

### APPLICATION

The HO range of screwed immersion heaters is intended to heat light to medium oils and caustic solutions. Depending on the chemical properties, the HO range may be specified to heat other liquids. The range is specifically designed to allow the element to be withdrawn from the heater without removing the heater from the vessel. This is particularly advantageous where it is not practical to drain the vessel in order to inspect or replace the element. The heaters are suitable for horizontal mounting only unless specifically stated otherwise. To avoid localised boiling or over heating, care should be taken to ensure that the cold zone extends beyond any neck piece. Please check that the heater is suitable for your application. Refer to the supplied Data Sheet for the detailed construction, specification and wiring of the heater.

### CONSTRUCTION

The element tube and thermostat pockets are welded into the screwed boss. The removable element is constructed from high grade resistance wire wound inside ceramic formers. The boss is screwed to suit a British Standard Pipe thread fixing and comes complete with a fibre gasket. The terminal enclosure is stove enamelled cast aluminium and is rated to 'IP66' with two conduit entries (M20 & M25). The standard HO range is designed for a maximum operating temperature of 90°C and a maximum operating pressure of 6 bar.

### INSTALLATION

#### MECHANICAL INSTALLATION INSTRUCTIONS

- The heater will only heat the contents of the vessel above the immersion heater.
- The heater is supplied with a gasket, ready to be screwed to the appropriate flange on the vessel. It is not recommended that sealing compounds are used as they can harden and make replacement of the immersion heater difficult.
- The heater, once installed, should have the thermostats, where possible, positioned above the elements.
- Heaters with immersed lengths of 1200mm and longer should be provided with an internal tank support.
- After fitting the heater into the vessel, the system should be filled and a check made for leaks around the joint. The Vessel should be filled according to your standard procedure ensuring that all air pockets are purged from the system.
- Control thermostats should be set to suit site requirements. The Control thermostat is provided to regulate the temperature to the desired setting.
- The Over-temperature manual reset cut-out thermostat, if fitted, is factory set and sealed.
- Should the vessel be drained at any time and the heater removed, this installation procedure must be repeated before proceeding to switch the heater on.
- **Warning : Do not cover the heater terminal enclosure.**

#### ELECTRICAL INSTALLATION INSTRUCTIONS

All electrical wiring must be carried out by a qualified person and must be comply with the current I.E.E Regulations to B.S.7671.

We recommend that the insulation of the each circuit within the heater is checked prior to installation. The minimum insulation reading between live and earth should not fall below 1MΩ. Refer to the procedure in the Operational Faults section of this leaflet if the insulation is below 1MΩ.

- A terminal layout drawing is supplied on the Data Sheet to use as a guide when wiring the heater.
- Do not use an element to thermostat link wire unless the heater load is single phase and draws less than 16 Amps (3.8kW at 240V).
- The immersion heater should be connected to fixed wiring.
- Check all electrical connections to ensure that they are tight.
- After all electrical connections have been made replace the heater terminal enclosure.
- Immersion heaters are designed to operate **ONLY** when the heating elements are totally immersed and **must not** be switched on when the heating elements are exposed to air.

### WARNING : THIS APPLIANCE MUST BE EARTHED

### OPERATIONAL FAULTS

**Always isolate electrical power at the mains switch before removing the terminal enclosure.**

#### HEATER NOT OPERATING

Check :

- a) The control thermostat has been set correctly. To avoid nuisance tripping the over-temperature thermostat should be at least 15°C higher than the control thermostat.
- b) The over temperature thermostat for a trip. If the over-temperature thermostat has tripped investigate and rectify the cause of the trip. Reset the over temperature thermostat by pressing the small button on the face of the thermostat.
- c) Main fuses. If the main fuses have tripped check the element for a short circuit.
- d) Main Electrical Supply.
- e) Control Thermostat for failure in 'open' position.
- f) Wiring to heater (No loose connections).
- g) Element continuity (resistance) - If faulty order a replacement heater (See spare parts section).

#### LOW ELEMENT INSULATION

Storage conditions after despatch are not always ideal. In particular, if there is a long delay between purchase and commissioning there may be some degree of water ingress into the element tube. The immersion heater will not be affected by the low insulation readings. However to allow any current control devices to operate it is suggested that the following procedures are carried out:

- 1) The terminals on the end of the element can be dried to remove any moisture. e.g. with a hairdryer or similar device.
- 2) When brought into operation, the element will naturally improve in insulation.
- 3) If an RCD is being used this can be disconnected for a short time while the heater is switched on to allow the insulation readings to increase.
- 4) The heater can be placed in an oven at 200-250°C for a period of time to raise the insulation levels. If an oven is not available, the heater can be returned to Howden Electro Heating.
- 5) To maintain the insulation during periods of low use it is advisable to switch the heater on in the tank, in the liquid, approximately once a month for 48 hours.

### SPARE PARTS & REPLACEMENTS

It is recommended that all spare parts should be ordered from H.D. Howden Ltd quoting the heater list number and serial number.

#### SPARE PARTS LIST

- Fibre Gasket
- Control Thermostat
- Over-temperature Thermostat

### GUARANTEE

The manufacturer will make good, by repair or at his option by the supply of a replacement, defects which, after proper installation, appear in the goods, within a period of twelve calendar months after the goods have been delivered and arise solely from faulty design, materials or workmanship, provided always that defective parts are promptly returned by the user free to the manufacturer's works, unless otherwise arranged. The repaired or new parts will be delivered by the manufacturer free of charge. Defects arising from inappropriate heater selection to suit local water conditions, incorrect connection or incorrect supply voltage will invalidate the product guarantee. The policy of H.D. Howden Ltd is that of continuous improvement and development, the right is therefore reserved to change specifications without notice.