

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

Screw Plug Immersion Heaters

Screw plug immersion heaters are ideal for direct immersion heating of liquids, including all types of oils and heat transfer solutions.

Available in a variety of stock and made-to-order sizes, Watlow screw plug immersion heaters feature both WATROD round and FIREBAR® flat tubular elements.

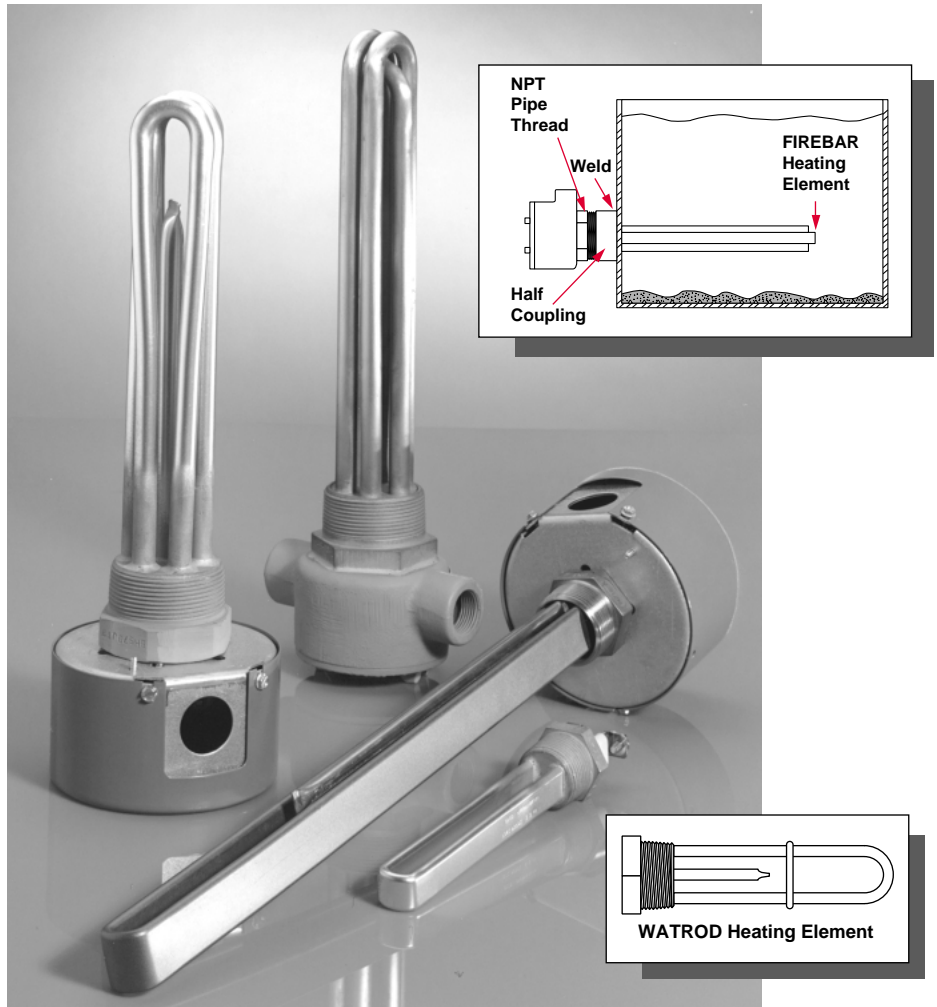
Heating elements are hairpin bent and either welded or brazed into the screw plug—depending on element sheath and plug material compatibility.

General purpose (NEMA 1) terminal enclosures are standard; with optional moisture resistant (NEMA 4), explosion resistant (NEMA 7) and explosion/moisture resistant (NEMA 7/4) enclosures available to meet specific application needs.

Optional thermostats provide convenient process temperature regulation.

Performance Capabilities

- Watt densities to 120 W/in² (18.6 W/cm²)
- Wattages to 38kW
- UL® and CSA component recognition to 480V~(ac) and 600V~(ac) respectively
- Incoloy® sheath temperatures to 1600°F (870°C)
- Passivated 316 stainless steel sheath temperatures to 1200°F (650°C)
- 304 stainless steel sheath temperatures to 1200°F (650°C)
- Steel sheath temperatures to 750°F (400°C)
- Copper sheath temperatures to 350°F (175°C)



Features and Benefits

• Screw plug and element sizes:

1" NPT	0.315" WATROD
1¼" NPT	0.315" WATROD 1" FIREBAR
2" NPT	0.475" WATROD
2½" NPT	0.475" WATROD 1" FIREBAR

- **A variety of element sheath and screw plug materials** to meet application needs.
- **Integral thermowells** provide convenient temperature sensor insertion and replacement without draining the fluid being heated.
- **Terminal enclosures** can be rotated to simplify connection with existing conduits.

- **Welding or brazing** WATROD and FIREBAR elements to the screw plug provides a pressure tight seal.
- **WATROD hairpins are repressed (recompacted)** to maintain MgO density, dielectric strength, heat transfer and life.
- **2½" NPT screw plug assemblies feature element support(s)** to help ensure proper spacing for maximizing heater performance and life.
- **Phase capability:**

1" NPT	1-Phase
1¼", 2", 2½" NPT	1- or 3-Phase

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

Incoloy® is a registered trademark of Special Metals Corporation.

UL® is a registered trademark of Underwriter's Laboratories, Inc.

Tubular and Process Assemblies

Screw Plug Immersion Heaters

Applications

- Water:
 - Deionized
 - Demineralized
 - Clean
 - Potable
 - Process
- Industrial water rinse tanks
- Vapor degreasers
- Hydraulic oil, crude, asphalt
- Lubricating oils at API specified watt densities
- Air and gas flow
- Caustic solutions
- Chemical baths
- Anti-freeze (glycol) solutions
- Paraffin

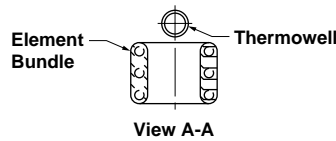
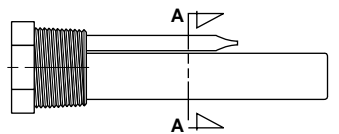
Screw Plug Orientation

Correct element/thermowell orientation assures proper process temperature sensing.

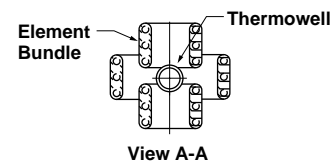
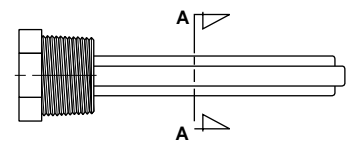
Correct horizontal mounting of WATROD and FIREBAR screw plugs is shown to the right. Correct orientation assures optimum performance and maximum heater life. Additional mounting information is provided in the *Installation and Maintenance Instructions*.

FIREBAR Heating Element

1½" NPT—One Element

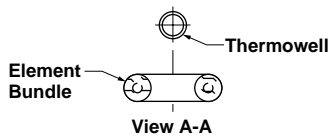
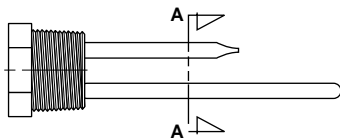


2½" NPT—Three Elements

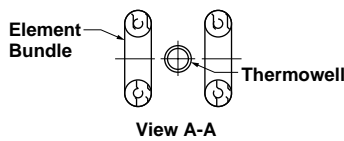
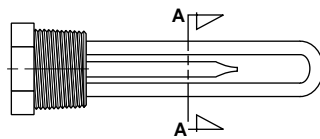


WATROD Heating Element

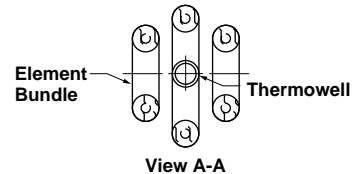
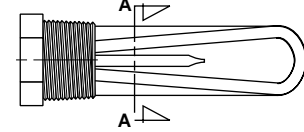
1" NPT—One Element



1¼" & 2" NPT—Two Elements



2" & 2½" NPT—Three Elements



Options

Terminal Enclosures

General purpose (NEMA 1) terminal enclosures, without thermostats, are standard on all screw plug immersion heaters. To meet specific application requirements, Watlow offers the following optional terminal enclosures:

- General purpose (NEMA 1) with single or double pole thermostat

- Moisture resistant (NEMA 4) or corrosion resistant (NEMA 4X) — available with optional single or double pole thermostat
- Explosion resistant (NEMA 7) class 1, groups C and D explosion resistant—available with optional single or double pole thermostat. For class 1, group B enclosures, consult your Watlow representative or refer to CSA specifications on [page 271](#).
- Explosion/moisture resistant (NEMA 7/4) combination—

available with optional single or double pole thermostat
Note: Unless otherwise stated on the accompanying illustrations, both WATROD and FIREBAR screw plugs are centered on the terminal enclosure. To order, add the suffix letter(s) to the screw plug heater's base code number. This is depicted on the *Stock and Options* ordering example on [page 336](#). Also, specify class and group, if applicable.

