



MODULAR HEATER

INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

These instructions should be carefully read and understood by all operators before installing and commissioning the equipment. Failure to comply with instructions could invalidate the warranty. The Modular heater is manufactured from high performance materials and should give trouble free service provided it is installed, operated and maintained in accordance with these instructions



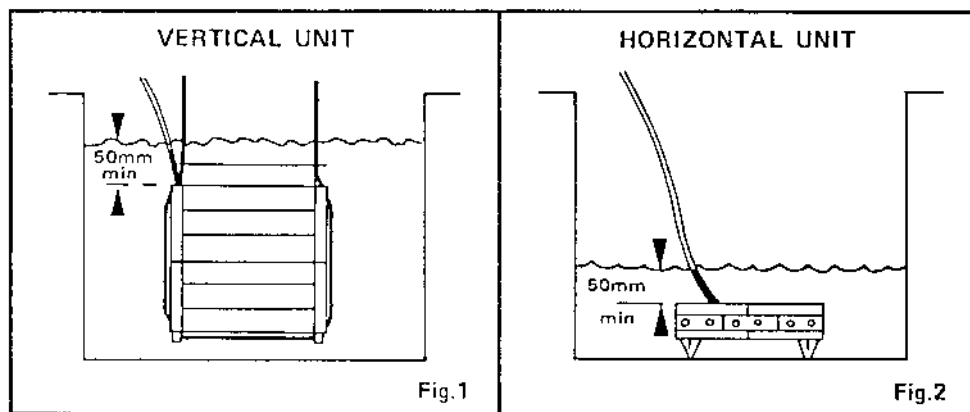
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This 'Impervio Polaris' Immersion heater is manufactured from the finest quality non-corrodable materials and should give trouble free service provided it is installed, operated and maintained in accordance with these instructions.

INSTALLATION

IMPORTANT

The Polaris must be installed by a qualified electrician. The unit is best located near the bottom of the tank, clear of any scale or sludge. Minimum liquid depth above the heater is 50mm. See Figures 1 and 2. Insufficient depth will impair heat transfer, and will overheat and burn-out the element, **RENDERING WARRANTY INVALID**



Vertical configuration 'POLARIS' heaters are fitted with non-corrodable hanging brackets, see Fig.3. To prepare the hanging bracket, carefully remove the ties and hand-straighten the uprights. **DO NOT** remove the bracket retaining strip. Set unit to suitable depth in tank observing the safe level indicator to ensure minimum depth. Bend brackets over tank lip with excess length against outside of tank. If necessary e.g. with agitated solutions, clamp the bracket to tank lip to keep unit vertical against tank side.

If necessary, e.g. with agitated solutions or solutions of high gravity, the unit should be fitted with weights to prevent flotation. Corrosion resistant weights for this purpose are available from BRAUDE. Care must be taken to prevent damage to elements or restriction of liquid circulation.

For units mounted horizontally, sludge spacers are provided, as shown in Figure 4.

The Protective Baffles on the POLARIS should not be removed when the heater is operating and the heater should be installed so that the baffle side only is exposed to hazards.

ELECTRICAL CONNECTIONS

Before making electrical connections, ensure that the heater is suitable for use on the available supply. Details will be found on end of heater. An earth is provided as an integral part of the POLARIS. It is essential that this is satisfactorily connected. It is also essential that the Residual Current Device (RCD) is incorporated in the circuit. Ensure that the terminal box is mounted high above the liquid level away from splash and humid conditions.

SINGLE PHASE CONNECTION

See Figure 5 and connecting instructions on the flex tag.

THREE PHASE CONNECTIONS

Three phase units are connected as shown on Fig. 6. If a 3 wire mains electrical supply is being used the blue (star-point) lead of the 'POLARIS' should be insulated and left unconnected.

Note that some heater variants are 'Delta' wound and do not have a blue lead. These are clearly marked.

Three single phase heaters of equal rating can be connected to three phase supply. See Figure 7. Users and operators must ensure that the individual heater's voltage ratings are not exceeded



Fig. 3
Polaris Modular installed vertically in tank showing safe liquid level



Fig. 4
Polaris Modular for horizontal installation in tank.

CURRENT RATINGS

Electrical circuits should be protected by suitable fuses or circuit breakers. The table below gives nominal line currents, to assist in selecting a suitable fuse or circuit breaker. There is no starting surge.

