

Lindab **Munio**

Active chilled beam
Installation instructions



Installation instruction

Munio

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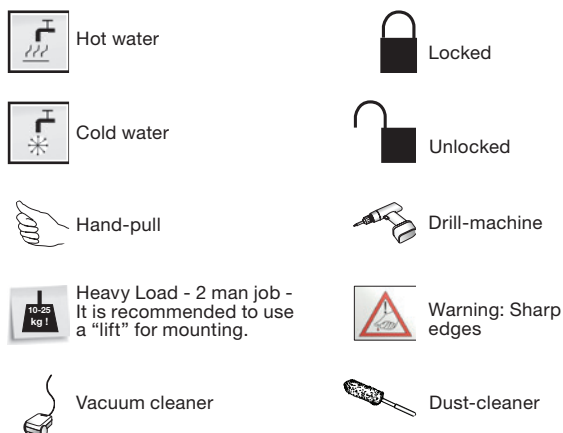
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8. Accessories

Installation instruction

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1.2 Symbols



2. Control of delivery

2.1 Before you start

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 suits perfect to our water products and simplifying your installation work, e.g. different type of hanger, Tektite-couplings, closing valves, thermostatic valves and actuators, flexible hoses, customized regulation components, customized caballing and more. See also 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 other way, than shown in the 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.

Al,ways carry the beams or panels piecewise into the building. Keep the product inthe 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 be 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.



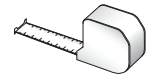
Knife



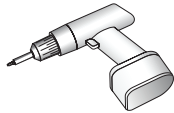
Gloves



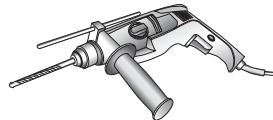
Shoes with soft soles



Tape measure



Drill machine



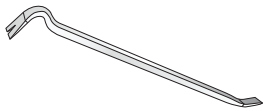
Percussion drill



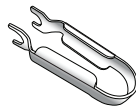
Pencil



Spanner



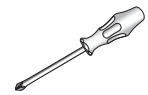
Crowbar



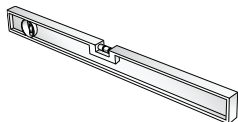
Tectite tool 12mm
(Order no: 884087)



Tectite tool small 12mm
(Order no: 646881)



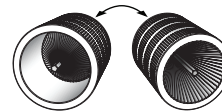
Screwdriver



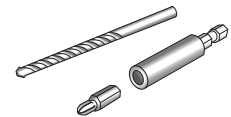
Spirit level



Lindab PC410
(Order no: 103344)



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 installation instructions or technical documentation.

Installation instruction is on the pallet. 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 finder"
3. Select "product"
4. Find relevant documentation under "related documents"

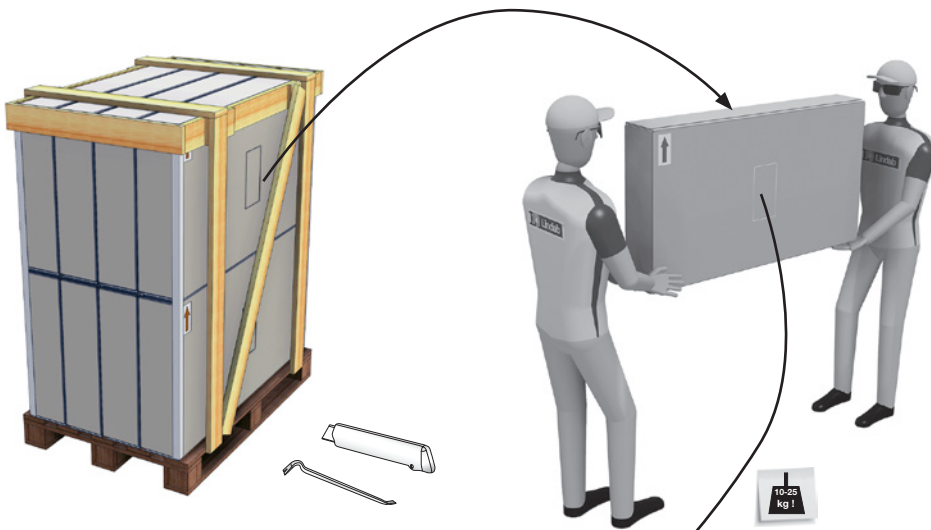
2.9 Cleaning after assembly/ before commissioning

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

Installation instruction

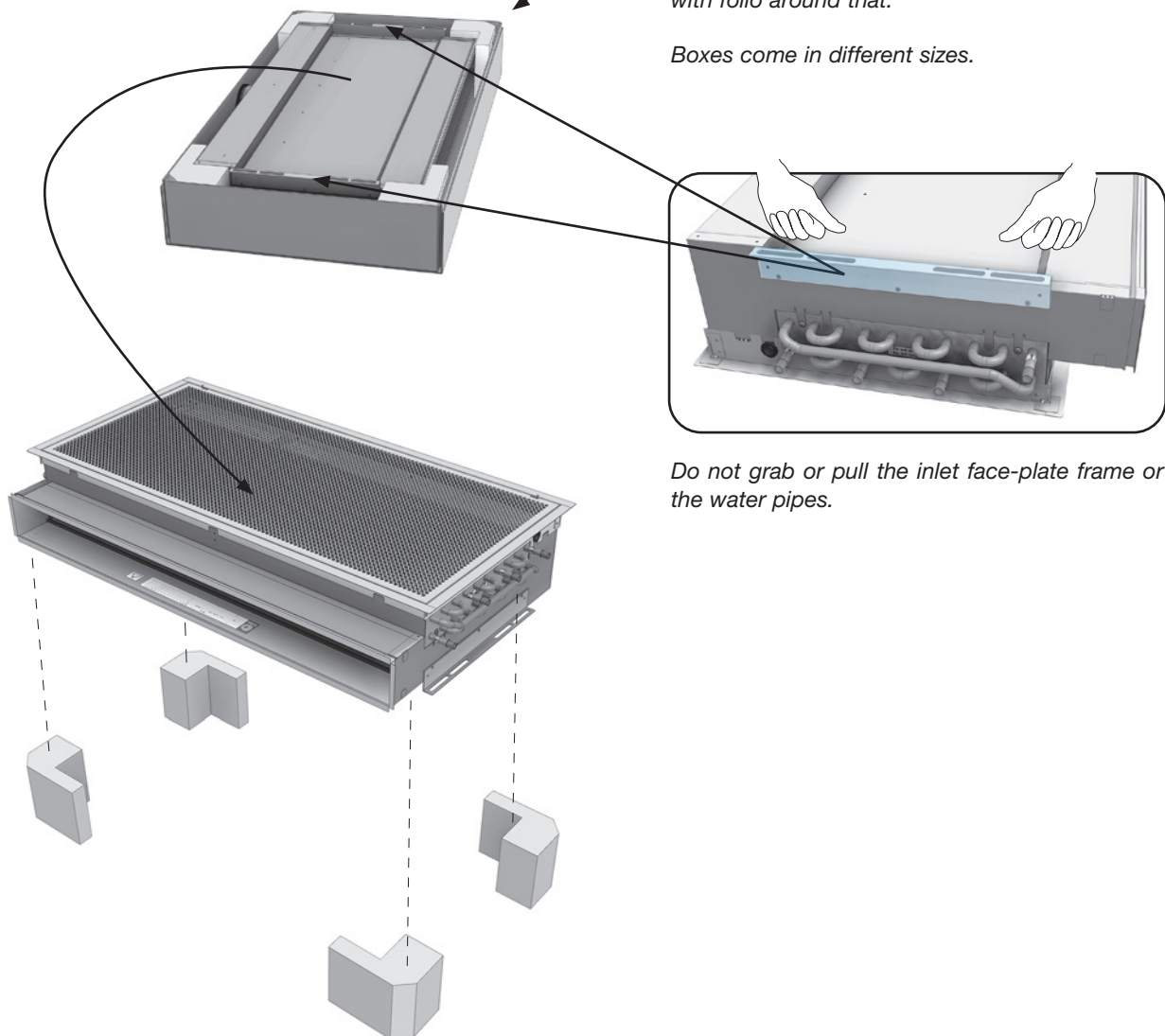
Munio

2.10 Packing, unpacking guideline



The products come to the building site with a wooden gatter around the pallet/products and with folio around that.

Boxes come in different sizes.



Do not grab or pull the inlet face-plate frame or the water pipes.

Installation instruction

Munio

2.11 Product labelling

Order: XX-XXXXXXXX
 Batch: XX-XXXXXX

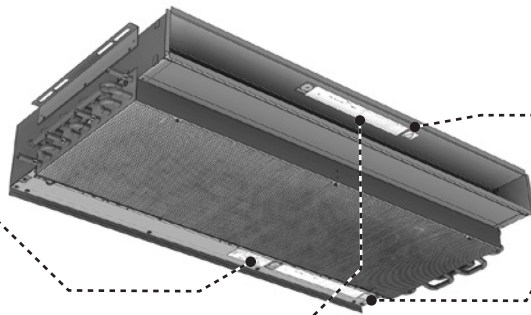
 Lindab

Munio I-xxx-12-125-Ax-xx-
 XX-XX-XXXX

Goods mark: XX XXXXX XX
 Product ID: XX-XXXXXX-X Sign: _____



x1



x2



x2

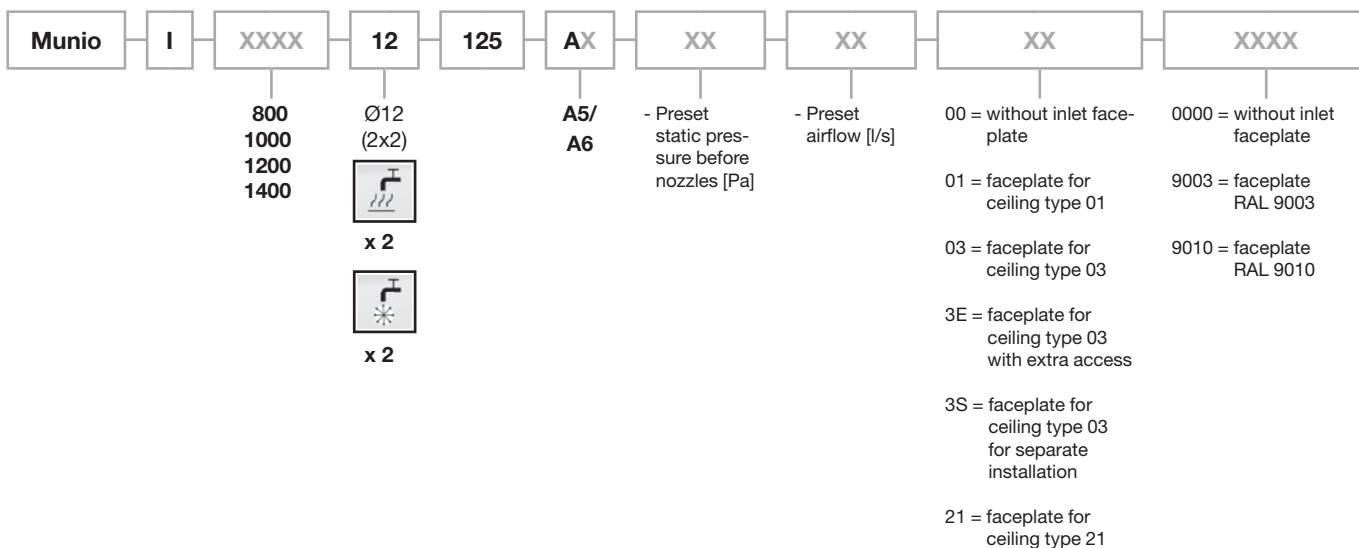
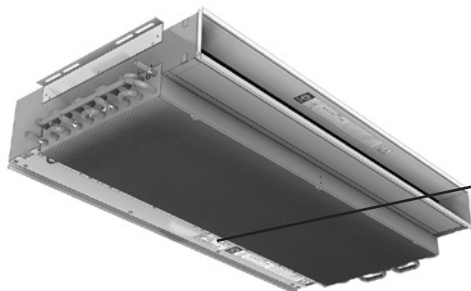
JetCones					
Date	ΔP_{tot} [Pa]	q_v [l/s]	1	2	Signature

Max 1000 Pa
 Point of jet cone adjustment pos.

Installation instruction

Munio

2.12 Order code



2.13 Order code example



Munio - I - 1200 - 12 - 125 - A5 - 70 - 20 - 00 - 0000



Munio - I - 1200 - 12 - 125 - A5 - 70 - 20 - 03 - 9003

2.14 Label

On the label you will find:

- Order : Order identification number.
- batch : Order position.
- Product : Product configuration.
- Goods mark : Marking noted on order.
- Product ID : Product number.
- Sign : To be signed when checked and commissioned on site



Installation instruction

Munio

2.15 Contents of order

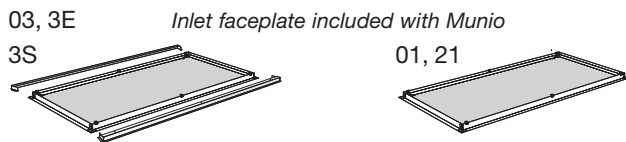
Standard package/order contains:

- Beam
- Inlet faceplate (pre-installed or loose/separate)
- Plus features (pre-installed in factory)
- 4 pc/beam of copper insets (separate in smaller box)
- Accessories (separate in smaller box)

NB! Outlet front grille does not belong to the beam and needs to be ordered separately!

2.16 Plus features

2.16.1 Inlet faceplates



2.16.2 Outlet front grilles (separate order and package)

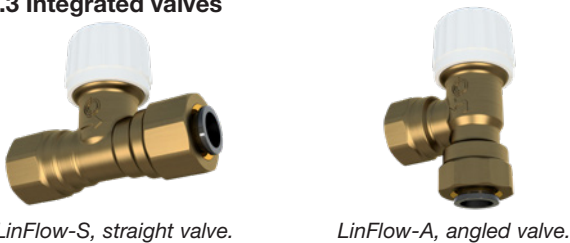


Go to “Munio outlet grilles” for details.

www.lindqst.com -> Documentation -> Munio ->

Related documents -> [AD21CN-M](#) and [AL21CN-M](#)

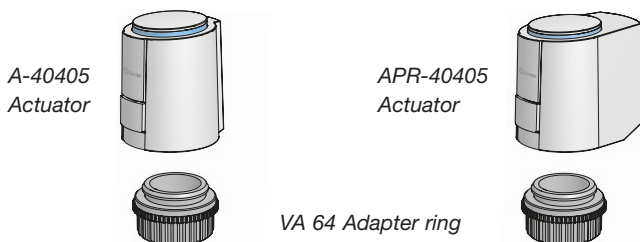
2.16.3 Integrated valves



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

As the product is compact, the valves will come prepared to push-on to the water outlet pipe (enclosed valves). Ready equipped with adapter ring, actuator, cabled to the Regula connect card (if ordered accordingly) and positioned with an adhesive tape near to the piping.

2.16.4 Thermoelectric actuators



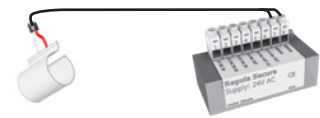
The actuators can be pre-installed on the integrated/enclosed valves and connected to the integrated Regula connect card / Regula Secura (plus feature).

Go to [Actuators](#) for details. See also [Adapter ring](#).

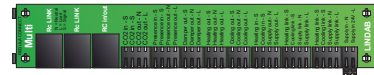
2.16.5 Integrated Regula components



Regula Combi



Regula Multi connect card



Condensation sensor and Regula Secura

Go to [Regula](#) for details.

2.16.6 Airguides

Not relevant for Munio.

2.16.7 Heating

Available as standard for Munio.

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.

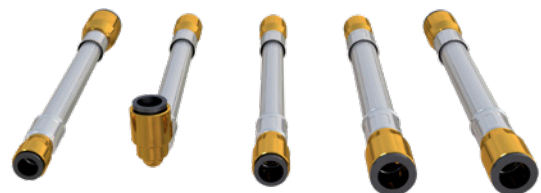
2.17.1 Threaded rod kit (Hangers)



M8 x4 per beam

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



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

see [Accessories](#)

Installation instruction

Munio

3. Product specification

3.1 Product description

Lindab's active chilled beam unit Munio can be used for cooling, heating and ventilation. It has been developed for the installation and integration into bulkheads in hotel- and hospital rooms or for any other rooms with bulkheads.

