

# Immersion Heaters



## FIREROD® Immersion Heaters

FIREROD® immersion heaters are ideal to replace large screw-plug immersion heaters. Packaging up to 300 W/in<sup>2</sup> (46.5 W/cm<sup>2</sup>) in a compact unit, these heaters are versatile when designed into a heating system.

FIREROD immersion heaters are complete with a stainless steel 3/4 inch National Pipe Thread Taper (NPT) double-threaded fitting, which allows conduit boxes to be added. They are also sealed at the lead end with a silicone rubber seal.

Solid copper leads with silicone rubber sleeves are provided for unrestricted wiring. These heaters are recommended for immersion in water of 90+ percent water soluble solutions.

### Performance Capabilities

- Maximum operating temperature in water up to 212°F (100°C) at atmospheric pressure
- Maximum watt density up to 300 W/in<sup>2</sup> (46.5 W/cm<sup>2</sup>)
- Maximum voltage up to 480VAC

### Features and Benefits

#### Nickel-chromium resistance wire precisely centered in the unit

- Ensures even, efficient distribution of heat to the sheath

#### Magnesium oxide (MgO) insulation compacted to the proper density

- Results in high dielectric strength and contributes to faster heat-up

#### Alloy 800 sheath

- Resists water corrosion

#### Metallurgically-bonded conductor pins

- Overlap the resistance wire inside of the core to ensure trouble-free electrical continuity

#### Lead end with silicone rubber seal

- Protects the heater against moisture contamination

#### Stainless steel fittings

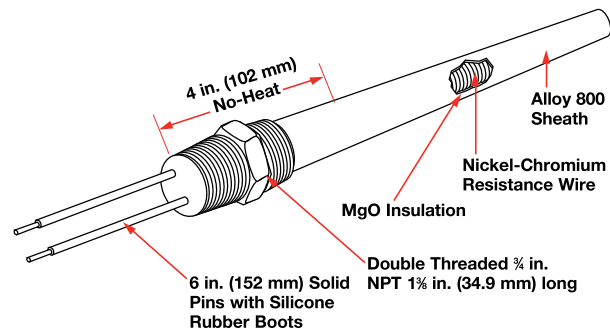
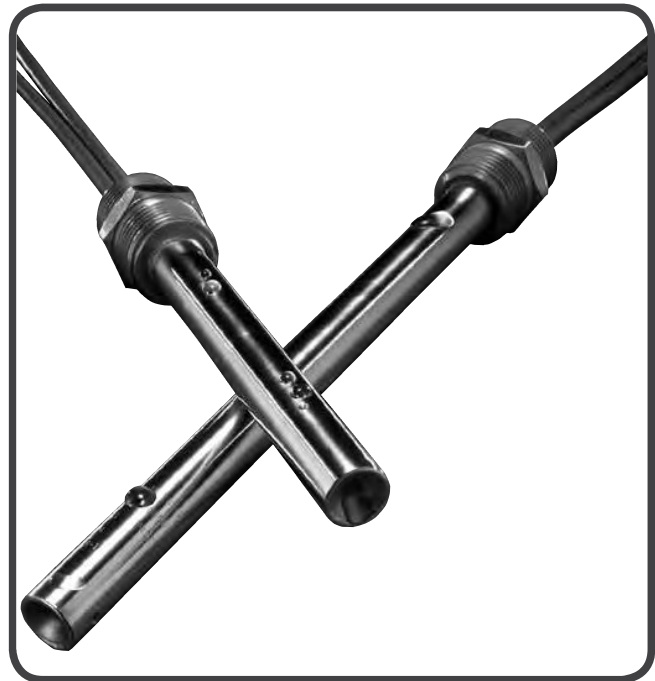
- Offer availability for use in corrosive applications

#### Horizontal through the wall tank mounting

- Provides faster set-up

#### 240 and 480VAC voltage

- Allows wiring flexibility for heater use in particular applications



### Typical Applications

- Plastic reclamation
- Food preparation
- Lab equipment

# Immersion Heaters



## FIREROD Immersion Heaters

### Applications and Technical Data

The small size and large capacity of FIREROD immersion heaters are ideal for use in cramped quarters. When heating liquids of low viscosity, FIREROD heaters have high watt density to pack more heat into tight spots. For water heating applications, a rating of 150 to 300 W/in<sup>2</sup> is recommended. Laboratory tests show that under certain conditions, ratings as high as 700 W/in<sup>2</sup> are safe. For longer life at high watt densities, the FIREROD heater:

- Should not be contained in the main body of the liquid or in a restricted space
- Should be covered with liquid at all times
- Should not be allowed to cycle on and off too frequently
- Should not form scale build up

When heating viscous liquids, such as oils, watt densities must be kept low to prevent carbonization at the heater sheath. FIREROD cartridges offer advantages for heating viscous materials where long life and high quality outweigh usual economic considerations.