Rating KW	230v 1Phase	415v 3 phase
½	2.1A	0.7A
1	4.2A	1.4A
1½	6.3A	2.1A
3	12.5A	4.2A
4½	18.8A	6.3A
6	25.0A	8.4A
9	37.6A	12.6A
12	50.0A	16.8A

CURRENT IN EACH LINE

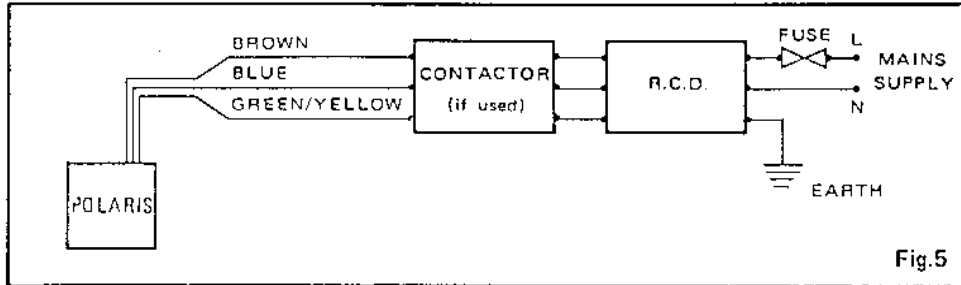


Fig.5

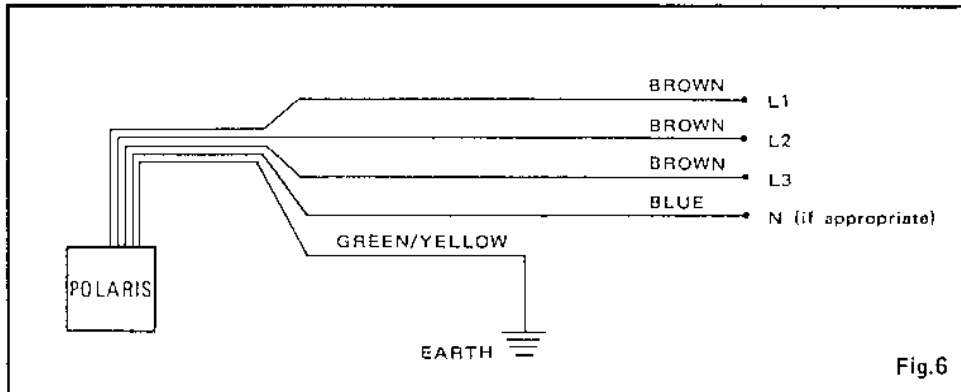


Fig.6

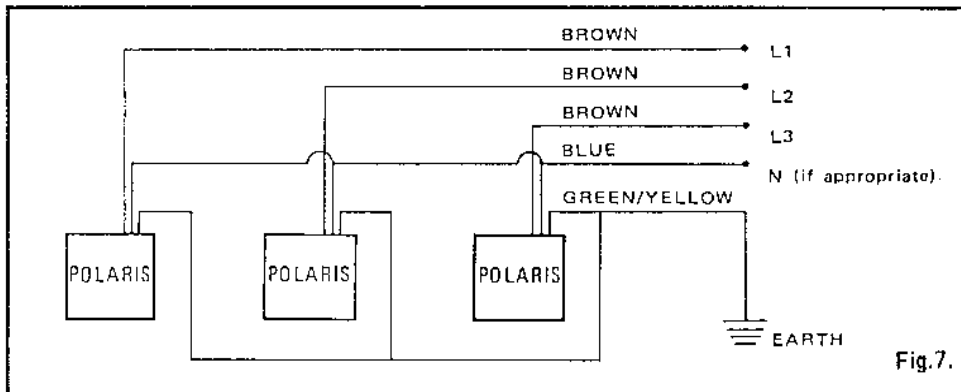


Fig.7.

OPERATION

The POLARIS is suited for use in most corrosive solutions at temperatures up to 100°C. Always refer to the Chemical Chart supplied.

The Polaris Modular heater uses high integrity polymers throughout.

Heating cable:	External: Teflon (PTFE/PFA)
	Internal: Cu, Sn, Ni, Cr
Frame mouldings:	PVDF on standard, PP on some special units.
Baffles:	PP on standard, PVDF on some special units.
Cable sleeving	PP on standard, Teflon on some units.
Hanger:	PTFE sleeved over Galvanised mild steel

The following precautions should be taken when in use in order to obtain trouble free service: **ALWAYS ENSURE THAT THE SOLUTION LEVEL COMPLETELY COVERS THE HEATER TO LEVELS INDICATED IN FIGS. 1 AND 2.**

Although the heater is of robust construction, care should be taken against impact damage. The hanging brackets are manufactured from mild steel rod sealed in PTFE. Regular Inspection is necessary. Care must be taken to avoid perforating the bracket cover as this may lead to contamination of certain solutions. The Company shall not accept responsibility for such contamination.

MAINTENANCE

The POLARIS heater is manufactured from non-corrodable materials and therefore requires minimum maintenance. In order to obtain maximum performance from the heater the following procedures must be observed.

