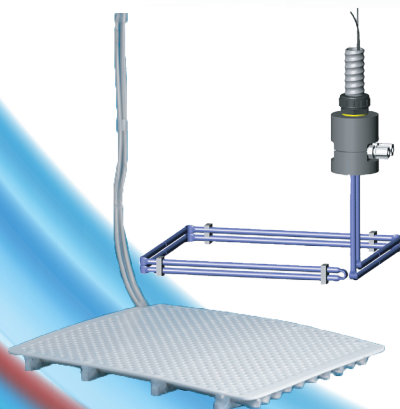




FLUOROPOLYMER IMMERSION HEATERS



TF

Engineered for critical chemical heating.

TF Series Features and Specifications

- ◆ The TF Series fluoropolymer immersion heaters are designed for the most demanding chemical applications and to provide years of trouble-free performance. The heaters are ideal for the Semiconductor, FPD, MEMS, and Biomedical industries, as well as other similar demanding applications.
- ◆ PTFE immersion heater element with .015 inch (38mm) thick fluoropolymer sheath for safety and long service life (see Options section).
- ◆ Patented "gas purged" element design: Low flow gas purge inside heater element ensures maximum element life by removing any chemical permeation through the sheath.
- ◆ 100% fluoropolymer wetted surfaces for virtually any non-flammable process solution including HF and KOH.
- ◆ Two basic configurations available:
TFB: bottom style (full bottom surface coverage)
TFW: inside wall style (hugs inside walls)
- ◆ Low watt density design promotes process temperature uniformity.
- ◆ Perforated PTFE fluoropolymer guard (TFB style heater):
Provides protection against physical damage of the heater
False bottom on which carriers rest

SPECIFICATIONS:

SIZES: 500 watts to 12,000 watts.

VOLTAGES: 120 to 600 volts, single or three phase.

TEMPERATURE RANGE: Up to 130° C (266°F). For higher temperatures, see Options section.

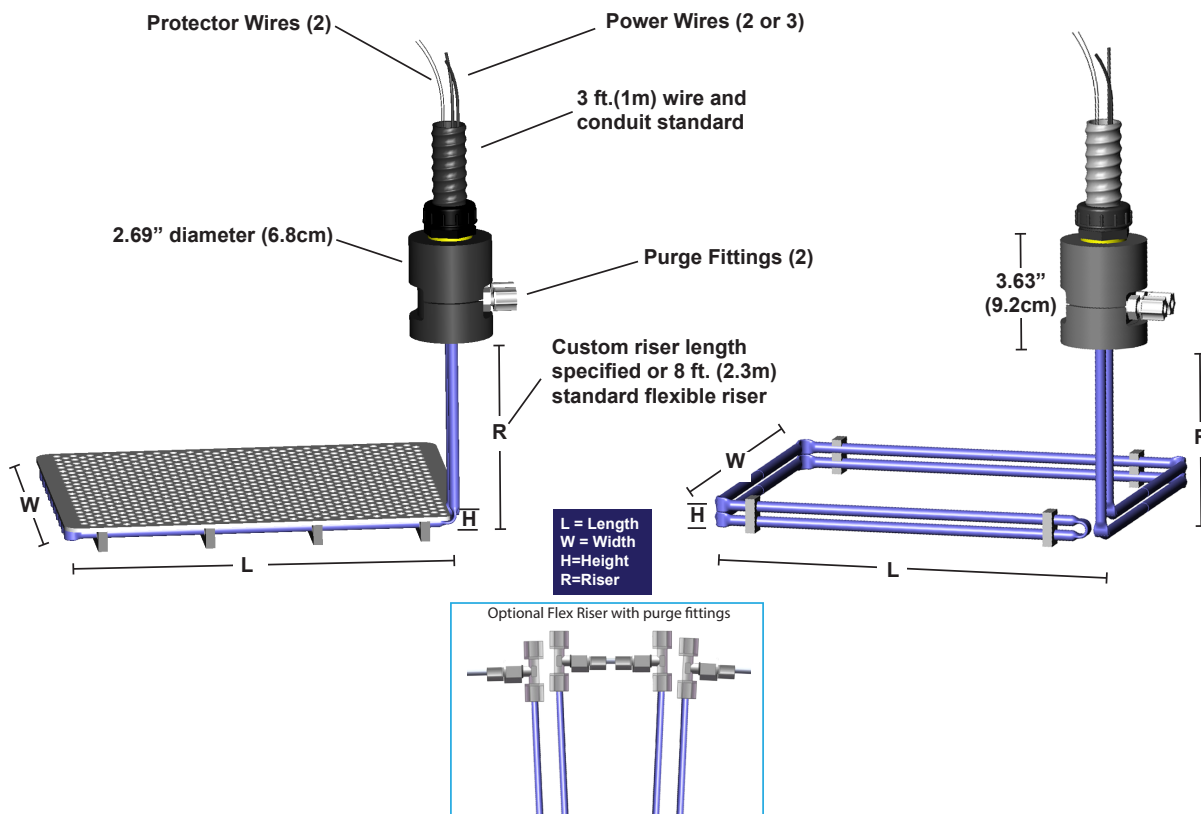
OPTIONS AVAILABLE (consult factory):

