

**Heateflex<sup>®</sup>**  
**Immersion Heater**  
**Instruction Manual**



**HEATEFLEX**

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Immersion Heater  
Instruction Manual**



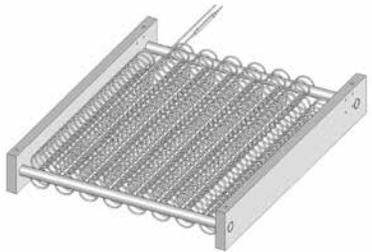
## HEATEFLEX® IMMERSION HEATERS

Having over 2,000 different designs with size, kW rating, and voltage, Heateflex Corporation provides you with the widest range of immersion heaters to meet your needs. Working with you, we can provide the best fit to your process. This is done by using one of three styles of heaters; Grid Heater, Frame Heater, and Fence Heater.



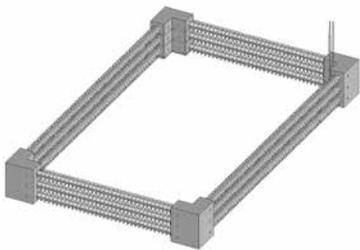
### **Grid Heater**

In general this is a single layer of PFA jacketed heating coils that is affixed to a PTFE Grid. It is around 3/4" in height.



### **Frame Heater**

In general this is multiple layers of PFA jacketed heating coils that are affixed to a PTFE Frame. It is usually around 1 1/2" in height.



### **Fence Heater**

In general this is multiple layers of PFA jacketed heating coils that are affixed to a PTFE Fence to keep the center of a tank empty and to run the heater around the inner side of the tank. Height is adjustable on number of layers of coils.

Heateflex® Heater Patent No.: 4,756,781, 4,835,365, 4,875,957, 2685505 (Japan)

## RECEIVING INSPECTION PROCEDURE

This shipment was carefully inspected, checked, and properly packaged at Heateflex Corporation and delivered to the carrier in good condition. We fully expect your merchandise to arrive in your hands in good condition.

ALL PRODUCTS ARE SHIPPED F.O.B. FACTORY; THEREFORE, WHEN IT IS DELIVERED TO THE CARRIER, IT BECOMES YOUR PROPERTY. THUS, IT IS IMPORTANT THAT YOU TAKE NOTE OF ANY DAMAGE, WHETHER OBVIOUS OR HIDDEN, AND REPORT SAME TO THE TRANSPORTATION COMPANY WITHIN FIVE (5) DAYS OF RECEIPT OF THE SHIPMENT AT YOUR PREMISE TO AVOID FORFEITING CLAIMS FOR DAMAGE.

### **HERE IS WHAT TO DO IF YOUR SHIPMENT IS DAMAGED:**

Leave the items, packing material, and carton "As-Is". Notify your carrier's local office and ask for immediate inspection of the carton and its content.

After inspection has been made by the carrier, and you have received acknowledgment in writing as to the damage, please contact our Customer Service Department at (626) 599-8566 for return authorization. If writing for return authorization, please indicate your purchase order number.

We will either repair or replace the merchandise depending upon the extent of the damage.

It is your responsibility to follow the above instructions, or the carrier will not honor any claims for damage. If there are any shortages or questions regarding this shipment, please notify us within ten (10) days.

## HEATER HANDLING GUIDELINE

The possibility of heater damage during installation has prompted Heateflex Corporation to develop handling guidelines on PFA products for the OEM and end user market.

The heater is shipped inside of a sealed plastic bag, wrapped in bubble wrap and placed inside of a box. It is our intent that you do not open the sealed plastic bag until your tank has been cleaned for testing with the heater. This will provide some protection against physical damage to the element before it is installed in the tank. Drills, scrapers, screwdrivers and metal shavings are common equipment at the OEM fabricator, and are all potential hazards to PFA products. Sharp objects in the tank are a serious risk to the heater. It is advisable that PFA heaters not be issued to the shop floor for installation until the work surface is cleaned and the testing of the bath requires the heater to be installed.

