

# Tubular and Process Assemblies

## Circulation Heaters

### Engine Preheaters

Watlow engine preheaters help maintain a desired minimum engine temperature to make starting fast and easy. Also reduces engine wear caused by cold engine starting.

Engine preheaters mount conveniently on an engine or rail. The internal thermostat constantly adjusts to ambient temperature changes to keep engine coolant warm at all times.

An internal tank temperature sensor protects Watlow engine preheaters from dry fire conditions caused by low coolant levels or blocked flow.

Installation is easy with just two mounting bolts, and inlet and outlet hose connections.

#### Performance Capabilities

- Watt densities from 45 to 90 W/in<sup>2</sup> (7 to 14 W/cm<sup>2</sup>)
- Up to 6 kW
- UL® and CSA component recognition to 480V~(ac) and 600V~(ac) respectively.
- Thermostatically controlled from 60 to 160°F (15 to 70°C)
- Incoloy® sheath temperatures to 1600°F (870°C)

#### Features and Benefits

- **Incoloy® sheath** minimizes the risk of premature failure in the event of a dry-fire condition.
- **Integral, prewired adjustable thermostat**, mounted in a general purpose (NEMA 1) terminal enclosure provides a ready-to-install unit.
- **Easy installation with standard, one inch (25 mm) diameter beaded inlet and outlet nozzles.** Rubber hose connections eliminate the need for threaded fittings and adapters.
- **120/240V~(ac) or 240/480V~(ac) dual voltages** make field wiring flexible. Minimizes stocking multiple voltages.
- **Mounting bracket** isolates harmful engine vibration.
- **Heavy-duty welded carbon steel tank** resists corrosion and extends life.
- **Optional oil pressure interconnect switch** disrupts power during engine operation.



- **Integral check valve** assures proper coolant flow and correct thermostat operation. Check valve will not interfere with adequate thermo-siphoning.
- **UL® and CSA component** recognition under file numbers E52951 and 31388 respectively. See **pages 268 to 271** for details.

#### Applications

- Standby generators
- Primary power generators
- Firepump engines

## Options

### Terminal Enclosures

The following terminal enclosures are available:

- Standard, general purpose (NEMA 1)
- Moisture resistant (NEMA 4)

- Explosion resistant (NEMA 7) class 1, groups C and D. For class 1, group B enclosures, consult your Watlow representative.

Order by adding the suffix letter **W** (NEMA 4) or **E** (NEMA 7) to the engine preheater base code number.

### Threaded Nozzles

Carbon steel threaded inlets and outlets are available for installations using rigid piping or threaded adapters. Threaded nozzles are

typically supplied for firepump applications. To order, specify **threaded nozzles** and **NPT size**.

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F.O.B.: Hannibal, Missouri

## Circulation Heaters

### Engine Preheaters

#### Application Hints

- Mount engine preheaters in horizontal position only (as shown in Figures #1, #2 and #3). Consult your Watlow representative if vertical mounting is unavoidable.
- Mount the heater near or below the lowest point on the engine block. Keep outlet nozzle pointed up, as indicated on the tank.
- Estimate kilowatt requirements with the following formula. First determine the engine displacement, then multiply:

**English**  
Cubic inches X 3 = estimated wattage

**Metric**  
Liters X 183 = estimated wattage

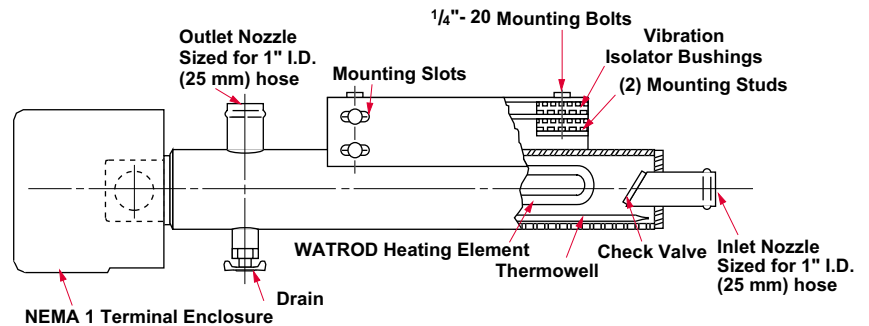
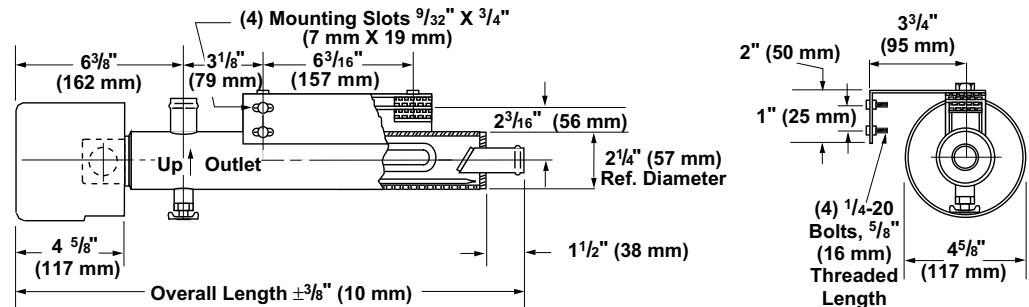


Figure 1



kW	Overall Length Inch (mm)	Code No.			Est. Ship.	
		120/240V~(ac) 1-Phase	208V~(ac) 1-Phase	240/480V~(ac) 1-Phase	Weight lbs	(kg)