Tubular and Process Assemblies

Screw Plug Immersion Heaters

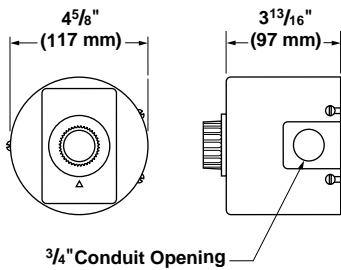
Options

Continued

General Purpose (NEMA 1)

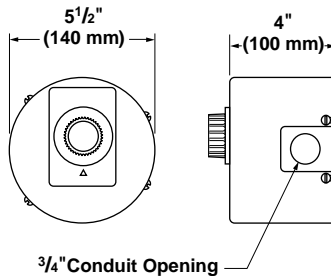
Single Pole Thermostat

All screw plug sizes



Double Pole Thermostat

All screw plug sizes



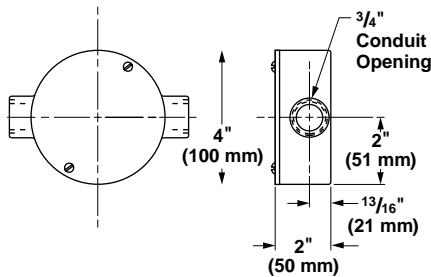
Caution:

Explosion-resistant terminal enclosures are intended to provide explosion containment in the electrical termination/wiring enclosure only. No portion of the assembly outside of this enclosure is covered under this NEMA rating. NEMA rating effectiveness may be compromised by abuse or misapplication.

Moisture Resistant NEMA 4

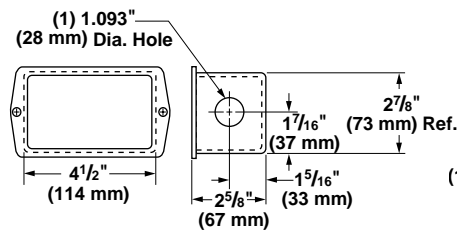
Without Thermostat

All screw plug sizes



Single Pole Thermostat

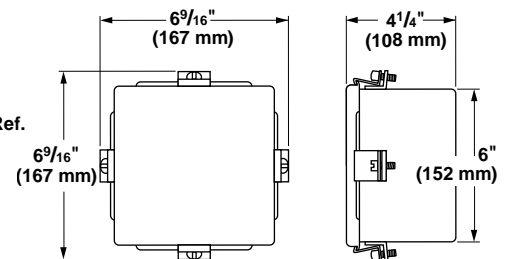
1" & 1 1/4" NPT-1 WATROD Element



Note: The thermostat is not centered on the WATROD screw plug immersion heater.

Single or Double Pole Thermostat

1 1/4" NPT-2 WATROD Elements
1 1/4" NPT-1 FIREBAR Element
All 2" & 2 1/2" NPT screw plugs

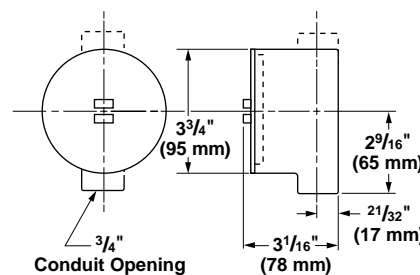


Note: The thermostat is not centered on the screw plug immersion heater.

Explosion/Moisture Resistant (NEMA 7 or 7/4) ①

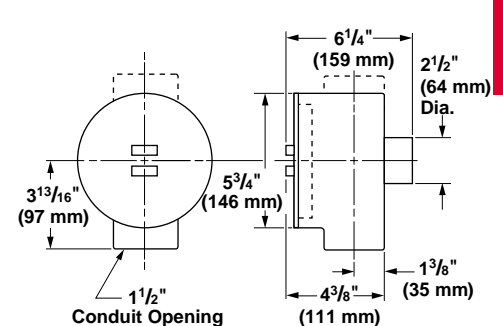
Without Thermostat

All WATROD screw plugs



Single or Double Pole Thermostat

1 1/4" NPT-1 FIREBAR Element
All WATROD screw plugs



① All NEMA 7/4 rated terminal enclosures supplied with a gasket for the cover.

Tubular and Process Assemblies

Screw Plug Immersion Heaters

Options

Continued

Explosion/Moisture Resistant (NEMA 7 or 7/4) [Ⓛ]

Without Thermostat

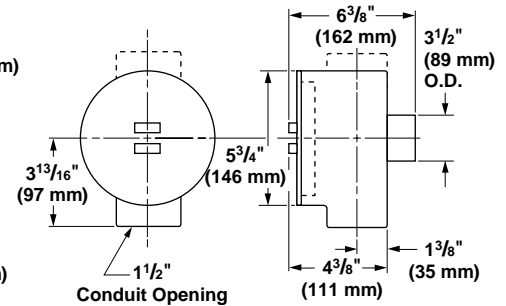
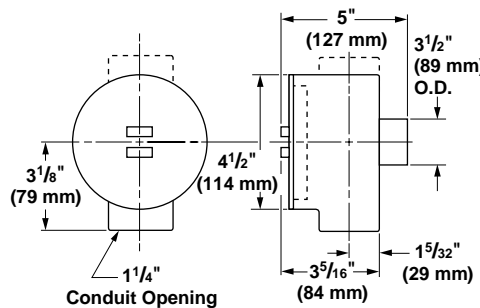
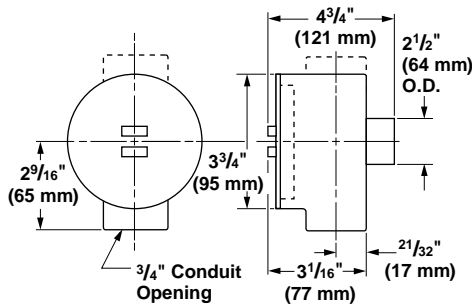
1/4" NPT--1 FIREBAR element

Without Thermostat

2 1/2" NPT--3 FIREBAR elements

Single or Double Pole Thermostat

2 1/2" NPT--3 FIREBAR elements



[Ⓛ] All NEMA 7/4 rated terminal enclosures supplied with a gasket for the cover.

CSA Certified Enclosures

CSA certified moisture and/or explosion resistant terminal enclosures protect wiring in hazardous gas environments. These terminal enclosures, covered under

CSA file number 61707, are available on all WATROD and FIREBAR screw plug immersion heaters. For additional information, consult your Watlow representative.

To order, specify **CSA certified enclosure**, **process temperature** (°F), maximum **working pressure** of application (psig), **media** being heated and heater **mounting orientation** (horizontal or vertical) and **screw plug size**.

Pilot Light

The optional pilot light gives the operator visual indication of heater on or off power status.

The PL10 pilot light is configured to a maximum 250V~(ac), and supplied with six inch (150 mm) leads.

The PL11 pilot light is rated for 480V~(ac), and supplied with four inch (100 mm) leads.

Pilot lights may be attached to either single or double pole thermostats with general purpose (NEMA 1) enclosure only. For moisture or

explosion resistant terminal enclosures (NEMA 4 or NEMA 7), consult factory.

To order, refer to the *Build-a-Code* chart on **page 336**.

Thermostats

To provide process temperature control, Watlow offers optional single pole, single throw (SPST) and double pole, single throw (DPST) thermostats.

Unless otherwise specified, thermostats are mounted inside the terminal enclosure. For details and ordering information, refer to *Thermostats* on **pages 423 to 425**.

Please verify that the thermostat's sensing bulb O.D. is compatible with the screw plug's thermowell I.D.

Tubular and Process Assemblies

Screw Plug Immersion Heaters

Options

Continued

Thermocouples

Type J or K thermocouples offer extremely accurate sensing of process and/or sheath temperatures. A thermocouple may be inserted into the thermowell or attached to the heater's sheath.