- Small dimensions (800 x 540 x 170), high capacity.
- Ventilation, cooling and heating as standard.
- JetCone, an innovative way of regulating the air volume.
- No need for filter because it works with dry cooling.
- Service & maintenance issues are limited.
- For bulkhead installation with full integration in architectural design.
- Easy installation.
- Telescoping connection with clip in for outlet front grille.
- Full access with low cost maintenance.
- Fulfills highest hygienic requirements.
- Low sound levels.
- Individual room regulation with customized control equipment (plus).
- Additional energy savings when used with free energy sources.
- Lindabs active chilled beams are Eurovent-certified and tested according to EN-15116.



3.3 Munio

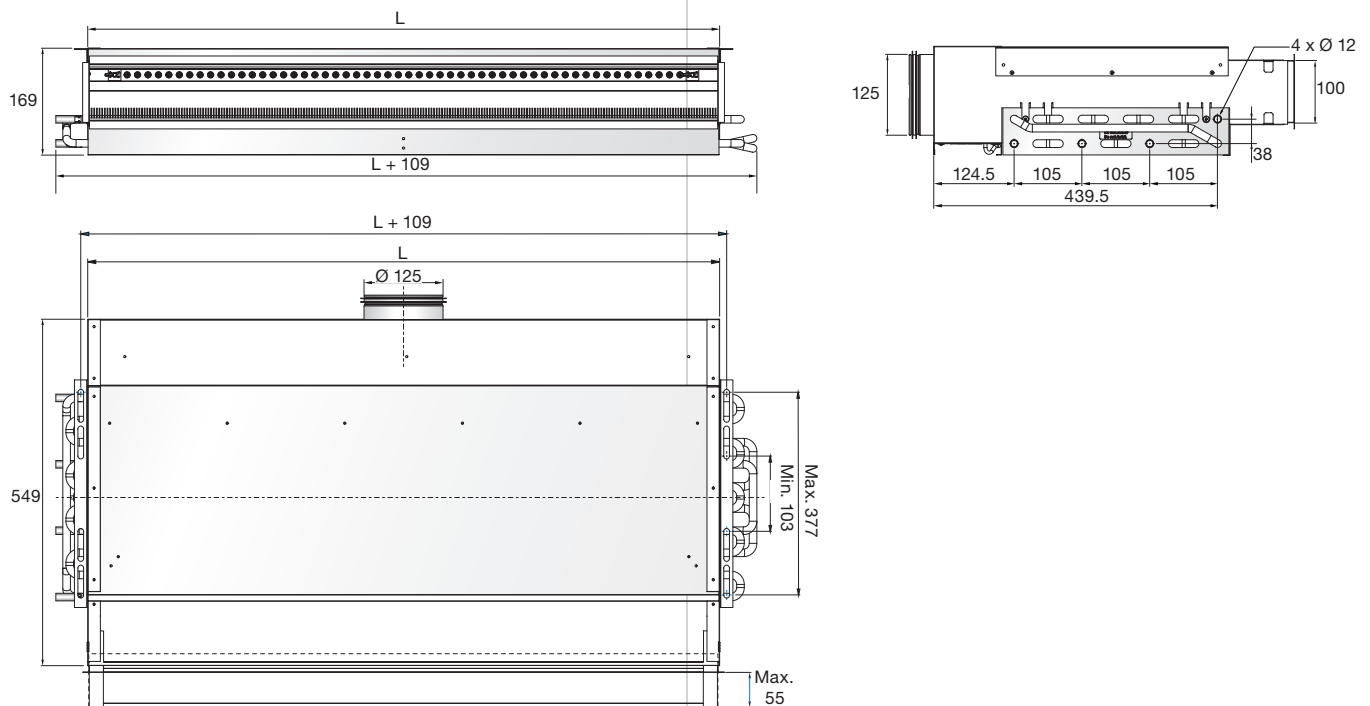


Munio active chilled beam

3.2 Dimension

L = 800, 1000, 1200, 1400 mm

L = Nominal length (order length)



Dimension drawing.

Installation instruction

Munio

3.4 Material data

Type	Munio I-800	Munio I-1000	Munio I-1200	Munio I-1400
Dry weight [kg]	12.1	14.7	17.3	19.9
Water content, cooling [l]	1.63	2.04	2.44	2.85
Water content, heating [l]	0.18	0.23	0.27	0.32
Copper pipes quality	EN 12735-2 CU-DHP			
Pressure class	PN10			

Table 1. Material data

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 in general recommends the water treatment and quality to be according to:

VDI 2035-2: 2009 "Prevention of damage in water heating installations Water-side corrosion".

and

VDI/BTGA 6044: 2023 "Prevention of damage in cold and cooling water circuits".

- Water systems must be designed as corrosion sealed installations. However, the planning data must be documented in a system logbook (e. g. according to **VDI 2035 part 2**, Annex C).
- The water preparation and maintenance for the water system must be handled by a specialist.
- To prevent corrosion, the water system must be airtight, and a constant input of oxygen must be avoided. In addition, scheduled maintenance and, when necessary, repairs are important corrosion protective measures (all to be documented in the system logbook).

- Before commissioning, the water system installations must be flushed thoroughly (it has proven to be necessary to consider the flushing of the system in the planning process already) with filling or make up water (see **EN 14336**) to remove particulate foreign matter from circulating water (e. g. corrosion products, dirt, microorganism, welding/soldering residues, substances entered during tool damage or others). Detailed information on this is formulated in **BTGA Rule 3.002**.

- The water system must be filled (and re-filled) with clean drinking water that complies with the "EC directive 98/83/EC". Appropriate measures must be undertaken and reported (system logbook) to ensure that the guide values are kept according to:

VDI 2035 Part 2: 2009, for heating water systems

Parameter	Unit	Low-saline	Saline
Electrical conductivity at 25 °C	µS/cm	< 100	100 - 1500
Appearance		Free of sedimentary substances	
pH-value at 25 °C		8.2 - 10.0	
Oxygen	mg/l	< 0.1	< 0.02

Table 2. Guide values for the heating water.

and

VDI/BTGA 6044 Part 4: 2023, for cooling water systems.

Parameter	Unit	Value
Electrical conductivity	µS/cm	10.....1500
Appearance		Clear, free of sedimentary substances
pH-value		8.2 - 10.0
Total hardness	mol/m³	< 1.5
Iron	g/m³	< 0.5
Copper, zinc, aluminium	g/m³	< 0.2
TOC of the untreated water	g/m³	< 25
Oxygen	mg/l	< 0.1

Table 3 Reference value table for filling, make-up and circulating cooling water.

- The water in the system must be always oxygen free, meaning an oxygen content of 0.1 mg/l in all parts of a water system must not be exceeded (**VDI 6044**) to prevent corrosion.
- The pH value of water must be between approximately 8.2 and 10.0 at 25 °C.
- The water velocities in the water system should not exceed 1 m/s to avoid corrosion and should be kept as close to the nominal flow as possible to minimize noise and optimize the energy yield.

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- Lindab recommends to use in-line strainers, and filters (e. g. according to table 3 **VDI/BTGA 6044 Part 4: 2023**) in sensitive parts of the water system to remove dirt particles from the water.
This can especially be fundamentally recommended in renovation of existing water systems.
- It can be further recommended (**VDI/BTGA 6044 Part 4: 2023**) to install a sensor-supported continuous monitoring of the circulation water and/or system for water treatment or purification in the bypass flow.
- If the water contains any additive inhibitor, then it must be appropriate to use with copper and solder and all other materials involved. If in doubt, do not hesitate to contact Lindab for further advice.

Lindab reserves the right not to accept any claims related to leakage or corrosion in our products, if the system water quality of the filling water and the changed conditions during the entire period of operation have not been recorded in a system logbook or similar document, and/or one of the above recommendations has not been followed correctly.

3.8 Air quality

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

3.9 Capacity test

Lindabs active chilled beams are Eurovent-certified and tested according to EN-15116.

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



4. Connections

4.1. Water connections

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

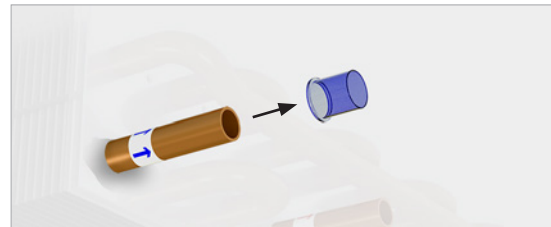
If the control valves have been ordered separately, a special direction of the flow must be upheld to ensure correct flow through the control valve. Please note the flow direction indicator on the valve to insure correct installation in relation to the desired flow. When connecting a panel or a beam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

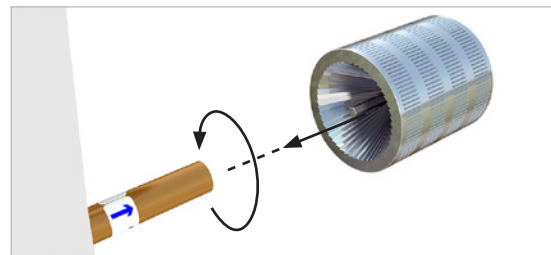
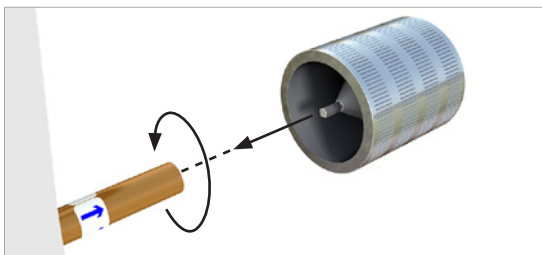
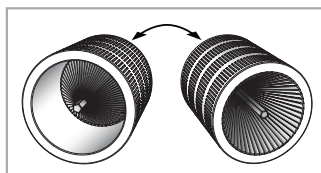
NB! Every control valve can create sound when it is installed directly connected to the water in- or outlet (or into the piping in close distance to the in- or outlet of the water product). To avoid unwanted sound generation we recommend to always use a Lindab control valve [LinFlow-A](#) (angled) or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



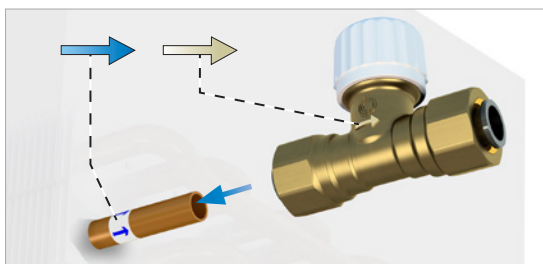
- Always remember to do a pressure test after assembly the pipe work.

Installation instruction

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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.

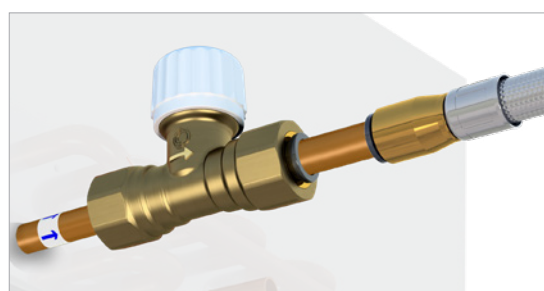
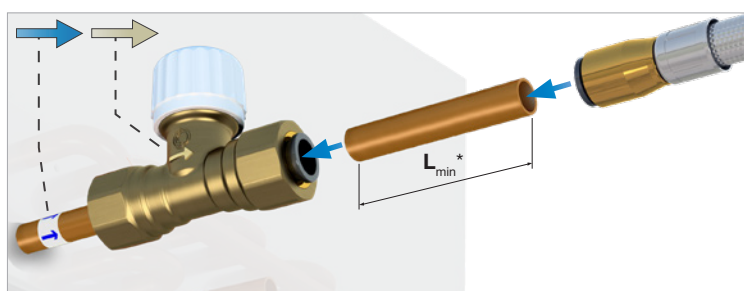
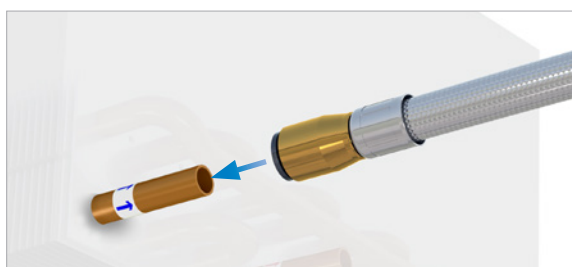


4.1.3 Compression fitting

- 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

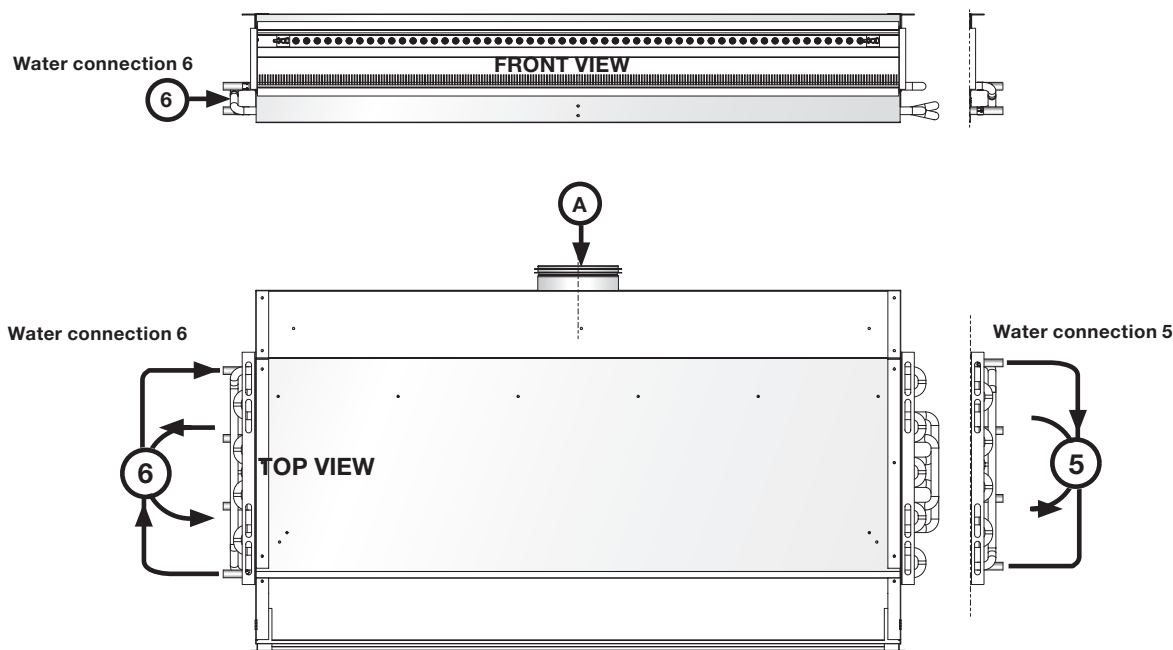
Munio

4.1.5 Possible connections water cooling (2-pipe)

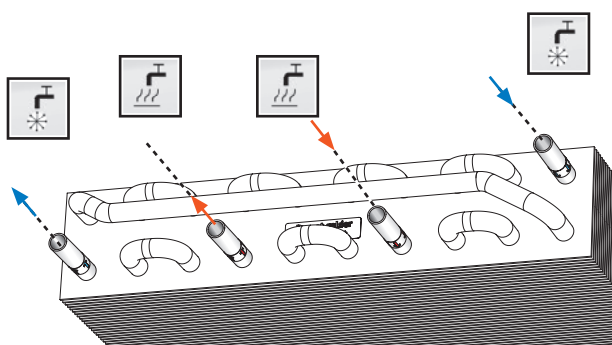
The active chilled beam Munio is in the standard version always equipped with a so called “4-pipe connection” and contains two water circuits. If the connection is a “2-pipe”, as in a change-over system, or if Munio is to be used for cooling only, the heating connection can be left unconnected.

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

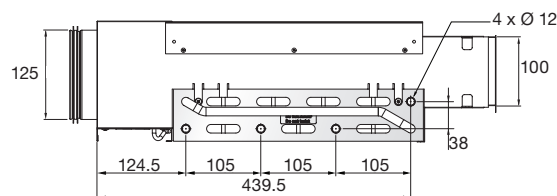
Munio has a 4-pipe water connection at the left (-6) or at the right side (-5), seen in the direction of the air connection.



Water connections (5 or 6) for Munio-I.



Placement of cooling and heating pipes (12 mm) on the battery.



Munio-I placement of connections (Battery in A6 position).

