also chapter 2.11).
3. Calculate the current primary air flow q_a by using the measured static nozzle pressure loss Δp_{stat} , the number of open nozzles n_{open} and k-factor one nozzle $k_{a/n}$:

$$q_a = n_{open} \times k_{a/n} \times \sqrt{\Delta p_{stat}} \text{ [l/s]}$$



Lindab

Date	Δp_{stat} [Pa]	q_a [l/s]	n_{open} [pcs]	n_{plug} [pcs]	Nozzle size	Signature
22-03-05	60	20	91		6	<i>Mikael Lindab</i>

Calculation of primary airflow rate


$$q_a = n_{open} \times k_{a/n} \times \sqrt{\Delta p_{stat}} \text{ [l/s]}$$

Calculate no. of open nozzles needed

$$n_{open} = q_a / (k_{a/n} \times \sqrt{\Delta p_{stat}}) \text{ [l/s]}$$

q_a = Primary airflow rate [l/s]
 Δp_{stat} = Static nozzle pressure loss [Pa]
 n_{open} = Number of open nozzles [pcs]
 n_{plug} = Number of plugs [pcs]
 $k_{a/n}$ = k-factor one nozzle

Nozzle size	$k_{a/n}$
4	0.01318
6	0.02929
8	0.05974



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Example 2:

PLA-FC-12-1x125-A1L-0804-2.4-60-20-NR

- Static nozzle pressure loss: $\Delta p_{stat} = 60$ Pa (to double check/measure the actual Δp_{stat} see 6.3.1.)
- Target primary airflow rate: $q_a = 20$ l/s
- Number of open nozzles: n_{open} from label (see chapter 2.11): 91 pcs.
- K-factor one nozzle: $k_{a/n}$ (according to nozzle size) from label (see above and chapter 2.11):
- Nozzle size (from label) is: 6
- This gives a K-factor one nozzle: $k_{a/n} = 0.02929$

$$q_a = n_{open} \times k_{a/n} \times \sqrt{\Delta p_{stat}} \text{ [l/s]}$$

$$q_a = 91 \times 0.02929 \times \sqrt{60} = 20 \text{ [l/s]}$$

6.3.3 Changing the actual air flow

6.3.3.1 With JetCone air adjustment system

1. Measure the static pressure loss Δp_{stat} .
2. Locate the diagram on the Plafond XD Body, (see chapter 2.11, also see next page), read of the k_{max} value and the average JetCone position J_{cp} from the order code and check the JetCone settings on the beam (see chapter 6.1.2 Finding values for JetCone pins).
3. Check the maximum primary air flow possible with this setup with:

$$q_{a_{max}} = k_{max} \times \sqrt{\Delta p_{stat}} \text{ [l/s]}$$

4. Calculate the new average JetCone position J_{cp2} according to the new required air flow q_{a2} .

$$J_{cp2} = \frac{q_{a2}}{(0.089 \times k_{max} \times \sqrt{\Delta p_{stat}})} - 2.247$$

5. Adjust the 2 JetCone adjustment pins in the Plafond XD Body, so the mean value of the pins will correspond with the JetCone position factor J_{cp2} from your calculation.

Installation instruction

Plafond XD

Example 3:

PLA-FC-12-1x125-A1L-0804-2.4-60-20-P5

Static nozzle pressure loss: $\Delta p_{\text{stat}} = 60 \text{ Pa}$ (to double check/measure the actual Δp_{stat} , see 6.3.1.)

Target: Change primary air flow rate $q_{a1} = 20 \text{ l/s}$ to $q_{a2} = 25 \text{ l/s}$

Maximum primary air flow possible with this set-up:

$$q_{a \text{ max}} = 4.028 \times \sqrt{60} = 31.2 \text{ [l/s]}$$

New average JetCone position $J_{\text{cp}2}$ according to the new required air flow $q_{a2} = 25 \text{ [l/s]}$:

$$J_{\text{cp}2} = \frac{25}{(0.089 \times 4.028 \times \sqrt{60})} - 2.247 = 6.75$$

Adjust the 2 JetCone adjustment pins to either:

$$J_{\text{cp}} = \frac{6 + 7}{2} = \frac{13}{2} = 6.5 \quad \text{or} \quad J_{\text{cp}} = \frac{7 + 7}{2} = \frac{14}{2} = 7$$

NB! 6.75 is only possible for beams with 4 JetCone bars.