Thermocouples are supplied with 120 inch (305 mm) leads (longer lead lengths available). Unless otherwise specified, thermocouples are supplied with temperature ranges detailed on the *Thermocouple Types* chart.

Using a thermocouple requires an appropriate temperature and power control. These must be purchased

separately. Watlow offers a wide variety of temperature and power controls to meet virtually all applications. Temperature controls can be configured to accept process variable inputs, too. Consult your Watlow representative for details.

To order, specify **Type J** or **K** thermocouple and lead length.

Indicate if the thermocouple is for **process temperature sensing** or heater sheath **high-limit protection**. Please specify if the screw plug will be mounted **vertical** or **horizontal** in the tank. **If vertical, indicate if the housing is on top or bottom.**

If the screw plug heater is mounted in an in-line circulation heating application, indicate flow direction relative to the heater's enclosure.

Thermocouple Types

ASTM Type	Conductor Characteristics		Recommended ^① Temperature Range	
	Positive	Negative	°F	(°C)
J	Iron (Magnetic)	Constantan (Non-Magnetic)	0 to 1000	(-20 to 540)
K	Chromel® (non-magnetic)	Alumel® (Magnetic)	0 to 2000	(-20 to 1100)

① Type J and Type K thermocouples are rated 32 to 1382°F and 32 to 2282°F (0-750°C and 0-1250°C), respectively. Watlow does not recommend exceeding temperature ranges shown on this chart for the tubular product line.

Wattages and Voltages

Watlow routinely supplies screw plug immersion heaters with 120 to 480V~(ac) as well as wattages from

250 watts to 38kW. If required, Watlow will configure heaters with voltages and wattages outside these parameters. For more information on

special voltage and wattage configurations, consult your Watlow representative.

Sheath Materials

The following sheath materials are available on WATROD and FIREBAR heating elements:

Standard Sheath Materials

WATROD	Incoloy®
	316 stainless steel
	Steel
	Copper
FIREBAR	Incoloy®

Made-to-Order Sheath Materials

WATROD	304 stainless steel Monel®
FIREBAR	304 stainless steel

Exotic Sheath Materials

Consult your Watlow representative for details and availability.

External Finishing

Passivation

During the manufacturing process, particles of iron or tool steel may become embedded in the stainless steel or alloy sheath. If not removed, these particles may corrode,

produce rust spots and/or contaminate the process. For critical applications, passivation will remove free iron from the sheath. To order, specify **passivation**.

Other Finishes

Simple belt polishing and glass beading are available to meet cosmetic demands. Consult factory for details.

Alumel® and Chromel® are registered trademarks of the Hoskins Manufacturing Company. Monel® is a registered trademark of Special Metals Corporation.

Tubular and Process Assemblies

Screw Plug Immersion Heaters

Options

Continued

Screw Plug Materials

The following screw plug materials are available:

To order, specify **screw plug size** and **material**.

Standard Screw Plug Materials

WATROD	304 stainless steel 316 stainless steel Steel Brass
FIREBAR	304 stainless steel

Made-to-Order Plug Materials

For both WATROD and FIREBAR, consult factory about details and availability.

Screw Plug Sizes

Including European

- **NPT**–1, 1¼, 2, 2½ inch
- **Gas**–G1¼, G1½, G 2 inch (brass only)

- **BSP**–1½ inch (stainless steel only)

Consult factory for sizes and materials not listed.

To order, specify **size, style** (NPT, Gas or BSP) and material.

BSP = British Standard Pipe
Gas = Gas pipe standard

Screw Plug to Flange Adaptors

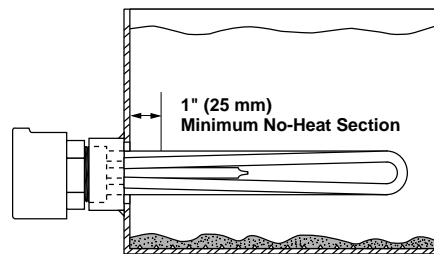
Screw plug to flange adaptors permit replacing flange heaters with screw plug heaters. To order, specify the appropriate code number.

Screw Plug to Flange Adaptors

Screw Plug to Flange Adaptor Sizes	Material	Estimated Shipping Wt.		Availability	Code Number
		lbs	(kg)		
1 ¼ to 3"-150#	Steel	13	(5.9)	Stock	125X3SA
2 ½ to 3"-150#	Steel	11	(5.0)	Stock	250X3SA
2 ½ to 4"-150#	Steel	16	(7.3)	Stock	250X4SA
2 ½ to 5"-150#	Steel	25	(11.3)	Stock	250X5SA
2 ½ to 6"-150#	Steel	33	(15.0)	Stock	250X6SA

Application Hints

- Select the recommended sheath material and watt density for the substance being heated. Use the **Supplemental Applications Chart** on **pages 263 to 266**. If unable to determine the correct heater material and type, consult your Watlow representative.
- Extend the element's no-heat section completely into the fluid being heated to help prevent premature heater failure. See accompanying illustration for proper no-heat section placement.
- Locate screw plug heater low in the tank, but above the sludge level.



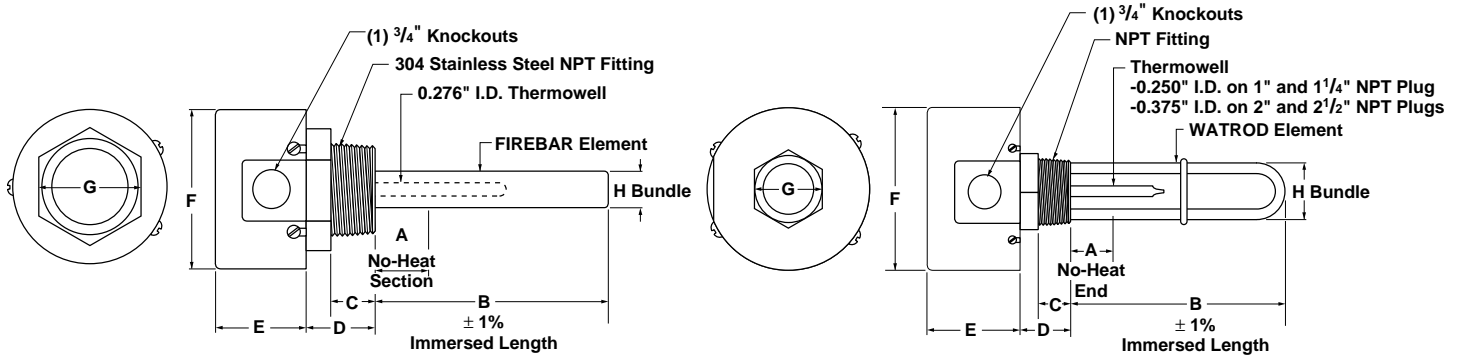
- Choose a FIREBAR element when your application requires a smaller system package or lower watt density.
- Ensure wiring integrity by making sure terminal enclosure temperature does not exceed 400°F (205°C).
- Keep electrical connections clean, dry and tight.

- Minimize problems associated with low liquid level conditions by using a low liquid level sensor or sheath temperature high-limit control.
- Periodically remove the screw plug assembly for inspection and clean the heating element(s). This preventive maintenance will reduce premature failure and optimize heater performance.
- Refer to the *Installation and Maintenance Instructions* for correct orientation of FIREBAR elements. Correct element orientation to flow minimizes pressure drop, increases buoyancy force and heater performance.

Tubular and Process Assemblies

Screw Plug Immersion Heaters

Screw Plug Heater Dimensions



WATROD and FIREBAR Screw Plug Immersion Heater Dimensions

Heater Type	NPT Size in	A Dimension in (mm)	C Dimension in (mm)	D Dimension in (mm)	E Dimension in (mm)	F Dimension in (mm)	G Dimension in (mm)	H Dimension* in (mm)
WATROD	1	1 (25)	5/16 (22)	1 1/4 (32)	2 5/8 (67)	4 5/8 (117)	1 3/8 (35)	1 1/2 (29)
WATROD	1 1/4	1 15/16 (24)	15/16 (24)	1 5/16 (33)	2 5/8 (67)	4 5/8 (117)	1 3/4 (44)	1 3/8 (35)
WATROD	2 Steel	2 5/16 (65)	1 (25)	1 11/16 (43)	2 5/8 (67)	4 5/8 (117)	2 1/2 (64)	2 1/4 (57)
WATROD	2 Brass	2 13/16 (68)	1 1/16 (27)	1 5/16 (40)	2 5/8 (67)	4 5/8 (117)	2 1/2 (64)	2 1/4 (57)
WATROD	2 S. Steel	2 13/16 (71)	1 (25)	1 5/8 (41)	2 5/8 (67)	4 5/8 (117)	2 1/2 (64)	2 1/4 (49)
WATROD	2 1/2	2 3/8 (56)	1 5/16 (33)	2 1/8 (52)	2 5/8 (67)	4 5/8 (117)	3 1/2 (76)	2 1/2 (64)
FIREBAR	1 1/4	3 7/8 (98)	13/16 (21)	1 1/8 (27)	2 5/8 (67)	4 5/8 (117)	1 3/4 (44)	1 3/8 (35)
FIREBAR	2 1/2	3 3/8 (86)	1 1/4 (32)	1 1/2 (38)	2 5/8 (67)	4 5/8 (117)	3 1/2 (76)	2 1/2 (64)

* Note: All plug bundles fit into equivalent NPT coupling. They do not fit in equivalent pipe sizes.

