



tt coil as

Cooling- and Heating Coils



User's Guide



Cooling- and Heating Coils

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Cooling- and Heating Coils

PRODUCT DEFINITION

Fin & Tube heat exchangers will be referred to as "coil" in the following text.

Product code indicates the following type of coil:

- HW = Hot Water (Heating coil)→ for air heating with hot water/glycol.
- CW = Chilled Water (Cooling coil).....→ for air cooling with cold water/glycol.
- SW = Superheated Water (Heating coil).....→ for air heating with superheated water.
- ST = Steam (Heating coil).....→ for air heating with steam.
- DX = Direct Expansion (Cooling coil).....→ for air cooling with refrigerant.
- CD = Condenser (Heating coil).....→ for air heating with refrigerant.

RECEIVING THE GOODS

Inspect carefully for transport damage. Visible damage or deficiency should be notified to the carrier immediately and noted on the freight bill.

The carrier's representative should confirm the note with his signature. Damage which is not visible on delivery should be reported to the carrier as quickly as possible and within seven days.

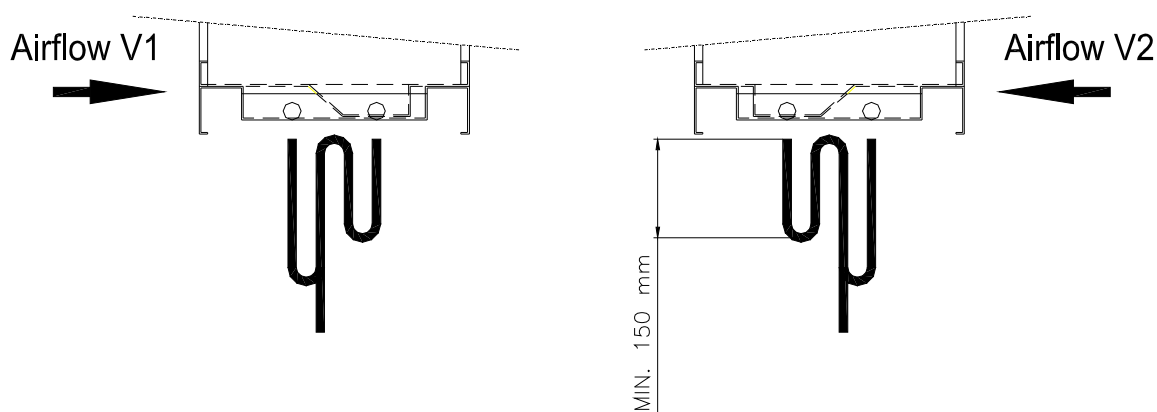


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INSTALLATION

Incorrect installation will reduce the coil's capacity and operational disturbances may result if the guidelines below are not followed. Installation may only be carried out by qualified personnel.

- During coil installation, follow the arrows indicating flow direction etc.
- On leaving the factory DX and CD coils are filled with a holding charge of nitrogen at 1 bar. Before installing, make sure that there are no leaks by ensuring that there is a positive pressure left in the coil. Other coil types should be visually inspected for leaks on tubes.
- It is very important that the airflow is passing through all parts of the finned area and air velocity distribution is uniform.
- All air flowing through the coil should be filtered.
- Air leaks and air passing outside the finned area should be avoided.
- When drilling in the frame, be aware of the position of the coil's internal tube in order to avoid leaks.
- Coil tubes must always be installed horizontally, except ST coils, on which the internal tube system must be installed vertically in order to lead the condensate towards the outlet header.
- HW, CW, SW and ST coils are as a standard delivered with thread connections. Alternatively, the coils can be delivered with welded or threaded flanges.
- When tightening the threaded headers, always use torque opposite tightening direction to avoid damaging the tubes.
- DX and CD coils are as a standard delivered with brazed- or welded tube connections.
- When the coil is connected to the tube system, care must be taken to prevent any undue strain from the weight of pipe-work or thermal expansion forces from over-stressing the coil.
- Care should be taken when handling the distributor and leads to avoid undue distortion, resulting in capacity degradation.
- Connection of headers to the external pipeline should be via proper refrigeration/pipe fittings or via welding or brazing, depending upon the coil material. Excessive use of heat during this procedure may adversely affect coil integrity.
- The headers of the coil must be allowed to move following thermal expansion and thus the pipe-work must be installed to accommodate movement.
- DX and CW coils may be fitted with a drip tray with 2 drain chambers. Please follow drain trap installation instructions below.





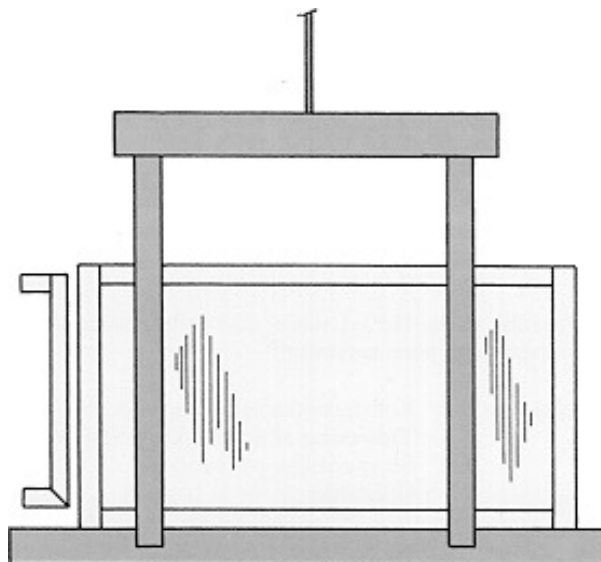
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Lifting and Handling

Coils that cannot be lifted by hand are normally equipped with holes for easy lifting with shackles. Extremely large coils can be delivered without holes for lifting with shackles and must be lifted with straps and a lifting yoke. Care should be taken to avoid damaging the unit whilst being moved into its final location. Large coils should be laid down during storage, or at least secured against overturn.