The actual air flow with these settings are:

$$q_{a2} = (0.089 \times 6.5 + 0.2) \times 4.028 \times \sqrt{60} = 24.3 \text{ [l/s]} \quad \text{or} \quad q_{a2} = (0.089 \times 7 + 0.2) \times 4.028 \times \sqrt{60} = 25.7 \text{ [l/s]}$$

6.3.3.2 Without JetCone air adjustment system

The actual factory setting for the primary air flow rate is achieved by the number of open nozzles nopen and the static pressure loss at the nozzles. As the number of open nozzles is fixed a change of the primary airflow cannot be achieved over the beam.

6.3.4 Changing the air distribution profile

Not possible. See 6.2.

6.3.5 Plafond XD pressure / airflow diagram

Not available

6.4 Water flow rate

6.4.1 Pre-setting of valves

All the integrated control valves (plus feature) 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 (calculated with [LindQST\waterborne calculator](#)).

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.

Installation instruction

Plafond XD

7. Maintenance

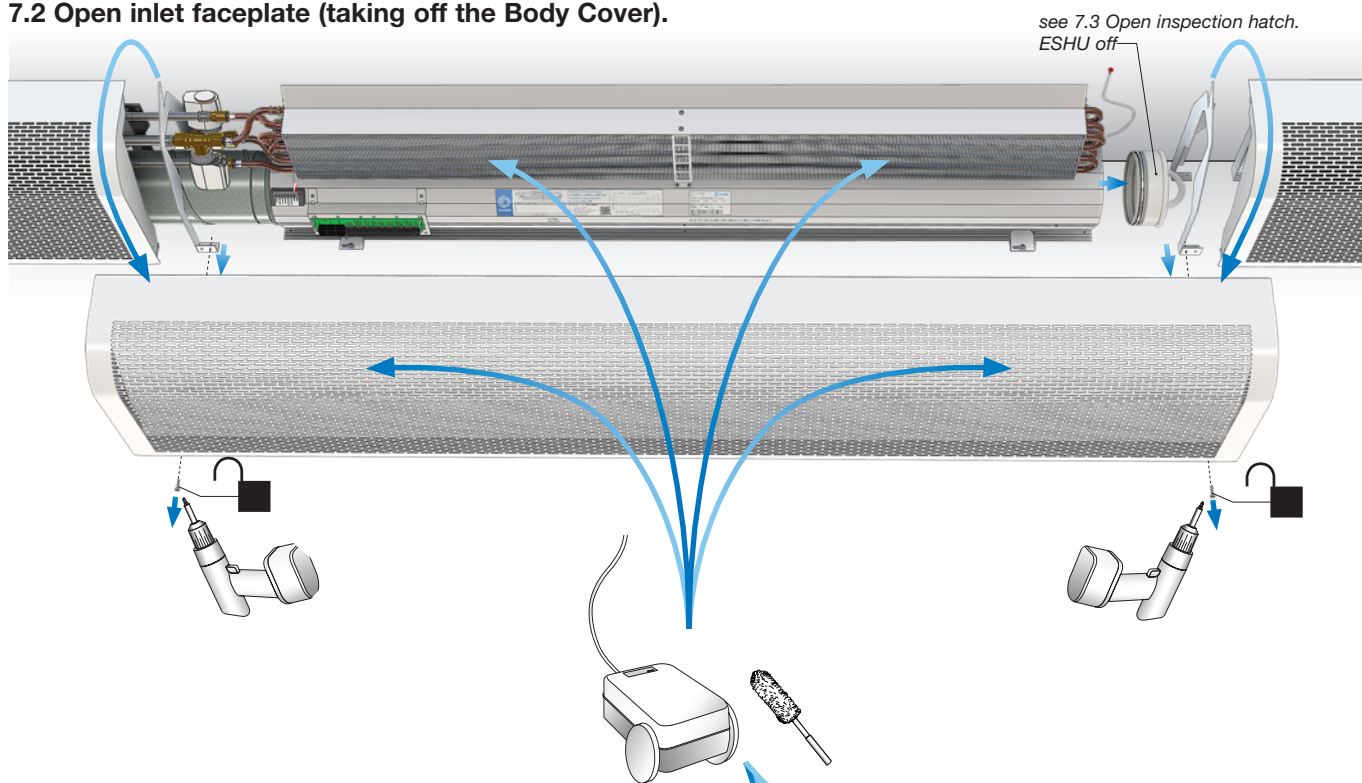
The interval of cleaning depends on the indoor environment where the beam is placed. Under optimal conditions the beams only need cleaning every 5 years.

