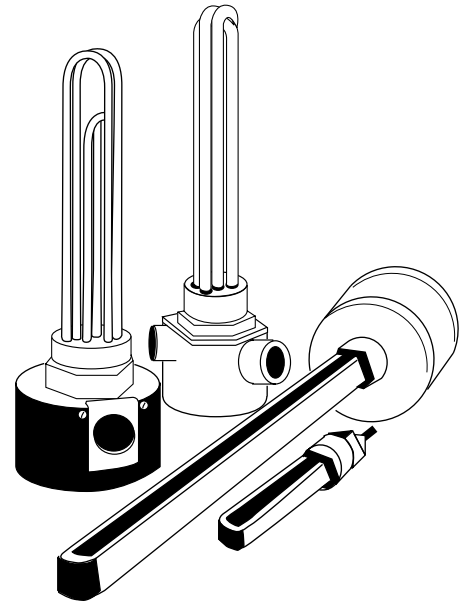


SCREW PLUG IMMERSION HEATERS

Ideal For Direct Immersion Heating of Liquids



Features

- A variety of element sheath and screw plug materials
- Integral thermowells
- Terminal enclosures rotate to simplify connection with existing conduits
- Welded or brazed element to heater construction
- Repressed (recompacted) WATROD hairpins
- 2½ inch NPT screw plug assemblies feature element support(s)
- UL® and CSA component recognition; under files #E52951 and 31388 respectively

Benefits

- Compatible with media being heated
- Provide convenient temperature sensor insertion and replacement without draining the fluid being heated
- Protect terminals from environment and provide ease of installation
- Provides a pressure tight seal between media and termination
- Maintain MgO density, dielectric strength, heat transfer and life
- Ensures proper element spacing for maximizing heater performance and life
- Designed and built for safety

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. Optional moisture resistant (NEMA 4), explosion resistant (NEMA 7) and explosion/moisture resistant (NEMA 7/4) enclosures are available to meet specific application needs.

Optional thermostats provide convenient process temperature regulation.



A subsidiary of Watlow, Designer and Manufacturer of Industrial Heaters, Sensors and Controls
6 Industrial Loop Road
Hannibal, Missouri 63401 USA
Phone: 573-221-2816
Fax: 573-221-3723
Internet: www.watlow.com

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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

Specifications

Screw plug and element sizes:

1 in. NPT	0.315 in. WATROD
1¼ in. NPT	0.315 in. WATROD; 1 in. FIREBAR
2 in. NPT	0.475 in. WATROD
2½ in. NPT	0.475 in. WATROD 1 in. FIREBAR

Phase capability

1 in. NPT	1-Phase
1¼, 2, and 2½ in. NPT	1 or 3-phase

Options

Terminal Enclosures

General purpose terminal enclosures, without thermostats, are standard on all screw plug immersion heaters. Optional terminal enclosures include:

- General purpose (NEMA 1) with a single or double pole thermostat.
- Moisture resistant (NEMA 4). Available with or without a single or double pole thermostat.
- Corrosion resistant (NEMA 4X). Available with or without a single or double pole thermostat.
- Explosion resistant (NEMA 7) class 1 groups C and D. Available with or without a single or double pole thermostat.
- Explosion / moisture resistant (NEMA 7/4) combinations. Available with or without a single or double pole thermostat.
- For class 1, group B enclosures, consult your Watlow representative.

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 comprised by abuse or misapplication.

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.

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 250VAC, and supplied with 6 inch (150 mm) leads. The PL11 pilot light is rated for 480VAC, and supplied with 4 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.

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.

Thermocouples

ANSI Type J or K thermocouples offer more 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 (3050 mm) leads (longer lead lengths are available).

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.

Note: Unless otherwise stated, both WATROD and FIREBAR screw plugs are centered on the terminal enclosure.

SCREW PLUG IMMERSION HEATERS

Wattages and Voltages

Watlow routinely supplies screw plug immersion heaters with 120 to 480VAC as well as wattages from 250 watts to 38 kW. 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 flange heaters:

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 sheath applications, passivation will remove free iron from the sheath.

Other Finishes

Simple belt polishing and glass beading are available to meet cosmetic demands.

Screw Plug Materials

The following screw plug materials are available:

Standard Screw Plug Materials Made-to-Order Plug Materials

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

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

Screw Plug to Flange Adaptors

Screw plug to flange adaptors permit replacing flange heaters with screw plug heaters.

Ordering Information

How to Order

To order a stock screw plug heater, please specify:

- Watlow code number (from Watlow Heater's Catalog)
- 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 length
- No-heat section below the plug
- Terminal enclosure type
- Options
- Quantity

Availability

- **Stock:** Same day shipment
- **Assembly Stock:** 3-5 working days
- **Modified Stock**^①: 5-7 working days
- **Standard:** 10 working days
- **Made-to-Order:** 4-6 weeks

Options, complexity and quantity may affect availability and leadtimes. Consult factory.

^① Stock and assembly stock units with catalog options.