Installation instruction

Munio

4.2. Air connections

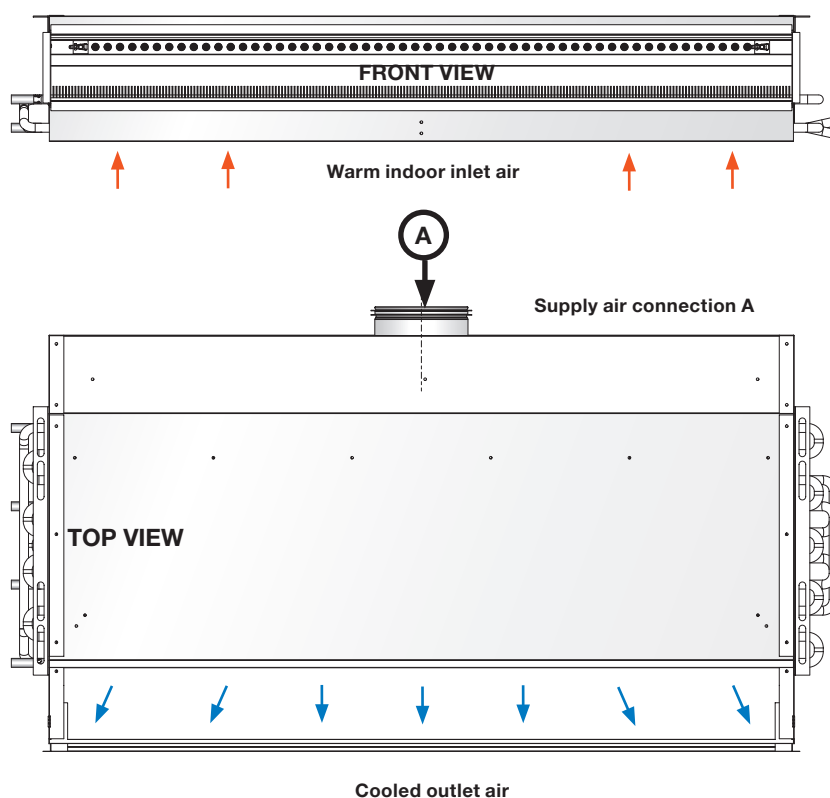
4.2.1 Air connection installation

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 Munio has one possible supply air connection (A) (horizontal back connection). To achieve other directions than horizontal we recommend using either a Lindab BKMU-90-125 or DRATMFU-125.



Supply air connection A for Munio-I.

4.2.3 Possible connections exhaust air

Munio has no possibility to integrate exhaust air.

4.3 Possible combination of connections

For Munio the only possible connections are A5 and A6 (see picture at 4.1.6), all connections horizontal with air back-connection (A; 125 mm) water on left side (A6, 12 mm) or water connections on right side (A5, 12 mm), direction of supply air.

Installation instruction

Munio

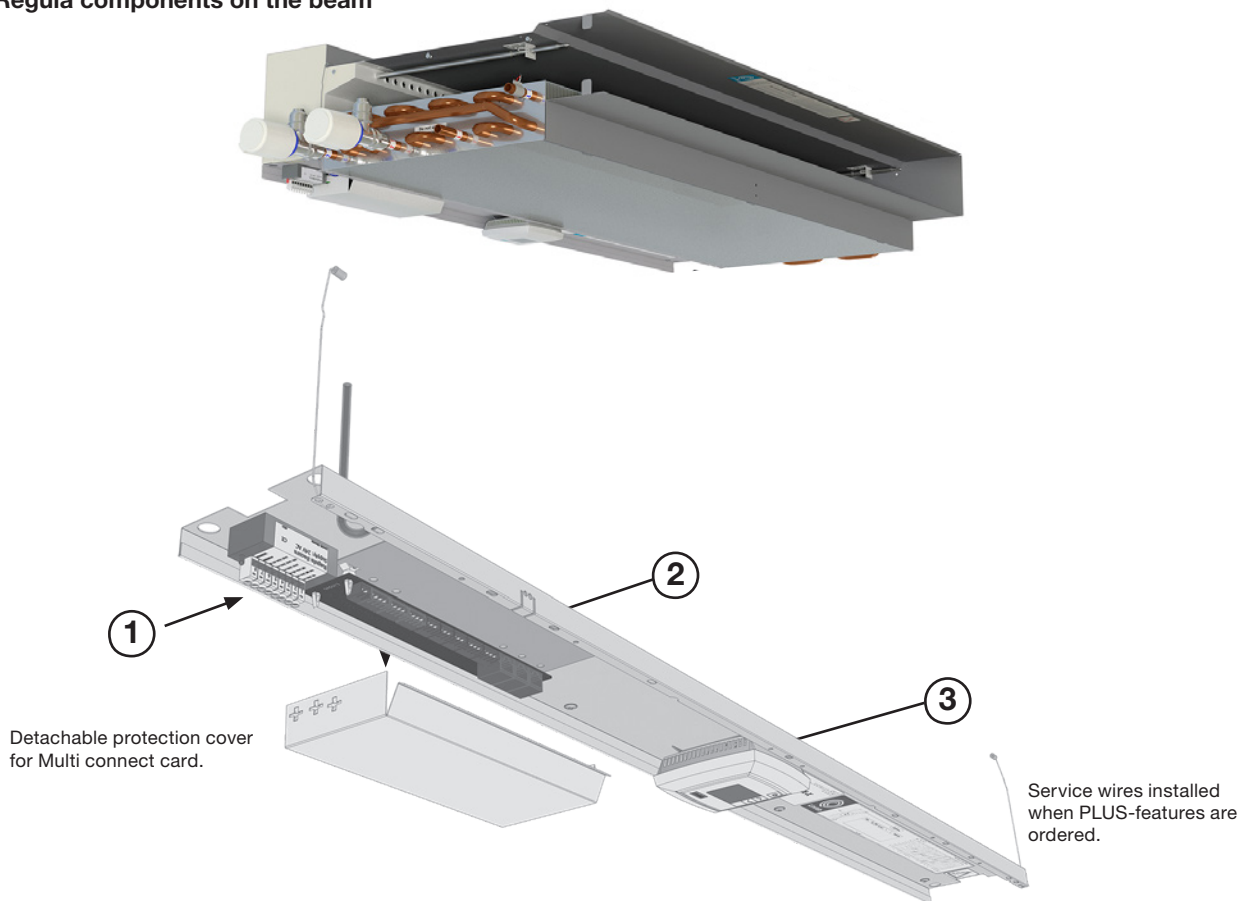
4.4 Electrical connections

Electrical connections on the beam are only necessary, when plus features are chosen and thanks to the pre-fabrication it is as easy as “plug and play”. All regula components will be installed on the inspection hatch which then comes with service-wires. The components are always installed near the water-connection at the end of the beam.

For further information, see Waterborne indoor climate solutions - Regula.

Go to www.lindQST.com -> Waterborne documentation -> [Regula Combi](#) -> Related Documents Also see: www.lindQST.com -> Waterborne documentation -> [Regula](#)

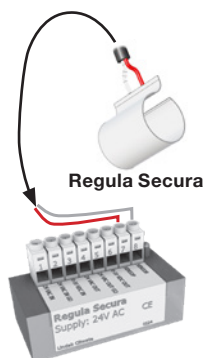
4.4.1 Regula components on the beam



1 Detachable protection cover for Multi connect card.

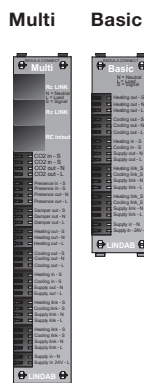
3 Service wires installed when PLUS-features are ordered.

1 Regula Secura Sensor



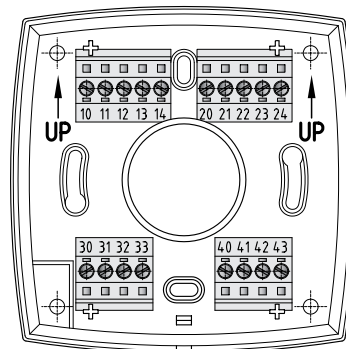
Regula Secura Sensor
Condensation sensor installed on cold-water-IN pipe. The sensor is connected and controlled by the Regula Secura.

2 Regula Connect Cards



Regula connect cards Multi / Basic
Connect cards come with protection covers, fully cabled to included features.

3 Regula Combi



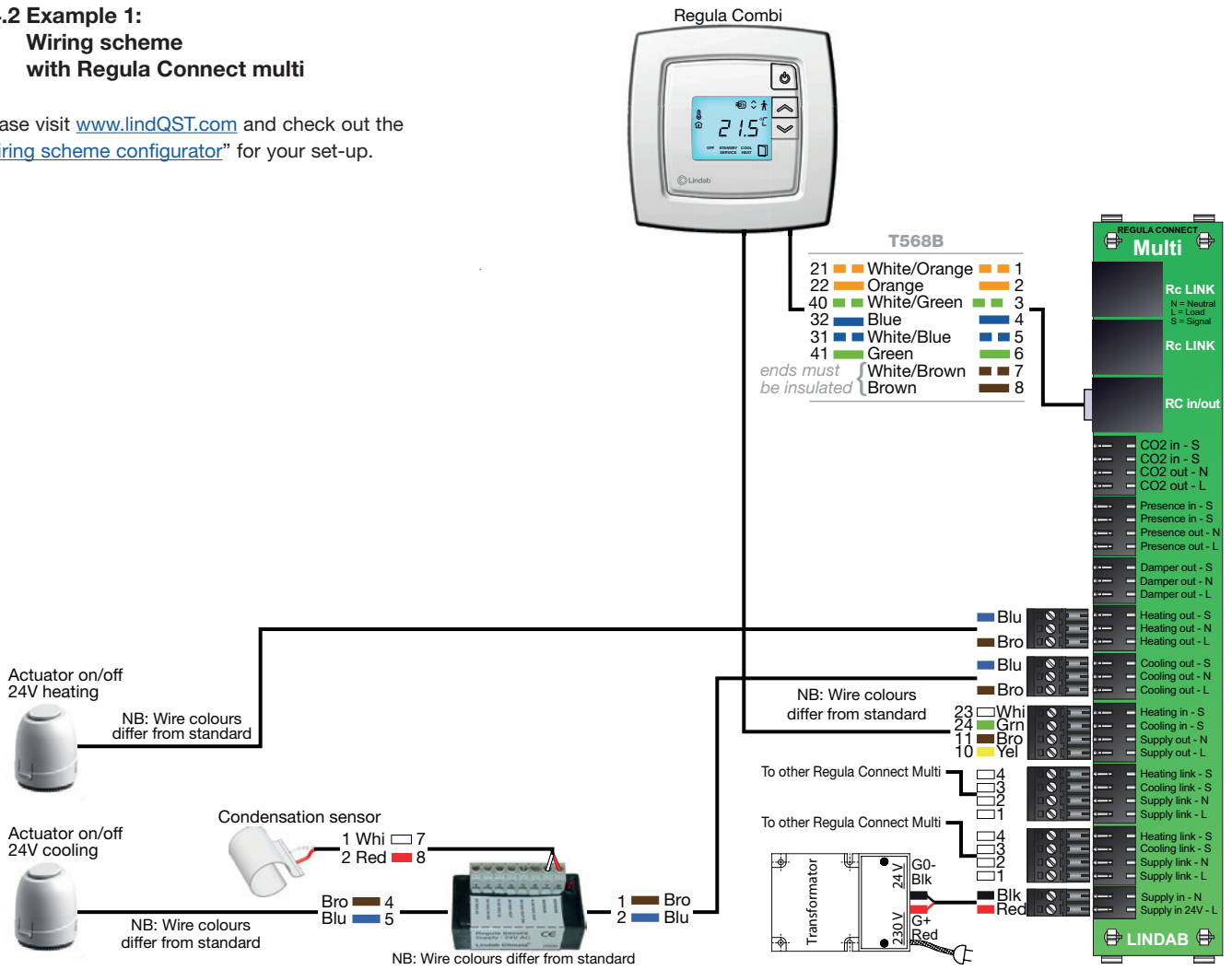
Regula Combi
Easy take off front gives directly access to connection-plinths. In single rooms arrangements the Regula Combi can also placed on a room wall to enable easy access.

Installation instruction

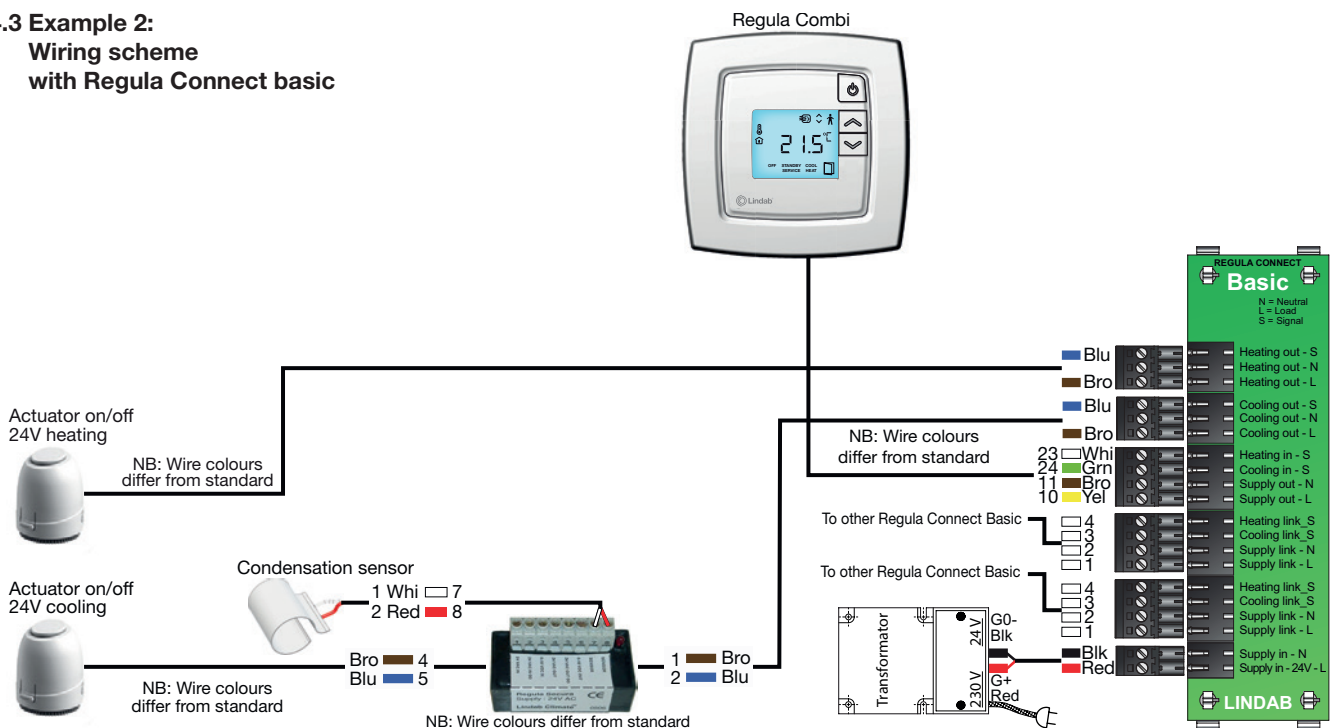
Munio

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

Munio

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 Pasch



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.

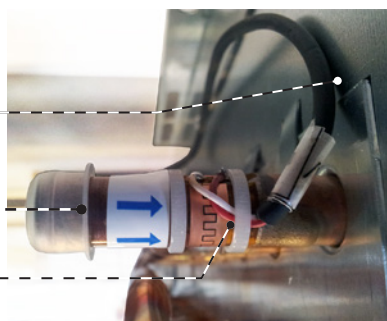
Condensation sensor and Regula Secura



Cable to Regula Secura

Protection cap

Condensation sensor



Regula Secura with condensation sensor preinstalled on Munio battery cold water inlet pipe.

4.4.6 Valves and Actuators on the beam

Description, see 2.16.

4.4.7 Regula Combi on/with the beam

The Regula Combi can be controlled and programmed locally in the display, or at a remote location by a EXOLINE or MODBUS communication system. Handles both 24 V and 0-10 V devices.

See the [Regula Combi](#) documentation.



4.4.8 Actuators

Description, see 2.16.