- Open Cover (7.2).
- Clean the Body battery and the Cover's inner parts with a dust cleaner / vacuum cleaner.
- Only use lukewarm water and a mild detergent and a piece of wet cloth to clean the inlet face plate.
- Open the inspection hatch (7.3).
- Clean the air plenum chamber and air connection with a vacuum cleaner.
- Clean the top side of the battery, nozzle plate, JetCones and the plenum chamber with a dust cleaner / vacuum cleaner.

7.1 Remove the outlet front grille

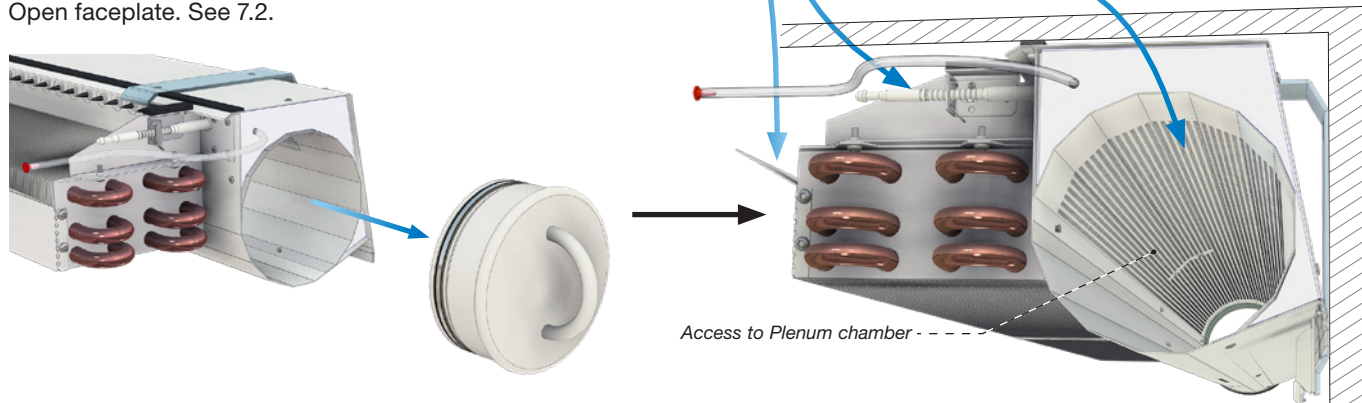
Not relevant for Plafond XD.

7.2 Open inlet faceplate (taking off the Body Cover).



7.3 Open inspection hatch

Open faceplate. See 7.2.



7.4 Lower battery

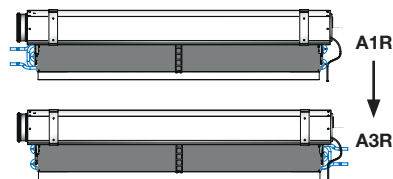
Not relevant for Plafond XD

Installation instruction

Plafond XD

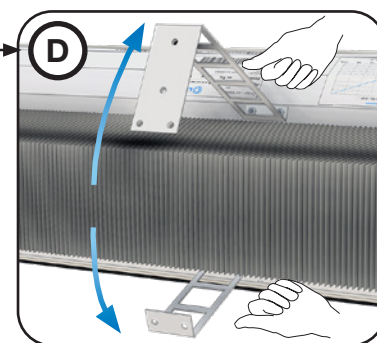
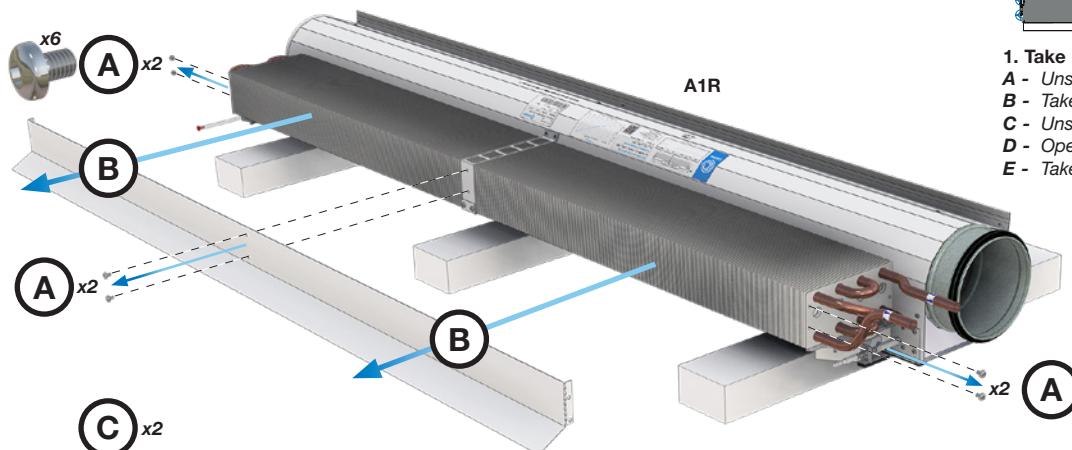
7.5 Turnable battery

