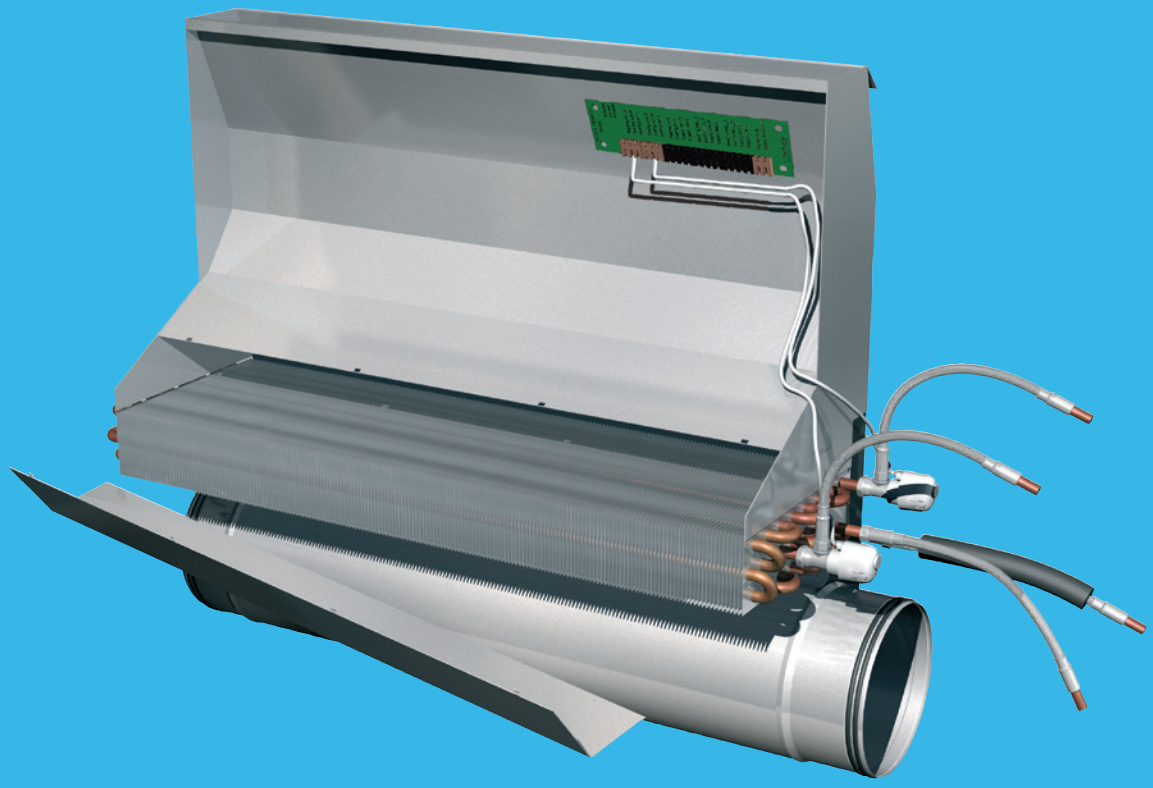

Lindab **Fasadium**

Service & Maintenance

Service & Maintenance Fasadium

1.0 Installation

1.1 Product description

Lindab's facade system Fasadium is an efficient system designed for ventilation, cooling and heating from the facade. Typical environments where Fasadium is used include, for example, schools, hospitals and offices. The Fasadium unit is placed at the building façade, preferably under a window sill.

1.2 Handling

The beam must be handled with care, ensuring that the beam does not sustain dents, scratches or bends during installation.

Always seek to lift the beam at multiple points.

- Do not lift in pipes.
- Do not lift in edges.
- Each beam is equipped with protective film to avoid any damage during transport and handling at building site. The film needs to be removed before commissioning the products.

1.3 Mounting instruction

- Please visit www.lindQST.com
-

- Select Documentation Finder
- Select "Fasadium"
- Select "Mounting"

1.4 Air connection installation

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

1.5 Connection description water

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.

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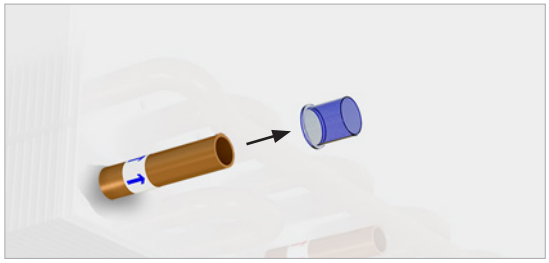
1.5.1 Before installation

Notice! The connection pipes are internally soft-welded, therefore it is not allowed to solder the beam to the pipes.

