

## Tubular and Process Assemblies

### Quick Ship

On stock chart units:

- Same day on most heaters
- 10 working days on special voltages and/or wattages
- 15 working days on special element lengths

### Square Flange Immersion Heaters

Designed for use in boilers and industrial storage tanks, square flange immersion heaters offer an energy efficient solution to heating water, oils and degreasing solutions.

Consisting of WATROD or FIREBAR® elements brazed, staked, or welded to a four- or six-bolt flange, these heaters mount directly to a mating flange that is welded to a tank wall or nozzle.

Installation and maintenance is easy. Heater change-out is also simple ... unbolt the flange and replace it with another ... without extensive equipment downtime.

#### Performance Capabilities

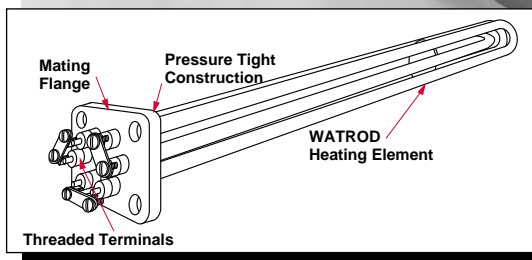
- Watt densities to 100 W/in<sup>2</sup> (15.5 W/cm<sup>2</sup>)
- Wattages to 24kW
- Voltages to 480V~(ac)
- Incoloy® sheath temperatures to 1600°F (870°C)

#### Features and Benefits

- **2½, 3½ and 4½ inch square flanges** easily adapt to application needs.

#### Flange materials:

<b>WATROD</b>	Steel 304 stainless steel
<b>FIREBAR</b>	Steel Brass



- **Asbestos-free gaskets** come wire-tied to each flange. Spare gaskets also available.
- **Epoxy or silicone resin seals**, rated to 250°F (120°C) or 390°F (200°C) respectively, protect elements against moisture and other contaminants.
- **WATROD hairpins are repressed (recompacted)** to maintain MgO density, dielectric strength, heat transfer and life.

- **UL® and CSA component recognition** under file numbers E52951 and 31388 respectively. See **pages 268 to 271** for details.

#### Applications

- Water
- Boiler equipment
- Vapor degreasers
- Fuel oils
- Heat transfer fluids
- Caustic solutions

#### Available on request:

- **Sheath materials** in copper, steel, 304 and 316 stainless steel and titanium
- **Flange materials** in titanium and 316 stainless steel

- **Flange sizes** to meet specific application needs
- **External finishes** such as passivation, belt polishing and glass beading

- **Other voltage and wattage ratings**

Consult your Watlow representative for details.

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F.O.B.: Hannibal, Missouri

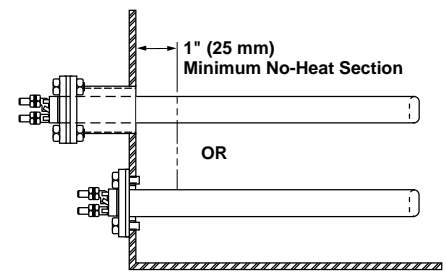
## Square Flange Immersion Heaters

### Application Hints

- Determine recommended sheath materials and watt densities by using the **Element and Assembly Selection Guide** on pages 262 to 263. If wattage is not known, consult your Watlow representative.
- Extend the element's no-heat section completely in the fluid at all times to prevent premature

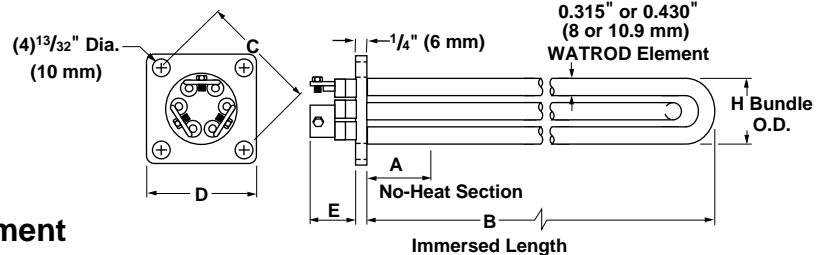
heater failure. See the accompanying illustration for proper placement of the no-heat section.

- Mount WATROD and FIREBAR square flange heaters horizontally and low in the tank, but above sludge level.
- Periodically remove heaters to inspect and clean the elements.



- Keep terminations clean, dry and tight.
- Minimize problems associated with low liquid level conditions by using a low liquid level sensor.

