



**PROCESS HEATING SERVICES LTD**

for industrial electric heaters

phone: 07864 931524 email: [sales@processheatingservices.com](mailto:sales@processheatingservices.com)

## Vat heater installation

**WORK SHOULD BE CARRIED OUT BY SUITABLY QUALIFIED PERSONNEL TO THE LATEST IEE REGULATIONS AND SITE REGULATIONS.**

### General installation instructions

1. Check with your chemical supplier that the sheath material of the selected heater is suitable for the intended solution.
2. **Never** switch on unless the heater is immersed in liquid at least up to the cold length markers on the vertical legs. This liquid level must be maintained whenever the heater is switched on. Usually the lowest anticipated level is that just prior to the work being loaded into the vat.
3. It is essential that the heater is switched off prior to draining the tank or removing the heater from the solution. An appropriate cooling time should be allowed for.
4. All elements provide the nominal kW output at 240V for two-wire AC single-phase supply, and 415V for 4 wire AC three-phase electrical supply.
5. In some cases, earthing of the heater must be carried out using special earthing devices. These are required to prevent any undesirable circulating current effect taking place as a result of linking other vats at different potentials via a common earth.
6. In all cases, it is recommended that an RCD with a tripping device rated at 30mA is fitted to ensure operator safety in the event of insulation breakdown. Furthermore, it is recommended the heater be installed in conjunction with an additional safety device to automatically isolate the heater should the liquid level fall below the cold leg markers or should an over-temperature event occur.
7. Heaters should be securely clamped to the open edge of the vat with care taken to ensure the element is not in contact with the side of the vat below liquid level. In the case of 3ph heaters care should be taken that elements are correctly aligned and are not touching each other.



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8. Heaters should be wired with flexible cable and conduit long enough to ensure easy removal for maintenance. PHS heater clamps are to be used in all circumstances to ensure the heater is electrically insulated from the vat.
9. When using more than one heater in a vat it is good practice to evenly space the heaters to ensure maximum heat dissipation.
10. It is not possible to manually change the form of the element – do not try. They can only be formed in our factory with the use of a bending jig.
11. The element must not come into contact with any other objects below solution level. This can create a hot-spot and significantly reduce the life of the heater. This includes sludge in the bottom of the tank.
12. Avoid very close proximity to workpieces and / or electrodes.
13. In appropriate cases steps or measures should be taken to ensure that heaters do not come into contact with workpieces or basket / barrels. This step applies in particular to PTFE coated elements which are particularly susceptible to mechanical damage.
14. Under no circumstances should PHS vat heaters be used in hazardous zones or areas where they may come into contact with flammable substances or vapours.

## Maintenance Instructions

1. Scale deposits must not be allowed to build-up on the element surface. Scale deposits will inhibit heat dissipation resulting in reduced efficiency, shortened operational life and premature failure.
2. It is advisable to impose a regular cleaning regime where the heater is switched off, removed from the vat and cleaned either manually or chemically.
3. Ensure that any sludge deposits in the bottom of the vat are removed before they reach the lowest loop of the element. Embedded elements will overheat and cause premature failure.
4. Never allow the element to be switched on when the element is not fully immersed up to the level of the cold point markers. Failure to do so will cause an overheating situation on the exposed portion and quickly result in element failure.
5. Stored heaters should be kept in a warm and dry atmosphere to avoid absorption of moisture by the insulation.



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6. All heaters should be subject to periodic visual inspection. This should consist of:
  - a check that all fasteners on the terminal box are secure.
  - the element is securely clamped, and that the clamp itself is secured to the vat
  - a check that the element is not in contact with any foreign object or the side of the vat.
7. In case of 3ph heaters care should be taken that elements are correctly aligned and are not touching each other.