Coils for Liquids QMXF

EN

Instructions for installation, operation, and care

COILTECH

Description

General
The coil is built up of electro-galvanised steel tubes and plates made of steel sheet coated with zinc and aluminium. The coil is used to heat air using heat energy from the liquid supplied. The plates on the tubes give an increase in area on the outside which gives a balance in the heat transfer from the liquid to the air.

Markings
The rating plate is located on the side of the coil where the connections are and provides information about:
Manufacturer.
Order number.
Year of manufacture.
Maximum working temperature (MWT).
Maximum working pressure (MWP).
Test pressure.
Dry weight.
Internal volume.

Quality system
Coiltech AB is certified in accordance with the Quality Assurance System ISO 9001 and the Environmental Management System ISO 14001.

Design
The core of the coil is manufactured of tubes that are mechanically expanded against the plates.
To prevent dust and fibres fastening inside the core, the plates are made as whole plates with no slits. The casing is made of hot-dip galvanised steel sheet as standard and this fulfils leakage class B according to VVS AMA 98. The collection pipes are made of rust-protected painted steel.

Tubes:	Diam. 19.0 x 1.5 mm Electro-galv. SS 1330-05.
Plates:	Thickness 0.4 mm EN 10215-DX51D+AZ150
Collection pipes:	Pressure vessel steel SS 1432-31
Coil frame:	Thickness 2 mm EN 10142 Fe P02G

Safety instructions and warnings

Handling and care
Read the whole of these instructions before handling the product in any way. All work on the coil must be carried out by authorised personnel with a knowledge about the product and the applicable safety regulations.

Lifting
The dry weight of the coil is stated on the rating plate attached to the side of the coil with the connections. Before lifting the coil:
- Check that the lifting eyes are not damaged.
- Check that the correct type of lifting equipment is used and that the size of hooks is suitable for the lifting eyes.

Operational pressure
The liquid temperature must not exceed the maximum working temperature MWT (°C), and the coil may only be used in a system that is designed to operate at the maximum working pressure MWP (MPa) stated on the rating plate of the coil.

Connections
The coil's pipe connections must not be loaded by the own weight of the connecting pipe system. Furthermore, they must not be loaded by the expansion forces of the pipe system.
The connections must be protected against impact, external forces, and stresses.
N.B. Loads and impacts can cause damage to the tubes in the coil.

Protection against frost bursting
When there is a risk of freezing, one of the two following measures must be taken.
- The coil must be filled with a suitable antifreeze medium. The liquid volume of the coil is stated on the rating plate which is located on the side of the coil with the connections.
- All the water must be drained from the pipes and the coil. The plugs on the coil should not be fitted until the system is again refilled with water. Compressed air should be blown into the coil to ensure it is properly emptied from water.

Cleaning
Use only environmentally friendly detergents that cannot harm the coil.

High temperatures
When the coil is operational, certain parts can be hot, such as the collecting pipes and the casing. Even the outgoing air can be hot.

N.B.
On installations of the coil where the liquid medium is water and the water temperature can exceed 100 °C, great care must be exercised when opening vent valves and stop-cocks in the system. Serious personal injury can be caused by hot liquid or steam discharge.
Coiltech accepts no responsibility what-so-ever for the connection of batteries to a heating system nor for any injuries or damage that may occur due to incorrect project engineering, installation, or care of the system.
Piping, valves, etc. must be dimensioned with regard to pressure drop and function and not based on the coil connection dimensions.

Installation

Transport
Check that the coil is not damaged in any way after transport or unloading. Check in particular the coil's plate surfaces, lifting eyes, collection pipes, and the tube bends on the rear side of the coil.
Any transport damage must be reported immediately to the haulage contractor and to Coiltech. Make a note on the way-bill as well.

Mounting
The coil must be mounted so it is properly secured.
The pipe connections are equipped with thread connections for DN-32-50, the others are intended for welded connections. Flange connections can be supplied as an option.
The connecting piping must be fixed as close to the coil as possible to ensure that the coil and pipe fittings are off-loaded from the own weight of the piping and the expansion forces.

Inlet for heat carrier
The coil is normally equipped with signs to show how the water inlet and return pipes should be connected. If there are no such signs, the coil should be connected to the pipe system so that a counter-flow connection is achieved (i.e. the air and water flow in opposite directions, see Figure 1).