1" NPT Screw Plug – WATROD Element

WATROD Description	kW	Immersed B Dimension inch (mm)	Code No.		Est. Ship. Weight lbs (kg)
			120V~(ac) 1-Phase	240V~(ac) 1-Phase	

Application: Clean Water

60 W/in ² Brass Plug 1-Copper (9.3 W/cm ²)	0.5	4 1/2 (114)	BCC4J1	BCC4J10	3 (2)
	0.75	6 1/2 (165)	BCC6J1	BCC6J10	3 (2)
	1.0	6 5/8 (168)	BCC6L1	BCC6L10	3 (2)
	1.25	8 (203)	BCC8A1	BCC8A10	4 (2)
	1.5	10 5/8 (270)	BCC10L1	BCC10L10	4 (2)
	2.0	12 1/2 (318)	BCC12J1	BCC12J10	5 (3)
	2.5	14 3/4 (375)	BCC14N1	BCC14N10	5 (3)
	3.0	16 3/4 (426)	BCC16N1	BCC16N10	6 (3)
	4.0	21 (533)		BCC21A10	6 (3)

Applications: Lightweight Oils, Degreasing Solutions, Heat Transfer Oils

23 W/in ² Steel Plug 1-Steel (3.6 W/cm ²)	0.25	6 1/2 (165)	BCS6J1	BCS6J10	3 (2)
	0.35	9 1/4 (235)	BCS9E1	BCS9E10	4 (2)
	0.5	9 5/8 (238)	BCS9G1	BCS9G10	4 (2)
	0.75	13 1/2 (343)	BCS13J1	BCS13J10	5 (3)
	1.0	16 3/4 (425)	BCS16N1	BCS16N10	6 (3)
	1.5	23 3/4 (603)	BCS23N1	BCS23N10	7 (4)

All heating elements are Assembly Stock unless otherwise noted.

Availability

Assembly Stock: Three to five working days

Tubular and Process Assemblies

Screw Plug Immersion Heaters

1¼" NPT Screw Plug – WATROD Element

WATROD Description	kW	Immersed B Dimension inch (mm)	Code No.			Est. Ship. Weight lbs (kg)
			120V~(ac) 1-Phase	120/240V~(ac) 1-Phase	240V~(ac) 1-Phase	

Application: Clean Water

60 W/in² Brass Plug	0.5	4 ¾ (111)	BDC4G1		BDC4G10	3 (2)
	0.75	6 ¾ (162)	BDC6G1		BDC6G10	3 (2)
1-Copper (9.3 W/cm²)	1.0	4 ¾ (111)		BEC4G6		4 (2)
	1.5	6 ¾ (162)		BEC6G6		4 (2)
	2.0	8 ½ (216)		BEC8J6		5 (3)
	2.5	10 ¾ (273)		BEC10N6		5 (3)
	3.0	15 (381)		BEC15A6		6 (3)
	4.0	19 (483)			BEC19A10	7 (4)
	5.0	23 ½ (597)			BEC23J10	8 (4)
	6.0	27 ½ (699)			BEC27J10	9 (4)

Applications: Lightweight Oils, Degreasing Solutions, Heat Transfer Oils

23 W/in² Steel Plug	0.5	6 ¾ (162)		BES6G6		4 (2)
	0.5	7 ¾ (187)		BES7G6		4 (2)
	0.7	8 ¾ (225)		BES8R6		5 (3)
	0.75	10 ¼ (256)		BES10B6		5 (3)
	1.0	12 ¾ (324)		BES12N6		6 (3)
	1.5	19 ¾ (492)		BES19G6		7 (4)
	2.0	25 ¾ (645)		BES25G6		8 (4)
	3.0	36 ¾ (937)		BES36R6		9 (4)

Applications: Forced Air and Gases, Caustic Solutions, Degreasing Solutions

23 W/in² 304 SS Plug	1.0	13 ¾ (340)		BEN13G6		6 (3)
	1.5	19 (483)		BEN19A6		7 (4)
	2.0	24 ¾ (619)		BEN24G6		8 (4)
2-Incoloy® (3.6 W/cm²)						

1¼" NPT Screw Plug– FIREBAR Element

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

Applications: Clean and Potable Water

90 W/in² 304 SS Plug	1.5	7 ¾ (194)	BDNF7R10 ② ⑦		BDNF7R11 ② ⑦	5 (3)	
	3.0	11 ¾ (283)	BDNF11G10 ② ⑦		BDNF11G11 ② ⑦	6 (3)	
	1-Incoloy® (14 W/cm²)	5.0	16 ¾ (410)		BDNF16G3	BDNF16G5	7 (4)
		6.5	19 ¾ (486)		BDNF19G3	BDNF19G5	8 (4)
		8.5	24 ¾ (619)		BDNF24L3	BDNF24L5	9 (4)
		10.5	29 ¾ (753)		BDNF29R3	BDNF29R5	10 (5)
	12.7	34 ¾ (879)		BDNF34R3	BDNF34R5	11 (5)	
	17.0	45 ¾ (1146)		BDNF45G3	BDNF45G5	13 (6)	
	21.5	55 ¾ (1413)			BDNF55R5	15 (7)	

All heating elements are Assembly Stock unless otherwise noted.
Availability
Assembly Stock: Three to five working days
Standard: 10 working days

CONTINUED 

- ② Standard
- ④ Wired for higher voltage.
- ⑦ Not available as 3-phase – 1-phase only.
- ⑧ Can be wired 1-phase.

Tubular and Process Assemblies

Screw Plug Immersion Heaters

1¼" NPT Screw Plug – FIREBAR Element

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

Applications: Process Water, Ethylene Glycol (50%)

45 W/in ² ®	2.0	13 (330)		BDNF13A27		6 (3)
304 SS Plug	2.5	15½ (394)		BDNF15J27		7 (4)
1-Incoloy®	3.0	18 (457)		BDNF18A27		8 (4)
(7 W/cm ²)	4.0	22½ (572)		BDNF22J27	BDNF22J28	9 (4)
	5.0	27½ (699)		BDNF27J27	BDNF27J28	10 (5)
	6.0	32½ (826)		BDNF32J27	BDNF32J28	11 (5)
	8.0	42 (1067)		BDNF42A27	BDNF42A28	13 (6)
	10.0	51½ (1308)		BDNF51J27	BDNF51J28	15 (7)

Applications: Cooking Oils, Ethylene Glycol (100%)

30 W/in ² ®	1.7	16½ (410)		BDNF16G12	BDNF16G13	7 (4)
304 SS Plug	2.2	19½ (486)		BDNF19G12	BDNF19G13	8 (4)
1-Incoloy®	2.8	24¾ (619)		BDNF24L12	BDNF24L13	9 (4)
(4.7 W/cm ²)	3.5	29¾ (752)		BDNF29R12	BDNF29R13	10 (5)
	4.25	34¾ (880)		BDNF34R12	BDNF34R13	11 (5)
	5.7	45¾ (1146)		BDNF45G12	BDNF45G13	13 (6)
	7.2	55¾ (1413)		BDNF55R12	BDNF55R13	15 (7)

Applications: Heat Transfer Oils, Mineral Oils, Degreasing Solutions

23 W/in ² ®	1.25	16½ (410)		BDNF16G20		7 (4)
304 SS Plug	1.65	19½ (486)		BDNF19G20		8 (4)
1-Incoloy®	2.15	24¾ (619)		BDNF24L20	BDNF24L19	9 (4)
(3.6 W/cm ²)	2.65	29¾ (752)		BDNF29R20	BDNF29R19	10 (5)
	3.2	34¾ (879)		BDNF34R20	BDNF34R19	11 (5)
	4.25	45¾ (1146)		BDNF45G20	BDNF45G19	13 (6)
	5.4	55¾ (1413)		BDNF55R20	BDNF55R19	15 (6)

