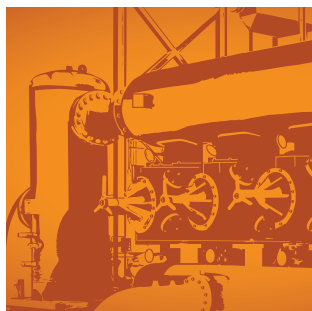


PRODUCT CATALOG

ENGINE HEATERS
OIL HEATERS
CONTROLS
ACCESSORIES



HOTSTART® 

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SECTION 1



HOTflow® Engine Heaters

CTM Model Single Phase

1000–2500 Watts



Meets requirements for installation on any UL 2200 listed generator.

Isolation Mounting Kit (optional)

CTM-IMK

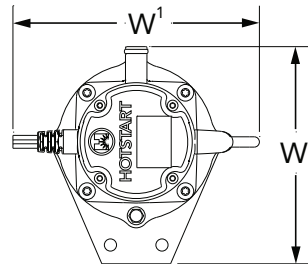
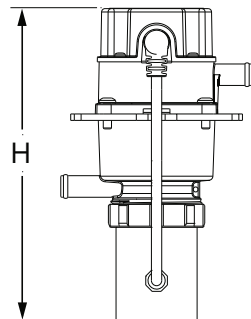
HOTSTART's HOTflow® engine heater (CTM Model) features an integrated pump that combines the benefits of forced circulation with a compact design that can mount to a variety of small engine applications. Forced circulation of the coolant delivers uniform heating throughout the entire engine, extends element life and offers a significant reduction in electrical consumption.

| Thermostat Range | |
|------------------|--------------|
| ON | OFF |
| 100°F (38°C) | 120°F (49°C) |

| Engine Displacement CID/Liter | Power Supply | | | kW | Amps | Model Number |
|---|--------------|---|-------|-----|------|------------------------------|
| | Volts | Ø | Hz | | | |
| CTM w/8' (2.4 m) cord and NEMA plug* | | | | | | |
| 0–500CID 0–8L | 120 | 1 | 60 | 1 | 8.8 | CTM10110-N00 CTM10210-N00 |
| | 240 | 1 | 50/60 | 1 | 4.4 | |
| 500–750CID 8–12L | 120 | 1 | 60 | 1.5 | 13.0 | CTM15110-N00 CTM15210-N00 |
| | 240 | 1 | 50/60 | 1.5 | 6.5 | |
| 750–1200CID 12–20L | 120 | 1 | 60 | 2.5 | 21.3 | CTM25110-N00 CTM25210-N00 |
| | 240 | 1 | 50/60 | 2.5 | 10.7 | |
| CTM w/9.8' (3 m) cord, without plug | | | | | | |
| 0–500CID 0–8L | 120 | 1 | 60 | 1 | 8.8 | CTM10110-A00 CTM10210-A00 |
| | 240 | 1 | 50/60 | 1 | 4.4 | |
| 500–750CID 8–12L | 120 | 1 | 60 | 1.5 | 13.0 | CTM15110-A00 CTM15210-A00 |
| | 240 | 1 | 50/60 | 1.5 | 6.5 | |
| 750–1200CID 12–20L | 120 | 1 | 60 | 2.5 | 21.3 | CTM25110-A00 CTM25210-A00 |
| | 240 | 1 | 50/60 | 2.5 | 10.7 | |
| CTM w/9.8' (3 m) cord and Schuko plug (Euro)** | | | | | | |
| 0–500CID 0–8L | 240 | 1 | 50/60 | 1 | 4.4 | CTM10210-E00 |
| 500–750CID 8–12L | 240 | 1 | 50/60 | 1.5 | 6.5 | CTM15210-E00 |
| 750–1200CID 12–20L | 240 | 1 | 50/60 | 2.5 | 10.7 | CTM25210-E00 |

* - UL/C-US listed
** - CE compliant

Other voltages available. Consult the factory.

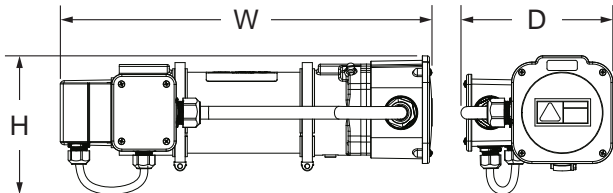


| Height (H) | Width1 (W ¹) | Width2 (W ²) | Weight |
|---------------|--------------------------|--------------------------|--------------------|
| 9.1" 230mm | 7.0" 145mm | 6.3" 161mm | 3.5 lbs. 1.6 kg |



| Engine Displacement CID/Liter | Power Supply | | | kW | Amps | Model Number |
|----------------------------------|--------------|---|----|----|------|------------------|
| | Volts | Ø | Hz | | | |
| 1000–1500 CID 15–23 L | 120 | 1 | 60 | 3 | 25.0 | CKM1030160-000 |
| | 230 | 1 | 50 | 3 | 13.0 | * CKM1030250-000 |
| | 240 | 1 | 60 | 3 | 13.0 | CKM1030260-000 |
| 1500–2000 CID 23–30 L | 230 | 1 | 50 | 4 | 13.0 | * CKM1040250-000 |
| | 240 | 1 | 60 | 4 | 16.7 | CKM1040260-000 |
| 2000–2500 CID 30–38 L | 230 | 1 | 50 | 5 | 21.7 | * CKM1050250-000 |
| | 240 | 1 | 60 | 5 | 20.8 | CKM1050260-000 |
| 2500–3000 CID 38–50 L | 230 | 1 | 50 | 6 | 26.1 | * CKM1060250-000 |
| | 240 | 1 | 60 | 6 | 25.0 | CKM1060260-000 |

* CE compliant
All other models – UL/C-US recognized



| Height (H) | Width (W) | Depth (D) | Weight |
|------------|-----------|-----------|-----------|
| 6.9" | 18.4" | 8.5" | 13.2 lbs. |
| 175 mm | 467 mm | 216 mm | 6.0 kg |

HOTflow® Engine Heaters

CKM Model Single Phase

3000–6000 Watts



Meets requirements for installation on any UL 2200 listed generator.

HOTSTART's HOTflow® engine heater (CKM Model) is a thermostatically controlled heater with an integrated pump, built in bleed screw and a high-limit thermostat that can be manually reset. The CKM is designed for the technician in mind, allowing for easy access to all major components. Forced circulation of the coolant delivers uniform heating throughout the entire engine, extends element life and offers a significant reduction in electrical consumption.

| Thermostat Range | |
|------------------|--------------|
| ON | OFF |
| 100°F (38°C) | 120°F (49°C) |

HOTflow® Engine Heaters

CSM Model Single & Three Phase

3000–12000 Watts



Meets requirements for installation on any UL 2200 listed generator.

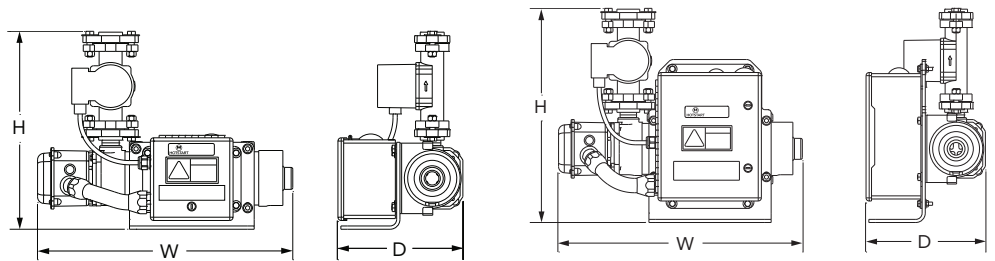
HOTSTART's HOTflow® engine heater (CSM Model) features a thermostat, pump and all required controls. Forced circulation of the coolant delivers uniform heating throughout the entire engine, extends element life and offers a significant reduction in electrical consumption.

The HOTflow® CSM operates automatically when provided contacts are supplied with a 24 V DC signal from the engine.

| Thermostat Range | |
|------------------|--------------|
| ON | OFF |
| 100°F (38°C) | 120°F (49°C) |

| Engine Displacement CID/Liter | Power Supply | | | kW | Amps | Style | Model Number |
|----------------------------------|--------------|----|----|------|------|--------------|----------------|
| | Volts | Ø | Hz | | | | |
| 1000–2000 CID 15–30L | 120 | 1 | 60 | 3 | 26.3 | A | CSM10301-000 |
| | 208 | 1 | 60 | 3 | 15.1 | A | CSM10308-000 |
| | 208 | 3 | 60 | 3 | 8.7 | B | CSM30308-000 |
| | 230 | 1 | 50 | 3 | 13.7 | A | * CSM1030J-5A0 |
| | 240 | 1 | 60 | 3 | 13.1 | A | CSM10302-000 |
| | 400 | 3 | 50 | 3 | 4.9 | B | * CSM3030A-5A0 |
| | 480 | 1 | 60 | 3 | 7.0 | B | CSM10304-000 |
| | 480 | 3 | 60 | 3 | 4.4 | B | CSM30304-000 |
| 2000–3000 CID 25–50L | 208 | 1 | 60 | 6 | 29.6 | A | CSM10608-000 |
| | 208 | 3 | 60 | 6 | 17.1 | B | CSM30608-000 |
| | 230 | 1 | 50 | 6 | 26.7 | A | * CSM1060J-5A0 |
| | 240 | 1 | 60 | 6 | 25.6 | A | CSM10602-000 |
| | 400 | 3 | 50 | 6 | 8.9 | B | * CSM3060A-5A0 |
| | 440 | 3 | 60 | 6 | 8.1 | B | * CSM3060F-5A1 |
| | 480 | 1 | 60 | 6 | 12.8 | B | CSM10604-000 |
| | 480 | 3 | 60 | 6 | 7.4 | B | CSM30604-000 |
| 575 | 3 | 60 | 6 | 6.2 | B | CSM30605-000 | |
| 3000–4500 CID 50–75L | 208 | 1 | 60 | 9 | 44.0 | A | CSM10908-000 |
| | 208 | 3 | 60 | 9 | 25.4 | B | CSM30908-000 |
| | 230 | 1 | 50 | 9 | 39.8 | A | * CSM1090J-5A0 |
| | 240 | 1 | 60 | 9 | 38.1 | A | CSM10902-000 |
| | 400 | 3 | 50 | 9 | 13.2 | B | * CSM3090A-5A0 |
| | 440 | 3 | 60 | 9 | 12.2 | B | * CSM3090F-5A1 |
| | 480 | 1 | 60 | 9 | 19.1 | B | CSM10904-000 |
| | 480 | 3 | 60 | 9 | 11.0 | B | CSM30904-000 |
| 575 | 3 | 60 | 9 | 9.2 | B | CSM30905-000 | |
| 4500–6000 CID 75–100L | 208 | 1 | 60 | 10.5 | 51.2 | B | CSM11058-000 |
| | 208 | 3 | 60 | 12 | 33.7 | B | CSM31208-000 |
| | 230 | 1 | 50 | 12 | 52.8 | B | * CSM1120J-5A0 |
| | 240 | 1 | 60 | 12 | 50.6 | B | CSM11202-000 |
| | 400 | 3 | 50 | 12 | 17.5 | B | * CSM3120A-5A0 |
| | 440 | 3 | 60 | 12 | 15.9 | B | * CSM3120F-5A0 |
| | 480 | 1 | 60 | 12 | 25.3 | B | CSM11204-000 |
| | 480 | 3 | 60 | 12 | 14.6 | B | CSM31204-000 |
| 575 | 3 | 60 | 12 | 12.2 | B | CSM31205-000 | |

* CE compliant/union pump configuration
Other voltages available. Consult the factory.



| Height (H) | Width (W) | Depth (D) | Weight | Height (H) | Width (W) | Depth (D) | Weight |
|------------|-----------|-----------|---------|------------|-----------|-----------|---------|
| 15.0" | 19.4" | 9.5" | 37 lbs. | 17.0" | 19.4" | 9.5" | 54 lbs. |
| 383 mm | 493 mm | 242 mm | 16.8 kg | 434 mm | 493 mm | 242 mm | 24.5 kg |

* If a union pump is installed, the model's height (H) will decrease by approximately 1.5" (38mm)

