

Immersion Heaters

Over-the-Side Heaters

L and O Shaped Immersion Heaters

Over-the-side heaters are ideal for heating water, oils, solvents, salts and acids. Application versatility is enhanced with optional sheath materials, kilowatt ratings, terminal enclosures and mounting methods.

The L and O shaped “installed-from-the-top” heaters slide easily into tanks, with the heated portion immersed along the side or at the bottom. The drum immersion heaters are designed for direct immersion in a standard 55 gallon steel drum. Watlow vertical loop immersion heaters are well-suited for open tank applications.

L and O Shaped Performance Capabilities

- Alloy 800 sheath element watt densities up to 60 W/in² (9.3 W/cm²)
- Wattages up to 50 kilowatts
- Voltages up to 600VAC

Features and Benefits

Rugged, light-weight construction

- Resists damage during installation or removal

0.475 in. (12 mm) diameter WATROD heating elements

- Offers one- or three-phase operation

WATROD hairpins are repressed (recompacted)

- Maintains MgO density, dielectric strength, heat transfer and heater life

Four inch (100 mm) sludge legs

- Keeps heating elements off the tank’s bottom to help avoid being covered with sediment

RTV riser seal

- Prevents moisture from infiltrating electrical areas

Standardized size 1 in. (25 mm) conduit openings

- Facilitates wiring

SRG insulated flexible lead wires, rated to 390°F (200°C)

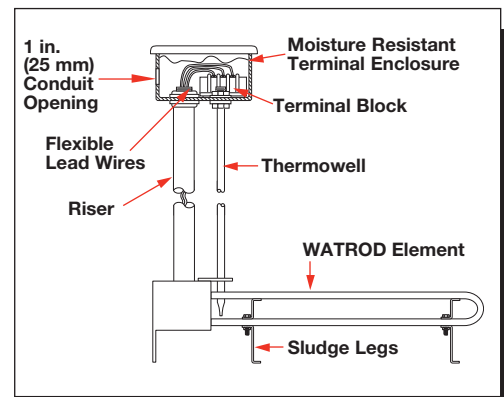
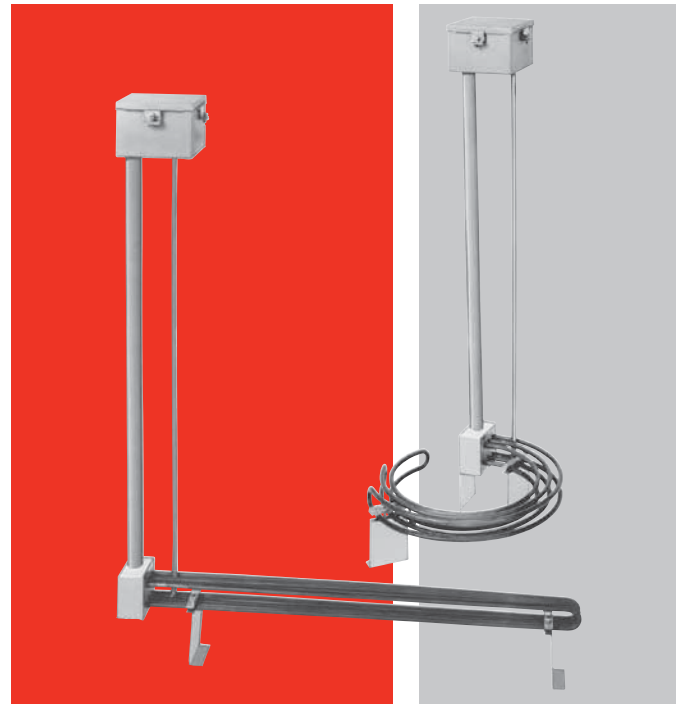
- Allows factory or field wiring for three- or one-phase operation

Riser materials are compatible with element sheath materials such as stainless steel with alloy 800 sheath and steel with steel sheath

- Meets varying application needs
- Ensures ease of use

Integral thermowells

- Provides convenient temperature sensor insertion and replacement without draining the fluid being heated



Moisture resistant

- Standardizes enclosures

UL® and CSA component recognition

- 480 and 600VAC maximum under file numbers E52951 and 31388 respectively

Typical Applications

- Water heating
- Solvents
- Freeze protection
- Salts
- Viscous oils
- Caustic solutions
- Storage tanks
- Paraffin
- Degreasing tanks

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Options

Terminal Enclosures

Moisture resistant terminal enclosures, without thermostats, are standard on all Watlow L and O shaped over-the-side heaters. Optional terminal enclosures meet application requirements with:

- Corrosion resistant, available with or without a single- or double-pole thermostat.
- Explosion/moisture resistant Class 1, Div. I and II, Groups B, C and D. Available with or without a single- or double- pole thermostat.

Thermostats

Optional single- and double-pole thermostats are also available separately.

For details on thermostats, see *Thermostats*, pages 534 to 537.

Wattages and Voltages

Watlow routinely supplies over-the-side heaters with 240 to 480VAC as well as wattages from 3 to 18 kilowatts.