As in all immersion applications, scale build-up on the sheath and sludge on the bottom of the tank must be carefully controlled to ensure long heater life.

Equipped with smaller threaded fittings than conventional immersion heaters, FIREROD heaters leave space for more units in the same location. Replacement of single FIREROD units in multi-heater assemblies is fast and easy to avoid discarding the complete assembly.

Moisture resistant seals are available for protection against damp atmospheres.

Threaded fittings are furnished in stainless steel. FIREROD heaters are designed with alloy 800 sheaths; however, other sheath materials can be provided on made-to-order FIREROD units.

Fittings and sheath material should be appropriate for the specific liquid material being heated.

### Sheath Material Compositions

Sheath Material	Chemical Composition															
	Al	C	Co	Cr	Cu	Fe	Mn	Mo	Ni	P	S	Si	Ta	Ti	V	W
<b>Nickel Alloys</b>																
Alloy 800	0.15-0.6	0.1		19-23	0.75	Bal	1.5		30-35		0.015	1.0		0.15-0.6		
<b>Stainless Steels</b>																
304		0.08 ①		18-20		Bal	2 ①		8-12			1 ①				
316		0.08 ①		16-18		Bal	2 ①	2-3	10-14			1 ①				

① Maximum

# Immersion Heaters



## FIREROD Immersion Heaters

### Heater Part Numbers With Stainless Steel Fittings

Diameter in.	Overall Length		Volts	Watts	Watt Density		Approx. Net Wt.		Part Number
	in.	(mm)			W/in <sup>2</sup>	(W/cm <sup>2</sup> )	lbs	(kg)	
5/8	6 1/4	(159)	120	500	127	(19.7)	0.58	(0.26)	<b>L6EX12B</b>
	6 1/4	(159)	240	500	127	(19.7)	0.58	(0.26)	<b>L6EX13B</b>
	6 1/4	(159)	120	750	191	(29.6)	0.58	(0.26)	<b>L6EX14B</b>
	6 1/4	(159)	240	750	191	(29.6)	0.58	(0.26)	<b>L6EX15B</b>
	6 1/4	(159)	120	1,000	254	(39.4)	0.58	(0.26)	<b>L6EX16B</b>
	6 1/4	(159)	240	1,000	254	(39.4)	0.58	(0.26)	<b>L6EX17B</b>
	6 3/4	(172)	240	1,500	300	(46.5)	0.60	(0.27)	<b>L6NX7B</b>
	6 3/4	(172)	480	1,500	300	(46.5)	0.60	(0.27)	<b>L6NX8B</b>
	7 3/4	(197)	240	2,000	291	(45.1)	0.66	(0.30)	<b>L7NX5B</b>
	7 3/4	(197)	480	2,000	291	(45.1)	0.66	(0.30)	<b>L7NX6B</b>
	8 1/2	(216)	240	2,500	300	(46.5)	0.68	(0.31)	<b>L8JX16B</b>
	8 1/2	(216)	480	2,500	300	(46.5)	0.68	(0.31)	<b>L8JX17B</b>
	9 1/4	(235)	240	3,000	300	(46.5)	0.72	(0.33)	<b>L9EX11B</b>
	9 1/4	(235)	480	3,000	300	(46.5)	0.72	(0.33)	<b>L9EX12B</b>
	11	(279)	240	4,000	300	(46.5)	0.80	(0.36)	<b>L11AX59B</b>
	11	(279)	480	4,000	300	(46.5)	0.80	(0.36)	<b>L11AX60B</b>
	12 3/4	(324)	240	5,000	300	(46.5)	0.89	(0.41)	<b>L12NX4B</b>
	12 3/4	(324)	480	5,000	300	(46.5)	0.89	(0.41)	<b>L12NX5B</b>
	14 1/2	(368)	240	6,000	300	(46.5)	0.95	(0.43)	<b>L14JX8B</b>
	14 1/2	(368)	480	6,000	300	(46.5)	0.95	(0.43)	<b>L14JX9B</b>
	18	(457)	240	8,000	295	(45.7)	1.14	(0.52)	<b>L18AX43B</b>
	18	(457)	480	8,000	295	(45.7)	1.14	(0.52)	<b>L18AX44B</b>
	21 1/4	(540)	240	10,000	300	(46.5)	1.30	(0.59)	<b>L21EX1B</b>
	21 1/4	(540)	480	10,000	300	(46.5)	1.30	(0.59)	<b>L21EX2B</b>
	24 3/4	(629)	480	12,000	300	(46.5)	1.50	(0.68)	<b>L24NX1B</b>
	29 3/4	(756)	480	15,000	300	(46.5)	1.80	(0.82)	<b>L29NX5B</b>
	35	(889)	480	18,000	300	(46.5)	2.00	(0.91)	<b>L35AX5B</b>