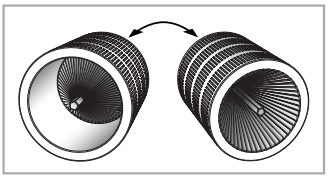
For other than Lindab fittings and valves, please consult the installation guide for the specific fitting for further details on proper installation.

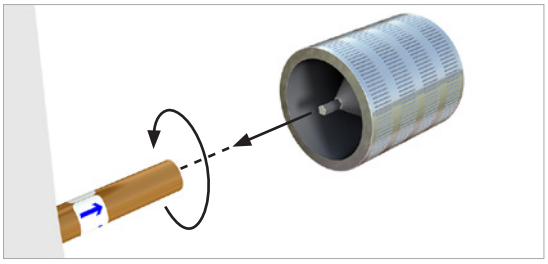
Both inlet- and return pipes are covered by a plastic or rubber protection cover, which must be removed before installation.

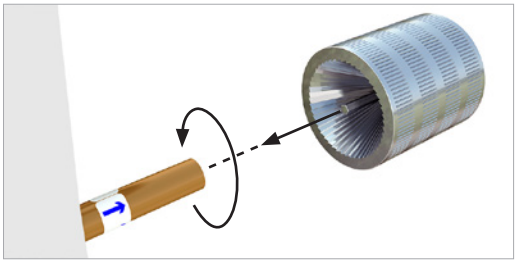


After removing the protection cover, make sure that the pipe is intact and undamaged, especially at the pipe end, as even small dents and scratches potentially pose a risk of leakage in the system.

Eventually deburr the pipe ends on the inside and the outside, using a deburring tool before installation.







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

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1.5.2 Push-on valve

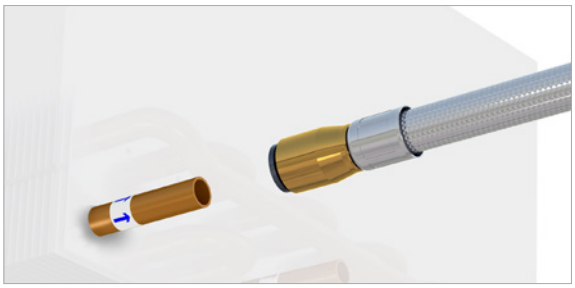
Mount a push-on valve to the pipe. Make sure the valve has the correct flow direction (see indication arrow on the valve) and that you have the correct valve, when integrated valve has been chosen (see indication on valve or follow cabelling to Regula Connect card). Cooper inserts aren't required !
Please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

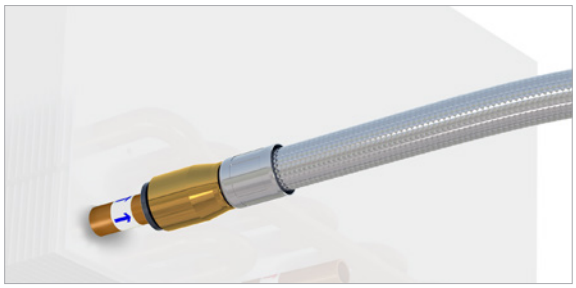
1.5.3 Compression fitting

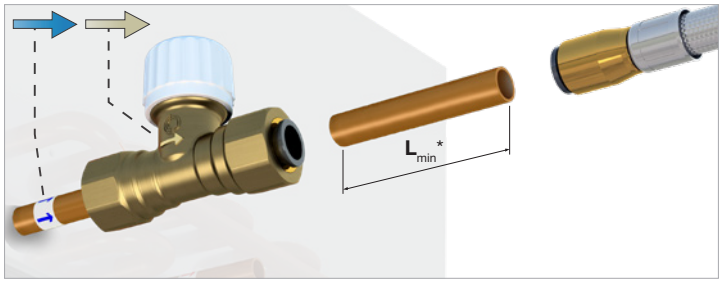
While mounting a compression fitting, the pipe will be exposed to a big amount of force, creating a risk of crushing the pipe. To ensure that the pipe won't be crushed when mounting the compression fitting, a copper insert must be inserted into the pipe (always part of the delivery).
The copper insert 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.