Applications: Medium Weight Oils, Heat Transfer Oils, Lubrication Oils, Liquid Paraffin

15 W/in ² ®	0.67	13 (330)		BDNF13A29		6 (3)
304 SS Plug	0.83	15½ (394)		BDNF15J29		7 (4)
1-Incoloy®	1.0	18 (457)		BDNF18A29		8 (4)
(2.3 W/cm ²)	1.33	22½ (572)		BDNF22J29	BDNF22J30	9 (4)
	1.67	27½ (699)		BDNF27J29	BDNF27J30	10 (5)
	2.0	32½ (826)		BDNF32J29	BDNF32J30	11 (5)
	2.67	42 (1067)		BDNF42A29	BDNF42A30	13 (6)
	3.33	51½ (1308)		BDNF51J29	BDNF51J30	15 (7)

Applications: Bunker C and #6 Fuel Oils, Asphalt

8 W/in ² ®	0.43	16½ (410)		BDNF16G22		7 (4)
304 SS Plug	0.55	19½ (486)		BDNF19G22		8 (4)
1-Incoloy®	0.7	24¾ (619)		BDNF24L22	BDNF24L21	9 (4)
(1.3 W/cm ²)	0.88	29¾ (753)		BDNF29R22	BDNF29R21	10 (5)
	1.08	34¾ (880)		BDNF34R22	BDNF34R21	11 (5)
	1.4	45¾ (1146)		BDNF45G22	BDNF45G21	13 (6)
	1.8	55¾ (1413)		BDNF55R22	BDNF55R21	15 (7)

③ Must be operated 3-phase only.

⑧ Can be wired 1-phase.

All heating elements are Assembly Stock unless otherwise noted.

Availability
Assembly Stock: Three to five working days

Tubular and Process Assemblies

Screw Plug Immersion Heaters

2" NPT Screw Plug – WATROD Element (Note: Will not fit into a two inch pipe)

WATROD Description	kW	Immersed B Dimension inch (mm)	Code No.					Est. Ship. Weight lbs (kg)
			120V~(ac) 1-Phase	120/240V~(ac) 1-Phase	240/480V~(ac) 1-Phase	240V~(ac) 3-Phase	480V~(ac) 3-Phase	

Application: Clean Water

60 W/in² ④ Brass Plug 2-Copper (9.3 W/cm ²)	2.0	8 1/8 (206)		BGC78C6	BGC78C7			4 (2)
	3.0	11 1/8 (283)		BGC711C6	BGC711C7			5 (3)
	4.0	15 1/8 (384)		BGC715C6	BGC715C7			6 (3)
	5.0	18 1/8 (460)		BGC718C6	BGC718C7 ②			6 (3)
	6.0	21 1/8 (537)			BGC721C7			7 (4)
	8.0	26 5/8 (676)			BGC726L7			7 (4)
	10.0	32 1/8 (816)			BGC732C7			8 (4)
60 W/in² Brass Plug 3-Copper (9.3 W/cm ²)	3.0	8 1/8 (206)	BHC78C1			BHC78C3	BHC78C13 ②③	5 (3)
	4.5	11 1/8 (283)	BHC711C1			BHC711C3	BHC711C5	6 (3)
	6.0	15 1/8 (384)				BHC715C3	BHC715C5	7 (4)
	7.5	18 1/8 (460)				BHC718C3	BHC718C5	7 (4)
	9.0	21 1/8 (537)				BHC721C3	BHC721C5	8 (4)
	12.0	26 5/8 (676)				BHC726L3	BHC726L5	8 (4)
	15.0	32 1/8 (816)				BHC732C3	BHC732C5	9 (4)

Application: Process Water

48 W/in² ④ 304 SS Plug 2-Incoloy® (7.5 W/cm ²)	2.0	9 3/4 (248)		BGN79N6	BGN79N7			4 (2)
	3.0	13 3/4 (337)		BGN713E6	BGN713E7			5 (3)
	4.0	17 3/4 (451)		BGN717N6	BGN717N7			6 (3)
	5.0	20 3/4 (514)		BGN720E6	BGN720E7			7 (4)
	6.0	25 3/4 (641)			BGN725E7			7 (4)
	8.0	32 3/4 (832)			BGN732N7			8 (4)
	10.0	40 3/4 (1022)			BGN740E7			9 (4)
48 W/in² ⑤ 304 SS Plug 3-Incoloy® (7.5 W/cm ²)	3.0	9 3/4 (248)	BHN79N1			BHN79N3 ②	BHN79N5	5 (3)
	4.5	13 3/4 (337)	BHN713E1			BHN713E3 ②	BHN713E5 ②	6 (3)
	6.0	17 3/4 (451)				BHN717N3 ②	BHN717N5 ②	7 (4)
	7.5	20 3/4 (514)				BHN720E3 ②	BHN720E5 ②	8 (4)
	9.0	25 3/4 (641)				BHN725E3 ②	BHN725E5 ②	9 (4)
	12.0	32 3/4 (832)				BHN732N3 ②	BHN732N5 ②	9 (4)
	15.0	40 3/4 (1022)				BHN740E3	BHN740E5 ②	10 (5)
	18.0	47 3/4 (1213)				BHN747N3 ②	BHN747N5 ②	11 (5)

CONTINUED 

All heating elements are Assembly Stock unless otherwise noted.

Availability

Assembly Stock: Three to five working days

② Stock

③ Must be operated 3-phase only.

④ Wired for higher voltage.

⑤ 240V~(ac) can be wired wye and operated at 480V~(ac) 3-phase to produce 1/3 more kW

Tubular and Process Assemblies

Screw Plug Immersion Heaters

2" NPT Screw Plug – WATROD Element (Note: Will not fit into a two inch pipe)

WATROD Description	kW	Immersed B Dimension inch (mm)	Code No.					Est. Ship.
			120V~(ac) 1-Phase	120/240V~(ac) 1-Phase	240/480V~(ac) 1-Phase	240V~(ac) 3-Phase	480V~(ac) 3-Phase	Weight lbs (kg)

Applications: Forced Air and Gases, Caustic Solutions, Degreasing Solutions

23 W/in ² ^{⑤⑥} 304 SS Plug 3-Incoloy [®] (3.6 W/cm ²)	3.0	17 ¼ (451)	BHNA17N1			BHNA17N3 ^①	BHNA17N5 ^①	7 (4)
	4.5	25 ¼ (641)	BHNA25E1			BHNA25E3	BHNA25E5	9 (4)
	6.0	32 ¼ (832)				BHNA32N3	BHNA32N5 ^①	9 (4)
	7.5	40 ¼ (1022)				BHNA40E3	BHNA40E5	10 (5)
	9.0	47 ¼ (1213)				BHNA47N3	BHNA47N5	11 (5)
	12.5	64 ¼ (1632)				BHNA64E3	BHNA64E5	15 (7)
15.0	76 ¼ (1950)				BHNA76E3	BHNA76E5	18 (9)	

Applications: Lightweight Oils, Degreasing Solutions, Heat Transfer Oils

23 W/in ² ^④ Steel Plug 2-Steel (3.6 W/cm ²)	1.0	9 ½ (241)		BGS79J6	BGS79J7			4 (2)
	1.5	13 ½ (343)		BGS713J6 ^①	BGS713J7 ^①			5 (3)
	2.0	17 ½ (445)		BGS717J6 ^①	BGS717J7			6 (3)
	2.5	20 ½ (521)		BGS720J6	BGS720J7			7 (4)
	3.0	25 (635)		BGS725A6	BGS725A7			7 (4)
	4.0	32 ½ (826)		BGS732J6	BGS732J7			8 (4)
23 W/in ² Steel Plug 3-Steel (3.6 W/cm ²)	5.0	40 (1016)		BGS740A6	BGS740A7			9 (4)
	6.0	47 ½ (1207)			BGS747J7			10 (5)
	1.5	9 ½ (241)	BHS79J1			BHS79J3	BHS79J13 ^③	5 (3)
	3.0	17 ½ (445)	BHS717J1			BHS717J3	BHS717J5 ^①	7 (4)
	4.5	25 (635)	BHS725A1			BHS725A3	BHS725A5	9 (4)
	6.0	32 ½ (826)				BHS732J3	BHS732J5	12 (6)
	7.5	40 (1016)				BHS740A3	BHS740A5	13 (6)
	9.0	47 ½ (1207)				BHS747J3	BHS747J5	13 (6)
	12.5	64 (1626)				BHS764A3	BHS764A5	17 (8)