The water battery can be turned on site to change e.g. water connection (A1R) to (A3R) or vice versa. (Only possible for models without plus features).



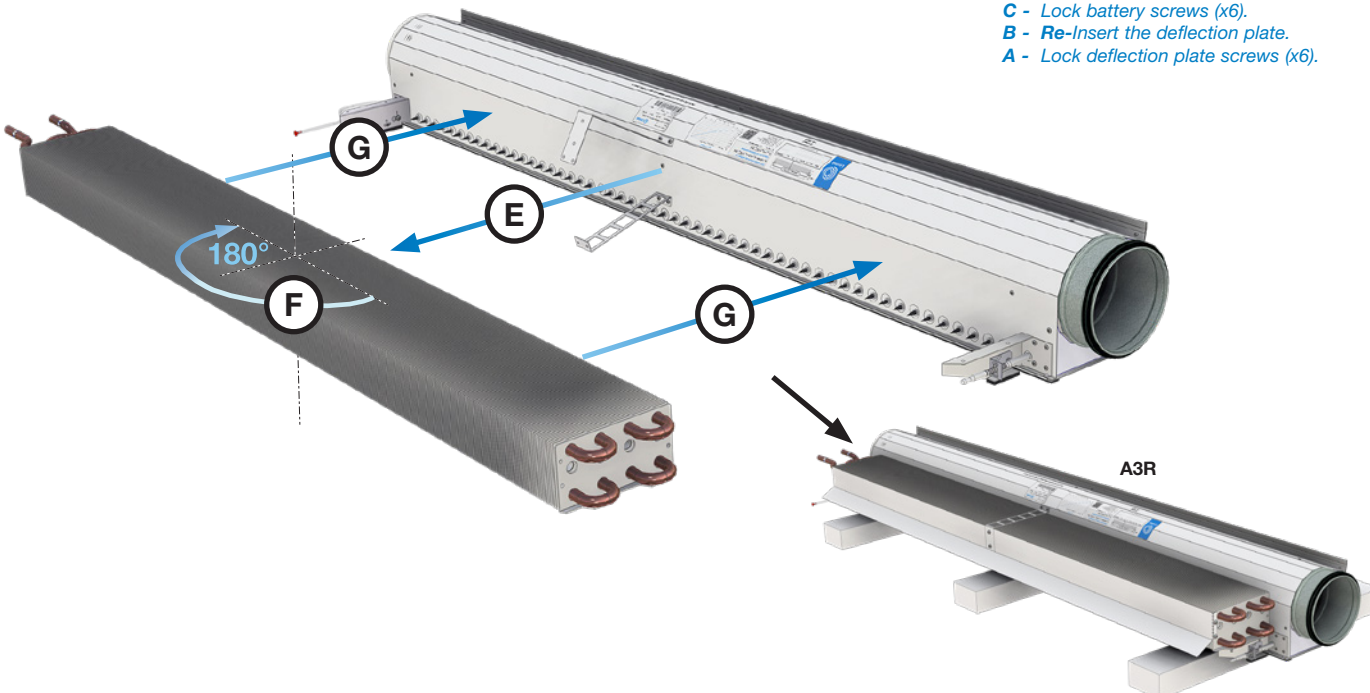
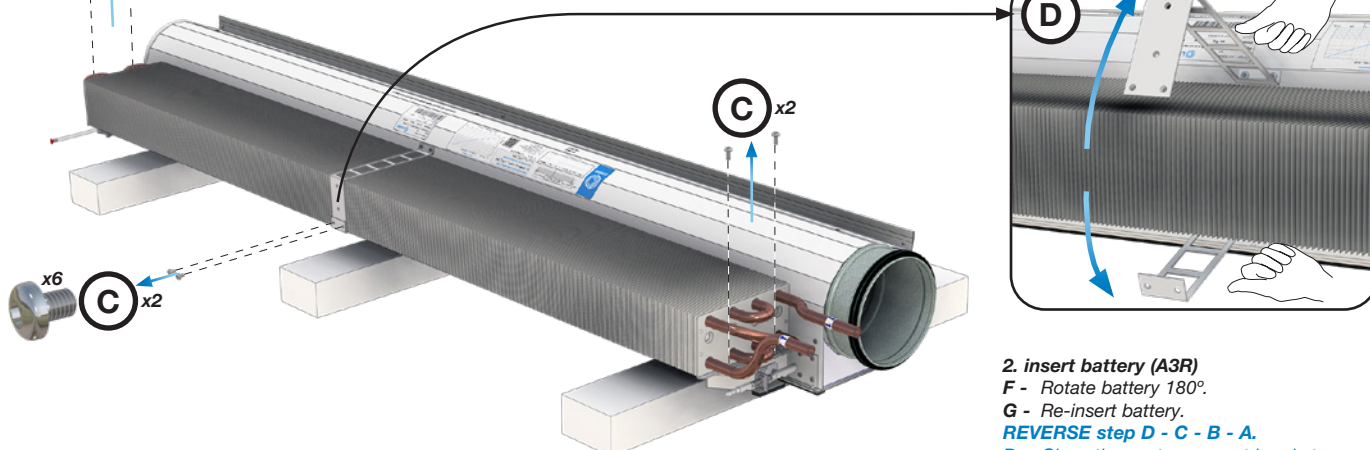
1. Take battery out (A1R)