Multiple Elements

Over-the-side immersion heaters are configured with three WATROD heating elements.

To achieve a specific kilowatt rating, Watlow can configure units with up to six heating elements.

To order, specify **multiple elements**, the **number of elements**, **volts**, **watts**, **phase** and **maximum bundle height** and **width**.

Riser

A stainless steel or steel riser is supplied to keep terminal enclosures out of the heated solution. Stock heights are 39⁵/₁₆ or 51⁵/₁₆ in. (1000 or 1320 mm). Upon request, riser height up to 60 ft (18.3 m) can be provided.

To order, specify **riser material** and **height**.

Right Angle Riser

Riser may be right angle formed to move the terminal enclosure away from over the tank.

To order, specify **right angle riser** and **dimensions**.

Sludge Legs

Four inch (100 mm) sludge legs are supplied on all stock units to keep elements above sediments. Shorter or longer sludge legs are available upon request.

To order, specify **sludge legs** and **height**.

Sheath Material

Stock O and L shaped over-the-side heaters come with alloy 800 or steel sheaths.

To order, specify the **sheath material**.



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 rating. Rating effectiveness may be compromised by abuse or misapplication.

Thermocouples

ASTM 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 in. (3050 mm) leads (longer lead lengths available). Unless otherwise specified, thermocouples are supplied with temperature ranges detailed on the *Thermocouple Types* chart.

Thermocouples require an appropriate temperature and power controller. These must be purchased separately. Watlow offers a wide variety of temperature and power controllers to meet virtually all applications. Temperature controllers can be configured to accept process variable inputs, too. Contact your Watlow representative for details.

To order, specify **Type J** or **K** thermocouple, **lead length**, and indicate if it is for measuring **process** temperature or as a **high-limit** sensing device.

Thermocouple Types

ASTM Type	Conductor Characteristics		Recommended Temperature Range	
	Positive	Negative	°F	(°C) ①
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.

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Extended Capabilities For L and O Shaped Immersion Heaters

Options

Wattages and Voltages

Watlow routinely supplies over-the-side heaters with 240 to 480VAC as well as wattages from 3 to 18 kilowatts. If required, Watlow can configure heaters with voltages and wattages outside these parameters.

For more information about this option, contact your Watlow representative.

Sheath Material

Stock O and L shaped over-the-side heaters come with alloy 800 sheaths. 304 or 316 stainless steel and titanium sheaths are available upon request.

For more information about this option, contact your Watlow representative.

Multiple Elements

Over-the-side immersion heaters are configured with three WATROD heating elements.

To achieve a specific kilowatt rating, Watlow can configure units with up to 36 heating elements.

To order, specify **multiple elements**, the **number of elements**, **volts**, **watts**, **phase** and **maximum bundle height** and **width**.

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 and other wetted surfaces.

To order, specify **passivation**.

Man Hole Cover

A man hole cover seals the tank and provides heater mounting. Man hole covers are pre-assembled to the riser. Standard man hole covers are made from steel with other materials available upon request.

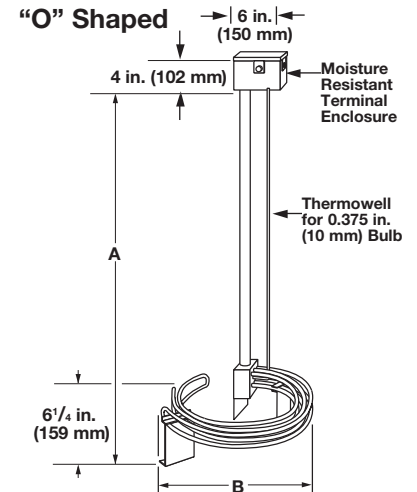
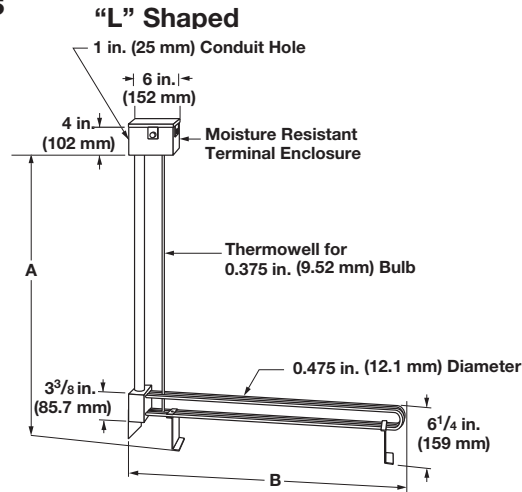
To order, specify **man hole construction**, **diameter** and **material**.