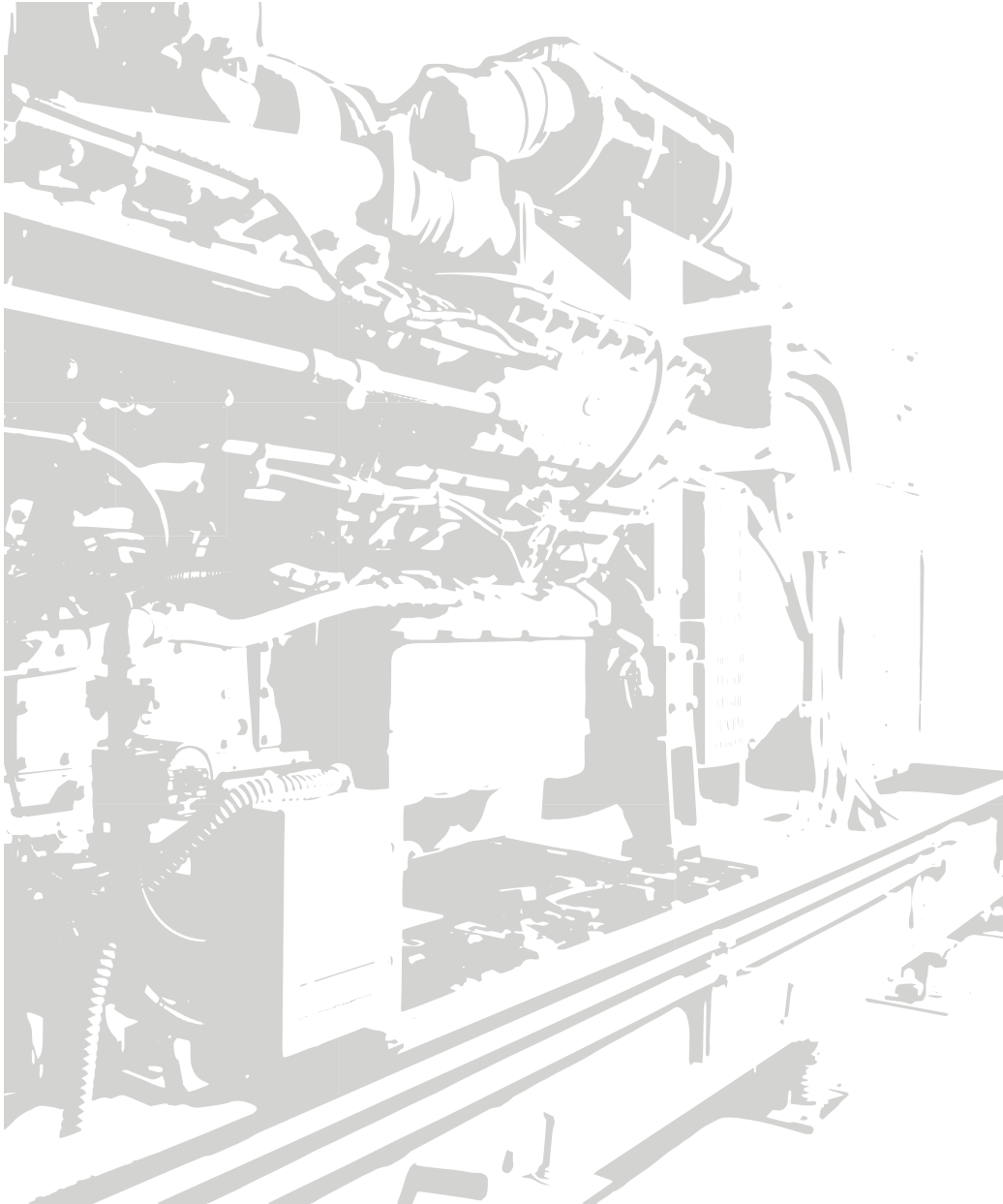
HOTflow® Technician Certification Training

HOTSTART's HOTflow® Technician Certification Training is an online webinar developed to train technicians in the field on how to install HOTflow® heaters to optimize engine preheating. Field technicians see heater applications everyday when servicing a generator. HOTSTART strives to provide the best tools and tips to these field experts to maximize the heater's performance in real world applications.

WEBINAR TOPICS INCLUDE:

- Introduction of HOTflow® Heating Systems
- Safety and Preparation
- Heater Connections
- Heater Installation
- Plumbing
- Start-up and Commissioning the Heater
- Common Problems
- Best Practices

Go online to www.hotstart.com/en/hotflow-certified-tech to register for a class or call Robert Fridye at 509-536-8660 to sign up today!



Thermosiphon Engine Heaters

TPS Model
Single Phase

500–2000 Watts



| Temperature Range | | Numerical Code |
|-------------------|--------------|----------------|
| ON | OFF | |
| 80°F (27°C) | 100°F (38°C) | 8 |
| 100°F (38°C) | 120°F (49°C) | 10 |
| 120°F (49°C) | 140°F (60°C) | 12 |

| Engine Displacement | Watts | Model Number 120V | Amps | Model Number 240V | Amps | Model Number 277V | Amps | |
|------------------------------|-------|----------------------|----------------|----------------------|------|----------------------|------|-----|
| 150 CID 2.5L | 500 | TPS051GT8-000 | 4.2 | TPS052GT8-000 | 2.1 | TPS057GT10-000 | 1.8 | |
| | | TPS051GT10-000 | 4.2 | TPS052GT10-000 | 2.1 | | | |
| | | TPS051GT12-000 | 4.2 | TPS052GT10-013 | 2.1 | | | |
| | | — | — | TPS052GT12-000 | 2.1 | | | |
| 350 CID 5.7L | 1000 | TPS101GT8-000 | 8.4 | TPS102GT8-000 | 4.2 | TPS107GT10-000 | 3.6 | |
| | | TPS101GT10-000 | 8.4 | TPS102GT10-000 | 4.2 | | | |
| | | TPS101GT12-000 | 8.4 | TPS102GT10-013 | 4.2 | | | |
| | | — | — | TPS102GT12-000 | 4.2 | | | |
| 350 – 500 CID 5.7 – 8.2L | 1500 | TPS151GT8-000 | 12.5 | TPS152GT8-000 | 6.3 | TPS157GT10-000 | 5.4 | |
| | | TPS151GT10-000 | 12.5 | TPS152GT10-000 | 6.3 | | | |
| | | TPS151GT12-000 | 12.5 | TPS152GT10-013 | 6.3 | | | |
| | | — | — | TPS152GT12-000 | 6.3 | | | |
| 500 – 700 CID 8.2 – 11.5L | 1800 | TPS181GT8-000 | 15 | — | — | — | — | |
| | 2000 | TPS181GT10-000 | 15 | TPS202GT8-000 | 8.3 | TPS207GT10-000 | 7.2 | |
| TPS181GT12-000 | | 15 | | | | | | |
| — | | — | TPS202GT10-000 | | | | | 8.3 |
| — | | — | TPS202GT10-013 | | | | | 8.3 |
| — | — | — | — | TPS202GT12-000 | 8.3 | — | — | |

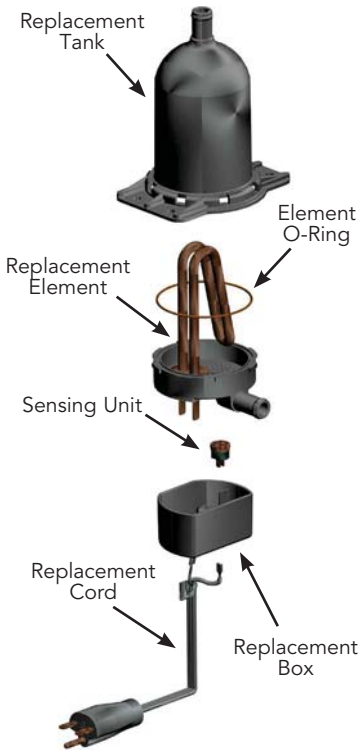
Power cord length on all models – 48" (1219mm)

TPS engine preheaters include a fixed setting thermostat. A single or double digit numeral at the end of the model number prefix designates the temperature range. **Example:** TPS101GT10-000 (see chart in left column)

-013 Engine preheater features 2 meter round cord and Schuko plug - CE compliant

Replacement Parts

For TPS Models



| Model Number | Replacement Parts | | | | | |
|----------------|-------------------|------------|-------|-------|------------|----------------|
| | Sensing Unit | Element | Tank | Box | Power Cord | Element O-ring |
| TPS051GT8-000 | LSU-8 | REPS051T8 | TPS-T | CPS-1 | 11P48UU | TPS-BOR |
| TPS051GT10-000 | LSU-10 | REPS051T10 | TPS-T | CPS-1 | 11P48UU | TPS-BOR |
| TPS051GT12-000 | LSU-12 | REPS051T12 | TPS-T | CPS-1 | 11P48UU | TPS-BOR |
| TPS052GT8-000 | LSU-8 | REPS052T8 | TPS-T | CPS-1 | 21P48UU | TPS-BOR |
| TPS052GT10-000 | LSU-10 | REPS052T10 | TPS-T | CPS-1 | 21P48UU | TPS-BOR |
| TPS052GT10-013 | LSU-10 | REPS052T10 | TPS-T | CPS-2 | 21SCH81UU | TPS-BOR |
| TPS052GT12-000 | LSU-12 | REPS052T12 | TPS-T | CPS-1 | 21P48UU | TPS-BOR |
| TPS057GT10-000 | LSU-10 | REPS057T10 | TPS-T | CPS-1 | 16H48UU | TPS-BOR |
| TPS101GT8-000 | LSU-8 | REPS101T8 | TPS-T | CPS-1 | 11P48UU | TPS-BOR |
| TPS101GT10-000 | LSU-10 | REPS101T10 | TPS-T | CPS-1 | 11P48UU | TPS-BOR |
| TPS101GT12-000 | LSU-12 | REPS101T12 | TPS-T | CPS-1 | 11P48UU | TPS-BOR |
| TPS102GT8-000 | LSU-8 | REPS102T8 | TPS-T | CPS-1 | 21P48UU | TPS-BOR |
| TPS102GT10-000 | LSU-10 | REPS102T10 | TPS-T | CPS-1 | 21P48UU | TPS-BOR |
| TPS102GT10-013 | LSU-10 | REPS102T10 | TPS-T | CPS-2 | 21SCH81UU | TPS-BOR |
| TPS102GT12-000 | LSU-12 | REPS102T12 | TPS-T | CPS-1 | 21P48UU | TPS-BOR |
| TPS107GT10-000 | LSU-10 | REPS107T10 | TPS-T | CPS-1 | 16H48UU | TPS-BOR |
| TPS151GT8-000 | LSU-8 | REPS151T8 | TPS-T | CPS-1 | 11P48UU | TPS-BOR |
| TPS151GT10-000 | LSU-10 | REPS151T10 | TPS-T | CPS-1 | 11P48UU | TPS-BOR |
| TPS151GT12-000 | LSU-12 | REPS151T12 | TPS-T | CPS-1 | 11P48UU | TPS-BOR |
| TPS152GT8-000 | LSU-8 | REPS152T8 | TPS-T | CPS-1 | 21P48UU | TPS-BOR |
| TPS152GT10-000 | LSU-10 | REPS152T10 | TPS-T | CPS-1 | 21P48UU | TPS-BOR |
| TPS152GT10-013 | LSU-10 | REPS152T10 | TPS-T | CPS-2 | 21SCH81UU | TPS-BOR |
| TPS152GT12-000 | LSU-12 | REPS152T12 | TPS-T | CPS-1 | 21P48UU | TPS-BOR |
| TPS157GT10-000 | LSU-10 | REPS157T10 | TPS-T | CPS-1 | 16H48UU | TPS-BOR |
| TPS181GT8-000 | LSU-8 | REPS181T8 | TPS-T | CPS-1 | 12P16H48UU | TPS-BOR |
| TPS181GT10-000 | LSU-10 | REPS181T10 | TPS-T | CPS-1 | 12P16H48UU | TPS-BOR |
| TPS181GT12-000 | LSU-12 | REPS181T12 | TPS-T | CPS-1 | 12P16H48UU | TPS-BOR |
| TPS202GT8-000 | LSU-8 | REPS202T8 | TPS-T | CPS-1 | 21P48UU | TPS-BOR |
| TPS202GT10-000 | LSU-10 | REPS202T10 | TPS-T | CPS-1 | 21P48UU | TPS-BOR |
| TPS202GT10-013 | LSU-10 | REPS202T10 | TPS-T | CPS-2 | 21SCH81UU | TPS-BOR |
| TPS202GT12-000 | LSU-12 | REPS202T12 | TPS-T | CPS-1 | 21P48UU | TPS-BOR |
| TPS207GT10-000 | LSU-10 | REPS207T10 | TPS-T | CPS-1 | 16H48UU | TPS-BOR |

| Engine Displacement | Model Number | Volts | Watts | Phase | Amps | Thermostat Range | |
|-----------------------------|----------------|-------|-------|-------|------|------------------|--------------|
| | | | | | | On | Off |
| 150CID 2.5L | TPS051GT12-001 | 120 | 500 | 1 | 4.2 | 100°F (38°C) | 120°F (49°C) |
| | TPS051GT12-A00 | 120 | 500 | 1 | 4.2 | ADJUSTABLE | |
| | TPS052GT12-001 | 240 | 500 | 1 | 2.1 | 100°F (38°C) | 120°F (49°C) |
| | TPS052GT12-A00 | 240 | 500 | 1 | 2.1 | ADJUSTABLE | |
| 350CID 5.7L | TPS101GT12-001 | 120 | 1000 | 1 | 8.4 | 100°F (38°C) | 120°F (49°C) |
| | TPS101GT12-A00 | 120 | 1000 | 1 | 8.4 | ADJUSTABLE | |
| | TPS102GT12-001 | 240 | 1000 | 1 | 4.2 | 100°F (38°C) | 120°F (49°C) |
| | TPS102GT12-A00 | 240 | 1000 | 1 | 4.2 | ADJUSTABLE | |
| 350 – 500CID 5.7 – 8.2L | TPS151GT12-001 | 120 | 1500 | 1 | 12.5 | 100°F (38°C) | 120°F (49°C) |
| | TPS151GT12-A00 | 120 | 1500 | 1 | 12.5 | ADJUSTABLE | |
| | TPS152GT12-001 | 240 | 1500 | 1 | 6.3 | 100°F (38°C) | 120°F (49°C) |
| | TPS152GT12-A00 | 240 | 1500 | 1 | 6.3 | ADJUSTABLE | |
| 500 – 700CID 8.2 – 11.5L | TPS181GT12-001 | 120 | 1800 | 1 | 15 | 100°F (38°C) | 120°F (49°C) |
| | TPS181GT12-A00 | 120 | 1800 | 1 | 15 | ADJUSTABLE | |
| | TPS202GT12-001 | 240 | 2000 | 1 | 8.3 | 100°F (38°C) | 120°F (49°C) |
| | TPS202GT12-A00 | 240 | 2000 | 1 | 8.3 | ADJUSTABLE | |