Applications: Medium Weight Oils, Heat Transfer Oils, Liquid Paraffin

16 W/in ² ^③ 304 SS Plug 3-Incoloy [®] (2.5 W/cm ²)	1.0	9 ¼ (248)				BHN79N12	BHN79N13	5 (3)
	1.5	13 ¼ (337)				BHN713E12	BHN713E13	6 (3)
	2.0	17 ¼ (451)				BHN717N12	BHN717N13	7 (4)
	2.5	20 ¼ (514)				BHN720E12	BHN720E13	8 (4)
	3.0	25 ¼ (641)				BHN725E12	BHN725E13	9 (4)
	4.0	32 ¼ (832)				BHN732N12	BHN732N13	9 (4)
15 W/in ² Steel Plug 3-Steel (2.3 W/cm ²)	5.0	40 ¼ (1022)				BHN740E12	BHN740E13	10 (5)
	6.0	47 ¼ (1213)				BHN747N12	BHN747N13	11 (5)
	1.5	13 ¼ (337)				BHSS13E3	BHSS13E13 ^③	6 (4)
	2.0	17 ½ (445)				BHSS17J3	BHSS17J5	7 (4)
	2.5	20 ½ (521)				BHSS20J3	BHSS20J5	8 (4)
	3.0	25 (635)				BHSS25A3	BHSS25A5	9 (4)
	4.0	32 ½ (826)				BHSS32J3	BHSS32J5	12 (6)
	5.0	40 (1016)				BHSS40A3	BHSS40A5	13 (6)
	6.0	47 ½ (1207)				BHSS47J3	BHSS47J5	13 (6)
7.5	58 ½ (1486)				BHSS58J3	BHSS58J5	16 (8)	
9.0	69 ¼ (1772)				BHSS69N3	BHSS69N5	20 (9)	

All heating elements are Assembly Stock unless otherwise noted.

Availability

Assembly Stock: Three to five working days
Stock: Same day shipment

① Stock

③ 3-phase wye only.

④ Wired for higher voltage.

⑤ 240V~(ac) can be wired wye and operated at 480V~(ac) 3-phase to produce ½ more kW and watt density.

⑥ Can be rewired wye to produce ½ of original kW and watt density (3-phase only).

Tubular and Process Assemblies

Screw Plug Immersion Heaters

2½" NPT Screw Plug – WATROD Element

WATROD Description	kW	Immersed B Dimension inch (mm)	Code No.			Est. Ship. Weight lbs (kg)
			120V~(ac) 1-Phase	240V~(ac) 3-Phase	480V~(ac) 3-Phase	

Applications: Deionized Water, Demineralized Water

60 W/in²	3.0	7% (194)	BLR77L1	BLR77L3	BLR77L5	6 (3)
316 SS Plug	4.5	10% (270)	BLR710L1	BLR710L3	BLR710L5	7 (4)
3-316 SS	6.0	14% (372)		BLR714L3	BLR714L5	9 (4)
Passivated	7.5	17% (448)		BLR717L3	BLR717L5	9 (4)
(9.3 W/cm ²)	9.0	20% (524)		BLR720L3	BLR720L5	11 (5)
	12.0	26% (664)		BLR726C3	BLR726C5	12 (6)
	15.0	31% (803)		BLR731L3	BLR731L5	14 (7)
	18.0	37% (943)		BLR737C3	BLR737C5	15 (7)

Application: Clean Water

60 W/in²	3.0	7% (194)	BLC77L1	BLC77L3	BLC77L13	6 (3)
Brass Plug	4.5	10% (270)	BLC710L1	BLC710L3	BLC710L5	7 (4)
3-Copper	6.0	14% (371)		BLC714L3	BLC714L5	9 (4)
(9.3 W/cm ²)	7.5	17% (448)		BLC717L3	BLC717L5	9 (4)
	9.0	20% (524)		BLC720L3	BLC720L5 ①	11 (5)
	12.0	26% (664)		BLC726C3	BLC726C5 ①	12 (6)
	15.0	31% (803)		BLC731L3	BLC731L5	14 (7)
	18.0	37% (943)		BLC737C3	BLC737C5	15 (7)

Application: Process Water

48 W/in²	3.0	9% (238)	BLN79G1	BLN79G3	BLN79G5	6 (3)
304 SS Plug	4.5	12% (327)	BLN712R1	BLN712R3	BLN712R5	7 (4)
3-Incoloy®	6.0	17% (441)		BLN717G3	BLN717G5 ①	9 (4)
(7.5 W/cm ²)	7.5	19% (505)		BLN719R3	BLN719R5	11 (5)
	9.0	24% (632)		BLN724R3	BLN724R5 ①	12 (6)
	12.0	32% (822)		BLN732G3	BLN732G5 ①	14 (7)
	15.0	39% (1013)		BLN739R3	BLN739R5	15 (7)
	18.0	47% (1203)		BLN747G3	BLN747G5 ①	17 (8)

CONTINUED 

All heating elements are Assembly Stock unless otherwise noted.

① Stock

Availability

Assembly Stock: Three to five working days

Stock: Same day shipment

Tubular and Process Assemblies

Screw Plug Immersion Heaters

2½" NPT Screw Plug – WATROD Element

WATROD Description	kW	Immersed B Dimension inch (mm)	Code No.			Est. Ship. Weight lbs (kg)
			120V~(ac) 1-Phase	240V~(ac) 3-Phase	480V~(ac) 3-Phase	

Applications: Forced Air and Gases, Caustic Solutions, Degreasing Solutions

23 W/in² ^{⑤⑥} 304 SS Plug 3-Incoloy® (3.6 W/cm ²)	3.0	17¼ (441)	BLNA17G1	BLNA17G3	BLNA17G5	9 (4)
	4.5	24¾ (632)	BLNA24R1	BLNA24R3	BLNA24R5	12 (5)
	6.0	32¾ (822)		BLNA32G3	BLNA32G5 ^①	14 (7)
	7.5	39¾ (1013)		BLNA39R3	BLNA39R5	15 (7)
	9.0	47¾ (1203)		BLNA47G3	BLNA47G5	17 (8)
	12.5	63¾ (1622)		BLNA63R3	BLNA63R5	20 (9)
	15.0	76¾ (1940)		BLNA76G3	BLNA76G5	23 (11)

Applications: Lightweight Oils, Degreasing Solutions, Heat Transfer Oils

23 W/in² ^⑥ Steel Plug 3-Steel (3.6 W/cm ²)	3.0	17¼ (438)	BLS717E1	BLS717E3	BLS717E5 ^①	9 (4)
	4.5	24¾ (629)	BLS724N1	BLS724N3	BLS724N5	12 (6)
	6.0	32¾ (819)		BLS732E3	BLS732E5 ^①	14 (7)
	7.5	39¾ (1010)		BLS739N3	BLS739N5	15 (7)
	9.0	47¾ (1200)		BLS747E3	BLS747E5	17 (8)
	12.5	63¾ (1619)		BLS763N3	BLS763N5	20 (9)
	15.0	76¾ (1937)		BLS776E3	BLS776E5	27 (13)

Applications: Medium Weight Oils, Heat Transfer Oils, Liquid Paraffin

16 W/in² ^③ 304 SS Plug 3-Incoloy® (2.5 W/cm ²)	1.0	9¾ (238)		BLN79G12	BLN79G13	6 (3)
	1.5	12¾ (327)		BLN712R12	BLN712R13	7 (4)
	2.0	17¾ (441)		BLN717G12	BLN717G13	9 (4)
	2.5	19¾ (505)		BLN719R12	BLN719R13	11 (5)
	3.0	24¾ (632)		BLN724R12	BLN724R13	12 (6)
	4.0	32¾ (822)		BLN732G12	BLN732G13	14 (7)
	5.0	39¾ (1013)		BLN739R12	BLN739R13	15 (7)
	6.0	47¾ (1203)		BLN747G12	BLN747G13	17 (8)

Applications: Bunker C and #6 Fuel Oils

8 W/in² ^③ Steel Plug 3-Steel (1.3 W/cm ²)	1.0	17¼ (438)		BLS717E12	BLS717E13	9 (4)
	1.5	24¾ (629)		BLS724N12	BLS724N13	12 (6)
	2.0	32¾ (819)		BLS732E12	BLS732E13	14 (7)
	2.5	39¾ (1010)		BLS739N12	BLS739N13	15 (7)
	3.0	47¾ (1200)		BLS747E12	BLS747E13	17 (8)
	4.0	63¾ (1619)		BLS763N12	BLS763N13	20 (9)
	5.0	76¾ (1937)		BLS776E12	BLS776E13	23 (11)

All heating elements are Assembly Stock unless otherwise noted.

