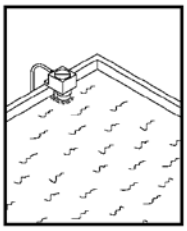
# THERMAL OVERLOAD PROTECTION

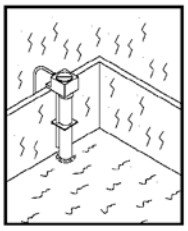
## Protector 1, 2 and 3 Series

### THE PROTECTOR 1 SERIES

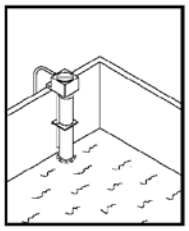
The Protector 1 overtemperature control system utilizes a heat sensitive fuse to detect overheat conditions. The protector, placed inside a thermowell, positioned in contact with the heater sheath, will cut power to the heater in the event of low liquid level.



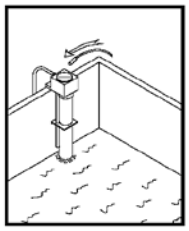
Immersion heater with PROTECTOR 1 working normally.



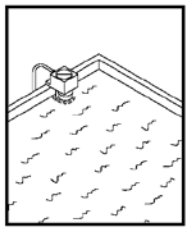
Process bath level drops due to tank leak or evaporation.



PROTECTOR 1 sensor detects elevating temperature and shuts off power to heater.



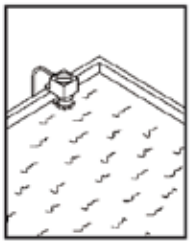
Replace protector.



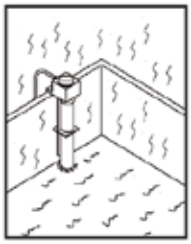
Restore the liquid level and resume operation.

### THE PROTECTOR 2 AND 3 SERIES

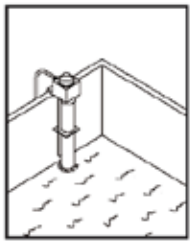
The Protector 2 and Protector 3 systems provide the same reliable overtemperature protection as the Protector 1; however, the control systems feature a heat sensing thermostat. If the liquid level drops and the heater reaches a preset overheat temperature, the thermostat cuts power to the heater and an audible alarm activates. After filling the tank, the immersion heater can quickly be made operational by pushing the reset button on the control to restore power. Protector 3 is designed for flexible lead or high temperature fluoropolymer (PTFE) heater applications only. DO NOT wire P2, P6, P7 or P8 devices directly to power or heater load, as a dangerous short circuit will result with irreparable damage to the heater. Refer to wiring diagrams for proper installation.



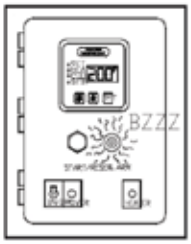
Immersion heater with PROTECTOR 2 working normally.



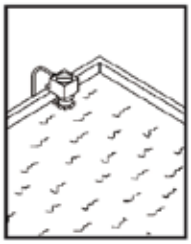
Process bath level drops due to tank leak or evaporation.



PROTECTOR 2's thermostat detects elevated temperature and shuts off power to the heater.



The alarm is activated.



Restore the liquid level and push the reset button to resume operation.

**HEATER THERMAL PROTECTION ACCESSORIES**

| PROTECTOR TYPE | TANK TEMP. °F (°C) | METAL OVER-THE-SIDE AND FLANGE | METAL L-SHAPED | METAL FLEX RISER | QUARTZ | OVER-THE-SIDE FLUORO-POLYMER | L-SHAPED FLUORO-POLYMER | FLEX RISER FLUORO-POLYMER |
|---|---|---|---|---|---|---|---|---|
| Replaceable | to 180°F (82°C) | P1 White, 6021-18-R | P1 White, 6021-85-R | --- | P1 Red, 6032-26-R | P1 to 190°F (88°C) Red, 6032-26-R | P1 to 190°F (88°C) Red, 6032-48-R | --- |
| | 180-230°F (82-110°C) | P4 Blue, 6022-18-R | P4 Blue, 6022-85-R | --- | P4 Blue, 6033-26-R | --- | --- | --- |
| | 230-300°F (110-150°C) | P5 Red, 6023-18-R | P5 Red, 6023-85-R | --- | --- | --- | --- | --- |
| **RESETTABLE PROTECTORS REQUIRE ADDITIONAL CONTROL COMPONENTS (CONSULT FACTORY)** | | | | | | | | |
| Resettable | to 180°F (82°C) | P2 White, 2804-18-R | P2 White, 2804-85-R | P2 * White, 4575 | P2 White, 4575-26-R | P2 to 190°F (88°C) White, 4575-26-R | P2 to 190°F (88°C) White, 4575-48-R | P3 * |
| | 180-230°F (82-110°C) | P6 Blue, 4047-18-R | P6 Blue, 4047-85-R | P6 * Blue, 4047 | P6 Blue, 5580-48-R | P8 190-210°F (88-99°C) Brown, 5163-120-R | P8 190-210°F (88-99°C) Brown, 5163-120-R | P3 |
| | 230-300°F (110-150°C) | P7 Red, 2805-18-R | P7 Red, 2805-85-R | P7 * Red, 2805 | --- | P3 * 210-250°F (99-121°C) | P3 * 210-250°F (99-121°C) | P3 |

Four digit numbers indicate item number. P3 option not available on 8 and 9 kW elements. Lowest temperature replaceable style protector standard unless otherwise designated. *Not field replaceable.

**VOLTAGES AVAILABLE (MOST HEATERS AND CONTROLS)**

**Voltages are designated in Process Technology model numbers as follows:**

| | | | | |
|---|---|---|---|---|
| **120 volt = 1** | **208 volt = 8** | **240 volt = 2** | **400 volt = 7** | **480 volt = 4** |
| **200 volt = 0** | **220 volt = 9** | **380 volt = 3** | **415 volt = 5** | **600 volt = 6** |

**Specify single or three phase when ordering. Consult factory for other voltages.**