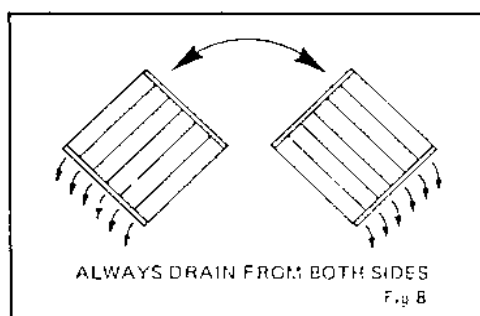
- Examine the heater periodically. Certain solutions may tend to build a deposit or film on the heater element over a period. This must not be allowed to build up unchecked as heat transfer efficiency will suffer and premature failure of the element will occur.

REMOVAL, CLEANING AND STORAGE OF THE HEATER.

- Before removal or draining the tank ensure that the heater has been switched off for at least 15 minutes. Disconnect, remove heater and rinse thoroughly in clean water.
- To remove deposits immerse the heater in a suitable cleaner until it is free from deposits. Rinse thoroughly in clean water.
- Heavy deposits may require the units to be left in the solution overnight. Agitation of the solution and/or light brushing with a suitable soft brush should accelerate the cleaning process.
- If the heater is to be stored after cleaning, guard against possible seepage of corrosive liquid due to inadequate draining.

CAUTION

The operator must exercise care when removing the heaters from tanks where corrosive solutions are in use. Make sure the heaters are fully drained and avoid 'carry over' of solution. Operators should be protected against acid spillage and splash by wearing suitable protective clothing.



SAFETY - IMPORTANT

- DO NOT switch on power unless you have checked for correct supply voltage.
- DO NOT use the heater unless the 'SAFE LEVEL INDICATOR' is fully immersed.
- DO NOT examine, move, tamper or remove the heater from the tank unless the power is disconnected and switched off for at least 15 minutes.
- DO NOT attempt to dismantle and tamper with the heater since irreparable damage may occur and invalidate the guarantee.
- DO NOT allow sharp objects or other items likely to cause damage to come into contact with polymer electrical elements. This is essential whether the heater power is switched on or not.

ANCILLARY ITEMS

The following items are available for use with the POLARIS heater.

- Low level cut-out - completely non-corrodable.
- Corrosion resistant safety power plugs and sockets.
- Thermostats, direct operating and indicator types.
- Current operated earth leakage circuit breakers (RCD).
- Miniature Circuit Breakers.
- Single phase and three phase relays recommended for use when a thermostat or other equipment is used.

All equipment supplied by Braude is subject to Braude Conditions of Sale as stated on the reverse of the Invoice/Delivery Note. Further copies may be supplied on request. Braude do not accept liability for consequential damages that may arise as a result of use of this equipment.

RETURNS POLICY

Any BRAUDE product that needs to be returned must comply with the following:

- A new/unused item should be returned in the original packaging with a note describing the reason for return.

BRAUDE also offer an inspection and repair or replacement service for products that have failed in use.

Used products must comply with the following when returned:

- Units returned to BRAUDE must be properly cleaned, sealed and packaged and are not contaminated with or contain any dangerous chemicals.
- A note advising the chemicals in which the units have been used is to be included inside the package, with as much information as possible about the process and the failure.
- A charge will be made for units received by BRAUDE, which require cleaning.

BRAUDE reserve the right to return any product that does not comply with the above without inspection.

DISPOSAL OF USED EQUIPMENT

Disposal of any product supplied by BRAUDE must comply with any relevant regulations.

The majority of materials in BRAUDE equipment are recyclable (see page 7) and should be delivered to an appropriate recycling centre.

IMPORTANT

1. Ensure that the Warranty card is completed and forwarded to the Manufacturer*. On receipt the Warranty will be registered and will become operative. No acknowledgement will be sent by the Company. Failure to register within 21 days of purchase will render the Warranty null and void.
2. The Warranty covers repair or replacement within the Warranty period.
3. Please refer to the operating, maintenance instructions and chemical resistance chart supplied before use.

*E. BRAUDE (LONDON) LTD, Liberta House, Sandhurst, Berkshire, GU47 8JR, U.K.

WARRANTY

This product has been manufactured to the highest standards using fine quality materials. Installation, operation and maintenance in accordance with the instructions and chemical resistance chart provided will ensure trouble free service.

Care should be taken that the equipment is correctly connected to current and voltage conforming with the information indicated on the label.

In the event of any defect in materials or workmanship and subject to the Company's general conditions of sale and warranty, the Company undertakes to correct at its discretion by repair or replacement, any such defect occurring within 12 (TWELVE) MONTHS from delivery of this equipment to the original purchaser (fair wear and tear excluded) provided the equipment is delivered carriage paid to our Works, suitably packed and insured. The Company's decision on all questions relating to alleged defects shall be conclusive.

This Warranty becomes void if repair is attempted or the equipment is interfered with by personnel other than authorised by the manufacturer, or is damaged due to accident or user's negligence, or if the Company's payment terms and any other conditions are not fully complied.

Under no circumstances will the period of the original 12 MONTHS warranty be extended. The Manufacturer or Supplier cannot be held responsible for claims covering consequential loss or damage.

All other claims or warranties are hereby expressly excluded.