Availability

Assembly Stock: Three to five working days

Stock: Same day shipment

① Stock

③ Must be operated 3-phase only.

⑤ 240V~(ac) can be wired wye and operated at 480V~(ac) 3-phase to produce ½ more kW and watt density.

⑥ Can be rewired wye to produce ½ of original kW and watt density (3-phase only).

Tubular and Process Assemblies

Screw Plug Immersion Heaters

2½" NPT Screw Plug – FIREBAR Element

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

Applications: Clean and Potable Water

90 W/in ² ®	15	15 ½ (384)	BLNF15C3	BLNF15C5	10 (5)
304 SS Plug	20	18 ½ (460)	BLNF18C3	BLNF18C5 ③	12 (6)
3-Incoloy®	25	23 ½ (587)		BLNF23C5	14 (7)
(14 W/cm ²)	32	28 ½ (727)		BLNF28L5	17 (8)
	38	33 ½ (854)		BLNF33L5	18 (9)

Applications: Process Water, Ethylene Glycol (50%)

45 W/in ² ®	6	12 (305)	BLNF12A27		10 (5)
304 SS Plug	7.5	14 ½ (368)	BLNF14J27		11 (5)
3-Incoloy®	9	17 (432)	BLNF17A27		12 (6)
(7 W/cm ²)	12	21 ½ (546)	BLNF21J27	BLNF21J28	14 (7)
	15	26 ½ (673)	BLNF26J27	BLNF26J28	17 (8)
	18	31 ½ (800)	BLNF31J27	BLNF31J28	18 (9)
	24	41 (1041)		BLNF41A28	20 (9)
	30	50 ½ (1283)		BLNF50J28	22 (10)

Applications: Cooking Oils, Ethylene Glycol (100%)

30 W/in ² ®	5	15 ½ (384)	BLNF15C12	BLNF15C13	10 (5)
304 SS Plug	6.5	18 ½ (460)	BLNF18C12	BLNF18C13	12 (6)
3-Incoloy®	8.5	23 ½ (587)	BLNF23C12	BLNF23C13	14 (7)
(4.7 W/cm ²)	10.5	28 ½ (727)	BLNF28L12	BLNF28L13	17 (8)
	12.8	33 ½ (854)	BLNF33L12	BLNF33L13	18 (9)
	17	44 ½ (1121)	BLNF44C12	BLNF44C13	20 (9)
	21.5	54 ½ (1388)		BLNF54L13	22 (10)

Applications: Heat Transfer Oils, Mineral Oils, Degreasing Solutions

23 W/in ² ®	3.8	15 ½ (384)	BLNF15C20		10 (5)
304 SS Plug	4.9	18 ½ (460)	BLNF18C20		12 (6)
3-Incoloy®	6.4	23 ½ (587)	BLNF23C20	BLNF23C19	14 (7)
(3.6 W/cm ²)	7.9	28 ½ (727)	BLNF28L20	BLNF28L19	17 (8)
	9.6	33 ½ (854)	BLNF33L20	BLNF33L19	18 (9)
	12.8	44 ½ (1121)	BLNF44C20	BLNF44C19	20 (9)
	16.1	54 ½ (1387)	BLNF54L20	BLNF54L19	22 (10)

CONTINUED 

All heating elements are Assembly Stock unless otherwise noted.

③ Must be operated 3-phase only.

⑧ Can be wired 1-phase.

Availability

Assembly Stock: Three to five working days

Stock: Same day shipment

Tubular and Process Assemblies

Screw Plug Immersion Heaters

2½" NPT Screw Plug – FIREBAR Element

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

Applications: Medium Weight Oils, Heat Transfer Oils, Lubrication Oils, Liquid Paraffin

15 W/in ² ③	2	12 (305)	BLNF12A29		10 (5)
304 SS Plug	2.5	14 ½ (368)	BLNF14J29		11 (5)
3-Incoloy®	3	17 (432)	BLNF17A29		12 (6)
(2.3 W/cm ²)	4	21 ½ (546)	BLNF21J29	BLNF21J30	14 (7)
	5	26 ½ (673)	BLNF26J29	BLNF26J30	17 (8)
	6	31 ½ (800)	BLNF31J29	BLNF31J30	18 (9)
	8	41 (1041)	BLNF41A29	BLNF41A30	20 (9)
	10	50 ½ (1283)	BLNF50J29	BLNF50J30	22 (10)

Applications: Bunker C and #6 Fuel Oils, Asphalt

8 W/in ² ③	1.25	15 ½ (384)	BLNF15C22		10 (5)
304 SS Plug	1.63	18 ½ (460)	BLNF18C22		12 (6)
3-Incoloy®	2.13	23 ½ (587)	BLNF23C22	BLNF23C21	14 (7)
(1.3 W/cm ²)	2.63	28 ½ (727)	BLNF28L22	BLNF28L21	17 (8)
	3.19	33 ½ (854)	BLNF33L22	BLNF33L21	18 (9)
	4.25	44 ½ (1121)	BLNF44C22	BLNF44C21	20 (9)
	5.38	54 ½ (1388)	BLNF54L22	BLNF54L21	22 (10)

All heating elements are Assembly Stock unless otherwise noted.

③ Must be operated 3-phase only.

Availability

Assembly Stock: Three to five working days

Stock: Same day shipment

Tubular and Process Assemblies

F.O.B.: Hannibal, Missouri

Screw Plug Immersion Heaters

Build-a-Code

Stock Screw Plug Code Number ① _____

(Includes general purpose terminal enclosure (NEMA 1))

Optional Terminal Enclosure _____

- S = General purpose with thermostat (NEMA 1)
- W = Moisture resistant (NEMA 4)
- E = Explosion resistant (NEMA 7)
- E/W = Explosion/moisture resistant (NEMA 7/4)

Optional Thermostat ② **or Thermocouple** ④ _____

Optional Pilot Light ③ _____

- PL10 = 250V~(ac) Max.
- PL11 = 480V~(ac) Max.

- ① Screw plug immersion heaters are supplied with a general purpose terminal enclosure (NEMA 1). A thermostat will not fit inside the standard 2⁵/₈ inch (67 mm) tall general purpose terminal enclosure. If a thermostat is required, a taller terminal enclosure will be supplied.
- ② Thermostat code numbers are shown in the *Thermostat Stock* chart on **page 425**.
- ③ Pilot lights are configured for general purpose enclosure (NEMA 1) applications. For pilot light availability with other terminal enclosure ratings, consult factory.
- ④ Specify Type J or K thermocouple. If overtemp thermocouple specify orientation horizontal, vertical up or vertical down.

How to Order

To order a stock screw plug heater, please specify:

- Watlow code number
- NPT screw plug size and material
- Volts/watts
- Phase
- Options
- Quantity

If our stock units do not meet your application needs, Watlow can provide made-to-order heaters. For a **made-to-order** unit, please specify:

- Application, including heated material, process temperature and flow rate, etc.
- Volts/watts
- Watt density
- Phase
- Screw plug size, style and material
- Element diameter
- Number of heating element(s)
- Sheath material
- Immersed ('B' dimension) length
- No-heat section below the plug
- Terminal enclosure type
- Options
- Quantity

Availability

Stock: Same day shipment

Assembly Stock: Three to five working days

Modified Stock ④: Five to seven working days

Standard: 10 working days

Made-to-Order: Four to six weeks

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

④ Stock and assembly stock units with catalog options.

Tubular and Process Assemblies

Quick Ship

- On stock chart units:
- Five working days on all heaters
 - 10 working days on special voltages and/or wattages
 - 15 working days on special element lengths

Screw Plug Immersion Heaters with Control Assembly

Constructed from a WATROD screw plug heater, a moisture resistant (NEMA 4) terminal enclosure and built-in temperature sensor and power control, this assembly comes pre-wired and ready for hook-up to any 120V~(ac) control circuit.

