



Carat

Service & maintenance



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Carat

1.0 Installation

1.1 Product description

Lindab's chilled beam Carat is placed above a perforated suspended ceiling and supplies cooling, with a low air velocity, to the room below. Carat has a high radiation quotient of approx. 35% (compared to approx. 5% for traditional finned products).

This gives great freedom in placing, when installing Carat, yet keeps air velocities low. Carat can be used for cooling. It can be equipped with the Regula Connect condensation guard feature. It offers many possibilities and great flexibility. For example, it is possible to paint Carat any color you want.

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 "Carat"
- Select "Mounting"

1.4 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](#).

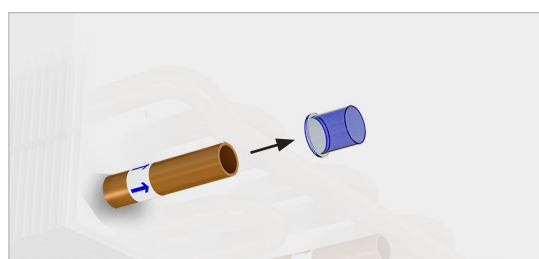
Service & maintenance

Carat

1.4.1 Before installation

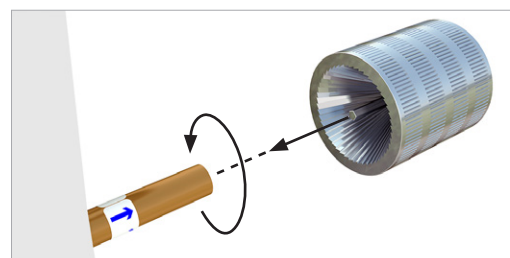
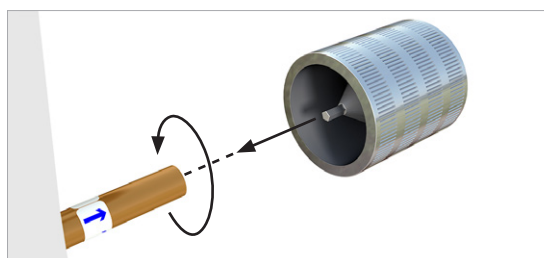
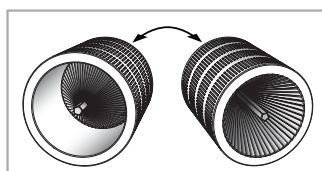
Notice! The connection pipes are internally soft-welded, therefore it is not allowed to solder the beam to the pipes. For other than Lindab fittings and valves, please consult the installation guide for the specific fitting for further details on proper installation.

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.

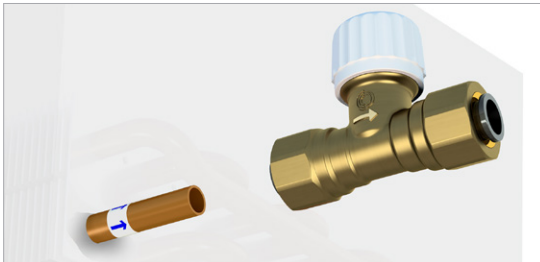
Service & maintenance

Carat

1.4.2 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.



1.4.3 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.

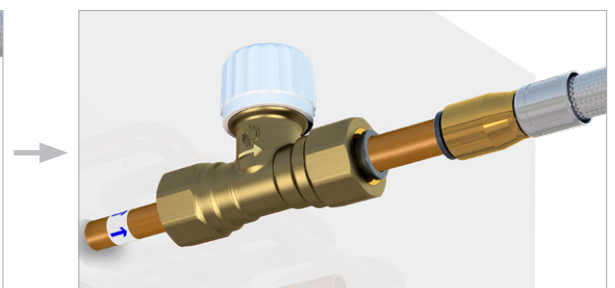
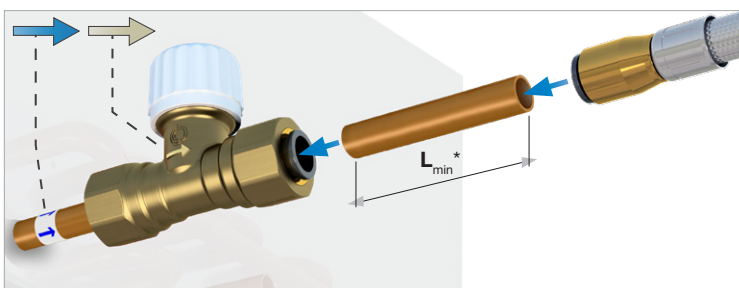
1.4.4 Flexible hoses

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.