-001 Remote thread-in fixed temperature thermostat

Adjustable 90° – 130°F (32° – 54°C)
On differential -20°F (-7°C)

Thermosiphon Engine Heaters

TPS Model w/in-line adjustable and remote thread-in fixed thermostat.

Single Phase

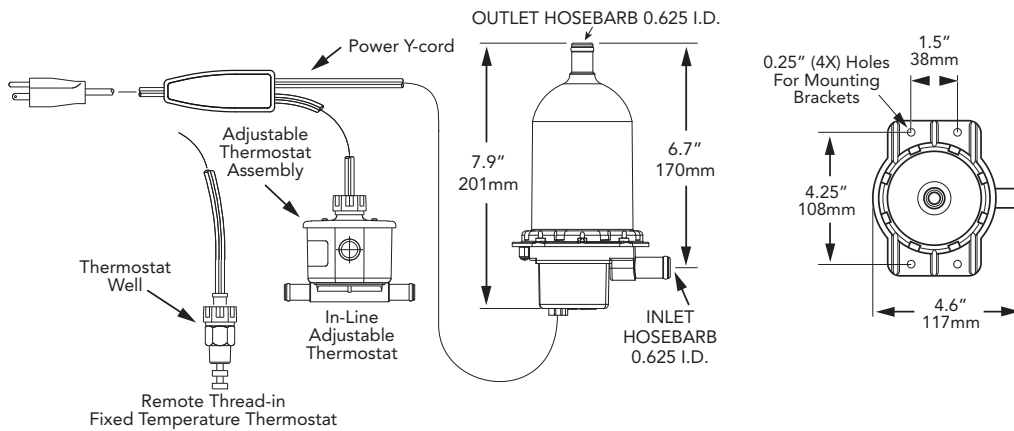
500–2000 Watts



Remote Adjustable
Thermostat Assembly

Part Number | TFTA-5/8HB

In-line thermostat options:



| Model Number | Volts | Watts | Replacement Parts | | | |
|----------------|-------|-------|-------------------|------------|------------------|-----------------|
| | | | Sensing Unit | Element | Power Y-cord | Thermostat Well |
| TPS051GT12-001 | 120 | 500 | LSU-10 | REPS051T12 | TPS-YC1 | TW2374-1 |
| TPS051GT12-A00 | 120 | 500 | RSU90-130 | REPS051T12 | # | # |
| TPS052GT12-001 | 240 | 500 | LSU-10 | REPS052T12 | TPS-YC2 | TW2374-1 |
| TPS052GT12-A00 | 240 | 500 | RSU90-130 | REPS052T12 | # | # |
| TPS101GT12-001 | 120 | 1000 | LSU-10 | REPS101T12 | TPS-YC1 | TW2374-1 |
| TPS101GT12-A00 | 120 | 1000 | RSU90-130 | REPS101T12 | # | # |
| TPS102GT12-001 | 240 | 1000 | LSU-10 | REPS102T12 | TPS-YC2 | TW2374-1 |
| TPS102GT12-A00 | 240 | 1000 | RSU90-130 | REPS102T12 | # | # |
| TPS151GT12-001 | 120 | 1500 | LSU-10 | REPS151T12 | TPS-YC1 | TW2374-1 |
| TPS151GT12-A00 | 120 | 1500 | RSU90-130 | REPS151T12 | # | # |
| TPS152GT12-001 | 240 | 1500 | LSU-10 | REPS152T12 | TPS-YC2 | TW2374-1 |
| TPS152GT12-A00 | 240 | 1500 | RSU90-130 | REPS152T12 | # | # |
| TPS181GT12-001 | 120 | 1800 | LSU-10 | REPS181T12 | 12P16H54S54X10UU | TW2374-1 |
| TPS181GT12-A00 | 120 | 1800 | RSU90-130 | REPS181T12 | # | # |
| TPS202GT12-001 | 240 | 2000 | LSU-10 | REPS202T12 | TPS-YC2 | TW2374-1 |
| TPS202GT12-A00 | 240 | 2000 | RSU90-130 | REPS202T12 | # | # |

-001 Remote thread-in fixed temperature thermostat

Call Factory

Replacement Parts

For TPS Model w/in-line adjustable and remote thread-in fixed thermostat.

Single Phase

Common replacement parts for all TPS engine preheaters:

- Tank
- Box
- Element O-ring

See table on page 6

Thermosiphon Engine Heaters

CB Model Weathertight Single Phase

1500–2500 Watts



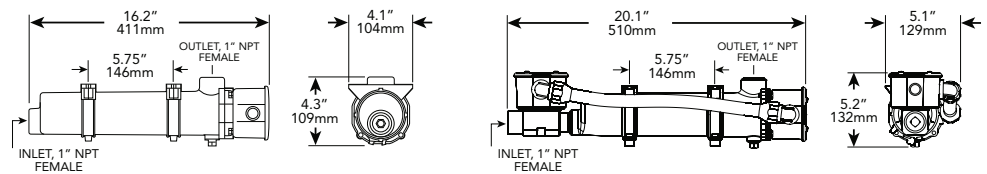
CB Model without thermostat



CB Model with thermostat

| Engine Displacement | Model Number without Thermostat | Model Number with Thermostat see chart 1 | Volts | Watts | Phase | Amps |
|------------------------------|---------------------------------|--|-------|-------|-------|------|
| 350 – 500 CID 5.7 – 8.2L | CB115100-000 | CB1151XX-200 | 120 | 1500 | 1 | 12.5 |
| | CB115800-000 | CB1158XX-200 | 208 | 1500 | 1 | 7.2 |
| | CB115200-000 | CB1152XX-200 | 240 | 1500 | 1 | 6.3 |
| | CB115700-000 | CB1157XX-200 | 277 | 1500 | 1 | 5.4 |
| | CB115300-000 | CB1153XX-200 | 380 | 1500 | 1 | 3.9 |
| | CB115400-000 | CB1154XX-200 | 480 | 1500 | 1 | 3.1 |
| 500 – 600 CID 8.2 – 9.8L | CB120100-000 | CB1201XX-200 | 120 | 2000 | 1 | 16.7 |
| | CB120800-000 | CB1208XX-200 | 208 | 2000 | 1 | 9.6 |
| | CB120200-000 | CB1202XX-200 | 240 | 2000 | 1 | 8.3 |
| | CB120300-000 | CB1203XX-200 | 380 | 2000 | 1 | 5.3 |
| | CB120400-000 | CB1204XX-200 | 480 | 2000 | 1 | 4.2 |
| 600 – 800 CID 9.8 – 13.1L | CB125100-000 | CB1251XX-200 | 120 | 2500 | 1 | 20.8 |
| | CB125800-000 | CB1258XX-200 | 208 | 2500 | 1 | 12.0 |
| | CB125200-000 | CB1252XX-200 | 240 | 2500 | 1 | 10.4 |
| | CB125700-000 | CB1257XX-200 | 277 | 2500 | 1 | 9.0 |
| | CB125300-000 | CB1253XX-200 | 380 | 2500 | 1 | 6.6 |
| | CB125400-000 | CB1254XX-200 | 480 | 2500 | 1 | 5.2 |

CB Model



CL Model Weathertight Single Phase

3000–5000 Watts



CL Model without thermostat



CL Model with thermostat

| Engine Displacement | Model Number without Thermostat | Model Number with Thermostat see chart 1 | Volts | Watts | Phase | Amps |
|---------------------------------|---------------------------------|--|-------|-------|-------|------|
| 800 – 1000 CID 13.1 – 16.4L | CL130100-100 | CL1301XX-200 | 120 | 3000 | 1 | 25.0 |
| | CL130800-100 | CL1308XX-200 | 208 | 3000 | 1 | 14.4 |
| | CL130200-100 | CL1302XX-200 | 240 | 3000 | 1 | 12.5 |
| | CL130700-100 | CL1307XX-200 | 277 | 3000 | 1 | 10.8 |
| | CL130300-100 | CL1303XX-200 | 380 | 3000 | 1 | 7.9 |
| | CL130400-100 | CL1304XX-200 | 480 | 3000 | 1 | 6.3 |
| 1000 – 1350 CID 16.4 – 22.1L | CL140800-100 | CL1408XX-200 | 208 | 4000 | 1 | 19.2 |
| | CL140200-100 | CL1402XX-200 | 240 | 4000 | 1 | 16.7 |
| | CL140700-100 | CL1407XX-200 | 277 | 4000 | 1 | 14.4 |
| | CL140300-100 | CL1403XX-200 | 380 | 4000 | 1 | 10.5 |
| 1350 – 1650 CID 22.1 – 27.0L | CL140400-100 | CL1404XX-200 | 480 | 4000 | 1 | 8.3 |
| | CL150800-100 | CL1508XX-200 | 208 | 5000 | 1 | 24.0 |
| | CL150200-100 | CL1502XX-200 | 240 | 5000 | 1 | 20.8 |
| | CL150700-100 | CL1507XX-200 | 277 | 5000 | 1 | 18.1 |
| 1650 – 2000 CID 27.0 – 32.0L | CL150300-100 | CL1503XX-200 | 380 | 5000 | 1 | 13.2 |
| | CL150400-100 | CL1504XX-200 | 480 | 5000 | 1 | 10.4 |
| | CL150900-100 | CL1509XX-200 | 208 | 6000 | 1 | 25.0 |

CL Model

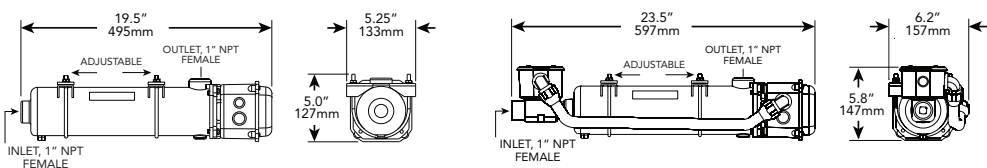


CHART 1

Heaters with Thermostats

To specify temperature range of thermostat, insert numerical code from chart in place of the **XX** in model number.

