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CE

OWNER'S MANUAL

LIQUID CIRCULATION HEATERS

HOUSING DN 50

TYPES 10631.2 & 4 (NOT LAGGED)

TYPES 10641.2 & 4 (LAGGED)

1 DESCRIPTION :

These fluid circulation heaters comprise:

- housings (1, 2 or 4) of steel or stainless steel (depending on execution), with two-inch max. gas-taper tapped "inlet-outlet" sleeves.

- screw type immersion heater(s) (1, 2 or 4) of diameter M 45 x 200 with housing (remote or local, depending on operating temperatures and execution)

- a thermal safety system for the housing: depending on execution, arranged at the centre of the housing (output housing in the case of multi-housing models):

  - by means of a fixed 115°C thermostat
  - by means of an adjustable thermostat in the range 0-300°C, or 320/540°C (generally for gas or steam reheaters)
  - by means of a J or K thermocouple for certain applications.

  NOTE: The thermostat with a range of 0-300°C or 320/540°C is not mounted on unlagged, wrapped models (see section 3.2 for mounting details).

- lagging (mineral wool) with a painted sheet metal or galvanized jacket for type 10641.2 and 4 models.

2 TECHNICAL CHARACTERISTICS :

For further details, refer to our sales handbook "Liquid circulating heaters" and the relevant drawing (in the case of special manufacture).

3 ASSEMBLY AND ELECTRICAL CONNECTIONS :

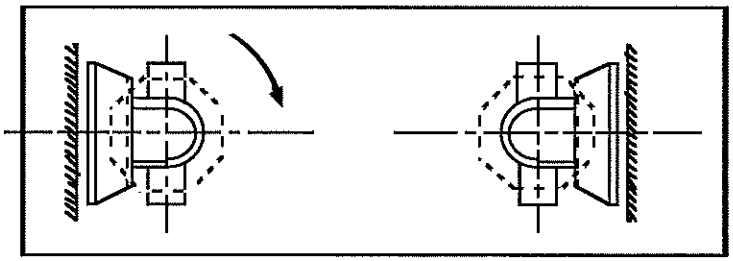
3.1 PRIOR TO INSTALLATION :

Check that :

- the constituent materials of the housings and immersion heaters and their load (W/cm2) are perfectly compatible with the fluids to be reheated as a function of the operating conditions and that there is no risk of galvanic couple
- the pressure of your installation is not higher than the nominal pressure of the reheaters
- the direction of flow of the fluid is maintained
- the housing(s) is/are securely fixed horizontally; in the special case of vertical mounting, additional precautions should be taken (casings at the bottom, length of immersion heaters less than the nominal length Ln of the housings consult our technical department for details of this particular application)
  The output tap should be vertical and pointing upwards (for outgassing of the liquids); the fluid must enter by the lower tap.
- there must be sufficient clearance for dismantling the immersion heater ("racking" side)
- the circulation heater should be well protected against inclement weather (rain, snow, etc) when installed out of doors
- the supply voltage must be that for which the immersion heaters were designed (the unit voltage of the pins is generally indicated on the six flats of the plugs).

3.2 ASSEMBLY :

- Unlagged circulation heaters are delivered with junction box(es) to the left. The junction box can be positioned on the right by rotating the securing lugs 180°.
  The centre-line of the securing lugs can be altered if necessary.
- Lagged circulation heaters, by virtue of their construction, require fixing to the floor on a solid base or chassis (to leave the inlet orifice clear). For wall mounting : preference should be given to the use of consoles (ref. 6048.01). The centre-line of the securing lugs is fixed.



- When coupling hydraulic equipment, precautions must be taken to ensure that the flow is not interrupted in any circumstances when the circulation heater is powered up.

  PROVIDE:
  - a flow controller
  - a safety valve
  - a temperature recorder on the outlet tube, for thermal regulation.

  (We can supply a steel outlet sleeve, ref. 53804.01, for two-inch gas-taper tapped "inlet-outlet" sleeves, that groups the taps for these three functions. The 3/8" gas taper tapping on this tube can house a glove finger for a thermostat or regulation probe).
- For heating circulating liquids in a closed circuit, provide the safety devices recommended in the legislation which must be designed to override overpressure phenomena when reheating (valve, gas pressure relief, expansion chamber, etc).

