FLUENT® In-line Heater

High Performance Fluid Heating Solution Featuring Watlow's Thermal Spray Technology Improves System Performance

The FLUENT® in-line heater from Watlow® is a small, lightweight, high-performance heater that can replace both a traditional immersion type heater or a heater wrapped around a tube as part of a thermal system. Watlow's FLUENT heater is designed as an integrated solution that replaces multiple components in a system. This heater design reduces overall system cost and complexity. Because of its high watt density, it offers ultra-fast response leading to higher system performance. Featuring Watlow's patented layered heater technology, the heater makes use of its entire surface to produce heat, which optimizes heat transfer and temperature uniformity.

Watlow's FLUENT is available through Watlow ***SELECT***®, a program that enables you to quickly identify, configure and receive your thermal products faster and easier than ever before. With ***SELECT***, you use a variety of tools to guide your decision, configure products for an exact fit and quickly receive your order. Visit www.watlow.com/select to learn more.

Features and Benefits

Small, lightweight, robust heater construction

- Replaces multiple components in a system
- Reduces overall system size
- Lowers total cost of ownership

Patented circuit patterning process

- Facilitates customizable heating profiles
- Enables distributed wattage and/or multiple zones
- Assures precise and repeatable power distribution

High watt density, low mass heater

- Contributes to fast response time
- Allows for efficient heat transfer
- Enables on-demand process start-up

Typical Applications

- Hemodialysis fluid heating
- Food cooking equipment
- Semiconductor purge and carrier gas heating
- Ink preheating systems
- On demand fluid heating

Specifications

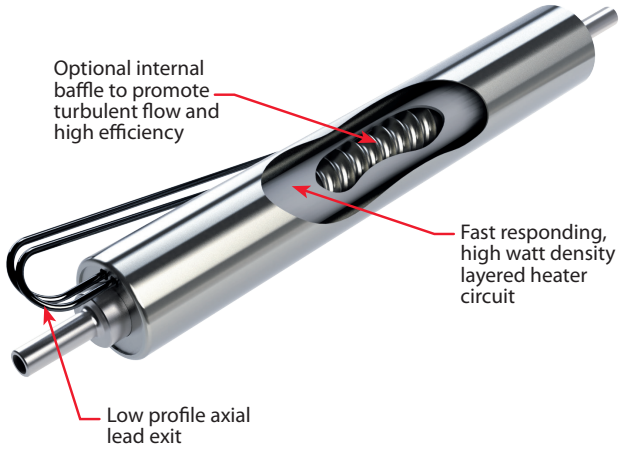
- Substrate tube material: 444 SS
- Fitting and baffle material: 316L SS
- Voltage up to 240V
- Amperage up to 15A per zone
- Resistance tolerance +10%, -5%
- Typical maximum watt densities
  - Air 150 W/in^2 (23 W/cm^2)
  - Water 450 W/in^2 (70 W/cm^2)
- Maximum pressure: 150psi (10.2 bar)
- Maximum temperature: 662°F (350°C) as measured by internal T/C
- UL®/cUL® and CE

Standard Product Offering: Base Heaters

Volts	Watts	Number of Heating Circuits	Outer Diameter in.	(mm)	Protection Tube Length in.	(mm)	Watt Density (W/in²)
240	500	1	1	(25)	3.00	(76)	210
120	250	1	1	(25)	4.25	(108)	57
240	1000	1	1	(25)	4.25	(108)	228
120	375	1	1	(25)	5.25	(133)	62
240	1500	1	1	(25)	5.25	(133)	247
120	500	1	1	(25)	6.50	(165)	63
240	2000	1	1	(25)	6.50	(165)	250
120	750	2	1	(25)	6.50	(165)	94
240	3000	2	1	(25)	6.50	(165)	375
120	1000	2	1	(25)	7.75	(197)	100
240	4000	2	1	(25)	7.75	(197)	400
240	500	1	1	(25)	6.50	(165)	63
120/240	1000/4000	1	1 5/8	(41)	6.50	(165)	75/300
120/240	1500/6000	2	1 5/8	(41)	10.00	(254)	61/245
120/240	2000/8000	2	1 5/8	(41)	12.00	(304.8)	61/245

Note: Visit www.watlow.com/fluent for the latest list of standard designs and product information.

WATLOW SELECT



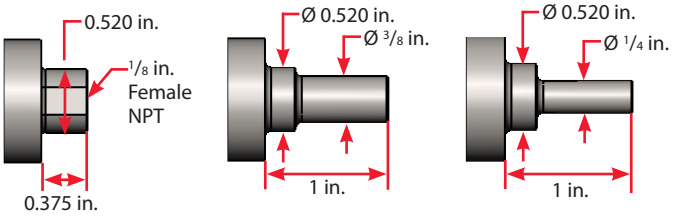
Application Orientation

Gas Heating—
(Any orientation)

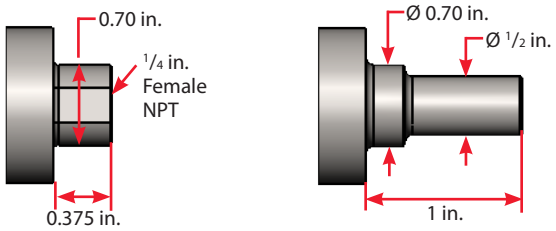
Liquid Heating—
(Heater must be vertical with inlet at the bottom)

Inlet/Outlet Fitting Options

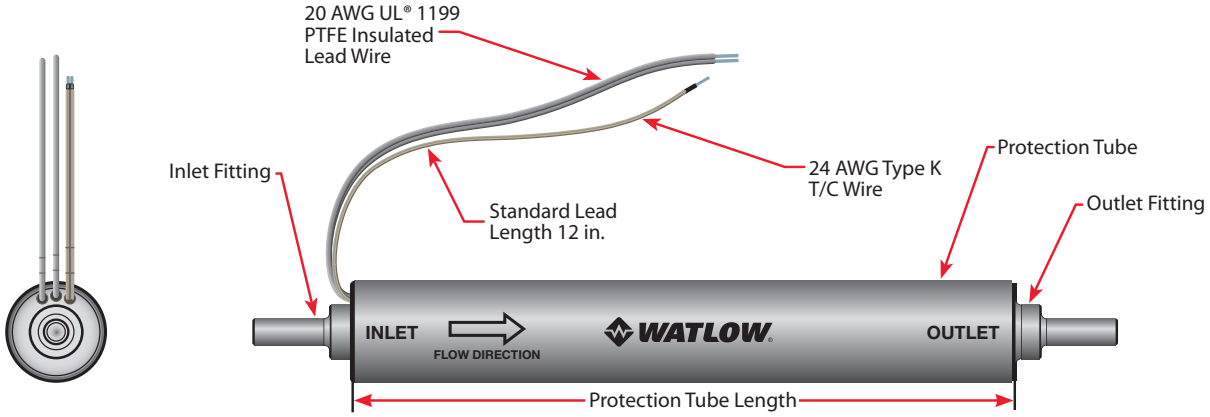
1 Inch Outer Diameter Heaters



1 5/8 Inch Outer Diameter Heaters



Standard Construction



Powered by Possibility

WATLOW

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