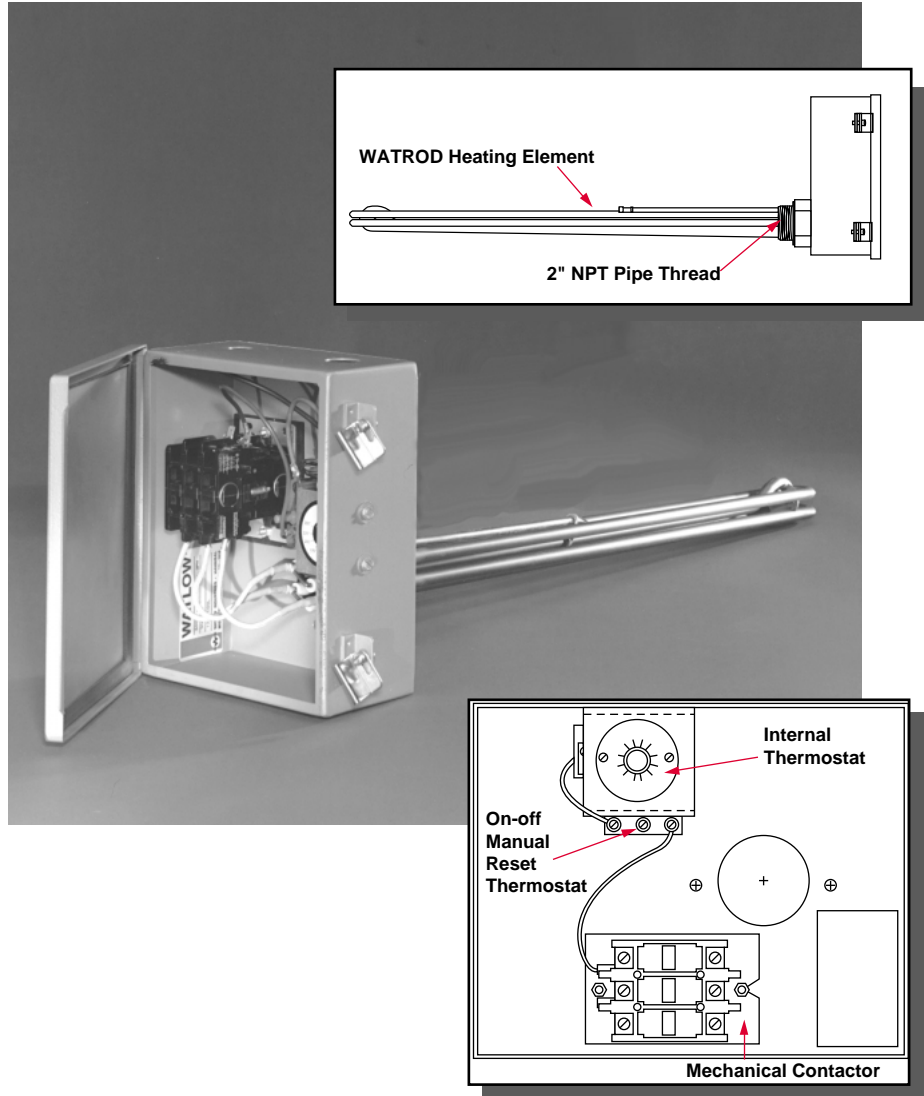
Optional sheath materials, NPT screw plug sizes and materials, wattages, voltages and terminal enclosures extend application versatility.

Performance Capabilities

- Watt densities to 60 W/in² (9.3 W/cm²)
- Wattages to 20kW
- Voltages to 600V~(ac)
- Incoloy® sheath temperatures to 1400°F (760°C)

Features and Benefits

- **Three 0.475 inch (12 mm) diameter WATROD elements** are brazed to a two inch NPT brass screw plug to produce a pressure-tight seal.
- **WATROD hairpins are repressed (recompacted)** after bending to maintain MgO density, dielectric strength, heat transfer and life.
- **Two built-in thermostats**, one on-off with manual reset, help ensure safe operation by automatically cycling on and off when process or sheath temperatures reach a predetermined set point selectable from 30° to 250°F (0° to 120°C).
- **Internal mechanical contactor** works on a 120V~(ac) control circuit to switch higher volts/amps to the heating elements.



- **Hinged, moisture resistant (NEMA 4) terminal enclosure** has two conduit openings to accommodate ¾ inch NPT conduit fittings.
- **Terminal enclosures can be rotated** to mate with existing conduits.
- **Thermowells** allow replacing the thermostat sensing element without draining the fluid being heated.

Applications

- Water heating
- Commercial dishwashers and glass washers
- Sterilizing equipment

Construction Features

Same as **Screw Plug Immersion Heaters**. See **pages 321 to 322** for details.

Application Hints

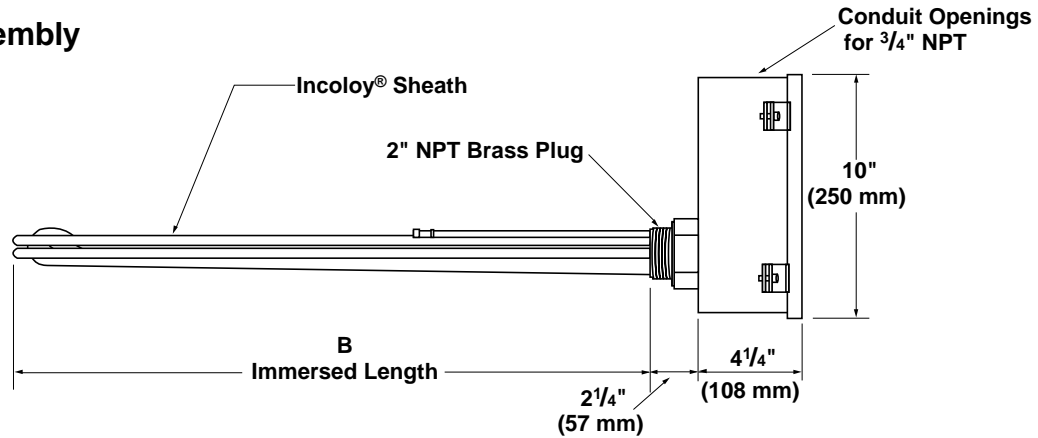
Same as **Screw Plug Immersion Heaters**. See **page 326** for details.

Accessories

Clamping Nut, Gasket and Washers—for mounting to thin-wall tanks, use optional clamping nut, gasket and washers. To order, specify **NGW**.

Tubular and Process Assemblies

Screw Plug Immersion Heaters with Control Assembly



2" NPT Brass Screw Plug With Control Box (Assembly Stock)

WATROD Descript.	kW	Immersed Length Inch (mm)	Code Number					Est. Net Weight lbs (kg)
			208V~(ac) 3-Phase	240V~(ac) 3-Phase	380V~(ac) 3-Phase	480V~(ac) 3-Phase	575V~(ac) 3-Phase	
50 W/in ²	9	24 3/4 (629)		BHNB24N3W2C11		BHNB24N5W2C11	BHNB24N16W2C11	23 (10)
Brass Plug	12	30 (762)	BHNB30A2W2C11	BHNB30A3W2C11	BHNB30A8W2C11	BHNB30A5W2C11	BHNB30A16W2C11	24 (11)
3-Incoloy®	16	35 3/4 (905)	BHNB35L2W2C11	BHNB35L3W2C11	BHNB35L8W2C11	BHNB35L5W2C11	BHNB35L16W2C11	25 (11)
(7.8 W/cm ²)	20	45 3/4 (1159)		BHNB45L3W2C11	BHNB45L8W2C11	BHNB45L5W2C11	BHNB45L16W2C11	27 (12)

How to Order

To order an Assembly Stock unit, please specify:

- Watlow code number
- Volts/watts
- Options, if applicable
- Quantity

If our assembly stock units do not meet your application needs, Watlow can provide **made-to-order** assemblies. For made-to-order units, please specify:

- Volts/watts
- Phase
- Screw plug size and materials
- Number of elements
- Sheath material
- Immersed ('B' dimension) length
- No-heat section below the plug
- Options
- Quantity

Availability

Assembly Stock: Five working days

Modified Stock [Ⓛ]: Five to seven working days

Made-to-Order: Four to six weeks

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

Replacement Heater Only

To order a replacement screw plug heater, simply delete the last five characters from the original *Screw Plug Immersion with Control Assembly* base code number.

[Ⓛ] Assembly Stock units with catalog options.