#### Application: Ethylene Glycol/Engine Coolant

1.13	20 7/8 (530)	CPBPB6S12	CPBPL2S12①		12 (6)
1.50	20 7/8 (530)		CPBPB2S12①		12 (6)
1.69	20 7/8 (530)		CPBPM2S12①		12 (6)
1.88	20 7/8 (530)		CPBPN2S12①		12 (6)
2.00	20 7/8 (530)	CPBPC6S12			12 (6)
2.25	20 7/8 (530)	CPBPD6S12			12 (6)
2.25	26 11/16 (678)		CPBPD2S12①		15 (7)
2.50	20 7/8 (530)	CPBPE6S12			12 (6)
3.00	26 11/16 (678)		CPBPF2S12①	CPBPF7S12	15 (7)
3.75	26 11/16 (678)		CPBPG2S12①		15 (7)
4.00	26 11/16 (678)			CPBPH7S12	15 (7)
5.00	26 11/16 (678)			CPBPJ7S12①	15 (7)

All preheaters are Stock unless otherwise noted.

① Standard

#### Availability

**Stock:** Same day shipment

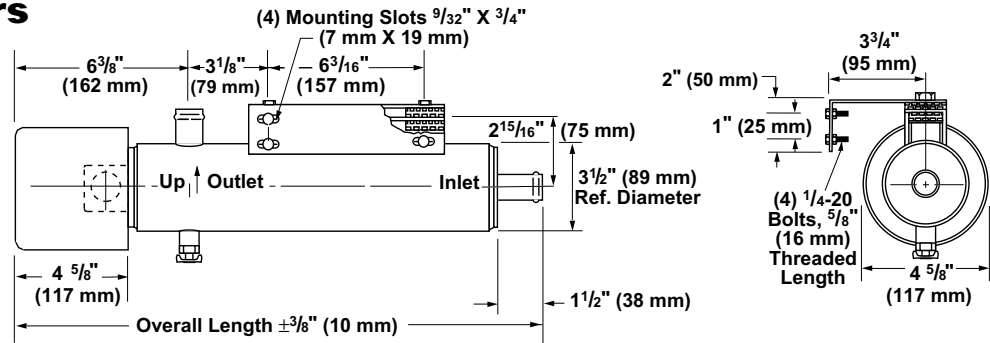
**Standard:** Four weeks

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F.O.B.: Hannibal, Missouri

## Circulation Heaters Engine Preheaters

Figure 2

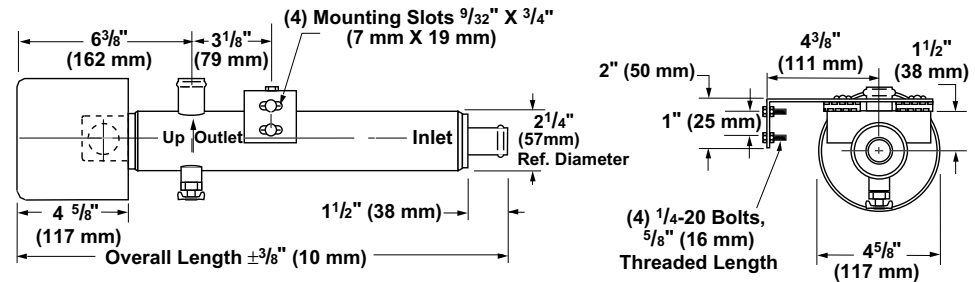


kW	Overall Length Inch (mm)	Code No.		Est. Ship. Weight lbs (kg)
		277V~(ac) 1-Phase	480V~(ac) 3-Phase	

Application: Ethylene Glycol/Engine Coolant

1.5	20 7/8 (530)	CPCPB4S12①	CPCPB13S12①	12 (6)
2.0	20 7/8 (530)	CPCPC4S12①	CPCPC13S12①	12 (6)
2.5	20 7/8 (530)	CPCPE4S12①	CPCPE13S12①	12 (6)
3.75	20 7/8 (530)	CPCPG4S12①	CPCPG13S12①	12 (6)
4.0	20 7/8 (530)	CPCPH4S12①	CPCPH13S12	12 (6)
5.0	20 7/8 (530)	CPCPJ4S12①	CPCPJ13S12	12 (6)

Figure 3



kW	Overall Length Inch (mm)	Code No.		Est. Ship. Weight lbs (kg)
		120/240V~(ac) 1-Phase	208V~(ac) 1-Phase	

Application: Ethylene Glycol/Engine Coolant

0.75	15% (397)		CPBPK2S12①	9 (4)
1.0	15% (397)	CPBPA6S12①		9 (4)

All preheaters are stock unless otherwise noted.

### Availability

**Stock:** Same day shipment

**Standard:** Four weeks

① Standard

### How to Order

To order a Stock, or Standard engine preheater, please specify:

- Code number
- Volts/watts
- Phase
- Options
- Quantity

If our Stock units do not meet your application needs, Watlow will

provide a made-to-order unit. For **made-to-order** units, provide the following information:

- Volts/watts
- Phase
- Inlet and outlet type and size
- Terminal enclosure type
- Mounting orientation
- Options
- Quantity

### Availability

**Stock:** Same day shipment

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

**Standard:** Four weeks

**Made-to-Order:** Six to eight weeks

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

Ⓜ Stock units with catalog options.