Service & maintenance

Carat

2.0 Commissioning

2.1 Product labeling

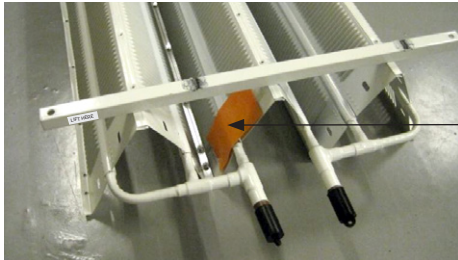


Fig.1: Label location exterior (Above water connection)

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.

Service & maintenance

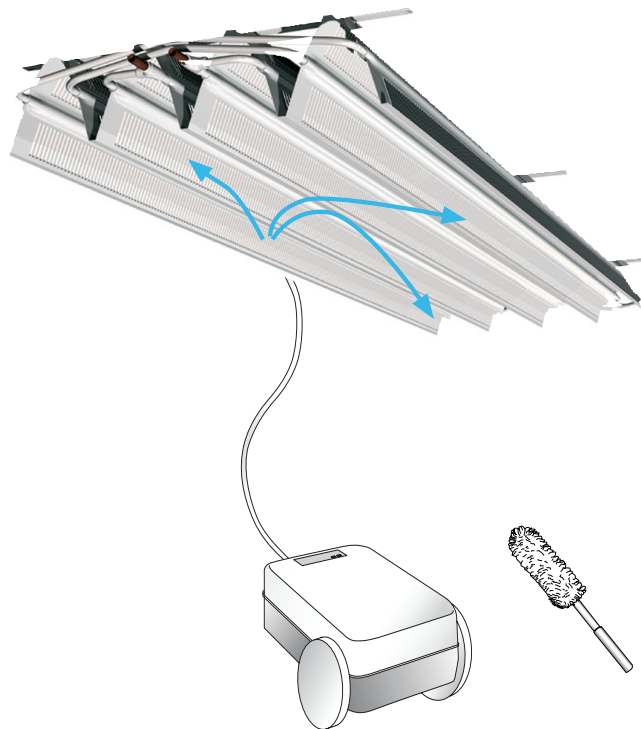
Carat

3.0 Maintenance

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

3.1 Cleaning instructions

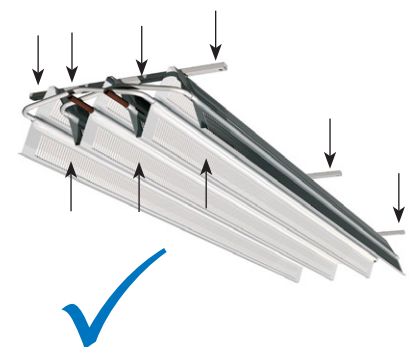
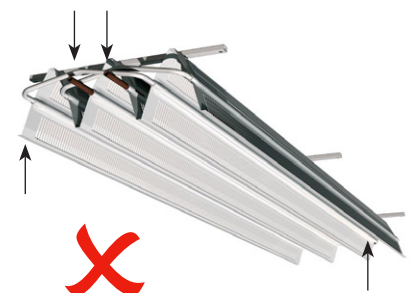
- Only use lukewarm water and a mild detergent.
- When cleaning from above, the ceiling plate next to the panel must be removed - then it will be possible to clean the panel from above.



Handling

NEVER handle the product from the extreme edges or from the pipe tails.

ALWAYS handle the product from either the suspension bar, the pipe manifold or the bottom of the 'A' profile. Take care not to damage cooling fins or pipe tails.



Service & maintenance

Carat

4.0 Product and system specification

4.1 Material data

	Carat 31	Carat 44	Carat 58	Carat 71	Carat 84
Dry weight, kg/m	1.7	2.5	3.3	4.2	5.0
Water content, l/m	0.4	0.5	0.7	0.9	1.06
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 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

	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 passive chilled beams are tested according to EN-14518.



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Support

UK - Here you can find product updates/mounting instructions and support telephone number/mail.

www.lindab.com

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www.lindab.dk

Ret til ændringer forbeholdes.

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www.lindab.se

Rätt till ändringar förbehålles.

FI - Täältä löydät uusimmat tuotetiedot ja asennusohjeet sekä tuotetuen yhteystiedot.

www.lindab.fi

Oikeus muutoksiin pidätetään.

DE - Hier finden Sie aktuelle Produktinformationen/ Montageanleitungen und Telefonnummer/ E-Mail-Adressen der Ansprechpartner.

www.lindab.de

Änderungen vorbehalten.

IT - Qui potete trovare istruzioni di montaggio, informazioni sul prodotto ed un supporto tecnico qualificato
Tel. 011 9952099 - e-mail: lindab@lindab.it

www.lindab.it

Soggetto a modifica senza obbligo di preavviso.

FR - Vous trouverez les fiches produits ou de montage actualisées ainsi que les coordonnées du support téléphonique à l'adresse suivante :

www.lindab.fr

Toutes modifications réservées.

Do you have trouble finding your local contacts please go to:

www.lindab.com

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