Installation instruction

Munio

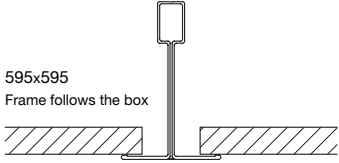
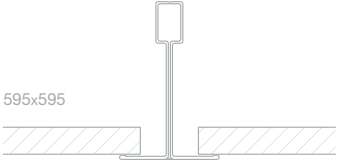

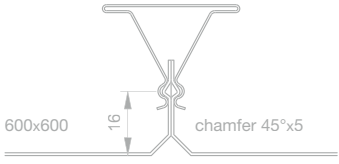
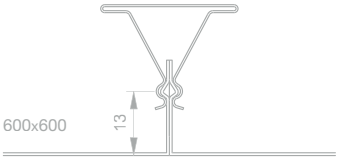
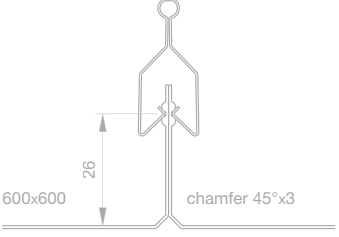
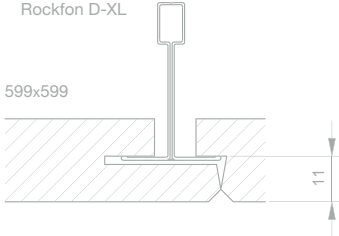
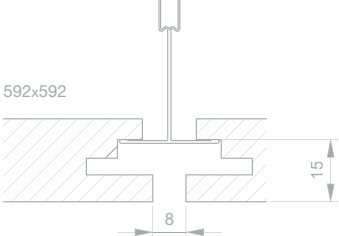
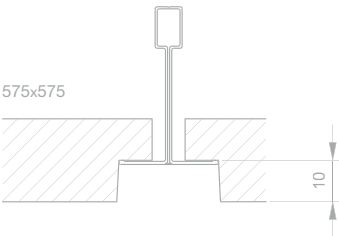
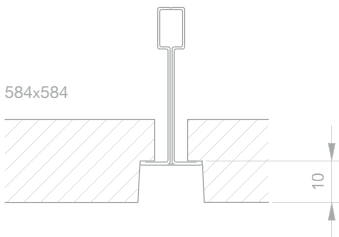
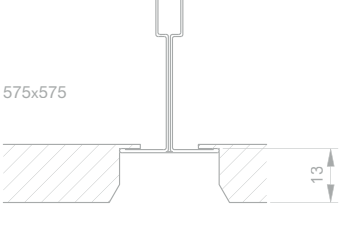
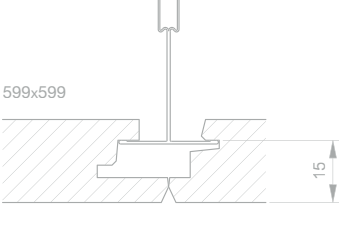
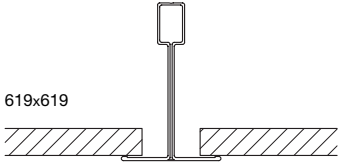
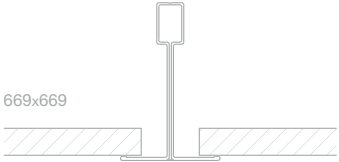
5. Installation of product

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

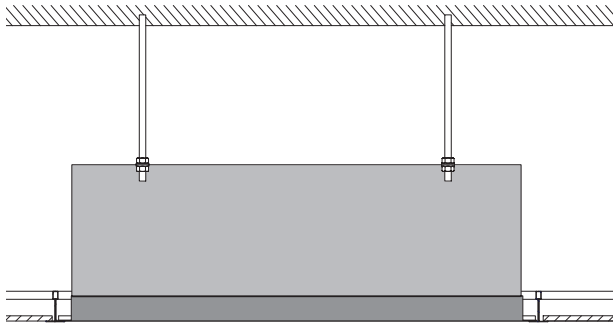
<p>01 T24/T15 Lay-in 600 Danotile T24/T25 Ecophon T24 Rockfon A24</p> <p>(I) Water</p> <p>595x595 Frame follows the box</p> 	<p>02 T24/T15 Lay-in 600 not cleanable</p> <p>(I) Water</p> <p>595x595</p> 	<p>03 Permanent ceiling</p> <p>(I) Water</p> 
<p>04 Dampa Clip-in bevelled edge</p> <p>(X) Water</p> <p>600x600 16 chamfer 45°x5</p> 	<p>05 Dampa Clip-in square edge</p> <p>(X) Water</p> <p>600x600 13</p> 	<p>06 Luxalon SQ Clip-in</p> <p>(X) Water</p> <p>600x600 26 chamfer 45°x3</p> 
<p>07 Danotile Contur Ecophon D Rockfon D-XL</p> <p>(X) Water</p> <p>599x599 11</p> 	<p>08 Ecophon Focus DG</p> <p>(I) Water</p> <p>592x592 8 15</p> 	<p>09 Rockfon E10 24 Ecophon -E /T24</p> <p>(Y) Water</p> <p>575x575 10</p> 
<p>10 Rockfon E10 15 Ecophon -E / T15</p> <p>(Z) Water</p> <p>584x584 10</p> 	<p>11 Danotile Markant</p> <p>(Y) Water</p> <p>575x575 13</p> 	<p>14 Ecophon Focus DS Rockfon Sonar X</p> <p>(X) Water</p> <p>599x599 15</p> 
<p>21 T24/T15 Lay-in 625 22 T24/T15 Lay-in 625 not cleanable</p> <p>(I-62) Water</p> <p>(I-62) Water</p> <p>619x619</p> 	<p>31 T24/T15 Lay-in 675 32 T24/T15 Lay-in 675 not cleanable</p> <p>(I-67) Water</p> <p>(I-67) Water</p> <p>669x669</p> 	

Installation instruction

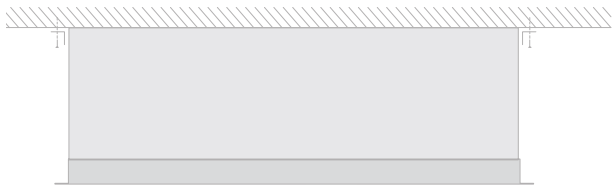
Munio

5.3 General installation principles

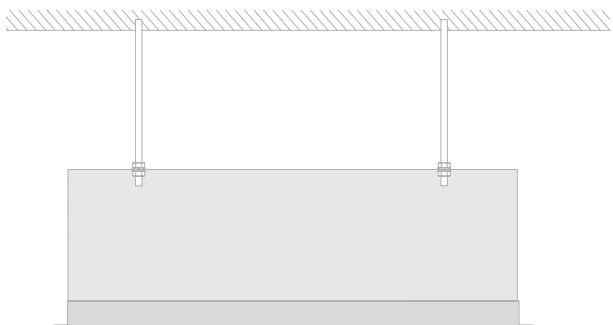
5.3.1 Recessed in suspended T-bar ceiling.



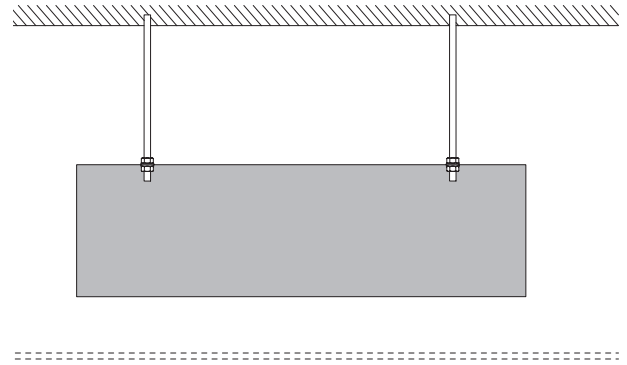
5.3.2 Exposed, sealed to the ceiling.



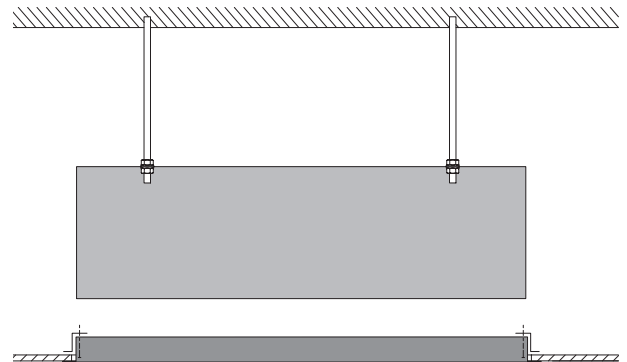
5.3.3 Exposed, free hanging.



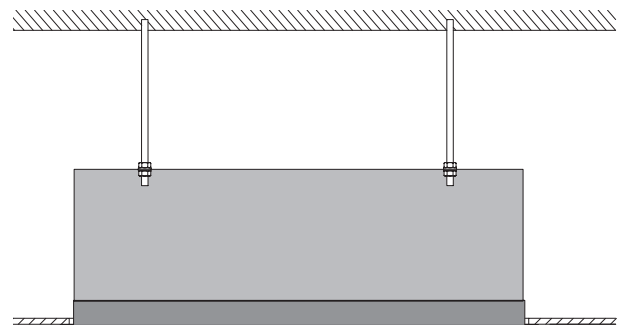
5.3.4 Free hanging above perforated or egg-crate ceiling.



5.3.5 Recessed in suspended (permanent) ceiling with cover flanges.



5.3.6 Recessed in suspended (permanent) ceiling without cover flanges.



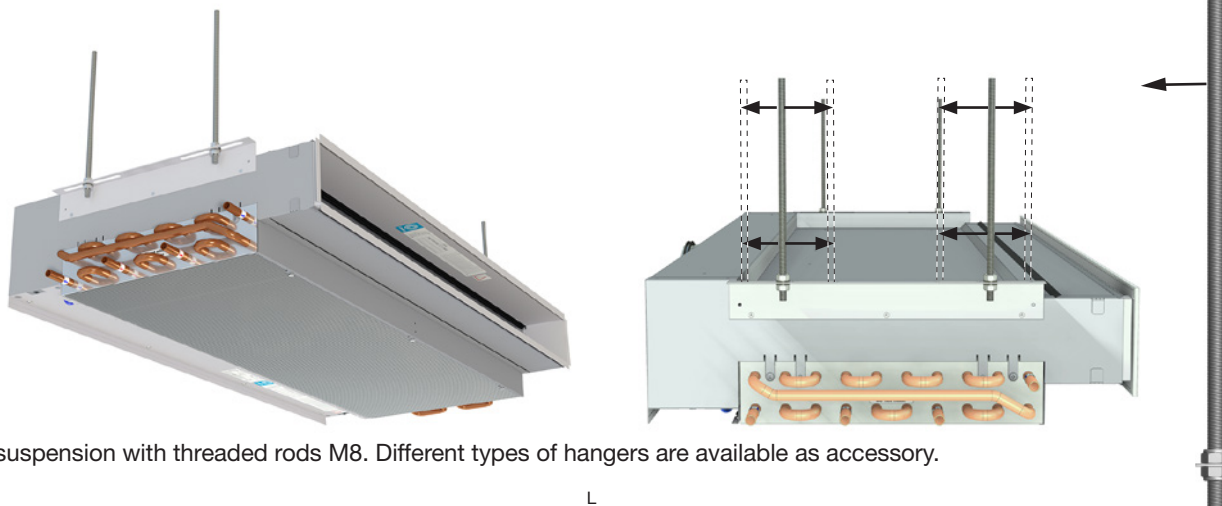
Installation instruction

Munio

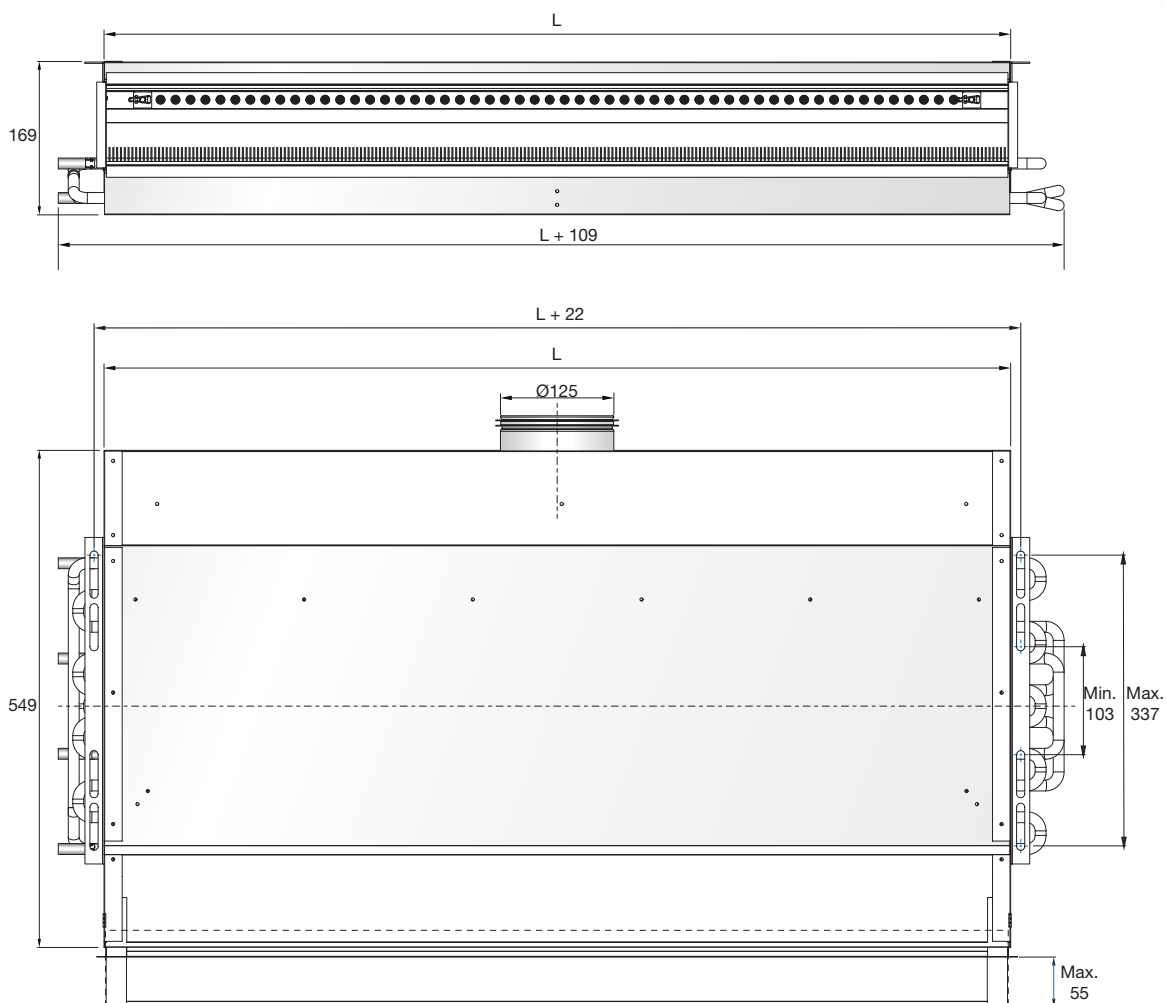
5.4 Preparation for installation on the product

The beam is prepared for installation of hangers (4 x per beam) by two bars including four long holes ready for:

- Pendulum hangers (in different sizes)
- Threaded rods M8



Munio-I suspension with threaded rods M8. Different types of hangers are available as accessory.



$L = 800, 1000, 1200, 1400 \text{ mm}$
 $L = \text{Nominal length (order length)}$

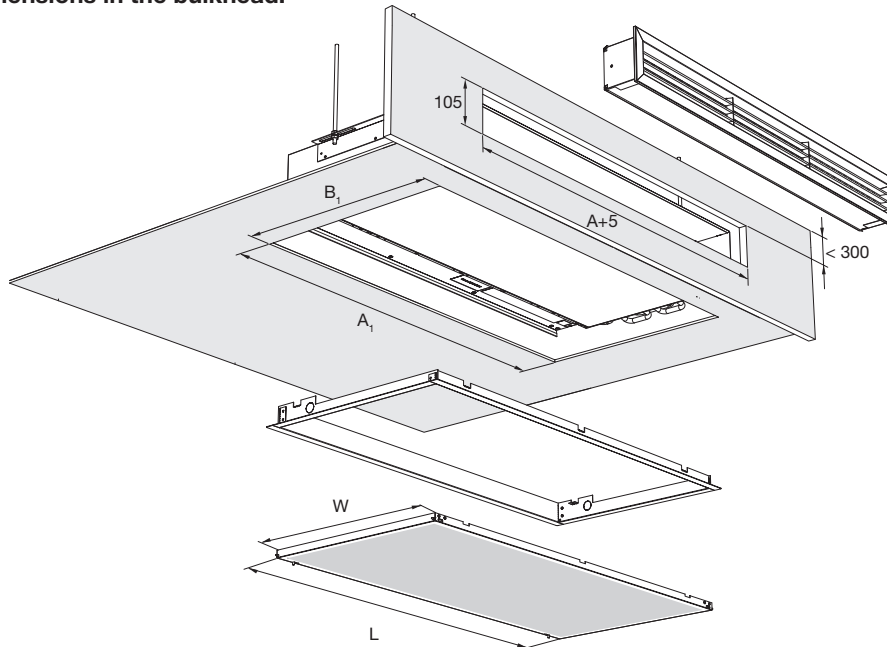
Hanger preparations sizes and dimensions.