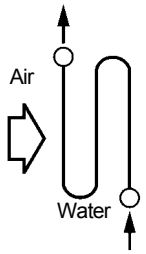

Figure 1. Counter-flow connection, diagrammatic sketch

Freezing protection
1. Freezing protection on the water side
   In cases when the coil is equipped with a nipple for attaching a sensor in one of the plate tubes, this possibility should be used in preference to freezing protection on the air side.
   If the sensor is positioned in or on the return pipe, it must be combined with a flow sensor that stops the fan, or alternatively closes the return air damper at the lowest allowable water flow.
2. Freezing protection on the air side
   Mechanical freeze protection thermostats should have a bulb as a sensing device. A long capillary tube is better in theory but poorer in practice due to the difficulty or unfeasibility of mounting it correctly.
   The sensor should be fitted along the second tube, from below, on the hot air side. If the capillary tube is too long, it should be coiled and the coil located close to the thermostat housing.
3. Thermostat that is not temperature compensated
   The thermostat housing must be located at a position where the temperature is higher than the intended tripping temperature. It must be fitted in the air stream if the room housing the coil is cold.

N.B. The coil casing is often cold because unheated air passes immediately inside the casing. If the thermostat housing is fitted on the coil casing, which is quite usual, it should be mounted with an insulator against the casing, made of fibreboard or a similar material.

Air-venting / Draining
The water coil collection pipes are equipped with an air venting nipple and a draining nipple.
The air must be properly vented from the system to ensure good functioning. When there is a risk of freezing, the coil should be completely drained, which is best done using compressed air.

Removal
When the coil is removed from a system, it is important that the water is drained from it. For more details, see the section above entitled Air-venting / Draining.
N.B. Environmentally hazardous liquids must be put into a vessel and sent for deposition or re-using.
The coil must not be lifted until the liquid has been drained.

Maintenance and service

General

The coil should be inspected regularly to prevent operational disturbances.
The following points should be checked:
- Attachment elements – Check that none of the load-carrying screw joints are defect.
- Plate core – Check that the core is not dirty or damaged.

Cleaning

Not even an efficient air filter can remove all the dust from the air. Dust coatings on the heat-transfer surfaces interfere with the air flow and reduce the heat transfer. The coil must be kept clean, which is suitably done by one of the alternatives described below or a combination of these.

1. Vacuum cleaning.
2. Blow with compress air in a direction opposite to the normal air flow.
3. Blow clean with steam in a direction opposite to the normal air flow.
4. Flushing or spraying with water, in a direction opposite to the normal air flow. If the heat transfer surfaces are greasy, spray the whole coil first with an environmentally friendly solvent at low pressure. Wait 10 to 12 minutes, then power-wash with water.

The water nozzle should be held at right angles to the plates and not closer than 150 mm.
The core must not contain any residue of the solvent after washing because this would only make new dust stick. After cleaning, remove any dust that has fallen down before starting the fan.

Measures in the event of risk for freezing

If the water in the coil freezes, the pipes can burst which means the water can run out of the system and cause water damage.
A risk of freezing can occur in a ventilation system at low ambient temperatures in the following cases:

1. The heating media has a high temperature – Risk of freezing particularly in the autumn and spring. Adjust the feed temperature to suit the ambient temperature.
2. Over-dimensioned coil – Lower the water temperature.
3. Heat supply stops or is reduced – Outdoor air inlet should be closed in a safe way and all fans should be switched off.

Freezing damage as in points 1 and 2 depends on too low water flow and uneven temperature distribution across the coil.
This can be avoided by equipping the core with its own circulation pump and circulation circuit.

N.B. Open the return air damper if the heat input stops or is reduced. There can be an under-pressure in the premises even if the fans have stopped. Outdoor air can thus be sucked in through the coil and cause freezing damage.
The anti-freezing protection thermostat must not be adjusted to so low a temperature that there is a risk of freezing.
If the building is to be unheated for a longer period during the winter, all the water must be drained from the pipes and from the coil. The plugs on the core should not be fitted until the system is to be refilled with water. Use compressed air to blow out the coil and ensure it is entirely empty.

Ensure that the temperature of the output water does not drop to an abnormal level and that the circulation is kept moving. The valves should be open, the pipe system and the coils should be well vented, and the circulation pump should be working, even if the heating is discontinued temporarily.

Repairs

Parts and materials suggested by Coiltech must be used to ensure the validity of the warranty terms.

Code key

Coil QMXF—d-4-aa-bb-c – 1 – ff - g

Plate pitch
2 = 2.5 mm
3 = 3 mm
4 = 4 mm

Length along the tubes

Width across the tubes (dm)

No. of tube rows
1,2,3,4,5,6

No. of liquid routes
1,2,3,4,5,6

Connection size
1 = 32
2 = 50
3 = 80
4 = 2*80
5 = 100

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