- ◆ Custom heater configurations built to customer specifications.
- ◆ .030 inch (76mm) thick sheath available for applications above 130°C or for use with certain chemistries such as nitride etch or HF.
- ◆ PID temperature control module.
- ◆ Element gas purge flow regulator panel.
- ◆ Special configurations and lengths.
- ◆ Longer wire and conduit lengths.
- ◆ Bolt down feature.
- ◆ Lower watt densities for highly viscous solutions and technical acids.
- ◆ Customized process and over-temperature control sensors

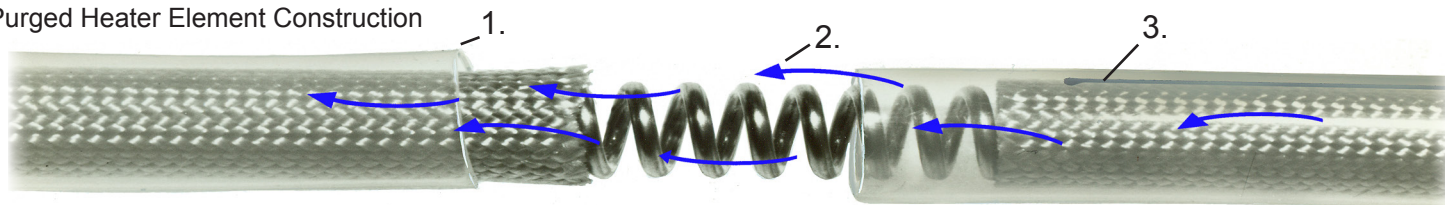
DIMENSIONS

TFB SERIES

TFW SERIES



Purged Heater Element Construction



1. Fluoropolymer Sleeve Heating Element
 Quality resistance element is sleeved in braided material for even coil separation. The entire element is given an outer sleeving of pretested and pre-extruded fluoropolymer tubing. THIS IS NOT A COATED PRODUCT.

2. N2 Purge System
 The N2 Purge monitors heater integrity and prevents condensation or diffusion of corrosive gases by purging nitrogen or clean dry air through the tubing.

3. Over-temperature Thermocouple
 The over-temperature cutoff device protects the integrity of the fluoropolymer heater. If an operator should leave the heater on while draining or aspirating a tank, when used in conjunction with a temperature control device, it will automatically shut off the heater when it is exposed to air.

TF SERIES FLUOROPOLYMER HEATER ORDERING INFORMATION

TFB TEFLON Bottom Heater consist of:

- * PTFE TEFLON ensleeved Heating Element
- * TFE TEFLON Guard
- * 8 Foot Heater Leads
- * Nitrogen Purge Connections
- * Overtemperature Thermocouples
- * Optional "TCO" Thermal Cut Off Heater Fuse

Number of Layers

1
2
3
4

Model

TFB
TFW

Wattage

250-12,000

Plan Number

=XXX (assigned)

**PROCESS
TECHNOLOGY**