- A - Unscrew deflection plate screws (x6).
- B - Take off the deflection plate.
- C - Unscrew the battery screws (x6).
- D - Open the center support bracket.
- E - Take battery out.



2. insert battery (A3R)

- F - Rotate battery 180°.
- G - Re-insert battery.
- REVERSE step D - C - B - A.**
- D - Close the center support bracket.
- C - Lock battery screws (x6).
- B - Re-Insert the deflection plate.
- A - Lock deflection plate screws (x6).



Installation instruction

Plafond XD

8. Accessories

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

Order code	Order number
2-way Control valve LinFlow-S-12 straight - push on	686552
2-way Control valve LinFlow-A-12 angled - push on	686554
Actuator A 40405 24 V on/off NC - 1 m, non-halogen cable	684601
Actuator A 41405 24 V on/off NO - 1 m, non-halogen cable	684603
Actuator APR 40405 0-10 V mod. NC, 1 m, non-halogen cable	684667
Actuator APR 40405 0-10 V mod. NC, 1 m, cable	684604
Aerator 12 mm - tectite	647690
Ballofix Broen 12 mm with handle - shut-off valve	642663
Ballofix Broen 12 mm without handle - shut-off valve	642662
Copper insert 12 x 1.0 mm	884022
Flexible hose O2stopp_DN10 0.4 m - JG12 elbow push	686567
Flexible hose O2stopp_DN10 0.4 m - JG12 push - JG12 push	686566
Flexible hose O2stopp_DN10 0.4 m - JG12 push - straight end 12 mm	175984
Lindab PC 410	103344
Regula Combi see: "Accessories"	**
Regula Connect Card Basic	*/**
Regula Connect Card Multi	*/**
Regula Secura	**
Tectite angle 12 mm	884014
Tectite straight 12 mm	884050
Tectite demounting tool 12 mm	884087
Tectite demounting tool 12 mm, small	646881
Touch-up paint RAL 9003 - 25 ml	174759
Touch-up paint RAL 9010 - 25 ml	642531
Transformer 24V AC output	*/**

Table 5. Ordering codes and numbers for basic Plafond XD accessories.

*see: "[Regula Connect – What do I get?](#)"

**see: "[Accessories](#)"



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