Example:

Desired Temp. Range: 100° – 120°F

Model Number: CB1151**XX**-200

Order as: CB1151**10**-200

| Temperature Range | | Numerical Code |
|--|--------------|----------------|
| ON | OFF | |
| 80°F (27°C) | 100°F (38°C) | 08 |
| 100°F (38°C) | 120°F (49°C) | 10 |
| 120°F (49°C) | 140°F (60°C) | 12 |
| Adjustable 90° – 130°F (32° – 54°C) | | A3 |

Replacement Parts

For thermosiphon engine heaters CB/CL Models

CHART 2

Heaters with Thermostats

| Temperature Range | | Sensing Unit |
|--|--------------|--------------|
| ON | OFF | |
| 80°F (27°C) | 100°F (38°C) | FSU8 |
| 100°F (38°C) | 120°F (49°C) | FSU10 |
| 120°F (49°C) | 140°F (60°C) | FSU12 |
| Adjustable 90° – 130°F (32° – 54°C) | | FSU90-130 |

Example:

Model Number: CB115110-200
T-Stat Replacement: FSU10

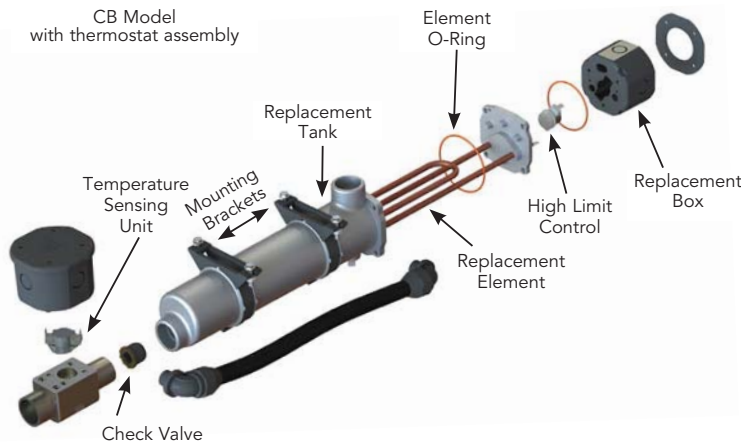
ADAPTER FITTINGS (CB MODELS ONLY)

For the use of 0.75" or 1" ID heater hose, hose barb adapters are available. See below.

| | |
|--------|---|
| HB-1 | 1" NPT to 1" hose barb adapter. Installs in 1" NPT female inlet or outlet of the heater. |
| HB-3/4 | 1" NPT to 0.75" hose barb adapter. Installs in 1" NPT female inlet or outlet of the heater. |

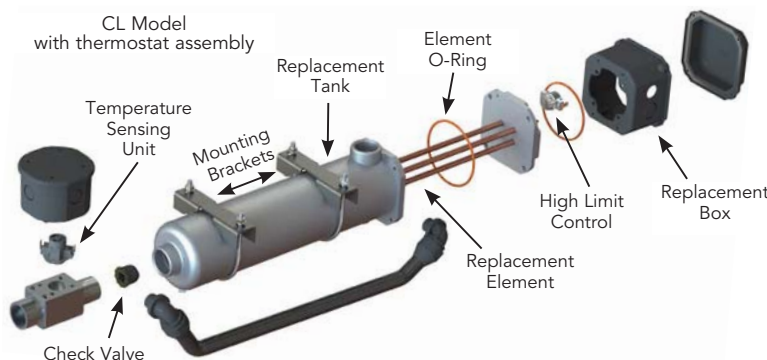
| Model Number without Thermostat | Model Number with Thermostat see chart 2 | Element Replacement |
|--|--|--|
| CB115100-000 CB115800-000 CB115200-000 CB115700-000 CB115300-000 CB115400-000 | CB1151XX-200 CB1158XX-200 CB1152XX-200 CB1157XX-200 CB1153XX-200 CB1154XX-200 | RECB1151 RECB1158 RECB1152 RECB1157 RECB1153 RECB1154 |
| CB120100-000 CB120800-000 CB120200-000 CB120300-000 CB120400-000 | CB1201XX-200 CB1208XX-200 CB1202XX-200 CB1203XX-200 CB1204XX-200 | RECB1201 RECB1208 RECB1202 RECB1203 RECB1204 |
| CB125100-000 CB125800-000 CB125200-000 CB125700-000 CB125300-000 CB125400-000 | CB1251XX-200 CB1258XX-200 CB1252XX-200 CB1257XX-200 CB1253XX-200 CB1254XX-200 | RECB1251 RECB1258 RECB1252 RECB1257 RECB1253 RECB1254 |

| Common Replacement Parts available for all listed heaters | |
|---|---------|
| High Limit Control | HLC-165 |
| Check Valve | RV-M |
| Element O-ring | TMM-OR |
| Tank | RTB |
| Box | RTBCB |
| Mounting Brackets | RTMMB |



| Model Number without Thermostat | Model Number with Thermostat see chart 2 | Element Replacement |
|--|--|--|
| CL130100-100 CL130800-100 CL130200-100 CL130700-100 CL130300-100 CL130400-100 | CL1301XX-200 CL1308XX-200 CL1302XX-200 CL1307XX-200 CL1303XX-200 CL1304XX-200 | RECL1301-100 RECL1308-100 RECL1302-100 RECL1307-100 RECL1303-100 RECL1304-100 |
| CL140800-100 CL140200-100 CL140700-100 CL140300-100 CL140400-100 | CL1408XX-200 CL1402XX-200 CL1407XX-200 CL1403XX-200 CL1404XX-200 | RECL1408-100 RECL1402-100 RECL1407-100 RECL1403-100 RECL1404-100 |
| CL150800-100 CL150200-100 CL150700-100 CL150300-100 CL150400-100 | CL1508XX-200 CL1502XX-200 CL1507XX-200 CL1503XX-200 CL1504XX-200 | RECL1508-100 RECL1502-100 RECL1507-100 RECL1503-100 RECL1504-100 |

| Common Replacement Parts available for all listed heaters | |
|---|-----------|
| High Limit Control | HLC-165 |
| Check Valve | RV-M |
| Element O-ring | TML-OR |
| Tank | RTL |
| Box | RTBCL-100 |
| Mounting Brackets | FK7 |



Thermosiphon Engine Heaters

SB Model
with power cord
Weathertight
Single Phase

1500–2500 Watts



SB Model with power cord
no thermostat



SB Model with thermostat
and power cord

SL Model
with power cord
Weathertight
Single Phase

3000–4000 Watts



SL Model with power cord
no thermostat

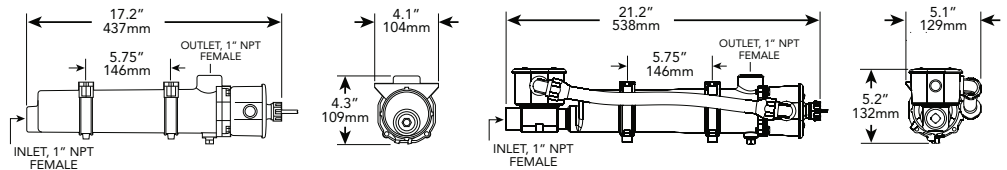


SL Model with thermostat
and power cord

| Engine Displacement | Model Number without Thermostat | Model Number with Thermostat see chart 1 | Volts | Watts | Phase | Amps |
|-------------------------------|---------------------------------|--|-------|-------|-------|------|
| 350 – 500 CID 5.7 – 8.2L | SB115100-000 | SB1151XX-200 | 120 | 1500 | 1 | 12.5 |
| | SB115800-000 | SB1158XX-200 | 208 | 1500 | 1 | 7.2 |
| | SB115200-000 | SB1152XX-200 | 240 | 1500 | 1 | 6.3 |
| | SB115700-000 | SB1157XX-200 | 277 | 1500 | 1 | 5.4 |
| 500 – 600 CID 8.2 – 9.8L | SB120100-000 | SB1201XX-200 | 120 | 2000 | 1 | 16.7 |
| | SB120800-000 | SB1208XX-200 | 208 | 2000 | 1 | 9.6 |
| | SB120200-000 | SB1202XX-200 | 240 | 2000 | 1 | 8.3 |
| 600 – 800 CID 9.8 – 13.1 L | SB122100-000 | SB1221XX-200 | 120 | 2250 | 1 | 18.8 |
| | SB125800-000 | SB1258XX-200 | 208 | 2500 | 1 | 12.0 |
| | SB125200-000 | SB1252XX-200 | 240 | 2500 | 1 | 10.4 |
| | SB125700-000 | SB1257XX-200 | 277 | 2500 | 1 | 9.0 |

Power cord length on all models – 72" (1829 mm)
All 208 V and 277 V models come with cord only - no plug.

SB Model



| Engine Displacement | Model Number without Thermostat | Model Number with Thermostat see chart 1 | Volts | Watts | Phase | Amps |
|----------------------------------|---------------------------------|--|-------|-------|-------|------|
| 800 – 1000 CID 13.1 – 16.4 L | SL130800-100 | SL1308XX-200 | 208 | 3000 | 1 | 14.4 |
| | SL130200-100 | SL1302XX-200 | 240 | 3000 | 1 | 12.5 |
| | SL130700-100 | SL1307XX-200 | 277 | 3000 | 1 | 10.8 |
| 1000 – 1350 CID 16.4 – 22.1 L | SL140800-100 | SL1408XX-200 | 208 | 4000 | 1 | 19.2 |
| | SL140200-100 | SL1402XX-200 | 240 | 4000 | 1 | 16.7 |
| | SL140700-100 | SL1407XX-200 | 277 | 4000 | 1 | 14.4 |

Power cord length on all models – 72" (1829mm)
All 208 V and 277 V models come with cord only - no plug.

SL Model

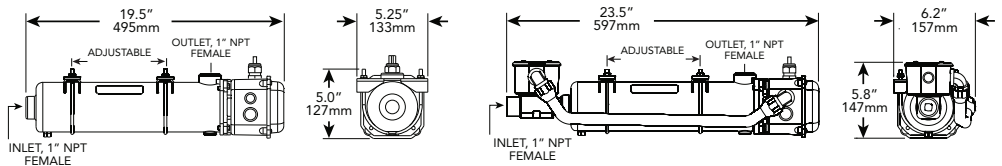


CHART 1

Heaters with Thermostats

To specify temperature range of thermostat, insert numerical code from chart in place of the **XX** in model number.

Example:

Desired Temp. Range: 100° – 120°F
Model Number: SB1151**XX**-200
Order as: SB1151**10**-200

| Temperature Range | | Numerical Code |
|--|--------------|----------------|
| ON | OFF | |
| 80°F (27°C) | 100°F (38°C) | 08 |
| 100°F (38°C) | 120°F (49°C) | 10 |
| 120°F (49°C) | 140°F (60°C) | 12 |
| Adjustable 90° – 130°F (32° – 54°C) | | A3 |

Replacement Parts

For thermosiphon engine heaters SB/SL Models

CHART 2

Heaters with Thermostats

| Temperature Range | | Sensing Unit |
|-------------------------------------|--------------|--------------|
| ON | OFF | |
| 80°F (27°C) | 100°F (38°C) | FSU8 |
| 100°F (38°C) | 120°F (49°C) | FSU10 |
| 120°F (49°C) | 140°F (60°C) | FSU12 |
| Adjustable 90° - 130°F (32° - 54°C) | | FSU90-130 |

Example:

Model Number: SB115110-200
T-Stat Replacement: FSU10

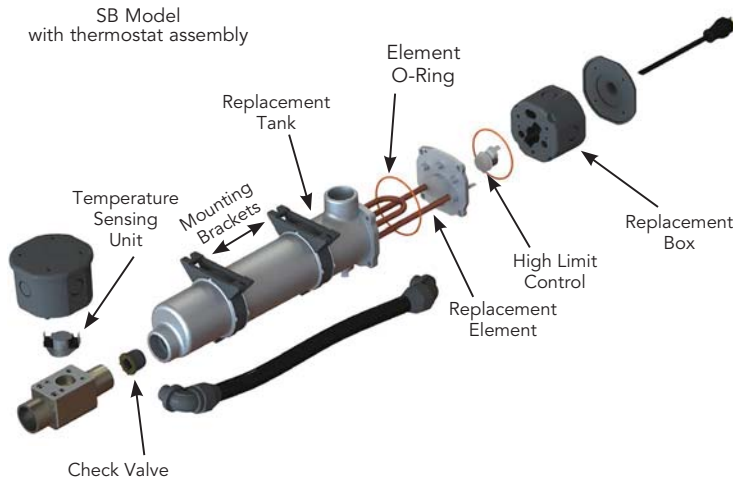
ADAPTER FITTINGS

For the use of 0.75" or 1" ID heater hose, hose barb adapters are available. See below.

| | |
|--------|---|
| HB-1 | 1" NPT to 1" hose barb adapter. Installs in 1" NPT female inlet or outlet of the heater. |
| HB-3/4 | 1" NPT to 0.75" hose barb adapter. Installs in 1" NPT female inlet or outlet of the heater. |