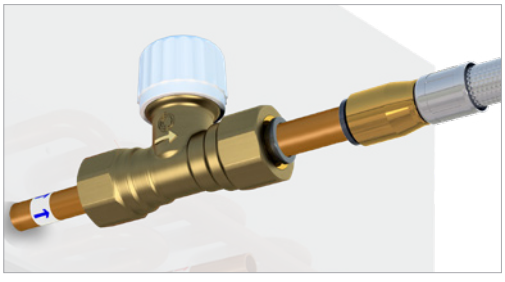
1.5.4 Flexible hoses

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 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.

2.0 Commissioning

2.1 Product labeling

Fig.1: Label location exterior (water connection).

On the label you'll find:

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

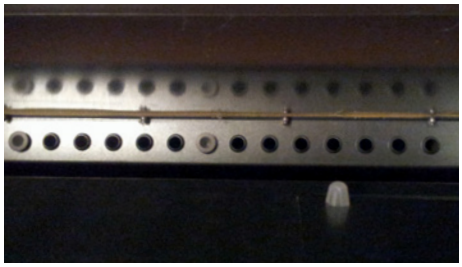
2.2 Measure air pressure and calculating the airflow.

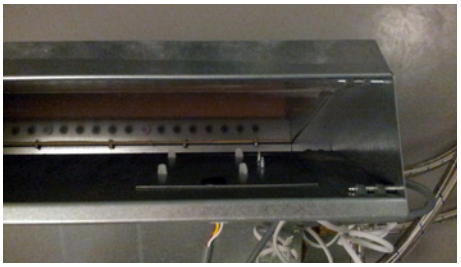
Before calculating the airflow, the static nozzle pressure must first be measured. The static nozzle pressure is the air pressure available at the nozzles.

2.2.1 Measure the static nozzle pressure.

- To measure the air pressure, a manometer, analog or digital (such as the Lindab PC410) will be needed.

- Insert the measuring tube into any of the nozzles.





- Read off the static nozzle pressure from the manometer

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2.2.2 Calculating the airflow

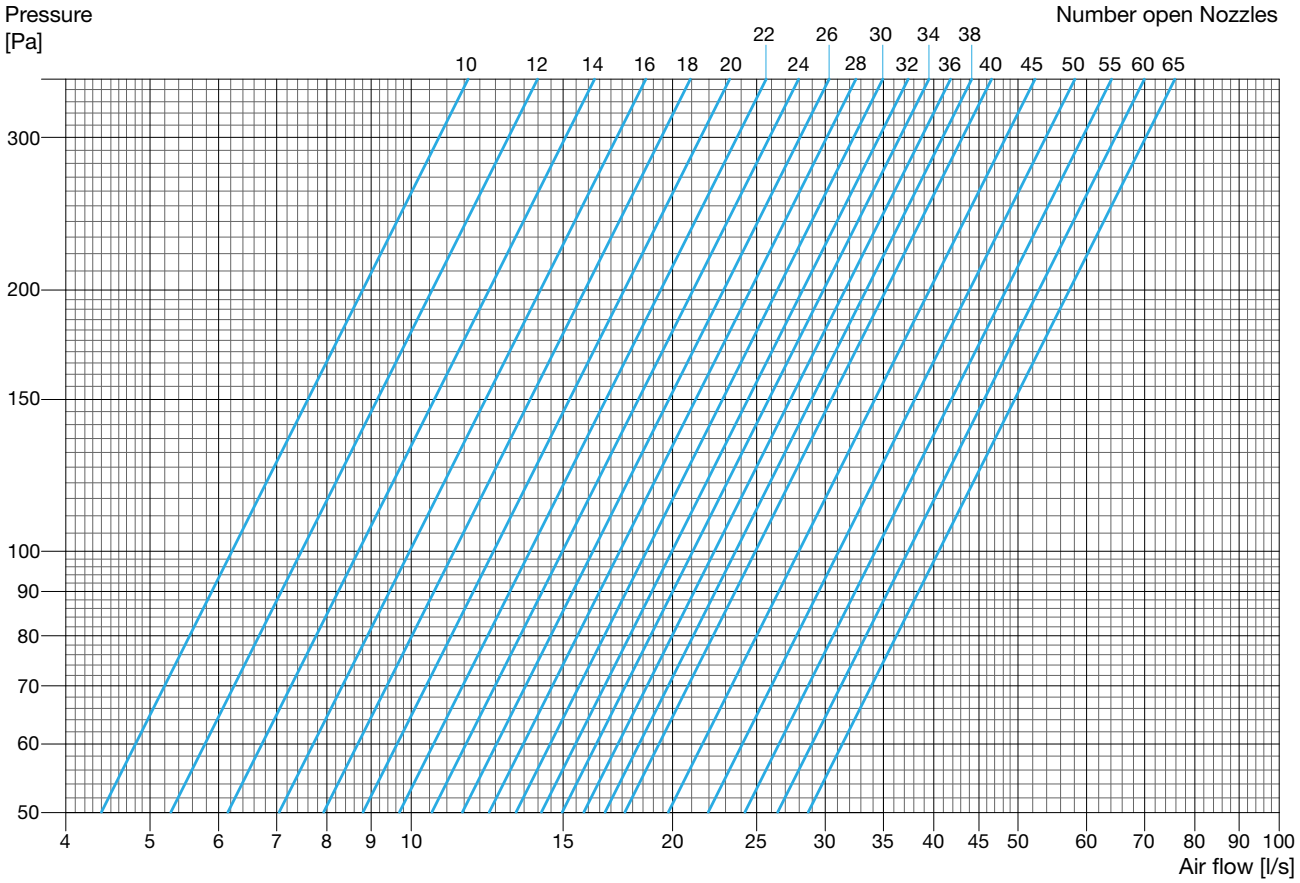
– After measuring the static nozzle pressure, calculate the air flow per nozzle:

q = 0.0622·√P
q = air flow per nozzle
P = static nozzle pressure

– After finding the air flow per nozzle, find the needed number of open nozzles:

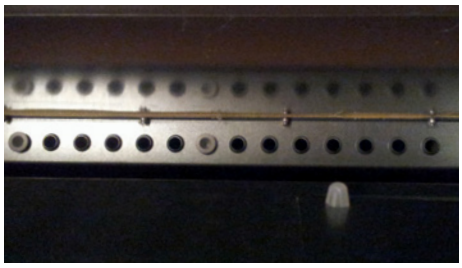
$q_{tot}/q = n_{open}$
q_{tot} = total air flow
n_{open} = open nozzles

– Alternatively, read off the needed number of nozzles in the diagram below.



2.3 Changing the airflow

- Measure the static nozzle pressure.
- Calculate the needed number of nozzles to be plugged, in order to reach the desired airflow at the available air pressure, as see the diagram above.
- Plug or unplug nozzles to reach the desired air flow. Using the Lindab Fasadium plug-tool.
- Dividing the plugs evenly, will result in an even air spread.



3.0 Maintenance

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

Under optimal conditions the Fasadium beams only need cleaning every 5 years.

3.1 Cleaning instructions

- Remove the battery ocver plate.
- Clean underneath the battery and inside the air dispersal duct with a vacuum cleaner and a piece of wet cloth.
- Only use lukewarm water and a mild detergent.

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4.0 Product and system specification

4.1 Material data

	Fasadium 600	Fasadium 700	Fasadium 800	Fasadium 1000	Fasadium 1200	Fasadium 1500
Dry weight, kg/m, Ø100 duct	6.6	7.5	8.5	11.3	13.7	17.0
Dry weight, kg/m, Ø160 duct	7.0	8.0	9.0	12.0	14.5	18.0
Dry weight, kg/m, Ø200 duct	7.6	8.5	9.5	12.7	15.3	19.0
Water content, cooling, l.	0.57	0.17	0.83	1.15	1.42	1.83
Water content, heating, l.	0.13	0.16	0.18	0.10	0.13	0.16
Copper pipes, quality	EN 12735-2 CU-DHP					
Pressure class	PN10					

4.2 Environmental declaration

Please follow the links below

- Building product declaration
- Declaration of conformity
- Eurovent certificate

4.3 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 PN10 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.

4.4 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 circuit*s".

– 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

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/m^3	< 1.5
Iron	g/m^3	< 0.5
Copper, zinc, aluminium	g/m^3	< 0.2
TOC of the untreated water	g/m^3	< 25
Oxygen	mg/l	< 0.1

– *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.

– 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.

4.5 Capacity test

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

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