Installation instruction

Munio

5.5 Preparation for installation of the product

5.5.1 Cutout dimensions in the bulkhead.



Bulkhead integration and cutout dimensions.

Inlet faceplate cutout dimensions

The cutout dimensions A_1 and B_1 for inlet faceplates are:

$$A_1 = L_{\text{inlet}} - 25 \text{ mm} \quad \text{and} \quad B_1 = W_{\text{inlet}} - 25 \text{ mm}$$

Order code	Ceiling Type	Munio-I		Inlet faceplate				Weight
				L_{inlet}	W_{inlet}	Cutout		
		L	Width			A_1	B_1	
				[mm]				[kg]
	03	Inlet faceplate -03 mounted to Munio (SHORT version)						
03		800	549	844	505	820	480	2.8
03		1000		1045		1020		3.2
03		1200		1245		1220		3.7
03		1400		1445		1420		4.1
		Inlet faceplate -01 and -21 separate from Munio for lay-in ceiling						
01	01	1200	600	1193	593	- *	- *	3.5
21	21	1200	625	1243	618	- *	- *	3.7
		Inlet faceplate -3S separate from Munio mounted into the ceiling						
3S	3	1200	549	1193	593	1168	568	4.6
		Inlet faceplate -3E mounted to Munio (LONG version)						
3E	03	800	549	1175	505	1150	480	3.6
3E		1000		1375		1350		4.1
3E		1200		1575		1550		4.5
3E		1400		1775		1750		5.0

Table 4. Munio cutout sizes, dimensions and weights for different inlet face plates.

***NB!** Ceiling type 01 and 21 do not have a cutout. The inlet faceplates lay-in freely in T24/T15 ceilings. (Please check with ceiling supplier if weight is covered or hang separately.)

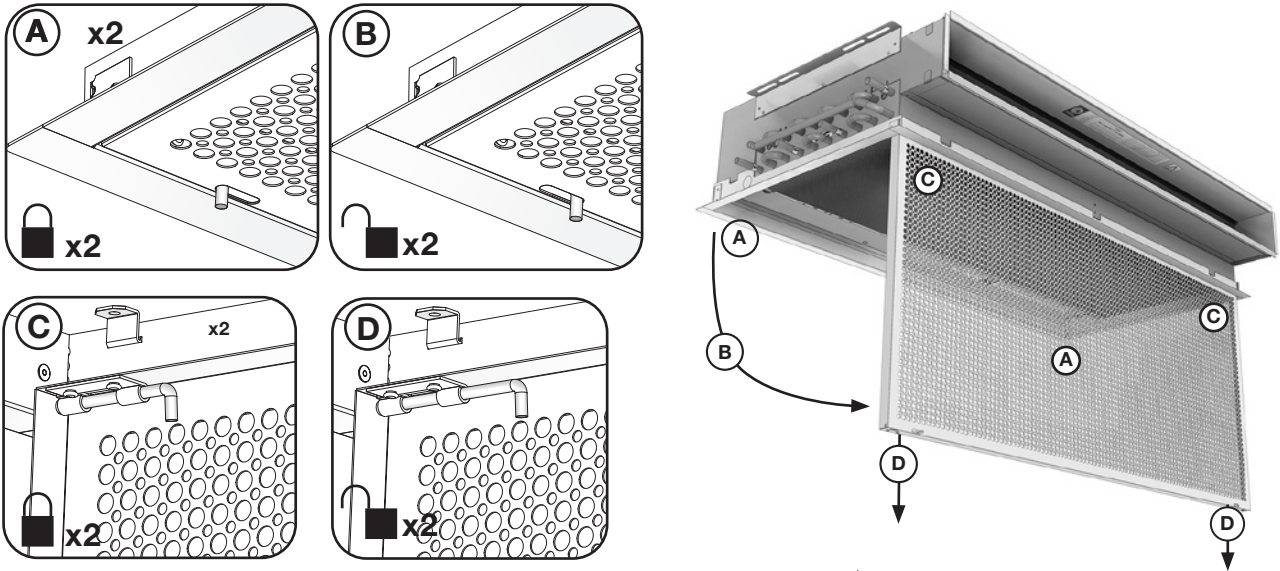
Installation instruction

Munio

5.5.2 Basics steps of installing the product

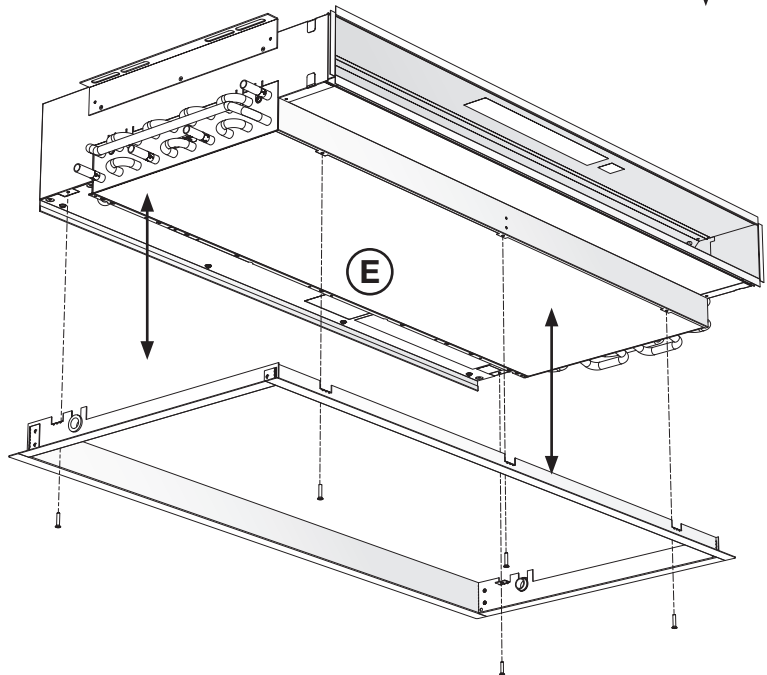
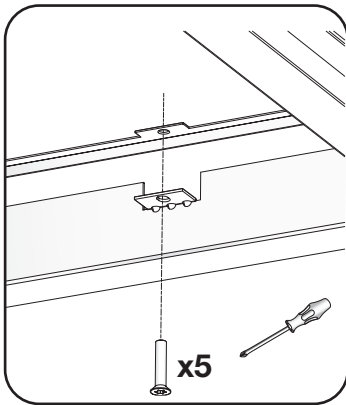
It is recommended to use inlet face plate types 03, 3E or 3S for ceiling type 03.

STEP-1 De-install inlet faceplate with frame (only necessary for type 03 an 3E, see order code).

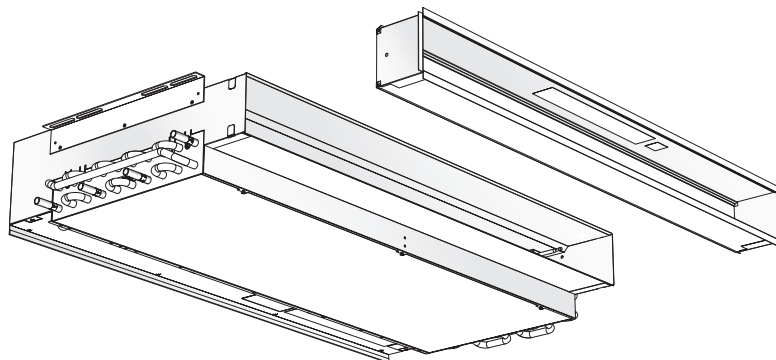


NB!

Only follow step-E, when inlet faceplate type -03, has been chosen. For all other scenarios, skip step-E. The inlet faceplate comes separately and the frame will not have to be de-installed/installed to the Munio.



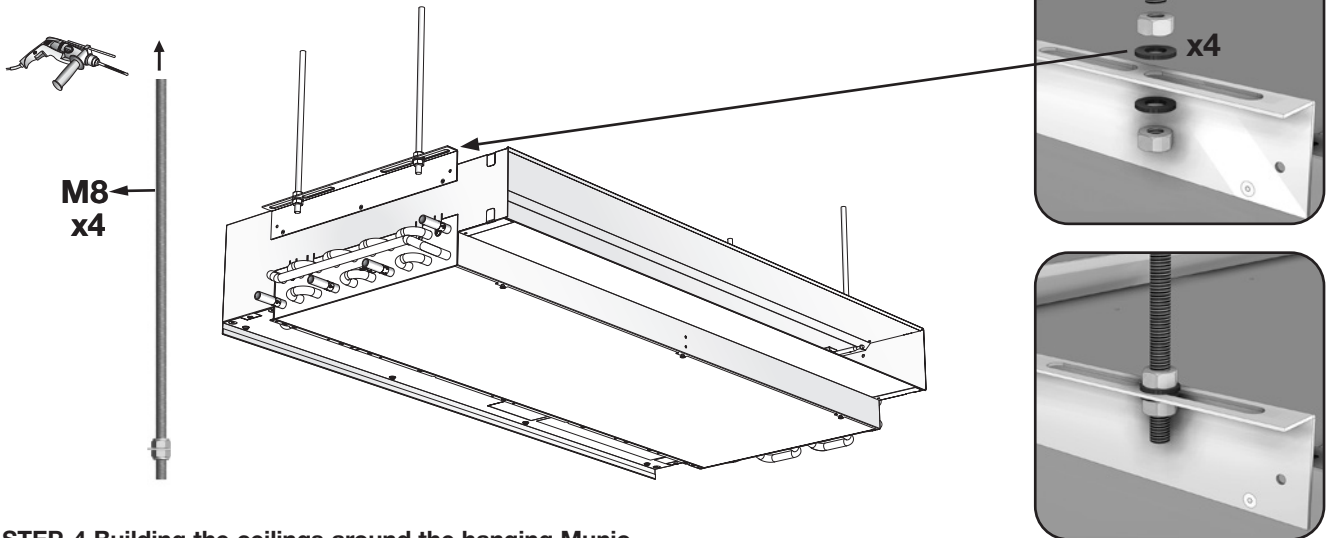
STEP-2 Remove the telescopic extension piece.



Installation instruction

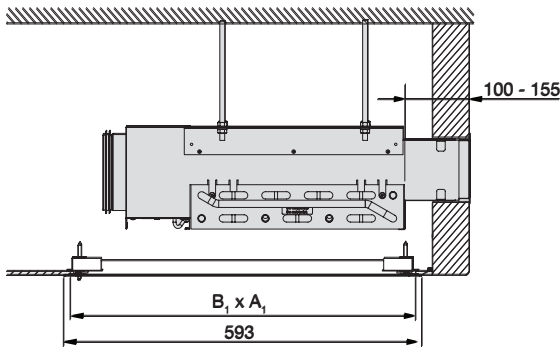
Munio

STEP-3 Install basic Munio in ceiling (shown with threaded rods, other hangers accordingly to instruction).

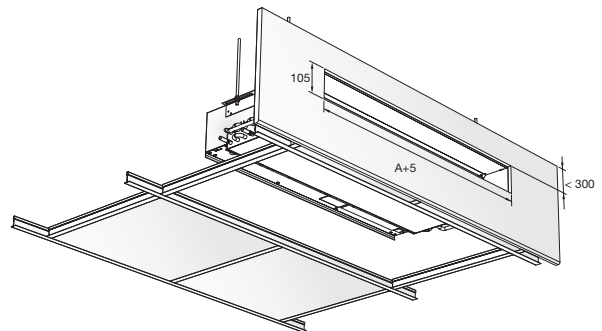


STEP-4 Building the ceilings around the hanging Munio.

Ceiling 03: Permanent ceiling

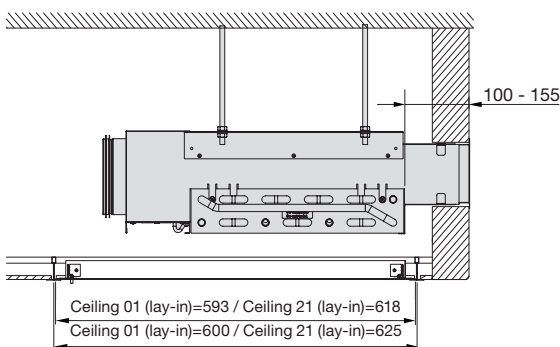


Prepare your cut-out for the transition piece:
(A + 5 mm) x 105 mm (A=L).
Prepare your A₁ x B₁ cut-out for inlet-faceplate.

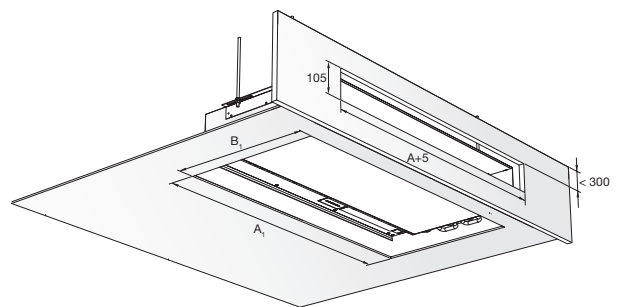


Installation sketch for Inlet faceplate -3S with cutout dimensions.

Ceiling 01, 21: T24 / T15 lay-in 600 / 625



Prepare your cut-out for the transition piece:
(A + 5 mm) x 105 mm (A=L).



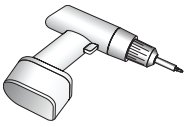
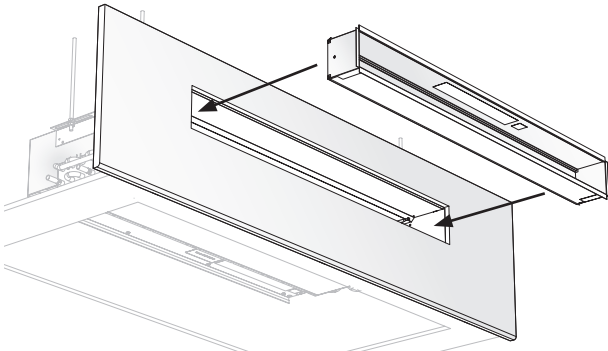
Installation sketch for inlet faceplate -01/-21 with cutout dimensions.

NB! Step 1-4 shows scenario when ceilings are built AFTER Munio are installed. If the ceiling is pre-built (sometimes the case for T-ceilings), step-4 will become step-1 and other steps 2-3-4.

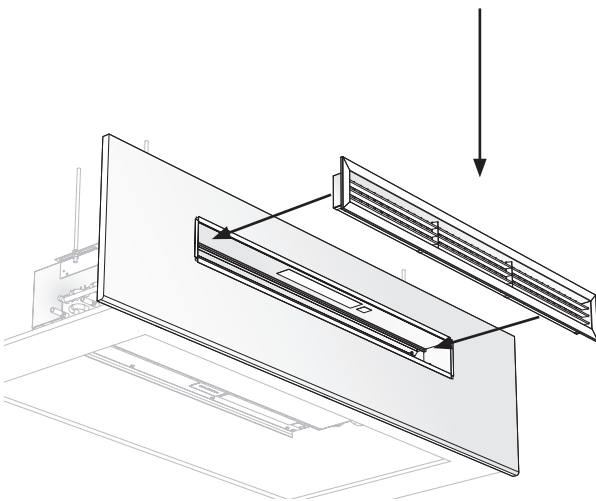
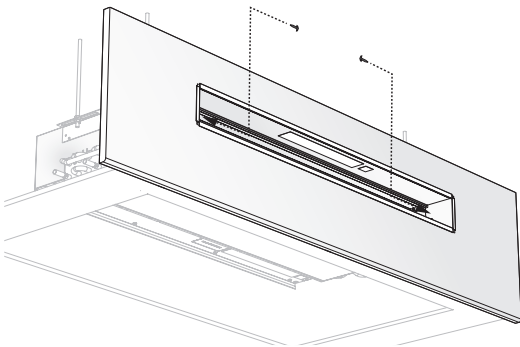
Installation instruction

Munio

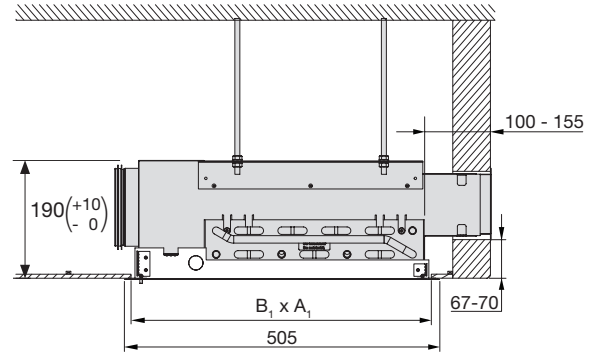
STEP-5 Installing telescopic expansion piece



Use 2x self drilling screws (not included).