Heater Dimension	Inch	(mm)
A	1 ½	(38)
C	2 ½	(64)
D	2 ½	(64)
E	1	(25)
H	1 ½	(38)



### 2 ½" Square Flange—WATROD Element

WATROD Description	kW	Immersed B Dimension inch (mm)	Code No.				Est. Ship.	
			240V~(ac) 1-Phase	240V~(ac) 3-Phase	480V~(ac) 1-Phase	480V~(ac) 3-Phase	Weight lbs (kg)	

#### Applications: Clean and Potable Water

100 W/in <sup>2</sup> Steel Flange 3-Incoloy® (15.5 W/cm <sup>2</sup> )	8.0	11 ¾ (298)	FHN11N10②	FHN11N3②	FHN11N11②	FHN11N5	18 (9)
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#### Applications: Forced Air and Gases, Caustic Solutions, Degreasing Solutions

30 W/in <sup>2</sup> 304 SS Flange 3-Incoloy® (4.7 W/cm <sup>2</sup> )	3.0	18 ½ (470)	FHN18J10①	FHN18J3	FHN18J11②	FHN18J5②	19 (9)
	3.75	23 ¾ (586)	FHN23B10①	FHN23B3①	FHN23B11②	FHN23B5②	20 (9)
25 W/in <sup>2</sup> 304 SS Flange 3-Incoloy® (3.9 W/cm <sup>2</sup> )	1.5	12 (305)	FHN12A10①	FHN12A3	FHN12A11②	FHN12A5②	18 (8)

#### Applications: Bunker C and #6 Fuel Oils

10 W/in <sup>2</sup> 304 SS Flange 3-Incoloy® (1.6 W/cm <sup>2</sup> )	1.0	18 ½ (470)		FHN18J12①		FHN18J13②	19 (9)
	1.25	23 ¾ (586)		FHN23B12①		FHN23B13②	20 (9)
8 W/in <sup>2</sup> 304 SS Flange 3-Incoloy® (1.3 W/cm <sup>2</sup> )	0.5	12 (305)		FHN12A12①		FHN12A13②	18 (8)

All square flange heaters are Stock unless otherwise noted.

① Assembly Stock  
② Standard

#### Availability

**Stock:** Same day shipment

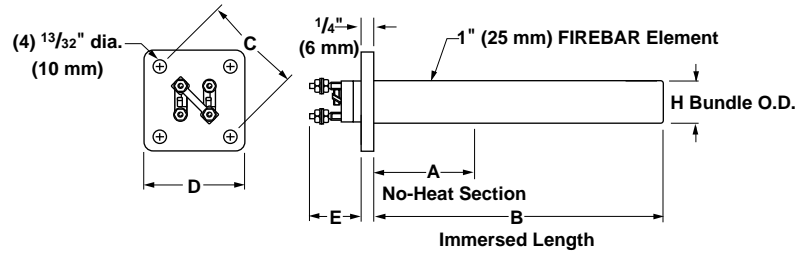
**Assembly Stock:** Five to seven working days

**Standard:** Six weeks

# Tubular and Process Assemblies

## Square Flange Immersion Heaters

Heater Dimension	Inch	(mm)
A	1½	(38)
C	2½	(64)
D	2½	(64)
E	1¼	(44)
H	1⅝	(33)



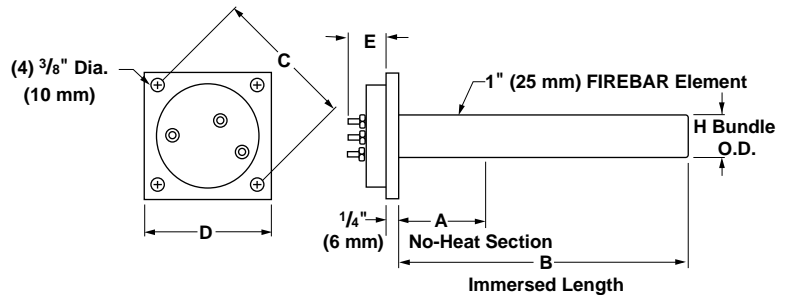
### 2½" Square Flange—FIREBAR Element

FIREBAR Description	kW	Immersed B Dimension inch (mm)	Code No.				Est. Ship. Weight lbs (kg)
			208V~(ac) 3-Phase	240V~(ac) 1-Phase	240V~(ac) 3-Phase	480V~(ac) 1-Phase	