During the installation of the heater, the PFA wire may be pulled through holes, fittings, cracks and gaps. Some of these may be metal with sharp edges that can cut and expose the conductor. Caution in this area is necessary with all wires.

Like fine china, our product is durable and long lasting, but exposed to the tools of the fabrication process, the possibility of damage is greatly increased. Awareness is your best protection.

### WARNING & SAFETY

 	High Voltage Electrical Equipment
 <b>WARNING</b>	Electric immersion heaters will ignite many plastic tanks such as polypropylene and polyethylene and subject personnel to shock hazard if not properly installed and maintained.
 <b>WARNING</b>	All heaters should be equipped with a thermal over-temperature device and the tank should have a liquid level control to reduce the potential of fire. It is the customer's responsibility to purchase thermal and liquid level control protection.

## HEATER HI-LIMIT SAFETY SETTING PROCEDURE

Your Heateflex® is an Immersion Heater. It should always be under liquid when operating. Operating heater in air or with a crystalline or precipitate solution that may coat the heater or sensors may result in damage to the heater and cause severe damage to your equipment. Non-compliance to the following procedure will void warranty.

1. If the supplied heater does not have a Hi-limit or over-temperature thermocouple, we highly recommend that you purchase one on future units. The purpose of this safety is to protect the heater and your equipment from a boil-dry situation. This is a redundant safety backup in case the process over temperature and liquid level safeties fail.
2. If the supplied heater does not have a process thermocouple, we highly recommend that you purchase one on future units. The purpose of this safety is to protect the heater and your equipment from an over-temperature situation.
3. Connect the thermocouple bundled with the lead wire to the Hi-limit controller. This thermocouple now becomes the Hi-limit or over-temperature thermocouple.
4. Connect the thermocouple that is by itself to the process temperature controller. This thermocouple now becomes the process thermocouple.
5. The process thermocouple position should be placed at approximately 1" above the immersion heater.
6. Set the process temperature controller to desired operating temperature. (Example: setpoint = 60°C.)
7. Temporarily set the Hi-limit controller at 150°C.
8. When the process temperature reaches about 80% of process setpoint (about 48°C), bring down the Hi-limit temperature until the control relay trips the Heater. At this point, add 5 to 10°C to the Hi-limit temperature controller. This is the Hi-limit safety setpoint for the heater.
9. The process alarm setpoint should be set at 5°C above the process setpoint.
10. If you have any questions, please contact Heateflex Corporation's customer service department at (626) 599-8566.

# HEATEFLEX CORPORATION'S MATERIAL WARRANTY

Heateflex Corporation warrants the equipment offered to be free from defects in material and workmanship, under normal handling and proper usage, for a period of one year from the date of shipment. All products purchased from manufacturers by Heateflex Corporation will carry that manufacturer's warranty period. This expressed warranty is in lieu of, and excludes all other representations made by advertisements or by agents. There are no implied warranties for the equipment.

Heateflex Corporation agrees to correct any defect in workmanship or material which may develop under normal handling and proper usage during a period of one year from the date of shipment or, by its option, to repair or replace the defective equipment F.O.B. Arcadia, California, USA. Purchaser's remedies shall be limited exclusively to the right of repair or replacement. Heateflex Corporation shall not be liable for any expenses incurred by the purchaser or any other person by reason of the use, misuse, sale, or fabrication of the equipment regardless of whether the equipment conforms to the specifications.

Items returned for warranty repair must be prepaid and insured for shipment. Warranty claims are processed on the condition that prompt notification of a defect is given within the warranty period. Heateflex Corporation shall have the sole right to determine whether, in fact, a warranty situation exists.