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Ordering Information



"L" Shaped

WATROD Description	kW	A Dimension in. (mm)	B Dimension in. (mm)	Part No.		Del.	Est. Ship. Wt. lbs (kg)
				240VAC 3-Phase	480VAC 3-Phase		
48 W/in ² Alloy 800 (7.5 W/cm ²)	3	39 ⁵ / ₁₆ (998.5)	14 ⁵ / ₈ (371.5)	OLN714L3W	OLN714L13W ^①	M	30 (14)
	6	39 ⁵ / ₁₆ (998.5)	22 ⁵ / ₈ (574.7)	OLN722L3W	OLN722L5W	M	40 (19)
	9	39 ⁵ / ₁₆ (998.5)	30 ¹ / ₈ (765.2)	OLN730C3W	OLN730C5W	M	45 (21)
	12	51 ⁵ / ₁₆ (1303.3)	37 ⁵ / ₈ (955.7)	OLN737L3W	OLN737L5W	M	50 (23)
	15	51 ⁵ / ₁₆ (1303.3)	45 ¹ / ₈ (1146.2)	OLN745C3W	OLN745C5W	M	65 (30)
	18	51 ⁵ / ₁₆ (1303.3)	52 ⁵ / ₈ (1336.7)	OLN752L3W	OLN752L5W	M	75 (34)

Applications: Citric and Phosphoric Acid Solutions, Caustic Solutions, Water Based Solutions

23 W/in ² Alloy 800 (3.6 W/cm ²)	3	39 ⁵ / ₁₆ (998.5)	22 ⁵ / ₈ (574.7)	OLNA22L3W	OLNA22L5W	M	40 (19)
	6	51 ⁵ / ₁₆ (1303.3)	37 ⁵ / ₈ (955.7)	OLNA37L3W	OLNA37L5W	M	50 (23)
	9	51 ⁵ / ₁₆ (1303.3)	52 ⁵ / ₈ (1336.7)	OLNA52L3W	OLNA52L5W	M	75 (34)

"O" Shaped

WATROD Description	kW	A Dimension in. (mm)	B Dimension in. (mm)	Part No.		Del.	Est. Ship. Wt. lbs (kg)
				240VAC 3-Phase	480VAC 3-Phase		
48 W/in ² Alloy 800 (7.5 W/cm ²)	3	39 ⁵ / ₁₆ (998.5)	10 ³ / ₄ (273)	ORN710N3W	ORN710N13W ^①	M	30 (14)
	6	39 ⁵ / ₁₆ (998.5)	13 ¹ / ₂ (343)	ORN713J3W	ORN713J5W	M	40 (19)
	9	39 ⁵ / ₁₆ (998.5)	16 (406)	ORN716A3W	ORN716A5W	M	45 (21)
	12	51 ⁵ / ₁₆ (1303.3)	18 ¹ / ₂ (470)	ORN718J3W	ORN718J5W	M	50 (23)
	15	51 ⁵ / ₁₆ (1303.3)	21 ¹ / ₂ (546)	ORN721E3W	ORN721E5W	M	65 (30)
	18	51 ⁵ / ₁₆ (1303.3)	23 ¹ / ₂ (597)	ORN723J3W	ORN723J5W	M	75 (34)

Applications: Citric and Phosphoric Acid Solutions, Caustic Solutions, Water Based Solutions

23 W/in ² Alloy 800 (3.6 W/cm ²)	3	39 ⁵ / ₁₆ (998.5)	13 ¹ / ₂ (343)	ORNA13J3W	ORNA13J5W	M	40 (19)
	6	51 ⁵ / ₁₆ (1303.3)	18 ¹ / ₂ (470)	ORNA18J3W	ORNA18J5W	M	50 (23)
	9	51 ⁵ / ₁₆ (1303.3)	23 ¹ / ₂ (597)	ORNA23J3W	ORNA23J5W	M	75 (34)

• M - Manufacturing lead times

■ Truck Shipment only

① Must be operated 3-phase only.

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Ordering Information

Part Number

Stock Over-the-Side Part Number	Optional Terminal Enclosures	Optional Process Sensors	Sheath Limit Sensors

Stock Over-the-Side Part Number

Note: Catalog part numbers include optional enclosures and process sensors. To order optional enclosures or sensors, substitute the appropriate suffix.

Optional Terminal Enclosures

W=	Moisture-resistant enclosure
C=	Moisture/explosion-resistant enclosure

Note: Catalog listings include moisture resistant enclosure. Substitute enclosure options are noted.

Optional Process Sensors

2A=	30 to 250°F, (-1 to 121°C) SPST
3A=	175 to 550°F, (79 to 288°C) SPST
5A=	60 to 250°F, (16 to 121°C) DPST
7A=	100 to 550°F, (38 to 288°C) DPST
PJ=	Type J process thermocouple in thermowell
PK=	Type K process thermocouple in thermowell

Note: Thermostat part numbers are shown in the *Thermostat Chart* on page 537.

Sheath Limit Sensors

TJ=	Type J high-limit thermocouple, vertical/housing at top
TK=	Type K high-limit thermocouple, vertical/housing at top

Note: Heater orientation is critical to accurate sensing of limit conditions. Use the appropriate code to indicate heater mounting orientation.

Example Part Number: OLN714L3 W 2A TK