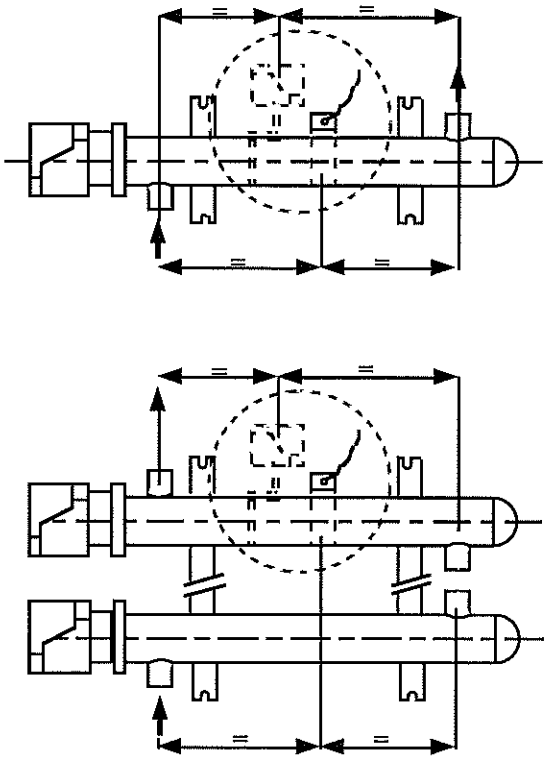
INSTRUCTIONS FOR INSTALLING THE THERMOSTAT ON UNLAGGED CIRCULATION HEATERS :

In order that the safety thermostat can function efficiently :

For efficient operation, the safety thermostats must always be arranged as indicated below. Check this positioning, especially after modifying the position of the securing lugs or when it is fitted by the installer.

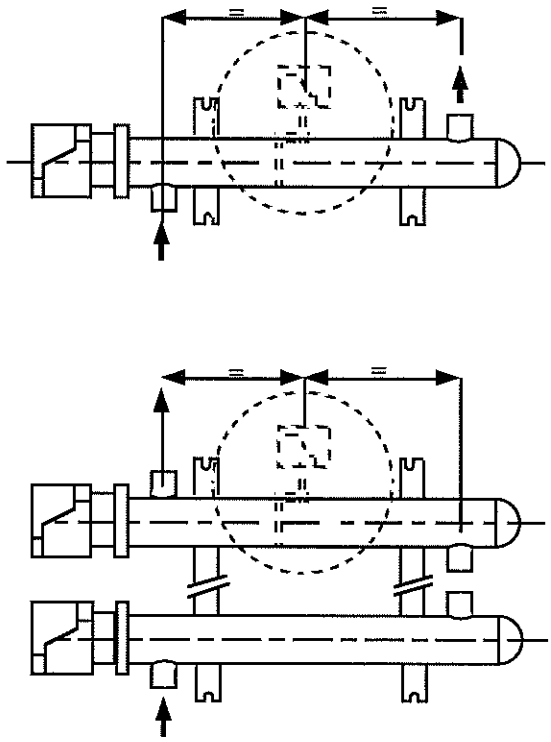
LIQUID CIRCULATION HEATER

Thermostat positioned in middle of housing



GAS CIRCULATION HEATER OR
STEAM CIRCULATION SUPERHEATER

Thermostat positioned in middle of housing



- Put some thermal lubricant on the surface of the thermostat probe set at 115 °C or on the adjustable thermostat bulb.

- Insulate around the fixed thermostat or around the bulb of adjustable thermostat

Lagging :

With high-temperature liquids, as well as for gas and steam, the fluid circulation heater housing reaches a high temperature, hence the need to lag it. Do not lag the safety system casing or the remote part and the immersion heater casing.

3.3 ELECTRICAL CONNECTIONS :

- POWER : three-phase immersion heaters, depending on the voltage used, must be coupled up by the installer in a delta, star or single-phase configuration (pins in parallel or in series). See diagrams below.

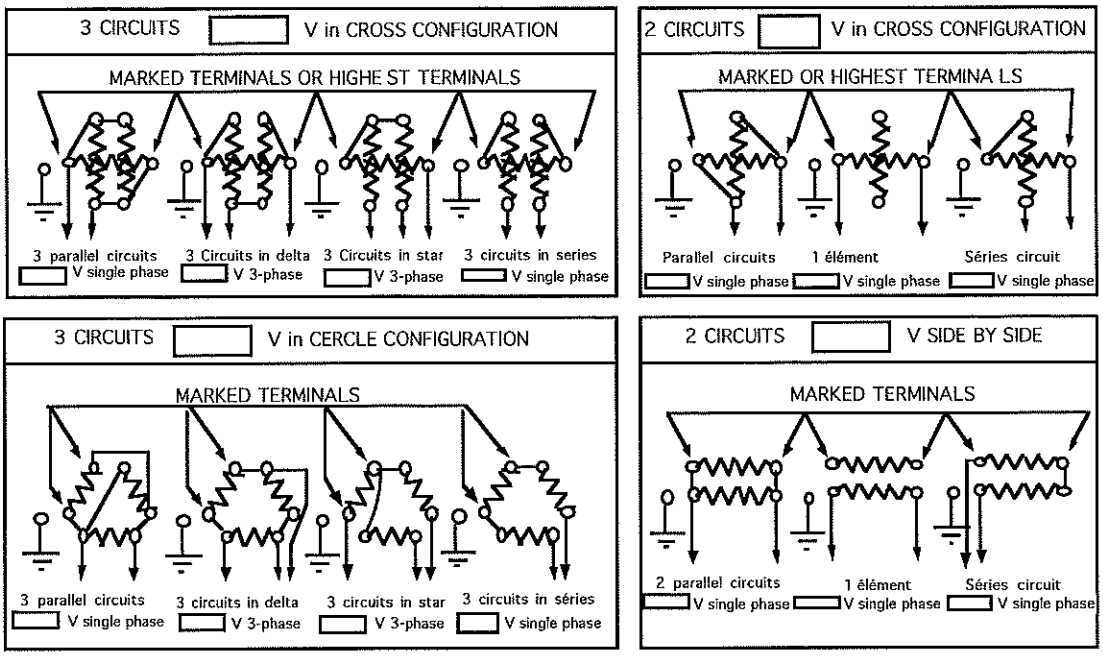
  Immersion heaters with a power rating of more than 24 kW should normally be coupled together in a star configuration (to be confirmed).