## DECLARATION OF CONFORMITY TO CE

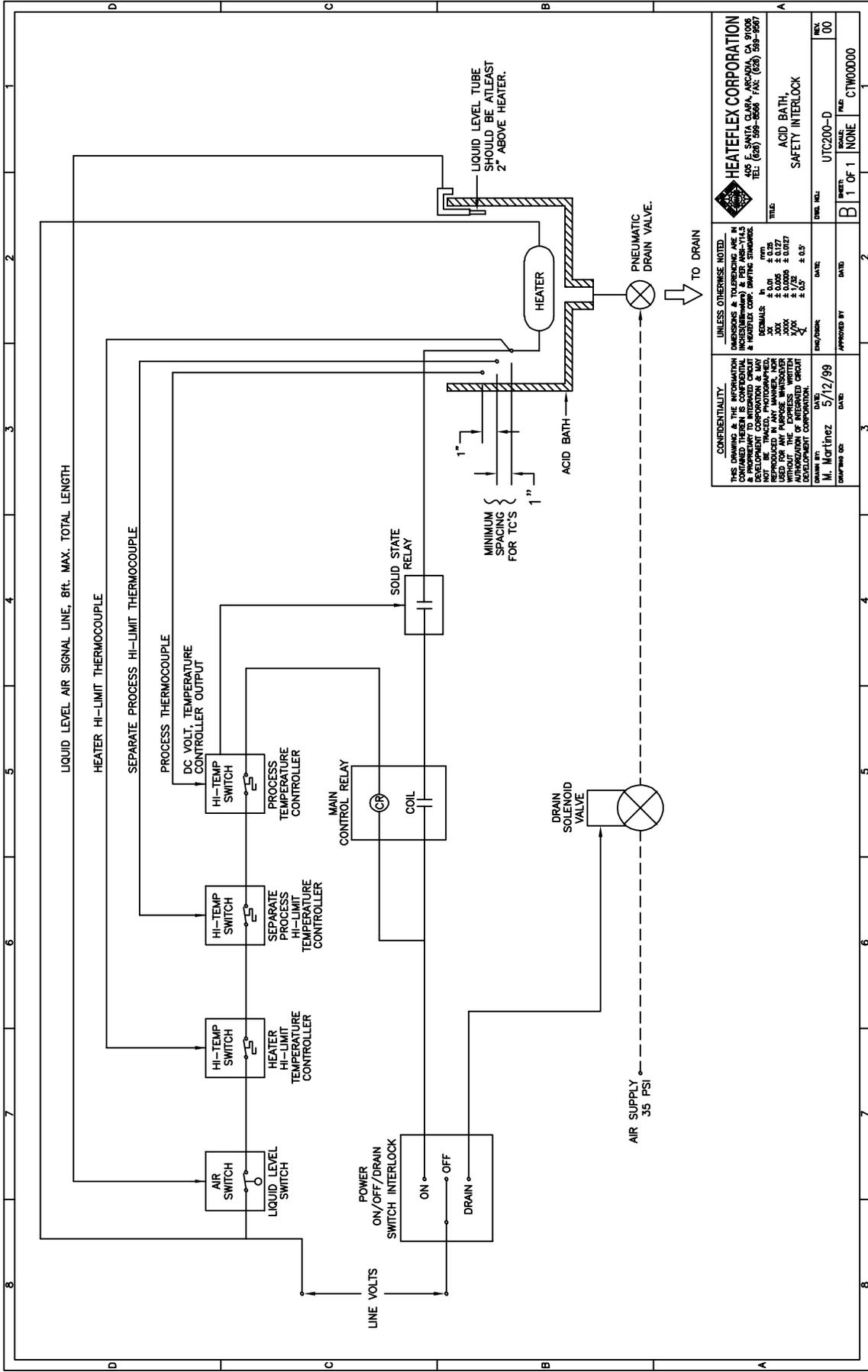
We, Heateflex Corporation, declare under our sole responsibility that our semiconductor fabrication equipment (for those models listed below), as delivered, are in conformity with the following European Directives:

<b>Application of Council Directive:</b>	2006/95/EC Low Voltage Directive
	2006/42/EC Machinery Directive
	2004/108/EC Electromagnetic Compatibility (EMC) Directive
<b>Standards to which Conformity is Declared:</b>	IEC 60335-1 ed5.0 Household and similar electrical appliances - Safety - Part 1: General requirements
	IEC 60335-2-35 ed5.0 Household and similar electrical appliances - Safety - Part 2-35: Particular requirements for instantaneous water heaters
	Directive 2006/95/EC Low Voltage Directive, Annex 1
	Directive 2006/42/EC Machinery Directive, Annex 1
	Directive 2004/108/EC Electromagnetic Compatibility (EMC) Directive, Essential Requirements
	EN61000-6-2 Electromagnetic Compatibility (EMC) - Part 6-2: Generic Standards - Immunity for Industrial Environments
	EN61000-6-4 Electromagnetic Compatibility (EMC) - Part 6-4: Generic Standards - Emission Standard for Industrial Environments
<b>Type of Equipment:</b>	Heater
<b>Manufacturer's Trade Name:</b>	Heateflex® Heater
<b>Manufacturer's Model or Type Designation:</b>	All Series Grid, Frame, and Fence Heaters
<b>Year CE Marking was affixed:</b>	2014
<i>Any modification or alteration of the above product(s) unwarranted by Heateflex Corporation will nullify this declaration.</i>	
<b>Authorized representative located within the European Community:</b>	SPS-Europe, B.V. Midden Engweg 41 3882 TS Putten, The Netherlands Phone: +31 341-360-590 Fax: +31 341-360-589
	 President, Heateflex Corporation

Heateflex is a registered trademark of Heateflex Corporation

Power-To-Flow is a registered trademark of Heateflex Corporation

Power-To-Flow Control is a registered trademark of Heateflex Corporation



**HEATEFLEX CORPORATION**  
 405 E. SANTA CLARA, ARCADIA, CA 91008  
 TEL: (608) 598-8668 FAX: (608) 598-9667

**UNLESS OTHERWISE NOTED - DIMENSIONS & TOLERANCES ARE IN INCHES UNLESS OTHERWISE SPECIFIED.**

DECIMALS	FRACTIONS
0.01	1/32
0.05	1/16
0.10	1/8
0.25	1/4
0.50	1/2
1.00	1
2.00	2
4.00	4
8.00	8
16.00	16
32.00	32
64.00	64
128.00	128
256.00	256
512.00	512
1024.00	1024

**CONFIDENTIALITY:**  
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Drawn by: M. Martinez DATE: 5/12/99  
 Checked by: DATE:  
 Approved by: DATE:

UNLESS OTHERWISE NOTED - DIMENSIONS & TOLERANCES ARE IN INCHES UNLESS OTHERWISE SPECIFIED.

DECIMALS: 0.01, 0.05, 0.10, 0.25, 0.50, 1.00, 2.00, 4.00, 8.00, 16.00, 32.00, 64.00, 128.00, 256.00, 512.00, 1024.00

FRACTIONS: 1/32, 1/16, 1/8, 1/4, 1/2, 1, 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024

DATE: 5/12/99

APPROVED BY: DATE:

DESIGNED BY: DATE:

REV. NO. 00

REV. DATE: CTW00000

SHEET 1 OF 1

TITLE: ACID BATH, SAFETY INTERLOCK

UTC200-D

# PRODUCT QUALITY CERTIFICATION

ORDER NUMBER: \_\_\_\_\_ CUSTOMER: \_\_\_\_\_

PART NUMBER: \_\_\_\_\_ QUANTITY: \_\_\_\_\_ T/C TYPE: \_\_\_\_\_

WATTS: \_\_\_\_\_ VOLTS: \_\_\_\_\_ AMPS: \_\_\_\_\_ OHMS: \_\_\_\_\_

ASSEMBLED BY: \_\_\_\_\_

## QUALITY INSPECTION

Serial Number	Seals	Hi-Pot 10kV	Ground Wire		Thermocouple		
			Ta	Pt	Continuity	2 kV	μ Amp

INSPECTED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

**!!!WARNING!!!**

You are receiving a PFA immersion type Heater. It should always be under liquid when operating. Operating Heater in air or in a crystalline or precipitate, that may coat the Heater, will result in burning-up the Heater and may cause severe damage to your equipment. Non-compliance to this procedure will void warranty. Also, seals are fragile. Please take caution when working with them.

For added protection to help prevent mechanical damage to the heater use protective floor,

Heateflex Part Number: \_\_\_\_\_