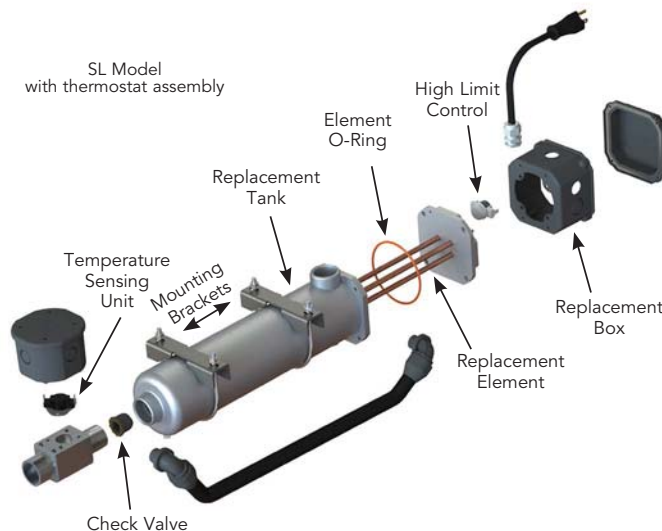
| Model Number without Thermostat | Model Number with Thermostat see chart 2 | Element Replacement | Power Cord |
|---------------------------------|--|---------------------|------------|
| SB115100-000 | SB1151XX-200 | RESB1151 | RHB-1-15 |
| SB115800-000 | SB1158XX-200 | RESB1158 | RHB-WOP |
| SB115200-000 | SB1152XX-200 | RESB1152 | RHB-2-15 |
| SB115700-000 | SB1157XX-200 | RESB1157 | RHB-WOP |
| SB120100-000 | SB1201XX-200 | RESB1201 | RHB-1-20 |
| SB120800-000 | SB1208XX-200 | RESB1208 | RHB-WOP |
| SB120200-000 | SB1202XX-200 | RESB1202 | RHB-2-15 |
| SB122100-000 | SB1221XX-200 | RESB1221 | RHB-1-20 |
| SB125800-000 | SB1258XX-200 | RESB1258 | RHB-WOP |
| SB125200-000 | SB1252XX-200 | RESB1252 | RHB-2-15 |
| SB125700-000 | SB1257XX-200 | RESB1257 | RHB-WOP |

| Common Replacement Parts available for all listed heaters | |
|---|---------|
| High Limit Control | HLC-165 |
| Check Valve | RV-M |
| Element O-ring | TMM-OR |
| Tank | RTB |
| Box | RTBSB |
| Mounting Brackets | RTMMB |



| Model Number without Thermostat | Model Number with Thermostat see chart 2 | Element Replacement | Power Cord |
|---------------------------------|--|---------------------|------------|
| SL130800-100 | SL1308XX-200 | RESL1308-100 | RHL-WOP |
| SL130200-100 | SL1302XX-200 | RESL1302-100 | RHL-2-15 |
| SL130700-100 | SL1307XX-200 | RESL1307-100 | RHL-WOP |
| SL140800-100 | SL1408XX-200 | RESL1408-100 | RHL-WOP |
| SL140200-100 | SL1402XX-200 | RESL1402-100 | RHL-2-20 |
| SL140700-100 | SL1407XX-200 | RESL1407-100 | RHL-WOP |

| Common Replacement Parts available for all listed heaters | |
|---|-----------|
| High Limit Control | HLC-165 |
| Check Valve | RV-M |
| Element O-ring | TML-OR |
| Tank | RTL |
| Box | RTBCL-100 |
| Mounting Brackets | FK7 |



Thermosiphon Engine Heaters

WL Series
Weathertight
Three Phase

2500-5000 Watts



WL Model without thermostat



WL Model with thermostat

CHART 1

Heaters with Thermostats

To specify temperature range of thermostat, insert numerical code from chart in place of the **XX** in model number.

Example:

Desired Temp. Range: 100° - 120°F
Model Number: WL3252**XX**-200
Order as: WL3252**10**-200

| Temperature Range | | Numerical Code |
|--|-------------|----------------|
| ON | OFF | |
| 80°F (27C) | 100°F (38C) | 08 |
| 100°F (38C) | 120°F (49C) | 10 |
| 120°F (49C) | 140°F (60C) | 12 |
| Adjustable 90° - 130°F (32° - 54°C) | | A3 |

CHART 2

Heaters with Thermostats

| Temperature Range | | Sensing Unit |
|--|--------------|--------------|
| ON | OFF | |
| 80°F (27°C) | 100°F (38°C) | FSU8 |
| 100°F (38°C) | 120°F (49°C) | FSU10 |
| 120°F (49°C) | 140°F (60°C) | FSU12 |
| Adjustable 90° - 130°F (32° - 54°C) | | FSU90-130 |

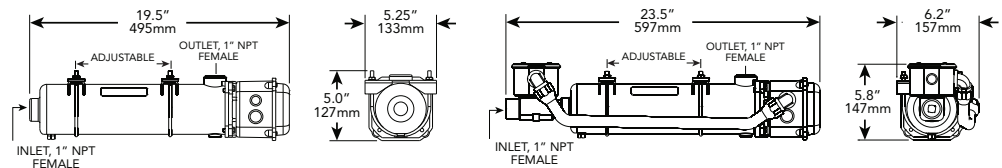
Example:

Model Number: WL3252**10**-200
T-Stat Replacement: FSU10

| Engine Displacement | Model Number without Thermostat | Model Number with Thermostat see chart 1 | Volts | Watts | Phase | Amps |
|----------------------------------|---------------------------------|--|-------|-------|-------|------|
| 600 - 800 CID 9.8 - 13.1 L | WL325800-000 | WL3258XX-200 | 208 | 2500 | 3 | 6.9 |
| | WL325200-000 | WL3252XX-200 | 240 | 2500 | 3 | 6.0 |
| | WL325A00-000 | WL325AXX-200 | 400 | 2500 | 3 | 3.6 |
| | WL325400-000 | WL3254XX-200 | 480 | 2500 | 3 | 3.0 |
| | WL325500-000 | WL3255XX-200 | 575 | 2500 | 3 | 2.5 |
| 1000 - 1350 CID 16.4 - 22.1 L | WL340800-000 | WL3408XX-200 | 208 | 4000 | 3 | 11.1 |
| | WL340200-000 | WL3402XX-200 | 240 | 4000 | 3 | 9.6 |
| | WL340A00-000 | WL340AXX-200 | 400 | 4000 | 3 | 5.8 |
| | WL340400-000 | WL3404XX-200 | 480 | 4000 | 3 | 4.8 |
| | WL340500-000 | WL3405XX-200 | 575 | 4000 | 3 | 4.0 |
| 1350 - 1650 CID 22.1 - 27.0 L | WL350800-000 | WL3508XX-200 | 208 | 5000 | 3 | 13.9 |
| | WL350200-000 | WL3502XX-200 | 240 | 5000 | 3 | 12.0 |
| | WL350A00-000 | WL350AXX-200 | 400 | 5000 | 3 | 7.2 |
| | WL350400-000 | WL3504XX-200 | 480 | 5000 | 3 | 6.0 |
| | WL350500-000 | WL3505XX-200 | 575 | 5000 | 3 | 5.0 |

All 3 phase heaters with thermostat must use a control box.
See Control Systems page 30.

WL Model



Replacement Parts

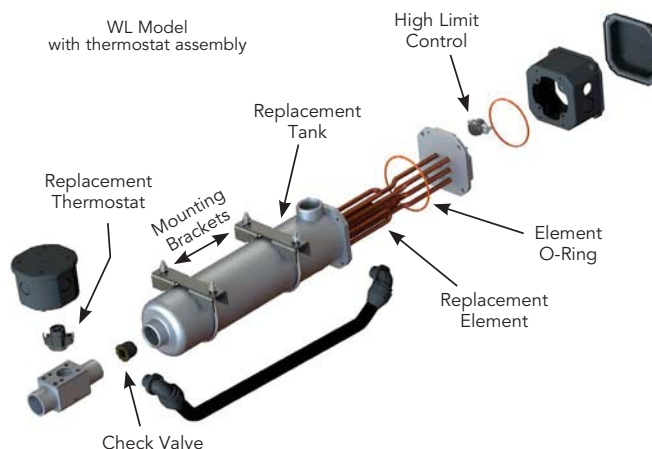
| Model Number without Thermostat | Model Number with Thermostat see chart 2 | Element Replacement |
|---------------------------------|--|---------------------|
| WL325800-000 | WL3258XX-200 | REWL3258 |
| WL325200-000 | WL3252XX-200 | REWL3252 |
| WL325A00-000 | WL325AXX-200 | REWL325A |
| WL325400-000 | WL3254XX-200 | REWL3254 |
| WL325500-000 | WL3255XX-200 | REWL3255 |
| WL340800-000 | WL3408XX-200 | REWL3408 |
| WL340200-000 | WL3402XX-200 | REWL3402 |
| WL340A00-000 | WL340AXX-200 | REWL340A |
| WL340400-000 | WL3404XX-200 | REWL3404 |
| WL340500-000 | WL3405XX-200 | REWL3405 |
| WL350800-000 | WL3508XX-200 | REWL3508 |
| WL350200-000 | WL3502XX-200 | REWL3502 |
| WL350A00-000 | WL350AXX-200 | REWL350A |
| WL350400-000 | WL3504XX-200 | REWL3504 |
| WL350500-000 | WL3505XX-200 | REWL3505 |

| Common Replacement Parts available for all listed heaters | |
|---|---------|
| High Limit Control | HLC-165 |
| Check Valve | RV-M |
| Element O-ring | TML-OR |
| Tank | RTL |
| Mounting Brackets | FK7 |

ADAPTER FITTINGS

For the use of 0.75" or 1" ID heater hose, hose barb adapters are available. See below.

| | |
|--------|---|
| HB-1 | 1" NPT to 1" hose barb adapter. Installs in 1" NPT female inlet or outlet of the heater. |
| HB-3/4 | 1" NPT to 0.75" hose barb adapter. Installs in 1" NPT female inlet or outlet of the heater. |



| HOTSTART Model Number | Caterpillar Model Number | Volts | Pre-Wired at assembly | Watts | Phase | Amps |
|-----------------------|--------------------------|---------|-----------------------|-------|-------|------------------------------|
| CL130DA2-000 | 7E-6247 | 120/240 | 120 | 3000 | 1 | 25.0 @ 120 V 12.5 @ 240 V |
| CL140EA2-000 | — | 240/480 | 240 | 4000 | 1 | 16.7 @ 240 V 8.3 @ 480 V |
| CL160EA2-000 | 7E-6248 (2006504) | 240/480 | 240 | 6000 | 1 | 25.0 @ 240 V 12.5 @ 480 V |
| CL160CA2-000 | 7E-6249 | 120 | 2-120 V circuits | 6000 | 1 | 25.0 per circuit |

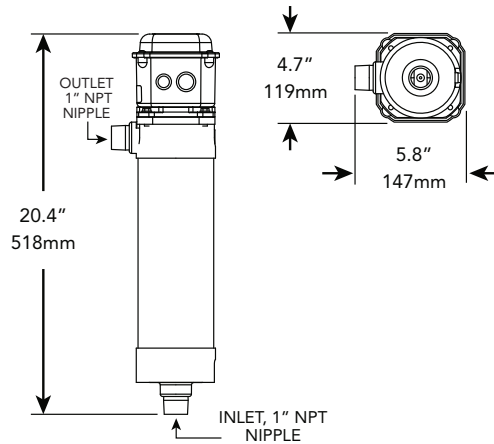
NOTE: Vertical installation ONLY

For original equipment replacement:

- Two 5" stainless steel clamps are included to mount heater to existing bracket.

For new installations:

- U-bolt mounting brackets available. Order kit number: **FK9**



Thermosiphon Engine Heaters

OEM Replacement
Weathertight
Single Phase

3000–6000 Watts



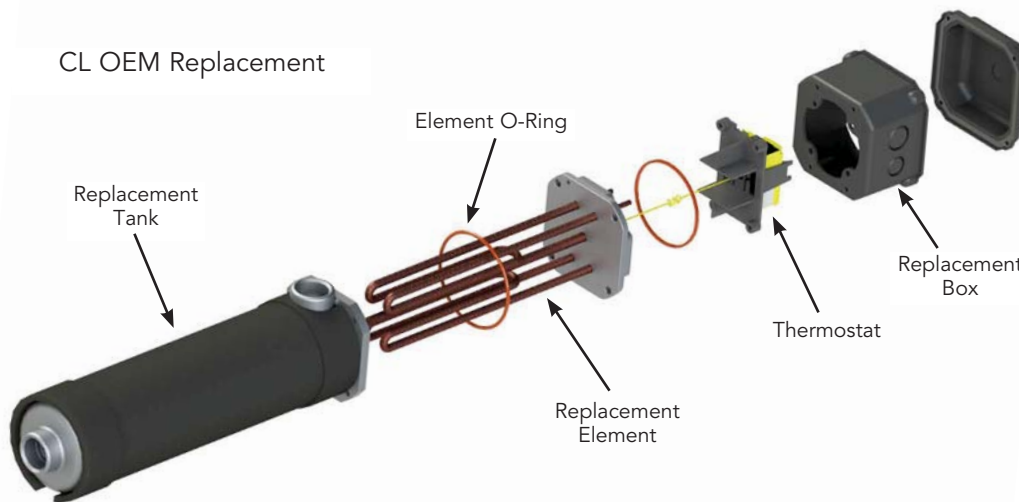
Vertical Mount
OEM replacement

Replacement Parts

| HOTSTART Model Number | Element Replacement |
|-----------------------|---------------------|
| CL130DA2-000 | RECL130D |
| CL140EA2-000 | RECL140E |
| CL160EA2-000 | RECL160C |
| CL160CA2-000 | RECL140E |

| Common Replacement Parts available for all OEM replacement heaters | |
|---|-------------|
| Thermostat | AMT70210-A2 |
| Element O-ring | TML-OR |
| Tank | RTCSM |
| Box | RTBCL-100 |

CL OEM Replacement



Thermosiphon Engine Heaters

EE Model
Hazardous Location
Single Phase

1500-5000 Watts



EE Model without thermostat



EE Model with thermostat

Heaters with Thermostats

EE Models are only available with a fixed setting temperature sensor.

| Temperature Range | | Numerical Code |
|-------------------|-------------|----------------|
| ON | OFF | |
| 100°F (38C) | 120°F (49C) | 10 |

All heaters over 480 V with a thermostat must use a control box. See Control Systems page 30.

