



① Steam Coils
Instructions for Installation, Operation and maintenance

Description

General

The coil is built of copper tubes and aluminium fins. The profiled fins with staggered tubes have been developed for the effective and economic heat transfer between the circulating medium and the air. The finned coil body is fabricated of tubes mechanically expanded to the fins. The fins are manufactured as plates without slots, to prevent dust and fibres from being caught in the finned coil body.

The casing is made of galvanized sheet steel, as standard, and conforms to air tightness Class B in accordance with Swedish Standard VVS AMA 98. The inlet header (steam) is made of steel and is painted with anti-corrosion paint. The outlet header on the outlet side (condensate) is made of copper.

Coils weighting more than 25 kg are equipped with lifting lugs.

Labelling

The rating plate is on the connection side of the steam coil and indicates the following:

- Manufacturer.
- Order number.
- Year of manufacture.
- Max. permissible working temperature (MWT).
- Max. permissible working pressure (MWP).
- Test pressure.
- Dry weight.
- Internal volume

Quality System

Coiltech is certificated in accordance with the provisions of Quality Assurance System ISO 9001 and Environmental Management System ISO 14001.

Safety Precautions and Warnings

Handling and Maintenance

Read all the instructions before you handle, install or do any maintenance work on the product.

Permit only trained persons who have knowledge of the product and appropriate safety precautions to carry out any work on the heat exchanger.

Lifting

Particulars of the dry weight of the coil are specified on the rating plate located on the connection side of the heat exchanger.

Use a crane to lift the coil using its lifting lugs as shown on the label by one of the lifting lugs.

Before lifting the coil:

- Check that the lifting lugs are well tightened and are not damaged.

- Check that correct lifting equipment is used and that the lifting hooks are of the right size to fit the lifting lugs.

Operating Pressure

The steam temperature must not exceed the maximum permissible working temperature MWT (°C) and the steam coil must only be used in a system that is rated for the maximum permissible working pressure MWP (MPa) specified on the rating plate on the heat exchanger.

Connections

The pipe couplings of the heat exchanger must not be forced to carry the dead weight of the piping system. Nor must they be forced to take up the expansion forces of the piping system.

The heat exchanger must be connected in such a way that it can expand freely upwards in response to temperature changes.

The connections must be protected against impact, external loads and mechanical stress.

Caution! Mechanical loads and impacts may damage the internal pipes of the heat exchanger.

Protection against freezing

Ensure that appropriate measures have been taken to prevent freezing, before commissioning the steam heat exchanger.

Cleaning

Only use environmentally acceptable cleaning agents that do not damage the heat exchanger.

High temperatures

When the heat exchanger is in operation, the various parts may be hot. This includes manifolds and casing. The drying air leaving the heat exchanger may also be quite hot.

Wear suitable protective gloves when touching any part of the heat exchanger.

Steam purity

The pH value of the steam should be between 8.8 and 9.2. The amount of oxygen (O₂) contained in the steam must not exceed 0,01 mg/kg and the amount of ammonia(NH₃) must not exceed 0,3 mg/kg.

Caution

During the installation of the heat exchangers that use steam as heating medium, caution must be applied

when ventilation valves and closing valves in the system are opened. If not, severe damage may be caused by pressure hammering or by escaping steam. Coiltech is not responsible for the connection of the heat exchanger to the heat system, and assumes no responsibility for damages caused by incorrect planning, installation or maintenance of the system.

Installation

Transport

Check that the coil hasn't been damaged during transport or while being unloaded. It is especially important to check the condition of the fins on the coil surface, lifting lugs, headers and the tube bends on the backside of the coil.

If transport damage is discovered, this must be reported to the shipper and to Coiltech. Also write a complaint on the consignment note.

Mounting

The coil shall be firmly secured at its location. DN25 to DN80 nom. pipe size connections are provided with a flange.

To avoid subjecting the accessories and coil to the dead-weight of the pipework and expansion forces, the piping should be arranged as close as possible to the coil.

Regulation

In the case of heaters connected in series, and where the temperature of the entering air may be sub zero, the first air heater should operate at full steam, while the second air heater is regulated. Regulation of the first air heater will only increase the risk of the coils freezing up.

Positioning

Steam coils are normally designed for positioning in a horizontal airflow. They can also be installed for vertical airflow provided that they pitch downward towards the condensate outlet.

Accessories and piping

The piping system should be pitched to ensure that the condensate build-up is drained off, and not admitted into the coil.

The return main should be pitched downward from the air heater.

All the accessories, which are part of the system, must be designed for steam or for condensate respectively. They should be sized for the pressure, temperature and flow for the installation concerned, and be connected according to the recommendations of the manufacturer.

Steam and return mains

As a rule, steam mains should be sized for high velocities. The steam should be dry. Humid steam leads to corrosion in the piping and may damage the air heaters and accessories through water hammer. The steam main should be drained of condensate upstream of the air heater and the accessories by means of a shunt valve. The take-off should be mounted as near to the air heater as possible and be designed to separate the steam from the condensate in the steam pipe.

If the return main is pitched higher than the condensate trap, the coil will operate at a static overpressure resulting from the w.g. height, and the pressure drop (i.e. resistance) in the condensate trap and/or other accessories. Consequently, this form of overhead return main should be avoided.

The steam and condensate pipes should be sized according to the recommended load and not according to the connection size of the air heater.

Dismantling

Whenever an air heater is to be dismantled and removed from a system, it is important that the air heater be emptied of liquid. Further particulars see the paragraph dealing with venting/drainage above.

Caution! Liquids that are hazardous to the environment shall be collected in a vessel and be handed over for deposition or recycling.

The coil must not be lifted before it has been emptied of liquid.

Maintenance and Service

General

The heat exchanger should be regularly inspected to prevent stoppages.

The following should be checked:

- Fasteners – Check that no supporting bolts are defective.
- Finned-tube body – Check that it isn't dirty or damaged.

Also check that there is steam pressure up to the air heaters (the boiler must have the correct steam pressure and all the valves must be open) and that the return main and venting function properly in the whole system. If one return main is faulty, it can affect all the return mains.

Cleaning

Not even an effective air filter can remove all the dust from the air.

Any dust deposits on the heat transfer surfaces will obstruct the airflow and impair the heat transfer. Coils must therefore be kept clean. Cleaning can suitably be carried out by any of the following methods or combinations of them.

1. Blowing with compressed air.
2. Blowing clean with steam. Caution! Not coils that contain evaporative refrigerant.
3. Hosing or flushing with water (max. permissible water temp. 40° C for coils that contain evaporative refrigerant). If the heating surfaces are coated with greasy dust, first spray the entire coil with environmentally compatible solvent under low pressure. Then clean the coil with water using a high-pressure jet after 10–12 minutes.

Caution! It is important to hold the nozzle perpendicular to the fins and not closer than 150 mm to prevent damaging the fins. Use a fin comb (accessory QLAZ-20) to straighten any deformed fins. The fin comb can be ordered from your local Fläkt representative or from Coiltech.

The finned-tube body must not contain any traces of solvent after cleaning as remaining solvent will bind new dust. After cleaning, remove all fallen dust before starting the fan.

Repair

Parts and materials recommended by Coiltech must be used in order for the guarantee to apply.



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