STEP-6 Insert outlet front grille



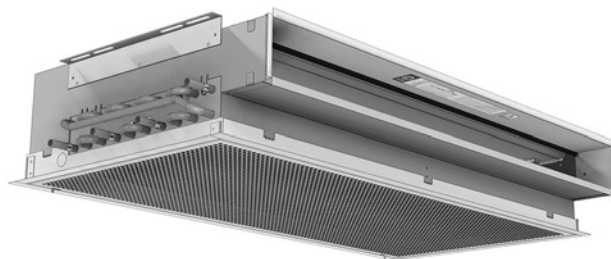
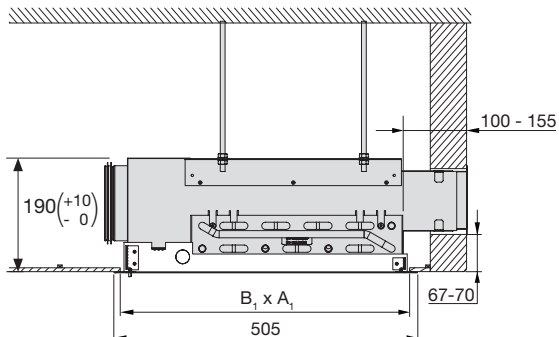
Installation sketch for Inlet faceplate -03 and -3E with cutout dimensions.

Installation instruction

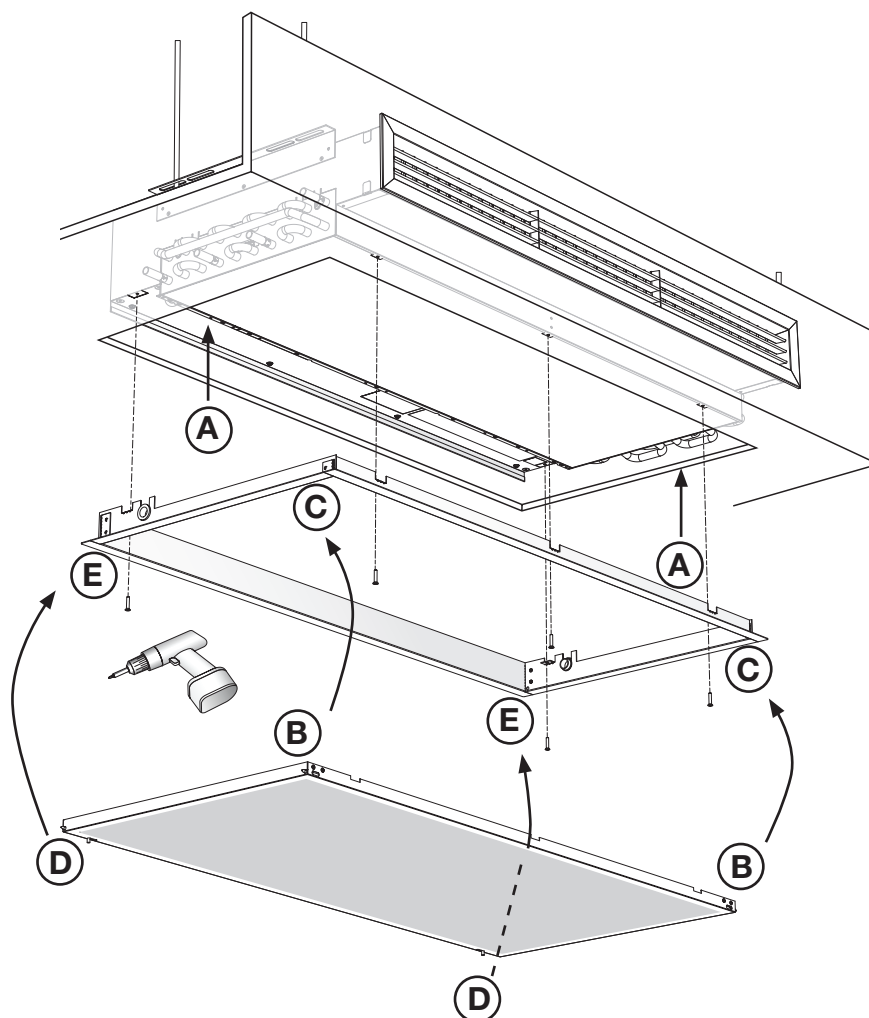
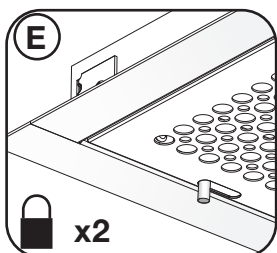
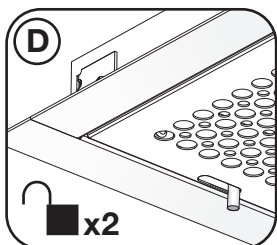
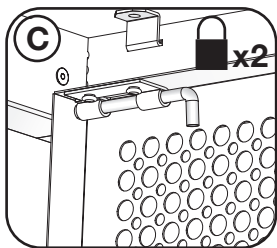
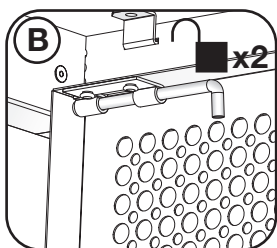
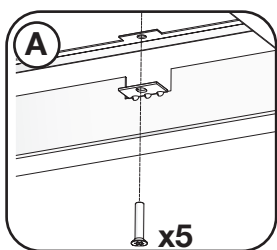
Munio

STEP-7a Installing inlet faceplate 03/3E.

Recessed in suspended (permanent) ceiling without cover flanges.



Follow step 1-6 and the inlet faceplate is ready to be installed. Start with the frame and the faceplate afterwards.



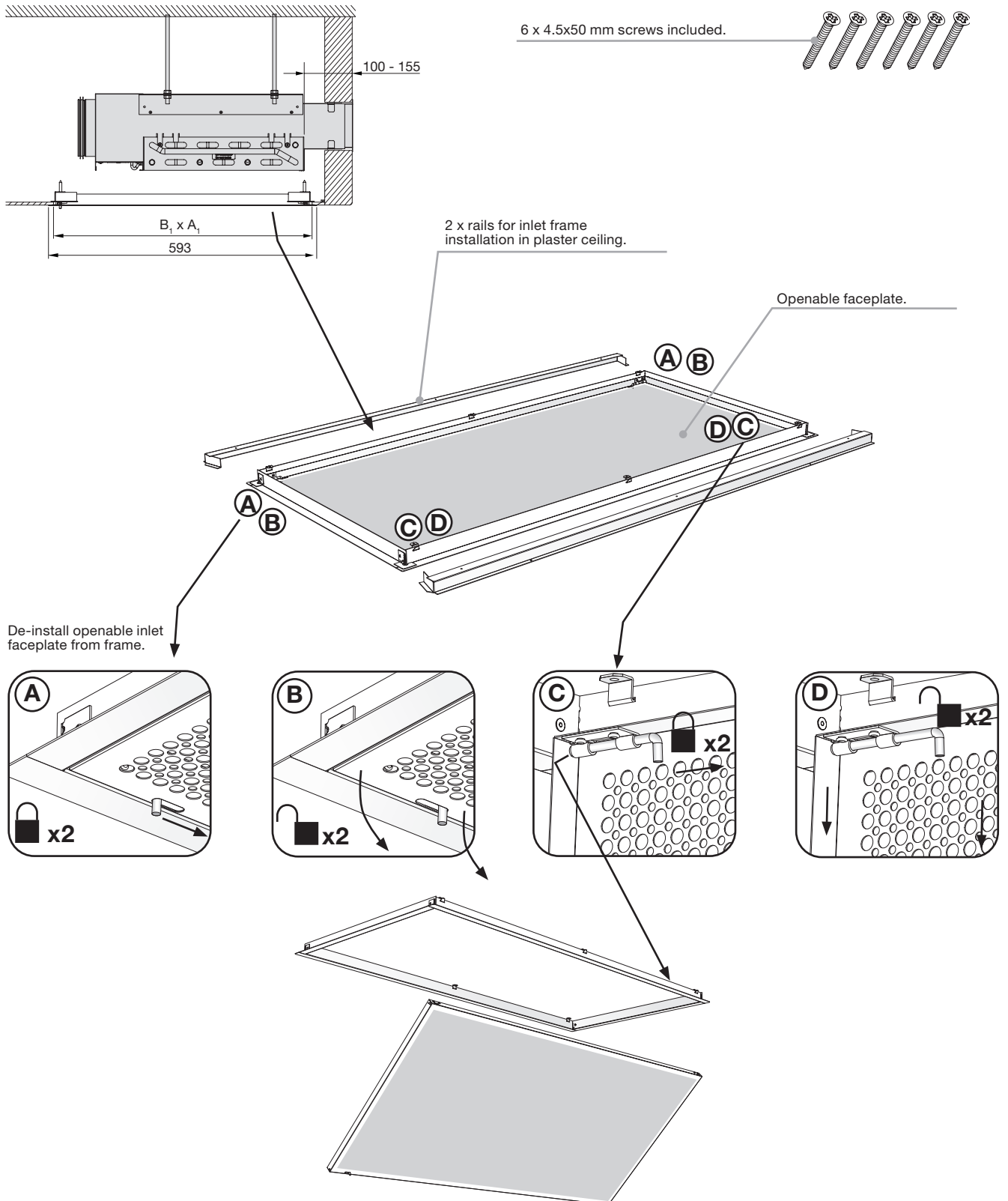
NB! The frame can be used as a transition piece (0-10 mm) together with the screws for example to cover irregularities of or towards the ceiling.

Installation instruction

Munio

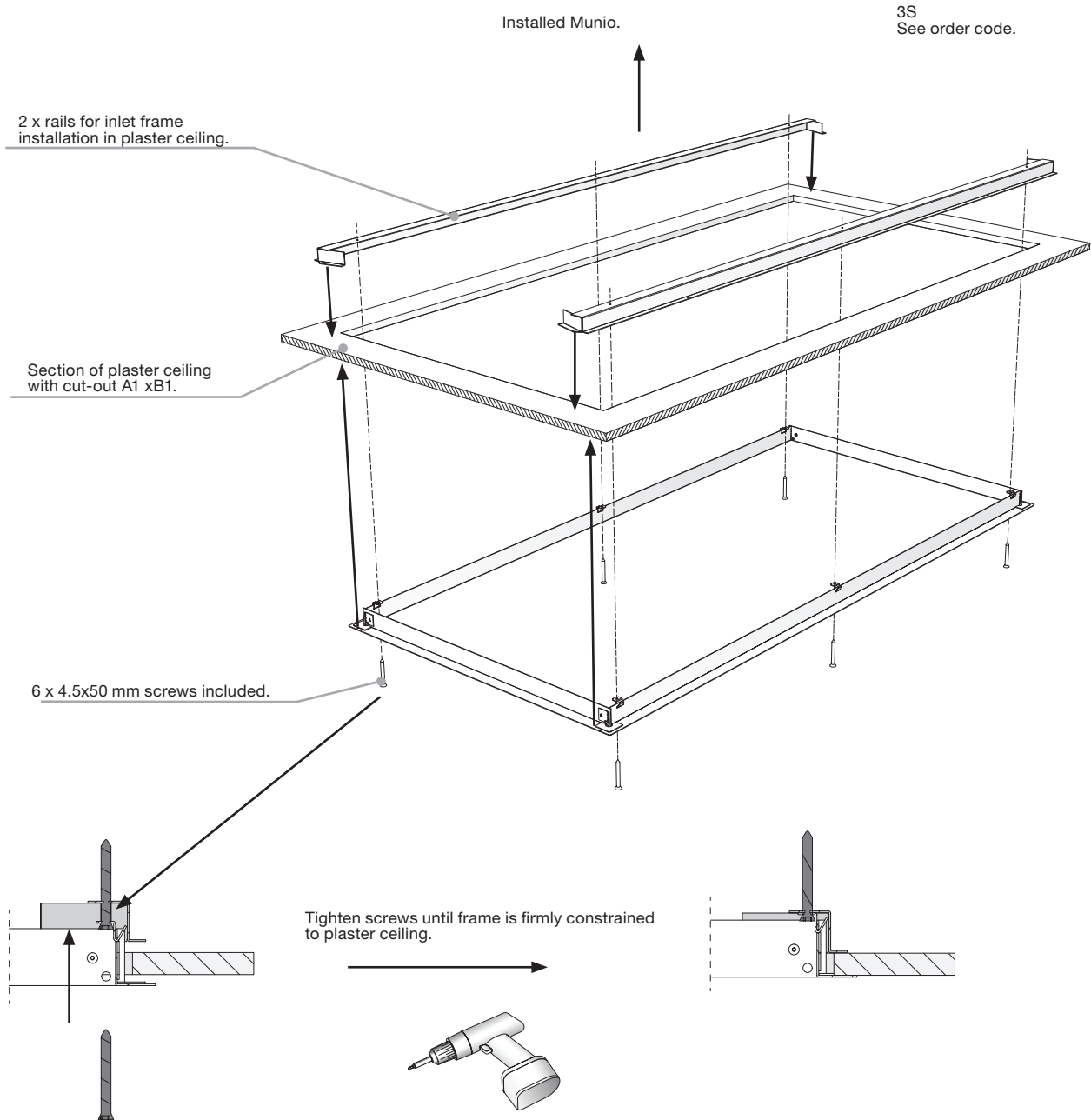
STEP-7b Installing inlet faceplate type 3S in ceiling type 03.

Recessed in suspended (permanent) ceiling with cover flanges



Installation instruction

Munio

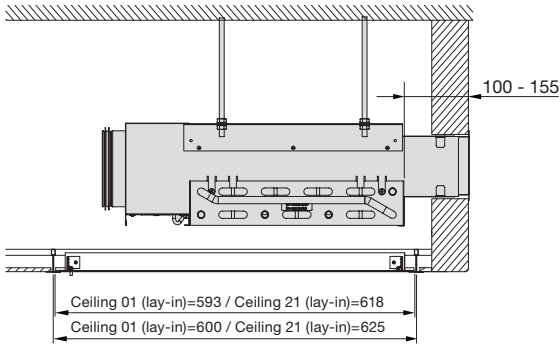


Installing inlet faceplate type 3S in ceiling type 03.

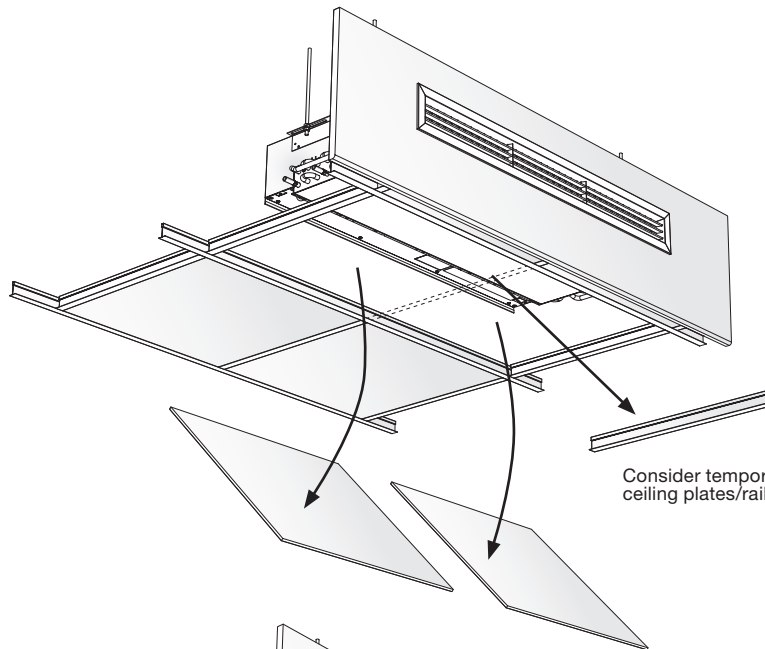
Installation instruction

Munio

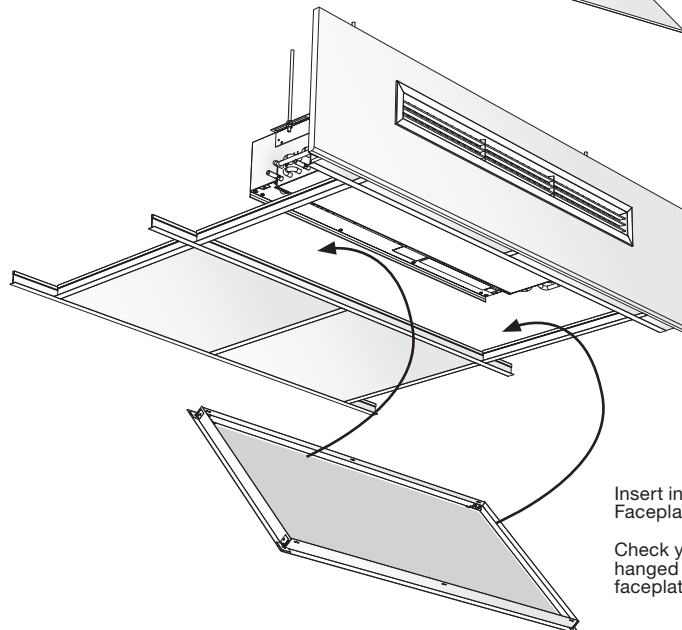
STEP-7c Installing inlet faceplate type 01/21 ceiling 01,21 (T-ceiling)



Make room for 1200 Inlet faceplate.
Remove ceiling plates and t-rails.