#### Applications: Clean and Potable Water

100 W/in <sup>2</sup> Steel Flange 1-Incoloy® (15.5 W/cm <sup>2</sup> )	5	11½ (292)	FHNFA11J26N②	FHNFA11J10N①	FHNFA11J3N①	FHNFA11J11N②	FHNFA11J5N②	5 (3)
	8	20¾ (527)	FHNFA20N26N②	FHNFA20N10N①	FHNFA20N3N①	FHNFA20N11N②	FHNFA20N5N①	7 (4)
	10	24¾ (619)	FHNFA24G26N②	FHNFA24G10N①	FHNFA24G3N②	FHNFA24G11N②	FHNFA24G5N①	8 (4)
	15	33⅝ (862)	FHNFA33S26N②		FHNFA33S3N②	FHNFA33S11N②	FHNFA33S5N①	9 (5)
80 W/in <sup>2</sup> Steel Flange 1-Incoloy® (12.4 W/cm <sup>2</sup> )	16	22¾ (575)	FHNFB22L26J②	FHNFB22L10J②	FHNFB22L3J②	FHNFB22L11J②	FHNFB22L5J②	10 (5)

Heater Dimension	Inch	(mm)
A	1⅞	(40)
C	3⅞	(90)
D	3⅞	(74)
E	1⅞	(40)
H	2½	(54)



### 3 inch Square Flange—FIREBAR Element

FIREBAR Description	kW	Immersed B Dimension Inch (mm)	Code No.			Est. Ship. Weight lbs (kg)
			208V~(ac) 3-Phase	240V~(ac) 3-Phase	480V~(ac) 3-Phase	

#### Applications: Clean and Potable Water

80 W/in <sup>2</sup> Brass Flange 1-Incoloy® (12.4 W/cm <sup>2</sup> )	18	24½ (622)	FENFB24J26J①	FENFB24J3J②	FENFB24J5J①	12 (6)

#### Applications: Process Water, Ethylene Glycol (50%)

40 W/in <sup>2</sup> Brass Flange 1-Incoloy® (6.2 W/cm <sup>2</sup> )	9	24½ (622)	FENFB24J26K②	FENFB24J3K②	FENFB24J5K②	12 (6)

#### Availability

**Stock:** Same day shipment

**Assembly Stock:** Five to seven working days

**Standard:** Six weeks

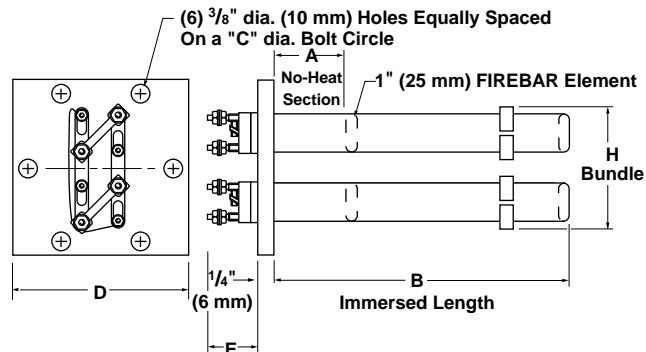
① Stock

② Standard

# Tubular and Process Assemblies

## Square Flange Immersion Heaters

Heater Dimension	Inch	(mm)
A	1	(25)
C	3 1/8	(97)
D	4 1/2	(114)
E	2 1/4	(57)
H	3 1/2	(82)



### 4 1/2" Square Flange—FIREBAR Element

FIREBAR Description	kW	Immersed B Dimension Inch (mm)	Code No.			Est. Ship. Weight lbs (kg)
			208V~(ac) 3-Phase	240V~(ac) 3-Phase	480V~(ac) 3-Phase	

#### Applications: Clean and Potable Water

100 W/in <sup>2</sup> Steel Flange 2-Incoloy® (15.5 W/cm <sup>2</sup> )	18	10 1/2 (267)	FGNFB10J26N②	FGNFB10J3N②	FGNFB10J5N①	16 (8)
70 W/in <sup>2</sup> Steel Flange 2-Incoloy® (10.9 W/cm <sup>2</sup> )	12	10 1/2 (267)	FGNFB10J26P①	FGNFB10J3P②	FGNFB10J5P①	16 (8)

#### Availability

**Stock:** Same day shipment

**Assembly Stock:** Five to seven working days

**Standard:** Six weeks

① Stock

② Standard

#### How to Order

To order a stock unit, please specify:

- Watlow code number
- Flange size and material
- Volts/watts
- Phase
- Quantity

If our stock units do not meet your application needs, Watlow can provide a made-to-order unit.

For **made-to-order** units, please specify:

- Application
- Volts/watts
- Phase
- Flange size, dimensions and material
- Sheath material and diameter
- Number of elements
- No-heat section below the flange
- Immersed ('B' dimension) length
- Maximum bundle diameter (H) or clearance hole size
- Bolt pattern, if not standard
- Options
- Quantity

© Stock or Assembly Stock units with catalog options.

#### Availability

**Stock:** Same day shipment

**Assembly Stock:** Five to seven working days

**Modified Stock®:** Five to seven working days

**Standard:** Three weeks

**Made-to-Order:** Four to six weeks

Options, complexity and quantity may affect availability and lead times. Consult factory.