

# Impervio

# POLARIS

NON-CORRODABLE ELECTRIC IMMERSION HEATER

## MODULAR

### INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

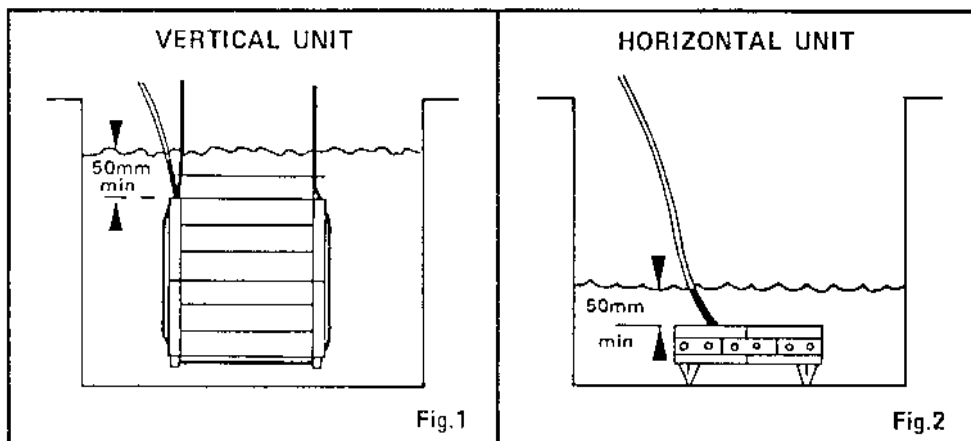
These instructions should be carefully read and Understood by all operators before use.

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, eg with agitated solution, clamp to tank lip to keep unit vertical against tank side.

If necessary, eg 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

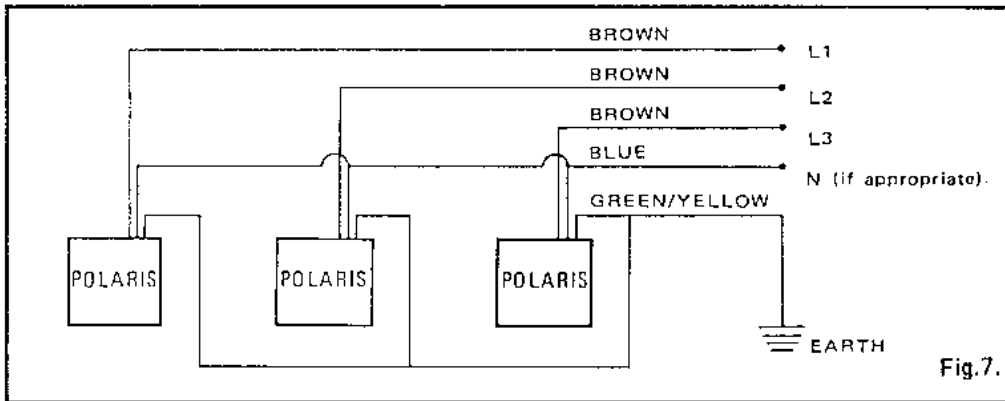
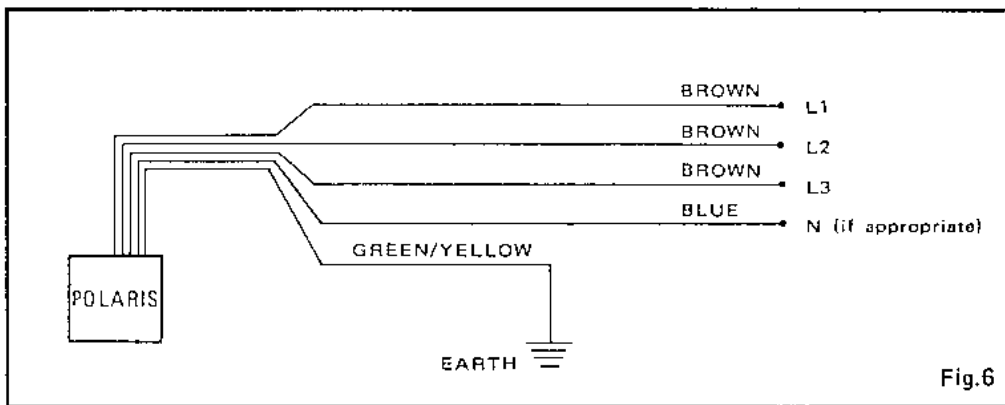
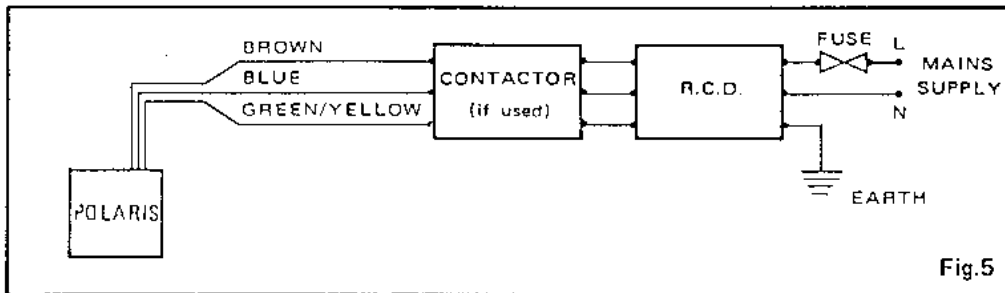


Fig. 4: Polaris Modular for horizontal installation in tank  
**CURRENT RATINGS**

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	240V Single Phase	414V Three Phase (Per 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



## 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 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 HEATER.

- Before removal or draining tank ensure that the heater has been switched off for at least 5 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 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 5 minutes.

DO NOT attempt to dismantle and tamper with the heater since irreparable damage may occur and invalidate the guarantee.

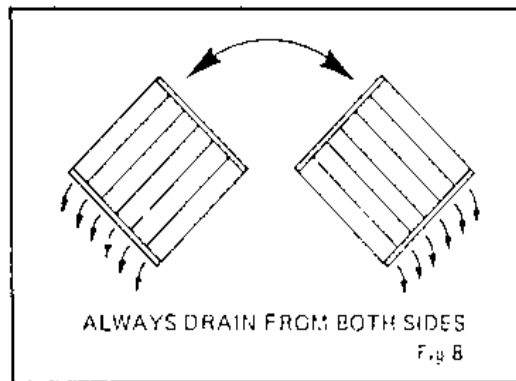
DO NOT allow sharp objects or other items likely to cause damage to come into contact with polymer electrical elements. This is essential whether the heater power is switched on or not.

#### 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

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