Consider temporarily to move extra ceiling plates/rails for better access.



Insert inlet faceplate. No tools needed.
Faceplate lies freely in suspended ceiling.

Check your ceiling system is properly
hung to take weight of the inlet
faceplate.

Installation instruction

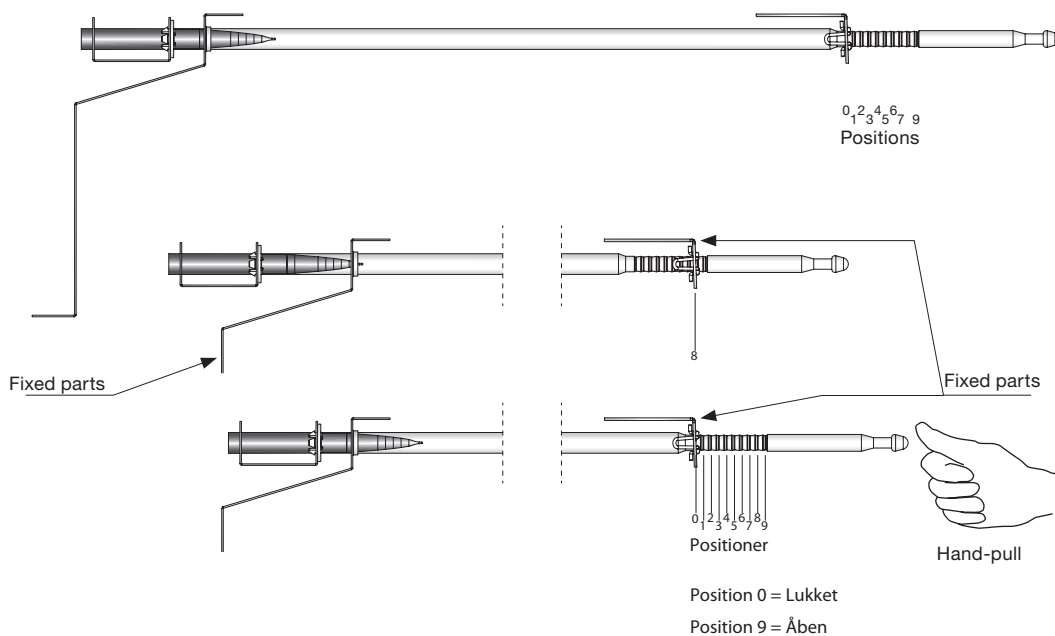
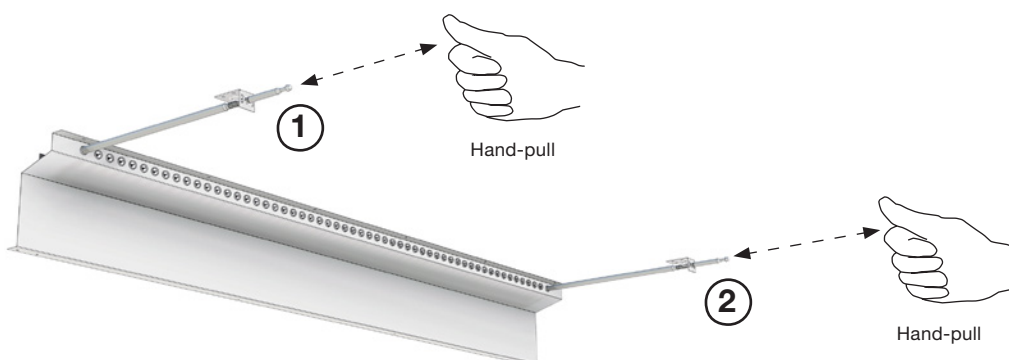
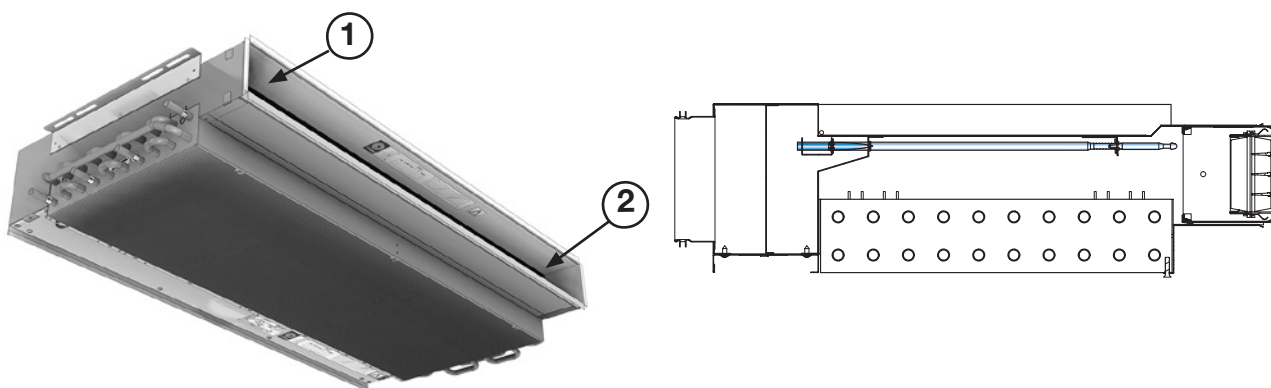
Munio

6. Adjustment and commissioning

6.1 Airflow and pressure

The JetCone System enables an easy and fast adjustment in both pressure and air volume (primary airflow rate) through the front side.

6.1.1 Jetcone adjustment pins



Installation instruction

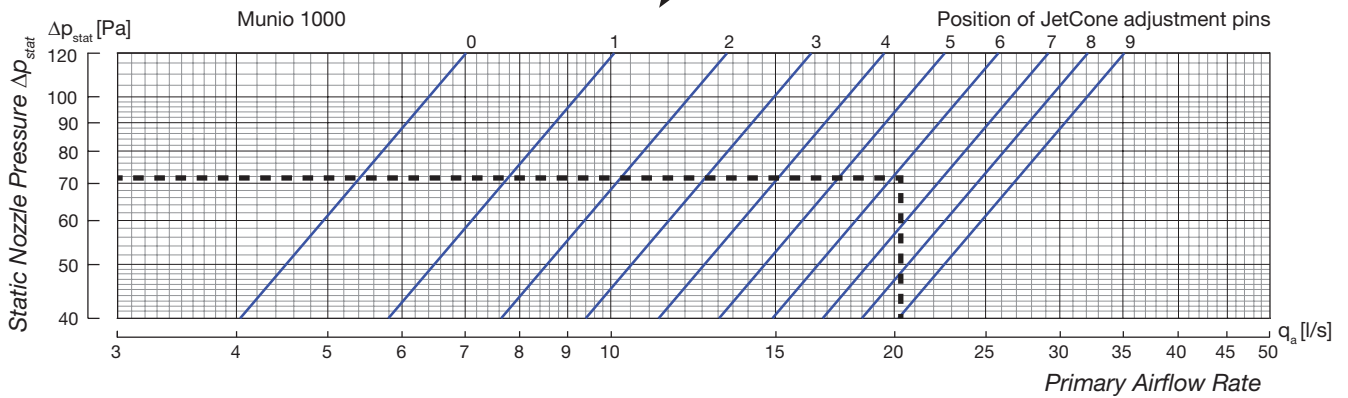
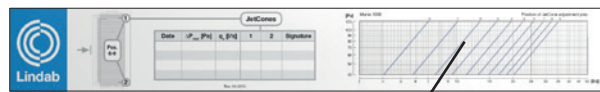
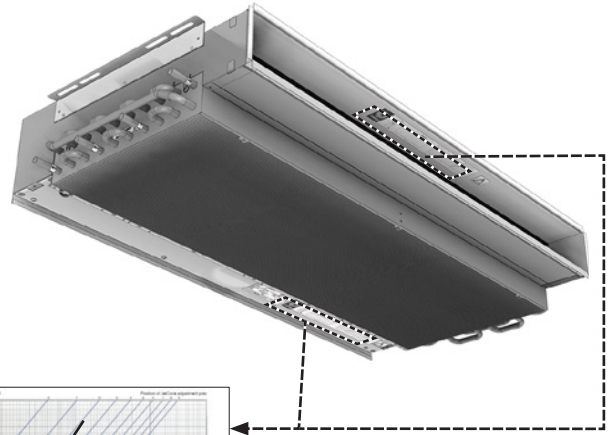
Munio

6.1.2 Finding values for JetCone pins

Example: Munio-I-1000-12-125-A6-72-20

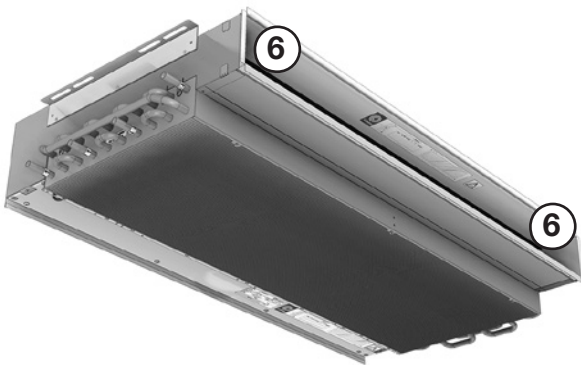
$$\Delta p_{stat} = 72 \text{ Pa}$$

$$q_a = 20 \text{ l/s}$$

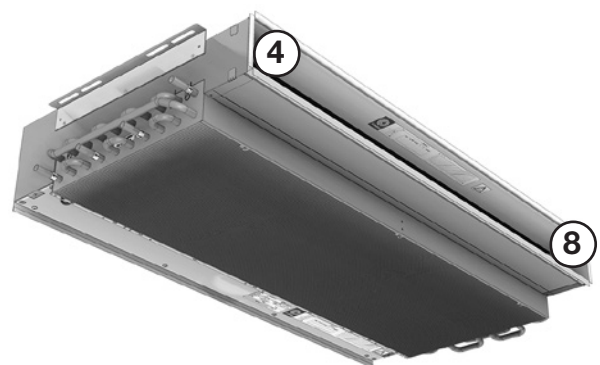


6.1.3 Adjusting air flow and pressure with JetCone pins

Symmetric adjustment



Asymmetric adjustment



Symmetric adjustment of Jetcones, position 6 read from diagram.

Asymmetric adjustment of Jetcones, position 4 and 8. Keep average value as read in diagram (=6).

Installation instruction

Munio

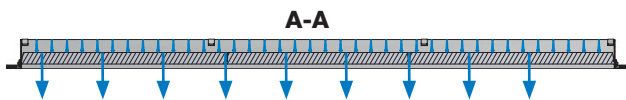
6.2 Adjustment of air distribution profile

6.2.1 Adjustment of outlet grille vertical directional bars.

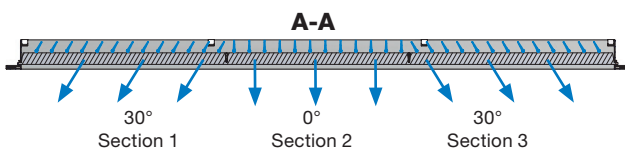
AD21CN-M



AL21CN-M



All vertical directional bars in neutral position (0°).

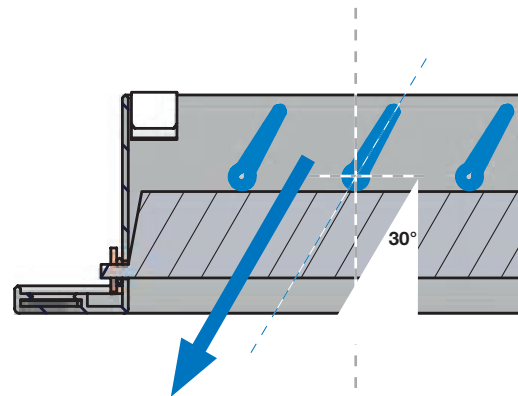


All vertical directional bars in sections (30° - 0° - 30°).

6.2.2 Adjustment of outlet grille horizontal directional bars.

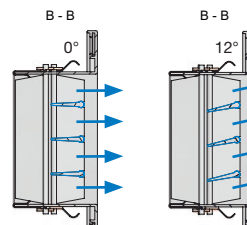
Outlet grille	Vertical adjustment	Horizontal adjustment
AD21CN-M	YES	YES
AL21CN-M	YES	NO

Table 5. Adjustment of outlet grille directional bars.



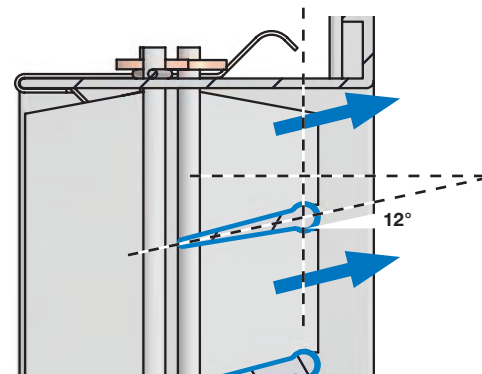
Adjustment of air distribution profile.

Use a triangle or create your own guide for alignment.

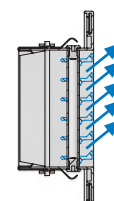


NB! We recommend a maximum horizontal deflection of the front outlet grille AD21CN-M about 15°!

Horizontal directional bars in neutral position (0°) and deflection of 12°.



Use a triangle or create your own guide for alignment.



AL21CN-M (15°) with fixed horizontal bars.