EE Replacement Thermostats

Example:

Model Number: EE130210-000
T-Stat Replacement: RSU10

| Temperature Range | | Sensing Unit |
|-------------------|-------------|--------------|
| ON | OFF | |
| 100°F (38C) | 120°F (49C) | RSU10 |

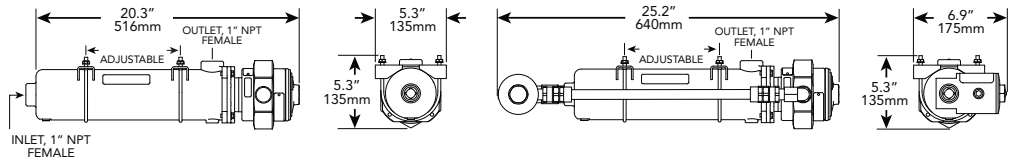
ADAPTER FITTINGS

For the use of 0.75" or 1" ID heater hose, hose barb adapters are available. See below.

| | |
|--------|---|
| HB-1 | 1" NPT to 1" hose barb adapter. Installs in 1" NPT female inlet or outlet of the heater. |
| HB-3/4 | 1" NPT to 0.75" hose barb adapter. Installs in 1" NPT female inlet or outlet of the heater. |

| Engine Displacement | Model Number without Thermostat | Model Number with Thermostat | Volts | Watts | Phase | Amp |
|----------------------------------|---------------------------------|------------------------------|-------|-------|-------|------|
| 500 CID or less 8.2 L or less | EE115100-000 | EE115110-000 | 120 | 1500 | 1 | 12.5 |
| | EE115800-000 | EE115810-000 | 208 | 1500 | 1 | 7.2 |
| | EE115200-000 | EE115210-000 | 240 | 1500 | 1 | 6.3 |
| 500 - 600 CID 8.2 - 9.8 L | EE120100-000 | EE120110-000 | 120 | 2000 | 1 | 16.7 |
| | EE120800-000 | EE120810-000 | 208 | 2000 | 1 | 9.6 |
| | EE120200-000 | EE120210-000 | 240 | 2000 | 1 | 8.3 |
| 600 - 800 CID 9.8 - 13.1 L | EE125800-000 | EE125810-000 | 208 | 2500 | 1 | 12.0 |
| | EE125200-000 | EE125210-000 | 240 | 2500 | 1 | 10.4 |
| | EE125400-000 | EE125410-000 | 480 | 2500 | 1 | 5.2 |
| 800 - 1000 CID 13.1 - 16.4L | EE130800-000 | EE130810-000 | 208 | 3000 | 1 | 14.4 |
| | EE130200-000 | EE130210-000 | 240 | 3000 | 1 | 12.5 |
| | EE130400-000 | EE130410-000 | 480 | 3000 | 1 | 6.3 |
| 1000 - 1350 CID 16.4 - 22.1 L | EE140800-000 | EE140810-000 | 208 | 4000 | 1 | 19.2 |
| | EE140200-000 | EE140210-000 | 240 | 4000 | 1 | 16.7 |
| | EE140400-000 | EE140410-000 | 480 | 4000 | 1 | 8.3 |
| 1350 - 1650 CID 22.1 - 27.0 L | EE150400-000 | EE150410-000 | 480 | 5000 | 1 | 10.4 |

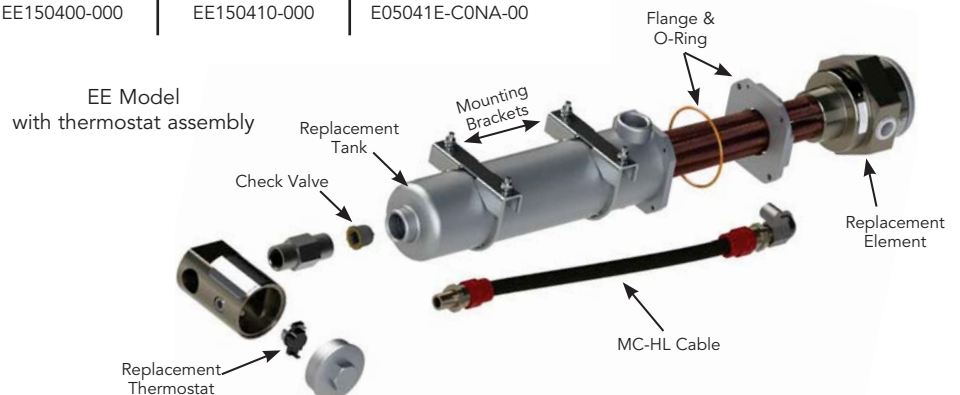
EE Model



Replacement Parts

| Model Number without Thermostat | Model Number with Thermostat | Element Replacement |
|---------------------------------|------------------------------|---------------------|
| EE115100-000 | EE115110-000 | REEE1151 |
| EE115800-000 | EE115810-000 | REEE1158 |
| EE115200-000 | EE115210-000 | REEE1152 |
| EE115400-000 | EE115410-000 | E01541E-50NA-00 |
| EE120100-000 | EE120110-000 | REEE1201 |
| EE120800-000 | EE120810-000 | REEE1208 |
| EE120200-000 | EE120210-000 | REEE1202 |
| EE120400-000 | EE120410-000 | E02041E-50NA-00 |
| EE125800-000 | EE125810-000 | REEE1258 |
| EE125200-000 | EE125210-000 | REEE1252 |
| EE125400-000 | EE125410-000 | E02541E-CONA-00 |
| EE130800-000 | EE130810-000 | REEE1308 |
| EE130200-000 | EE130210-000 | REEE1302 |
| EE130400-000 | EE130410-000 | E03041E-50NA-00 |
| EE140800-000 | EE140810-000 | REEE1408 |
| EE140200-000 | EE140210-000 | REEE1402 |
| EE140400-000 | EE140410-000 | E04041E-50NA-00 |
| EE150400-000 | EE150410-000 | E05041E-CONA-00 |

| Common Replacement Parts available for all listed heaters | |
|---|---------------|
| Check Valve | RV-M |
| Flange | RF-L |
| Flange O-ring | TML-OR |
| Tank | RTL |
| MC-HL cable | PRP104301-029 |
| Mounting Brackets | FK7 |



Thermosiphon Engine Heaters

EE Model Hazardous Location Three Phase

1500-5000 Watts



EE Model without thermostat



EE Model with thermostat

Heaters with Thermostats

EE Models are only available with a fixed setting temperature sensor.

| Temperature Range | Numerical Code |
|-------------------------|----------------|
| ON OFF | 10 |
| 100°F (38C) 120°F (49C) | |

All 3 phase heaters with thermostat must use a control box. See Control Systems page 30.

EE Replacement Thermostats

Example:

Model Number: EE130210-000
T-Stat Replacement: RSU10

| Temperature Range | Sensing Unit |
|-------------------------|--------------|
| ON OFF | RSU10 |
| 100°F (38C) 120°F (49C) | |

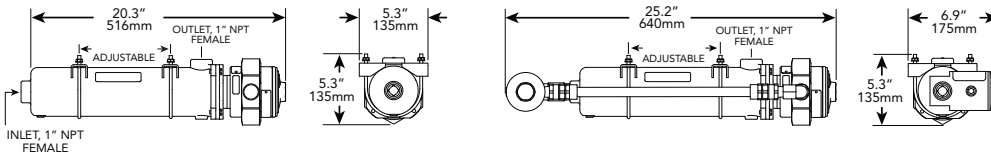
ADAPTER FITTINGS

For the use of 0.75" or 1" ID heater hose, hose barb adapters are available. See below.

| | |
|--------|---|
| HB-1 | 1" NPT to 1" hose barb adapter. Installs in 1" NPT female inlet or outlet of the heater. |
| HB-3/4 | 1" NPT to 0.75" hose barb adapter. Installs in 1" NPT female inlet or outlet of the heater. |

| Engine Displacement | Model Number without Thermostat | Model Number with Thermostat | Volts | Watts | Phase | Amp |
|----------------------------------|---------------------------------|------------------------------|-------|-------|-------|------|
| 500 CID or less 8.2 L or less | EE315800-000 | EE315810-000 | 208 | 1500 | 3 | 4.2 |
| | EE315200-000 | EE315210-000 | 240 | 1500 | 3 | 3.6 |
| | EE315400-000 | EE315410-000 | 480 | 1500 | 3 | 1.8 |
| 500 - 600 CID 8.2 - 9.8 L | EE320800-000 | EE320810-000 | 208 | 2000 | 3 | 5.6 |
| | EE320200-000 | EE320210-000 | 240 | 2000 | 3 | 4.8 |
| | EE320400-000 | EE320410-000 | 480 | 2000 | 3 | 2.4 |
| 600 - 800 CID 9.8 - 13.1 L | EE325800-000 | EE325810-000 | 208 | 2500 | 3 | 6.9 |
| | EE325200-000 | EE325210-000 | 240 | 2500 | 3 | 6.0 |
| | EE325400-000 | EE325410-000 | 480 | 2500 | 3 | 3.0 |
| 800 - 1000 CID 13.1 - 16.4 L | EE330800-000 | EE330810-000 | 208 | 3000 | 3 | 8.3 |
| | EE330200-000 | EE330210-000 | 240 | 3000 | 3 | 7.2 |
| | EE330400-000 | EE330410-000 | 480 | 3000 | 3 | 3.6 |
| 1000 - 1350 CID 16.4 - 22.1 L | EE340800-000 | EE340810-000 | 208 | 4000 | 3 | 11.1 |
| | EE340200-000 | EE340210-000 | 240 | 4000 | 3 | 9.6 |
| | EE340400-000 | EE340410-000 | 480 | 4000 | 3 | 4.8 |
| 1350 - 1650 CID 22.1 - 27.0 L | EE350800-000 | EE350810-000 | 208 | 5000 | 3 | 13.9 |
| | EE350200-000 | EE350210-000 | 240 | 5000 | 3 | 12.0 |
| | EE350400-000 | EE350410-000 | 480 | 5000 | 3 | 6.0 |

EE Model

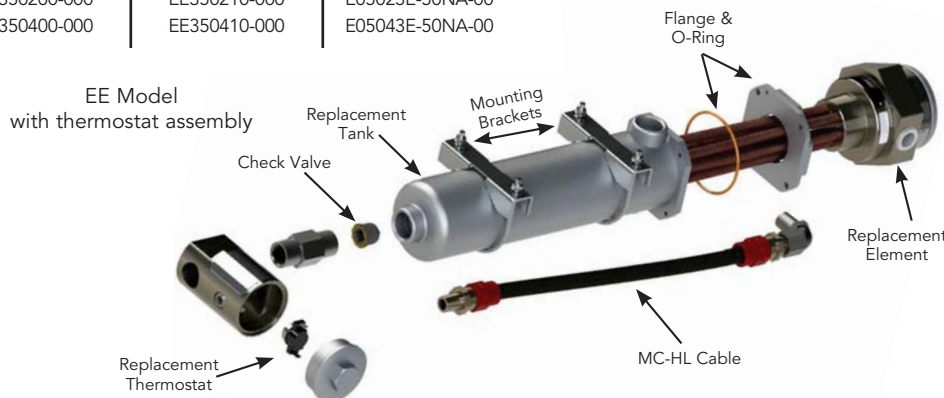


Replacement Parts

| Model Number without Thermostat | Model Number with Thermostat | Element Replacement |
|---------------------------------|------------------------------|---------------------|
| EE315800-000 | EE315810-000 | E01583E-15NA-00 |
| EE315200-000 | EE315210-000 | E01523E-15NA-00 |
| EE315400-000 | EE315410-000 | E01543E-15NA-00 |
| EE320800-000 | EE320810-000 | E02083E-25NA-00 |
| EE320200-000 | EE320210-000 | E02023E-25NA-00 |
| EE320400-000 | EE320410-000 | E02043E-25NA-00 |
| EE325800-000 | EE325810-000 | E02583E-30NA-00 |
| EE325200-000 | EE325210-000 | E02523E-30NA-00 |
| EE325400-000 | EE325410-000 | E02543E-30NA-00 |
| EE330800-000 | EE330810-000 | E03083E-30NA-00 |
| EE330200-000 | EE330210-000 | E03023E-30NA-00 |
| EE330400-000 | EE330410-000 | E03043E-30NA-00 |
| EE340800-000 | EE340810-000 | E04083E-50NA-00 |
| EE340200-000 | EE340210-000 | E04023E-50NA-00 |
| EE340400-000 | EE340410-000 | E04043E-50NA-00 |
| EE350800-000 | EE350810-000 | E05083E-50NA-00 |
| EE350200-000 | EE350210-000 | E05023E-50NA-00 |
| EE350400-000 | EE350410-000 | E05043E-50NA-00 |

Common Replacement Parts available for all listed heaters

| | |
|-------------------|---------------|
| Check Valve | RV-M |
| Flange | RF-L |
| Flange O-ring | TML-OR |
| Tank | RTL |
| MC-HL cable | PRP104301-029 |
| Mounting Brackets | FK7 |



Installation Instructions for Thermosiphon Engine Heaters

The HOTSTART engine heater uses thermosiphon action – the natural expansion and rising action of a heated fluid – to circulate heated coolant throughout an engine’s water jacket. Installation of the heating system is critical. Please refer to specific instructions that accompany your HOTSTART engine heater or visit hotstart.com and select **Installation Instructions, Manuals and Guides** from the **Resources** tab.