  Fluid circulation heaters designed exclusively for single-phase working (standard AIR or STEAM models, for instance) are coupled together in the plant. Do not alter this coupling.

- EARTH : Ensure that the earth terminal is connected to earth.

- SAFETY SYSTEM :
  The safety thermostat (breaking capacity 2 A/400 V) for the 115°C thermostat and 10 A/400 V for the 300°C and 320/540°C thermostats), or else the thermocouple safety system must cut off the electrical supply to the fluid circulation heater irreversibly if a fault develops.

  In the case of multi-housing fluid circulation heaters fed at several different rates, ensure that the regulator controls the top housing containing the safety thermostat as a matter of priority.



- To avoid any risk of error, carefully check the voltage per pin and that of the mains before coupling the circuits in one of the above configurations

- Check that the connections on the heater elements are properly tightened.

- When selecting the connecting cable, bear in mind that the temperature in the housing may be approximately 20 to 50°C above the outside ambient temperature.

- You are strongly advised to provide a thermostat or temperature regulator other than the safety device, which latter should cut off the electrical supply irreversibly if overheating is detected.

4 COMMISSIONING PROCEDURE :

4.1 PRECAUTIONS TO TAKE BEFORE COMMISSIONING :

In no circumstances may the immersion heaters be powered up until the minimum theoretical flow rate has been established (the installation of a flow controller is strongly recommended and an outgassing device is often essential for liquids).

Check carefully that the fluid circulation heaters are completely full (when heating liquids), after having purged the installation completely.

The thermostat (if not fixed) or the safety regulator is adjusted temporarily to a set temperature value that is higher than the working temperature.

4.2 COMMISSIONING :

- Power up the immersion heater. Check immediately that the line current is as specified and adjust the regulator units.

- After stabilization at the nominal working temperature :

  * cut out the safety thermostat (or regulator) manually and set it to between 10°C and 30°C approximately above that value, but without exceeding the fluid vaporizing temperature at the relevant pressure

  * when heating liquids or gases with forced convection, confirm that a drop in the flow rate below the minimum indicated by the heat exchange calculations actually does shut off the heating.

(In the case of fluid circulation heaters fitted with an adjustable thermostat, set it after the maximum working temperature has stabilized).

Warning : On gas circulation heaters, the 300°C bulb thermostat must never be set beyond 250°C.

4.3 SHUTTING DOWN THE INSTALLATION

For heating liquids and especially gases by forced convection, when shutting down the installation it is necessary to maintain the liquid flow rate for a few moments after powering down the fluid circulation heater, in order to allow the calories built up in the heater elements to be discharged.

In certain conditions, failure to comply with this instruction will result in destruction of the immersion heater and/or its environment, or even pose a hazard for users.

5 MAINTENANCE

After 50 hours of operation :

- Check that all connections are properly tightened.

Every six months:

- Same operation as above.

At least once a year or more frequently if necessary :

- When heating liquids, dismantle the immersion heater(s) and clean the heater elements, without damaging them, if sludge or fur has built up on them (otherwise the service life of the heater elements may be shortened considerably due to obstruction of the heat exchange with the liquid).
- Clean out any sludge that may have accumulated at the bottom of the reheater.
- After re-assembling the immersion heater, follow the commissioning instructions given in section 4.

6 WARRANTY

The warranty complies with the inter-union agreements of the Electrical Construction industry and our general sales.

In view of the major series of tests conducted by our quality control department during manufacture and before handover, the probability of failure in our equipment is negligible.

We guarantee compliance of the materials used and any surface coatings, as defined in our documents.

Any deterioration resulting from:

- usage at more than 10% above the specified rated voltage,
- wear caused by lack of maintenance, impact, clumsiness or inexperience of the user,
- corrosion (including in sanitary water) or scaling,
- non-compliance with these instructions, with normal working practices and with legislation,

cannot be deemed to invoke any responsibility on our part, owing to the wide range of parameters that give rise to such phenomena and which escape our inspection procedures.