Installation instruction

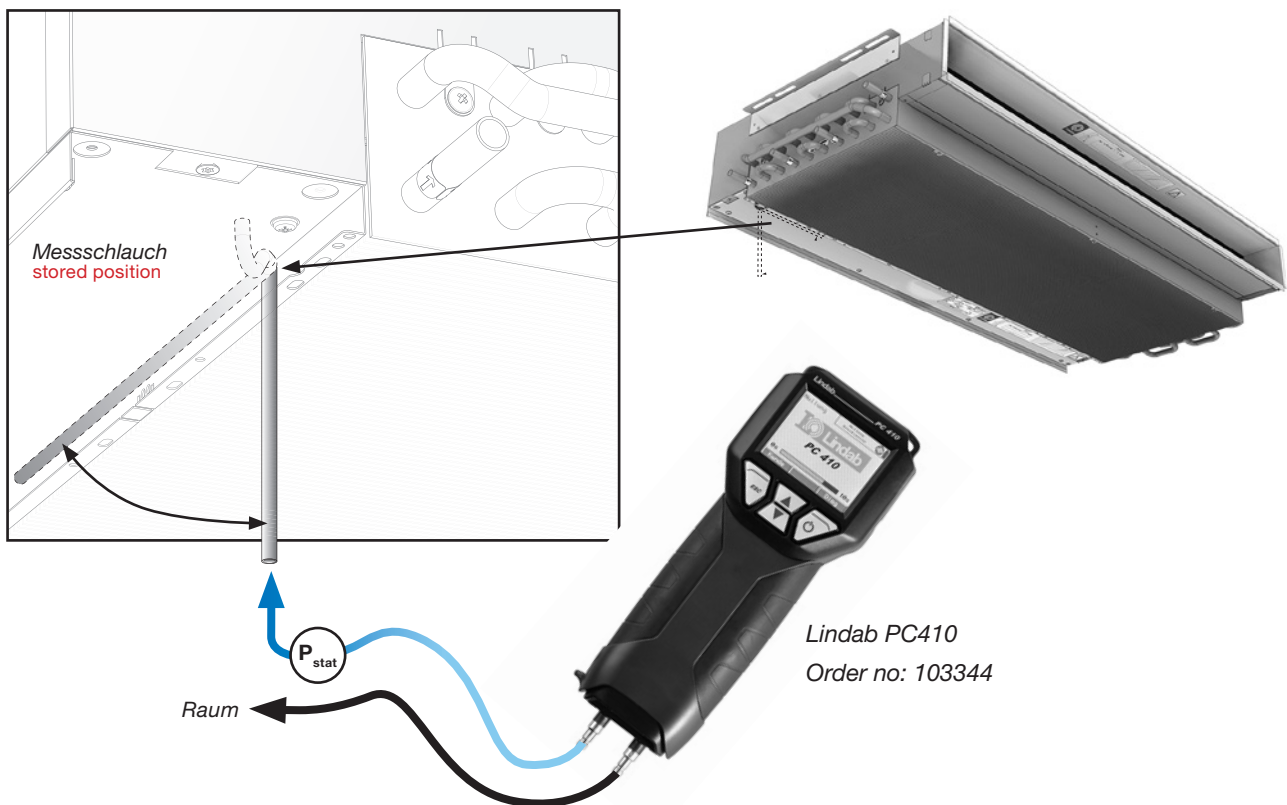
Munio

6.3 Measuring air pressure and calculating the air flow

Before calculating the airflow, 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

- To measure the air pressure, a manometer, (analogue or digital) will be needed. Lindab recommends PC410.
- Insert the measuring tube onto the specialized measuring nozzle.
- Read of the static nozzle pressure from the manometer (PC410).



6.3.2 Calculating the actual air flow

- After measuring the static pressure, read the settings of the two JetCone adjustment pins to find the mean value of the pins.
- Locate the diagram inside the telescopic extension piece or on the inspection hatch, (also see next page), and use the static nozzle pressure and the mean value of the pins to find the current airflow.

6.3.3 Changing the actual air flow

- Measure the static nozzle pressure.
- Locate the air pressure/airflow diagram inside the telescopic extension piece or on the inspection hatch. (You can also see diagrams on next page).
- Find the mean value of the 2 pins to reach the desired airflow, in the diagram. Use the static nozzle pressure and the desired airflow to find the mean value of the two pins.
- Adjust the two pins in the Munio, so the mean value of the pins will correspond with the mean value found in the diagram.
- Example: pin setting: $5 + 7 = 12 / 2 = 6$

6.3.4 Changing the air distribution profile

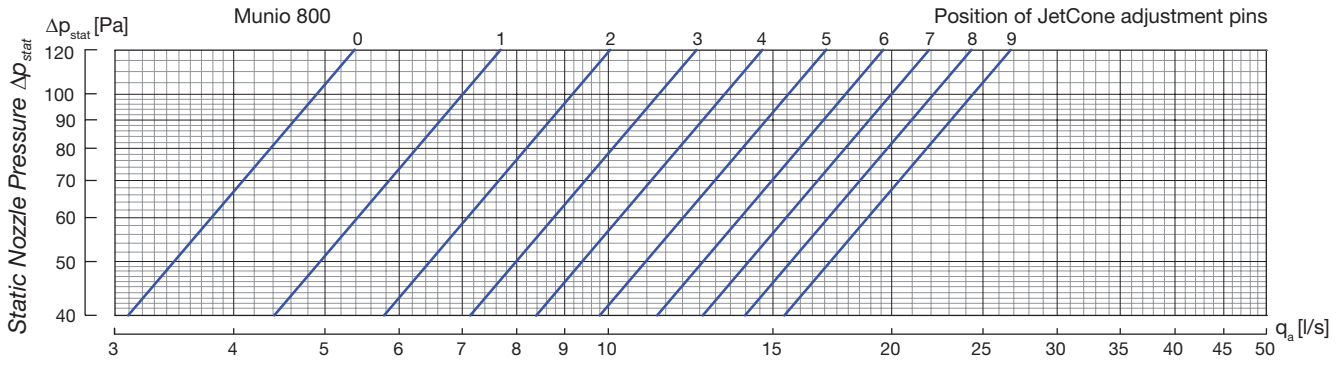
See 6.2

Installation instruction

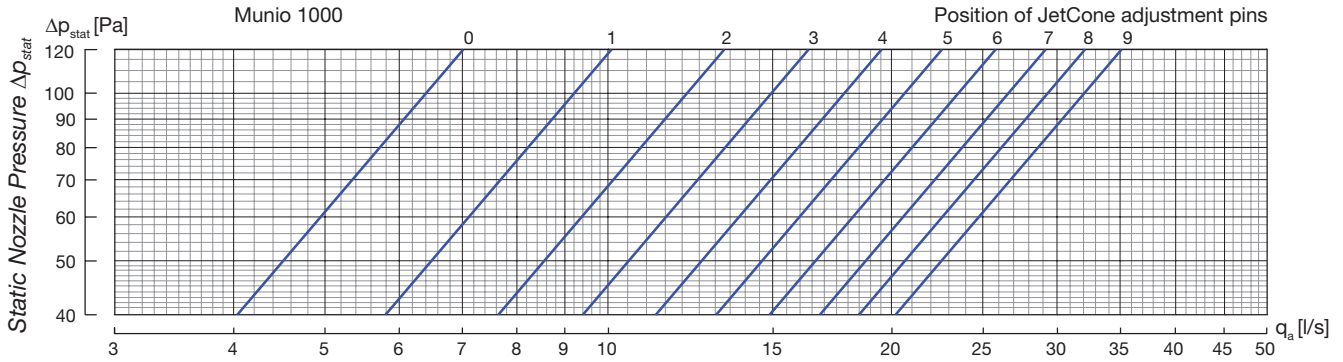
Munio

6.3.5 Munio pressure / airflow diagrams

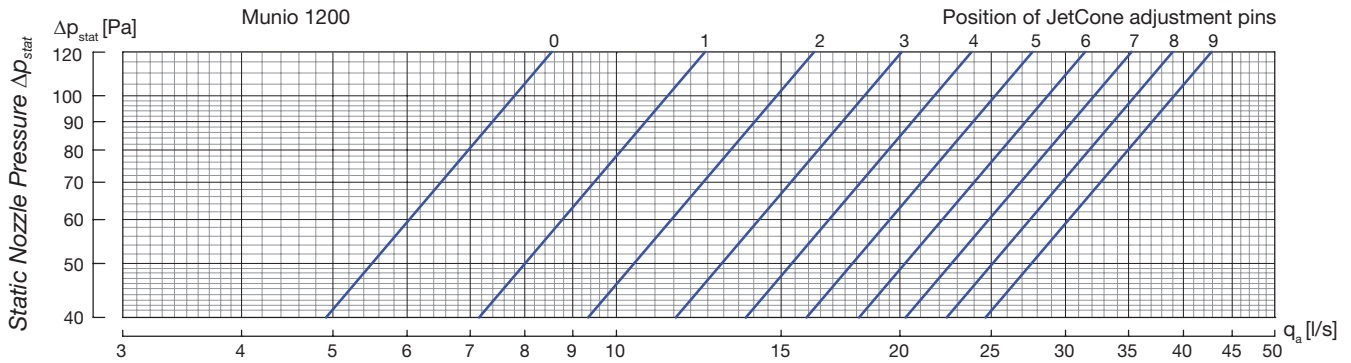
Munio 800



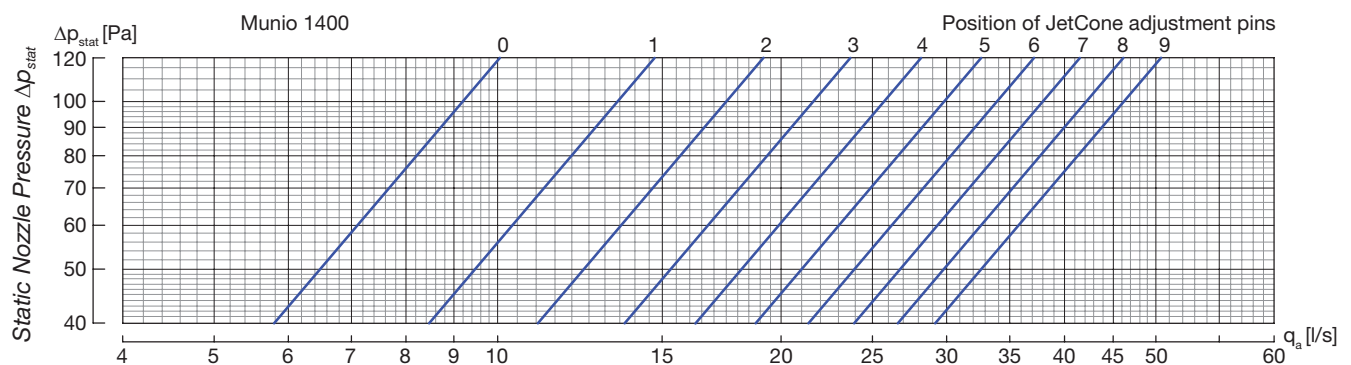
Munio 1000



Munio 1200



Munio 1400



Installation instruction

Munio

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](#)).

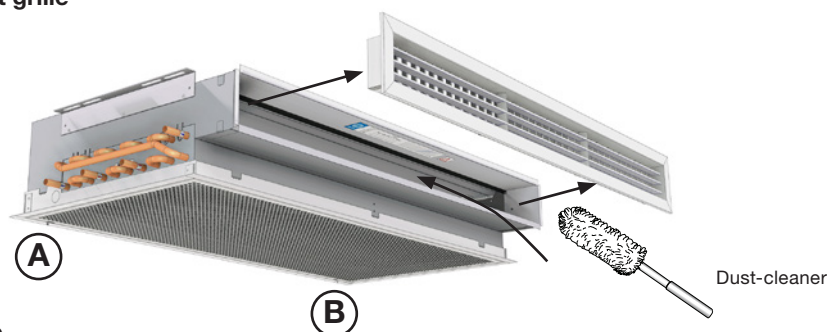
Lindab refers to the proportional method, where all beams (panels or facade units) are balanced to the same proportion of the requested water flow rate.

7. Maintenance

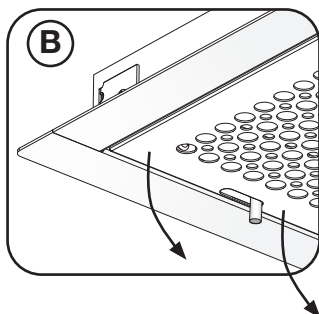
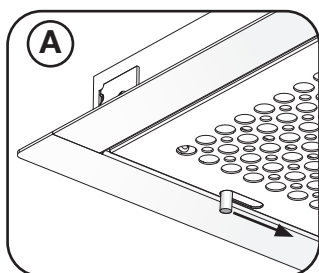
The interval of cleaning depends on the indoor environment where the beam is placed. Under optimal conditions the beams only need cleaning every 5 years.

- Remove the outlet front grille (7.1).
- Clean the top side of the battery and the mixing chamber with a vacuum cleaner.
- Open the inlet face plate (7.2).
- Clean the battery downside and the inlet faceplate inner part with a vacuum cleaner.
- Only use lukewarm water and a mild detergent and a piece of wet cloth to clean the inlet face plate and the outlet grille.
- Open the inspection hatch behind the inlet faceplate (7.3).
- Clean the air plenum and air connection with a vacuum cleaner.

7.1 Remove the outlet front grille



7.2 Open inlet faceplate

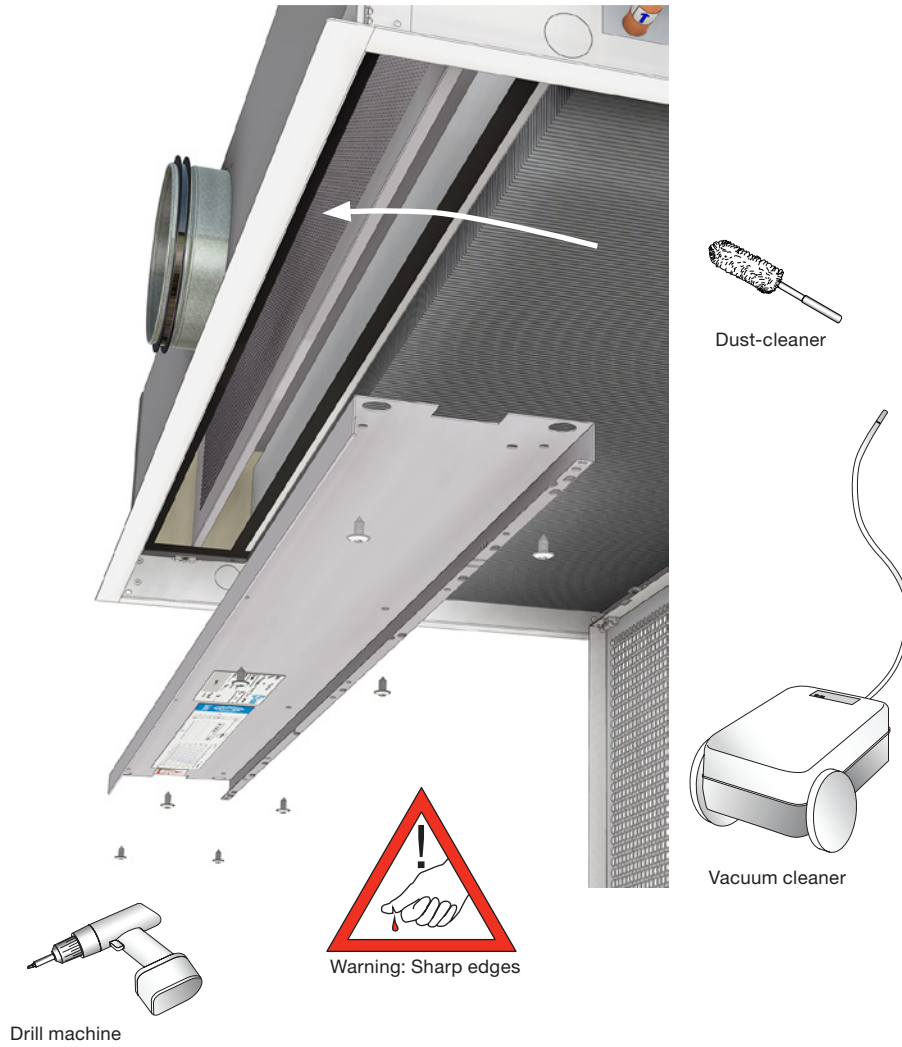


Opening outlet front grille and inlet faceplate.

Installation instruction

Munio

7.3 Opening inspection hatch



Installation instruction

Munio

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 - 1m, non-halogen cable	684601
Actuator A 41405 24 V on/off NO - 1m, non-halogen cable	684603
Actuator APR 40405 0-10 V mod. NC, 1m, non-halogen cable	684667
Actuator APR 40405 0-10 V mod. NC, 1m, cable	684604
AD21CN-M	***
AL21CN-M	***
Ballofix Broen 12mm with handle - shut-off valve	642663
Ballofix Broen 12mm without handle - shut-off valve	642662
Copper insert 12x1,0mm	884022
Flexible hose O2stopp_DN10 0,4m - JG12 push - JG12 push	686566
Flexible hose O2stopp_DN10 0,4m - JG12 push - straight end 12 mm	175984
Lindab PC 410	103344
Pendulum 180-300mm	642480
Pendulum 540-1000mm	646742
Regula Combi see: "Accessories"	**
Regula Connect Card Basic	*/**
Regula Connect Card Multi	*/**
Regula Secura	**
Aerator 12mm - tectite	647690
Tectite angle 12mm	884014
Tectite straight 12mm	884050
Tectite demounting tool 12mm	884087
Tectite demounting tool 12mm small	646881
4 pcs Threaded rod M8 -100mm + 4 pcs z-brackets + 16 pcs screw nuts	on request
Touch-up paint RAL 9003 - 25 ml	174759
Touch-up paint RAL 9010 - 25 ml	642531
Transformer 24V AC output	*/**

Table 6. Accessories.

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

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

***see : "[AD21CN-M](#) and [AL21CN-M](#)"



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