For “V” engines larger than eight cylinders or over 1000 CID (15L), HOTSTART recommends using a **HOTflow®** heater. Please refer to pages 4-5 for heater selection.

Prior to heater installation, inspect the coolant supply. When mixing coolant, only use deionized or distilled water and low-silicate antifreeze. Refer to your engine’s manufacturer recommendations. Do not exceed 60% antifreeze to 40% water ratio. Never add unmixed water and antifreeze to an engine. Do not add anti-leak or other coolant additives.

PREPARING

- Drain and flush cooling system to remove any debris present in the engine’s cooling system.
- Select return port. The return port will allow heated coolant to return to the engine.
- Select supply port. The supply port will allow coolant to flow from the engine to the heater.
- Select fittings. Use the following table to determine the proper port fitting size for your heater:

| | | |
|-------------|-----------------|--------------|
| CB/CL/SB/SL | 500–3000 watts | 1/2 inch NPT |
| CB/CL/SB/SL | 3750–5000 watts | 3/4 inch NPT |
| WL/EE | 1500–5000 watts | 3/4 inch NPT |

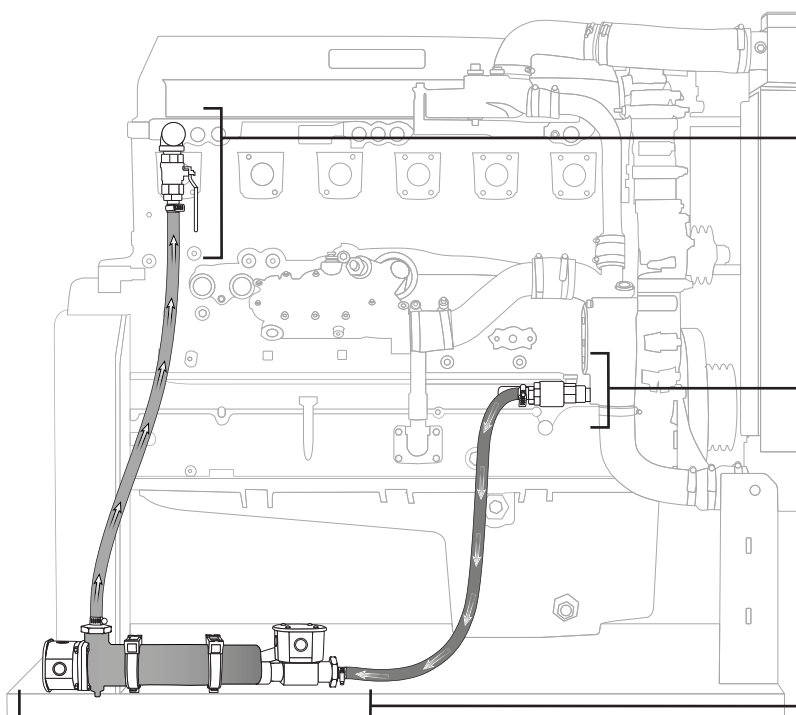
- Select hoses. Use the following table to determine the minimum hose inner diameter for your heater:

| | | |
|-------------|-----------------|----------|
| CB/CL/SB/SL | 500–3000 watts | 3/4 inch |
| CB/CL/SB/SL | 3750–5000 watts | 1 inch |
| WL/EE | 1500–5000 watts | 1 inch |

HOTSTART recommends installing valves to isolate the heating system in case of service. To minimize flow restriction, select full-flow ball isolation valves.

MOUNTING

- Select a heater mounting position directly below the return port and at least 6 inches (15 cm) below the lowest point of the engine’s water jacket. Mount heater using the supplied mounting brackets and fasteners.



PLUMBING

- Install isolation valves to port fittings.
- Route and install return hose. The return hose should continuously rise from the heater to the return port.
- Route and install supply hose. The supply hose should continuously descend from the supply port to the heater.
- Refill cooling system with coolant. To prevent air pockets, refill coolant with return hose removed.
- Start engine. Allow engine to run until engine thermostat opens, purging air from cooling system. Engine must be run to eliminate air from heating system before energizing heater.

WIRING

- Connect heater to an appropriately rated power source. Ensure power source is grounded and in accordance with local and national electrical codes. If necessary, install control box:
 - ▶ If your heater is single-phase and rated up to 480 volts, your heater may be powered directly without the use of a control relay or contactor.
 - ▶ If your heater is three-phase or is single-phase and rated for over 480 volts, the heater thermostats must be used in a control circuit with a contactor for switching the main power to the heating elements.

RETURN PORT

- Select a return port away from the engine thermostat.
 - Select a return port high on the engine.
 - Select a return port toward the rear of the engine.
 - Select a return port away from the remote thermostat.
- NOTE: If an optional remote thermostat is installed
- Select a return port away from the supply port.

SUPPLY PORT

- Select a supply port low on the engine.
- Select a supply port toward the front of the engine.
- Select a supply port away from the return port.

HEATER MOUNTING

- Mount the heater in the proper orientation. Ensure heater outlet faces upward.
- Mount the heater to a vibration-isolated surface.
- Mount the heater directly below the **return port**.
- Mount the heater at least 6 inches (15 cm) below the lowest point of the water jacket.

SECTION 2



Oil Heaters

Oil Heaters up to 277 V AC meet recognized CSA standards for safety or performance.

To specify temperature range of thermostat, insert code from chart in place of the **XX** in model number.

Example:

Desired Temp. Range 80°–100°F
 Model Number: OW2121**XX**-000
 Order as: OW2121**08**-000

| Temperature Range | | Code |
|-------------------|--------------|------|
| ON | OFF | |
| 60°F (16°C) | 80°F (27°C) | 06 |
| 80°F (27°C) | 100°F (38°C) | 08 |
| 100°F (38°C) | 120°F (49°C) | 10 |

See p.25 for remote thermostat assembly part numbers.



Oil heater with Y-cord and remote thermostat

Use a thermostat with all lube oil heaters to protect the oil from overheating. Lube oil heaters must always be installed in the sump with the entire heater submerged below the oil level at all times. See page 25 for remote thermostat part numbers.

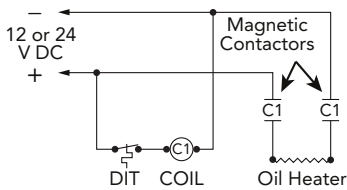
***NOTE:** If heating gear oil (medium weight viscosity), HOTSTART recommends using low watt density heaters.

| Oil Capacity | Weathertight Heater Only | Weathertight With Thermostat | Hazardous Location Heater Only | Volts | Watts | Amps | Watts/Sq Inch |
|---|--------------------------|------------------------------|--------------------------------|-------|-------|------|---------------|
| 3/8" N.P.T. THREAD WITH A 2 1/8" (54mm) PROBE LENGTH | | | | | | | |
| 2 qt. (2L) or Less | OW005100-000 | — | — | 120 | 50 | .4 | 20.0 |
| | OW005200-000 | — | — | 240 | 50 | .2 | 20.0 |
| 1/2" N.P.T. THREAD WITH A 4" (101mm) PROBE LENGTH | | | | | | | |
| 2 - 6 qt. 2 - 5.7L | OW212100-000 | OW2121XX-000 | OE212100-000 | 120 | 125 | 1.0 | 24.6 |
| | OW212200-000 | OW2122XX-000 | OE212200-000 | 240 | 125 | .5 | 24.6 |
| 3/4" N.P.T. THREAD WITH A 5" (127mm) PROBE LENGTH | | | | | | | |
| 1 - 5 gal. 3.8 - 19L | OW415100-000 | OW4151XX-000 | OE415100-000 | 120 | 150 | 1.3 | 14.6* |
| | OW415200-000 | OW4152XX-000 | OE415200-000 | 240 | 150 | .6 | 14.6* |
| 5 - 15 gal. 19 - 57L | OW430100-000 | OW4301XX-000 | OE430100-000 | 120 | 300 | 2.6 | 29.3 |
| | OW430800-000 | OW4308XX-000 | OE430800-000 | 208 | 225 | 1.1 | 22.0 |
| | OW430200-000 | OW4302XX-000 | OE430200-000 | 240 | 300 | 1.2 | 29.3 |
| 1" N.P.T. THREAD WITH A 5 1/4" (133mm) PROBE LENGTH | | | | | | | |
| 1 - 5 gal. 3.8 - 19L | OW615100-000 | OW6151XX-000 | OE615100-000 | 120 | 150 | 1.3 | 10.7* |
| | OW615200-000 | OW6152XX-000 | OE615200-000 | 240 | 150 | .6 | 10.7* |
| 5 - 15 gal. 19 - 57L | OW630100-000 | OW6301XX-000 | OE630100-000 | 120 | 300 | 2.6 | 21.4 |
| | OW630800-000 | OW6308XX-000 | OE630800-000 | 208 | 375 | 1.8 | 28.0 |
| | OW630200-000 | OW6302XX-000 | OE630200-000 | 240 | 300 | 1.2 | 21.4 |
| | — | — | OE630700-000 | 277 | 265 | 1.0 | 19.0 |
| | — | — | OE630300-000 | 380 | 300 | 1.0 | 21.4 |
| 15 - 30 gal. 57 - 113L | — | — | OE630400-000 | 480 | 300 | .6 | 21.4 |
| | OW650100-000 | OW6501XX-000 | OE650100-000 | 120 | 500 | 4.1 | 35.7 |
| | OW650800-000 | OW6508XX-000 | OE650800-000 | 208 | 450 | 2.2 | 33.0 |
| | OW650200-000 | OW6502XX-000 | OE650200-000 | 240 | 500 | 2.0 | 35.7 |
| | OW650700-000 | OW6507XX-000 | OE650700-000 | 277 | 400 | 1.4 | 30.0 |
| | — | — | OE650300-000 | 380 | 500 | 1.3 | 35.7 |
| | — | — | OE650400-000 | 480 | 500 | 1.0 | 35.7 |
| — | — | OE650500-000 | 575 | 500 | 0.8 | 35.7 | |

Weathertight models are furnished with a 4' (1.2m) oil- and heat-resistant power cord without plug. Hazardous Location models are furnished with 18" (457mm) of lead wire for connection to the power leads in an approved splice box.

DC Oil Heaters 12 V and 24 V

When used with a thermostat control, all DC oil heaters must use a DC relay.