THE COIL CASEWORK HAS SHARP EDGES - USE GLOVES!

Lifting instructions



- Always be careful when lifting the coil.
- Attach lifting tackle to lifting lugs when these are fitted. Do not attach to the headers.
- Place the coil upon a pallet and attach lifting shackles to this. Use an equal number of shackles in order to keep the coil balanced when lifting.
- Do not allow headers or return bends to carry any weight.
- Protect the frame in order to avoid deformation.



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MAINTENANCE

It is important to regularly inspect the coil for leaks, damage or operational disturbances. No repair work is to be carried out within the warranty period without prior acceptance of **tt coil as**.

The performance of the coil is dependent on the presence of the stated temperature- and air-conditions. (Values for air inlet temperature and air velocity are stated on the thermodynamic calculation sheet.)

The following should be checked:

- Corrosion damage on casework, headers, tubes and fins
- Build-up of dust and debris on the fins
- Outside damage and air leaks
- Obstructions in drip tray, siphon or drain

Corrosion damage to casework, headers, tubes or fins can be caused by corrosive atmosphere, deposits causing acids or refrigerant leaking from the coil.

Excess water in the drip tray indicates incorrect installation or obstruction in the drain system.

Dust deposits on the fins cannot be avoided even if the air filter is carefully cleaned. This will result in reduced thermal efficiency causing reduced heat transfer, increased air pressure drop and reduced airflow.

Cleaning of the fins can be accomplished by means of blowing with air or steam or by flushing or rinsing with water. When using high pressure flushing, care should be taken to avoid damage of the fins. Mechanical cleaning of the fins must not take place. Damage of the fins can be rectified by use of a special fin comb.

Leakage from tubes or bends can be caused by corrosion or abusive handling, mechanical damage or freeze up. If the leak is inside the fin block a repair tube can be conducted by inserting a new tube that is welded/brazed to the tube bend.

Please contact the installer/supplier or tt coil, if you need any further instructions.



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DRAINING PROCEDURE

During extended off-cycle periods where ambient temperatures could fall below the freezing point of the operating fluid, the heat exchangers must be completely drained or filled with suitable refrigerant.

To ensure complete drainage, it is important that the heat exchanger is positioned in the same way as it was installed during operation. It is important to ensure that any support structure is both stable and level.

Coil draining should proceed as follows:

1. All isolating/shut off valves on the inlet/outlet piping system of the coil must be firmly closed to shut off all liquid supply.
2. Fluid in- and outlet connections on the coil should be dismantled from the piping system, to isolate the coil from the unit. Following dismantling of fluid connections, fluid will flow freely from the coil. The fluid can be discharged into the surrounding areas or it can be collected in a container. We recommend the latter in order to monitor the discharged fluid and compare it with the internal volume of the coil (see technical data sheet for internal volume). By comparing the two it can be established when the coil is completely empty.
3. Free flow will not drain the coil completely. Connect compressed air to the topmost header of the coil to force any remaining fluid from the coil. We recommend an air pressure of 4-5 bar and a volume of 3 x the internal volume of the coil. As an alternative to the headers, drain plugs can be used if the coil is equipped with these.
4. When the fluid stops flowing from the bottommost header of the coil, shut off the air supply in order to allow any remaining fluid to disperse in the cooler.
5. Repeat steps 3 and 4 until fluid flow ceases.

Depending on the piping and the internal circuits of the coil, it can be very hard to empty it 100%. ttc recommend filling the heat exchanger with a suitable refrigerant during long periods of standstill.

FILLING PROCEDURE

The coil should be filled with a suitable operating fluid through the lowermost header of the coil.

While the system is at ambient conditions, add sufficient fluid to the coil and/or system until it can be seen venting from all air vents, i.e. any trapped air has been eliminated from the system. Close all air vents, start pump and activate system.

When the system has reached working temperature, stop the pump and bleed all air vents of any residual air.

Depending on the system and/or fluid characteristics associated with air retention, this procedure may need to be repeated several times.



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SAFETY

HW, CW, SW, ST, DX and CD coils have no rotating or movable parts that can damage persons or equipment. They have sharp edges and should be kept in their original wooden crate until installation. During storage, large coils should always be secured against overturn.

All installations must be carried out in accordance with the instructions and only by qualified personnel.

The coil must be protected against pressures that exceed the design value by approved safety devices such as safety valves.

Besides sharp edges, the coil can have hot or very cold headers, tubes and casework. These surfaces must be covered, insulated or protected to avoid contact by unauthorized personnel.

Under no circumstances should the coil be used for other types of applications or with other types of refrigerant than designed for without approval from **tt coil as**. Use of other refrigerants may be incompatible with the coil material and lead to corrosion resulting in coil damage.

Refrigerants are harmful to the environment and in many cases toxic and flammable. If any leaks are observed, please contact qualified service personnel immediately.

Please contact **tt coil as** or their agent/distributor, if you have any questions regarding the safety of the product.