12 Vdc/24 Vdc CONTROL BOXES

| | | |
|-----------------|-----|--------------------------------|
| 25 Amps Maximum | 12V | JBMC330DC-12V JBMC330DC-24V |
| | 24V | |

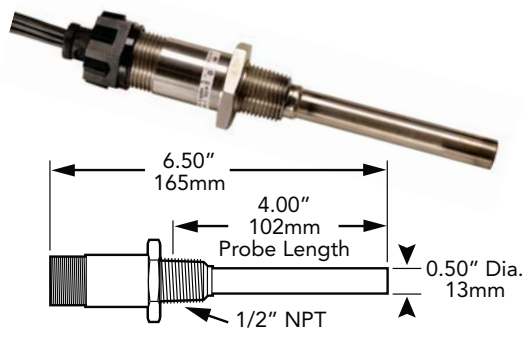
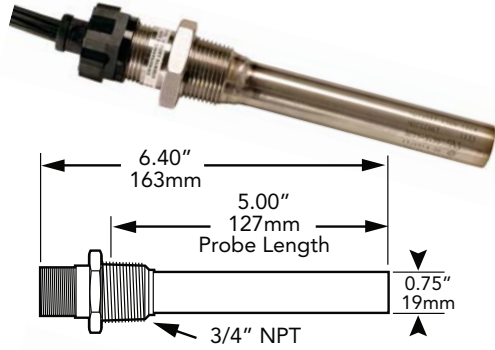
| Oil Capacity | Volts | Watts | 1/2" NPT with 4" (101mm) Probe Length | 3/4" NPT with 4 7/8" (124mm) Probe Length | 1" NPT with 5 3/8" (136mm) Probe Length | Amps | Watts Per Square Inch |
|--------------------|-------|-------|---------------------------------------|---|---|------|-------------------------|
| 2 qt. 2.0L or Less | 12 | 75 | OW207900-012 | OW407900-012 | — | 6.3 | 1/2" — 14.7* WSI |
| | 24 | 75 | — | OW407900-024 | — | 3.1 | 3/4" — 7.3* WSI |
| 2-6 qt. 2.0-2.7L | 24 | 125 | OW212900-024 | — | — | 5.2 | 24.6 WSI |
| 1-5 gal. 3.8-19L | 12 | 150 | — | OW415900-012 | OW615900-012 | 12.5 | 3/4" — 14.6* WSI |
| | 24 | 150 | — | OW415900-024 | OW615900-024 | 6.3 | 1" — 10.7* WSI |
| 5-15 gal. 19-57L | 12 | 300 | — | — | OW630900-012 | 25.0 | 3/4" — 29.3 WSI |
| | 24 | 300 | — | OW430900-024 | OW630900-024 | 12.5 | 1" — 21.4 WSI |
| 15-30 gal. 57-113L | 24 | 500 | — | — | OW650900-024 | 20.8 | 35.7 WSI |

12 V DC and 24 V DC oil heaters can be powered directly from the battery, but will drain the battery very rapidly unless charged by an alternator or generator.

Weathertight



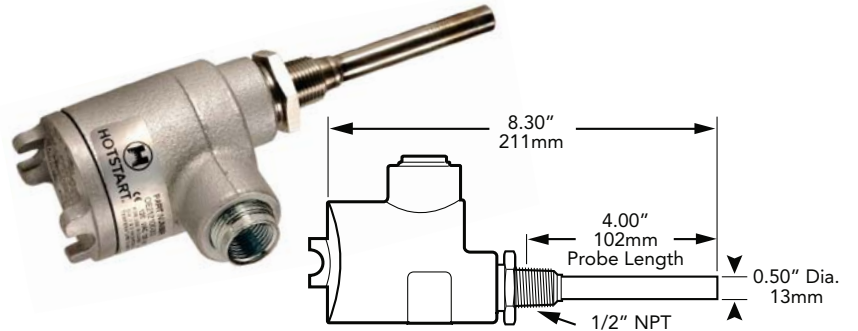
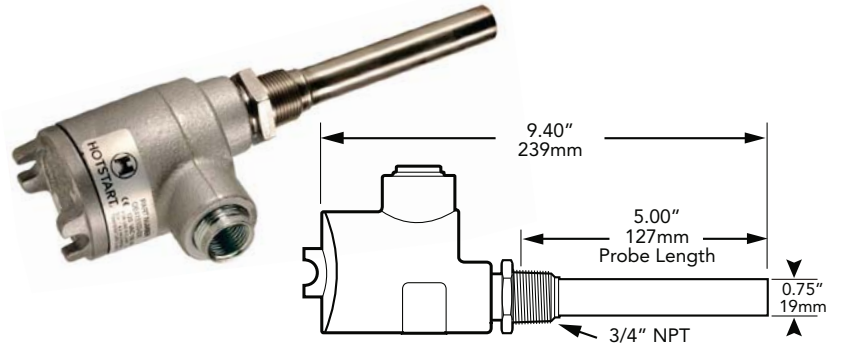
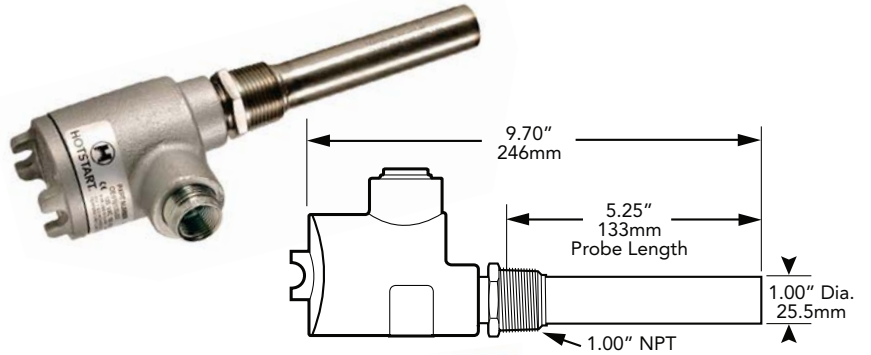
Heater only



Hazardous Location



Heater only



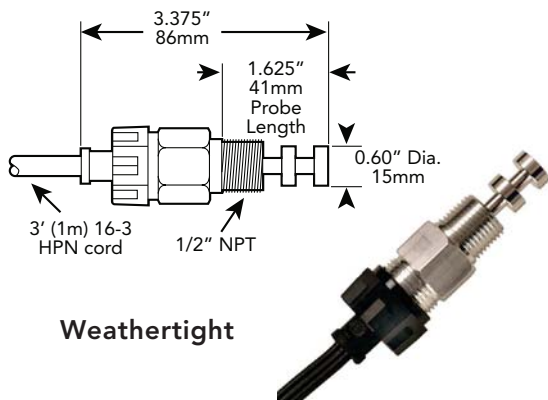
REMOTE THERMOSTATS for OIL HEATERS

| Weathertight | Hazardous Location | Temperature Range | | Sensing Unit | Thread Size |
|--------------|--------------------|-------------------|--------------|--------------|-------------|
| | | ON | OFF | | |
| DIT68 | DIT68EP | 60°F (16°C) | 80°F (27°C) | LSU-6 | 1/2" NPT |
| DIT810 | DIT810EP | 80°F (27°C) | 100°F (38°C) | LSU-8 | 1/2" NPT |
| DIT1012 | DIT1012EP | 100°F (38°C) | 120°F (49°C) | LSU-10 | 1/2" NPT |
| DIT1214 | DIT1214EP | 120°F (49°C) | 140°F (60°C) | LSU-12 | 1/2" NPT |

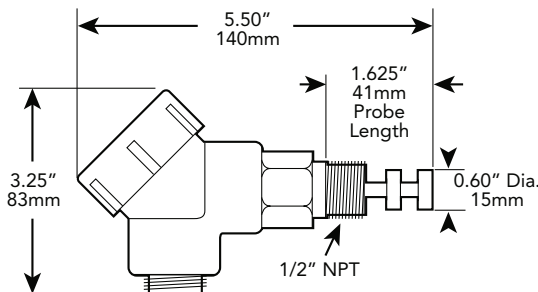
Switch Capacity

- 120 V - 15amp
- 208 V - 10amp
- 240 V - 10amp
- 277 V - 10amp

12 V DC } Pilot Duty Only
24 V DC }



Weathertight



Hazardous Location



Industrial Immersion Heaters

2" Screw Plug

Available with fixed or adjustable thermostat.



Weathertight Model
NEMA 4



Hazardous Location Model
NEMA 4 & 7

Models for larger capacities than shown are available. Call factory.

| Oil Capacity | HIGH LIMIT THERMOSTAT CONTROL SETTING | | | Volts | Watts | Amps | Watts/Sq. In. |
|--------------|---------------------------------------|------------------------------------|-------------------------------------|-------|-------|------|---------------|
| | On 60°F (16°C) Off 80°F (27°C) | On 80°F (27°C) Off 100°F (38°C) | On 100°F (38°C) Off 120°F (49°C) | | | | |

SINGLE PHASE — 2" N.P.T. WITH A 12" (305mm) PROBE LENGTH

| | | | | | | | |
|-----------------|-----------------|-----------------|-----------------|-----|------|------|------|
| 30 - 45 Gallons | E01011W-156A-00 | E01011W-158A-00 | E01011W-151A-00 | 120 | 1000 | 8.3 | 17.0 |
| | E01081W-156A-00 | E01081W-158A-00 | E01081W-151A-00 | 208 | 1000 | 4.8 | 17.0 |
| 113-170L | E01021W-156A-00 | E01021W-158A-00 | E01021W-151A-00 | 240 | 1000 | 4.2 | 17.0 |
| | E01071W-156A-00 | E01071W-158A-00 | E01071W-151A-00 | 277 | 1000 | 3.6 | 17.0 |
| 45 - 60 Gallons | E01511W-156A-00 | E01511W-158A-00 | E01511W-151A-00 | 120 | 1500 | 12.5 | 17.0 |
| | E01581W-156A-00 | E01581W-158A-00 | E01581W-151A-00 | 208 | 1500 | 7.2 | 17.0 |
| 170-227L | E01521W-156A-00 | E01521W-158A-00 | E01521W-151A-00 | 240 | 1500 | 6.3 | 17.0 |
| | E01571W-156A-00 | E01571W-158A-00 | E01571W-151A-00 | 277 | 1500 | 5.4 | 17.0 |

THREE PHASE — 2" N.P.T. WITH A 12" (305mm) PROBE LENGTH

| | | | | | | | |
|-----------------|-----------------|-----------------|-----------------|-----------------|------|------|------|
| 30 - 45 Gallons | E01083W-106A-00 | E01083W-108A-00 | E01083W-101A-00 | 208 | 1000 | 2.8 | 11.0 |
| | E01023W-106A-00 | E01023W-108A-00 | E01023W-101A-00 | 240 | 1000 | 2.4 | 11.0 |
| | E01033W-106A-00 | E01033W-108A-00 | E01033W-101A-00 | 380 | 1000 | 1.5 | 11.0 |
| 113-170L | E01043W-106A-00 | E01043W-108A-00 | E01043W-101A-00 | 480 | 1000 | 1.2 | 11.0 |
| | 45 - 60 Gallons | E01583W-156A-00 | E01583W-158A-00 | E01583W-151A-00 | 208 | 1500 | 4.2 |
| 170-227L | E01523W-156A-00 | E01523W-158A-00 | E01523W-151A-00 | 240 | 1500 | 3.6 | 17.0 |
| | E01533W-156A-00 | E01533W-158A-00 | E01533W-151A-00 | 380 | 1500 | 2.3 | 17.0 |
| | E01543W-156A-00 | E01543W-158A-00 | E01543W-151A-00 | 480 | 1500 | 1.8 | 17.0 |

SINGLE PHASE — 2" N.P.T. WITH A 18" (457mm) PROBE LENGTH

| | | | | | | | |
|-----------------|-----------------|-----------------|-----------------|-----|------|------|------|
| 60 - 90 Gallons | E02011W-156A-00 | E02011W-158A-00 | E02011W-151A-00 | 120 | 2000 | 16.7 | 14.0 |
| | E02081W-156A-00 | E02081W-158A-00 | E02081W-151A-00 | 208 | 2000 | 9.6 | 14.0 |
| | E02021W-156A-00 | E02021W-158A-00 | E02021W-151A-00 | 240 | 2000 | 8.4 | 14.0 |
| | E02071W-156A-00 | E02071W-158A-00 | E02071W-151A-00 | 277 | 2000 | 7.2 | 14.0 |
| 227-341L | E02031W-156A-00 | E02031W-158A-00 | E02031W-151A-00 | 380 | 2000 | 5.3 | 14.0 |
| | E02041W-156A-00 | E02041W-158A-00 | E02041W-151A-00 | 480 | 2000 | 4.2 | 14.0 |

THREE PHASE — 2" N.P.T. WITH A 18" (457mm) PROBE LENGTH

| | | | | | | | |
|-----------------|-----------------|-----------------|-----------------|-----|------|-----|------|
| 60 - 90 Gallons | E02083W-156A-00 | E02083W-158A-00 | E02083W-151A-00 | 208 | 2000 | 5.6 | 14.0 |
| | E02023W-156A-00 | E02023W-158A-00 | E02023W-151A-00 | 240 | 2000 | 4.8 | 14.0 |
| | E02033W-156A-00 | E02033W-158A-00 | E02033W-151A-00 | 380 | 2000 | 3.0 | 14.0 |
| 227-341L | E02043W-156A-00 | E02043W-158A-00 | E02043W-151A-00 | 480 | 2000 | 2.4 | 14.0 |

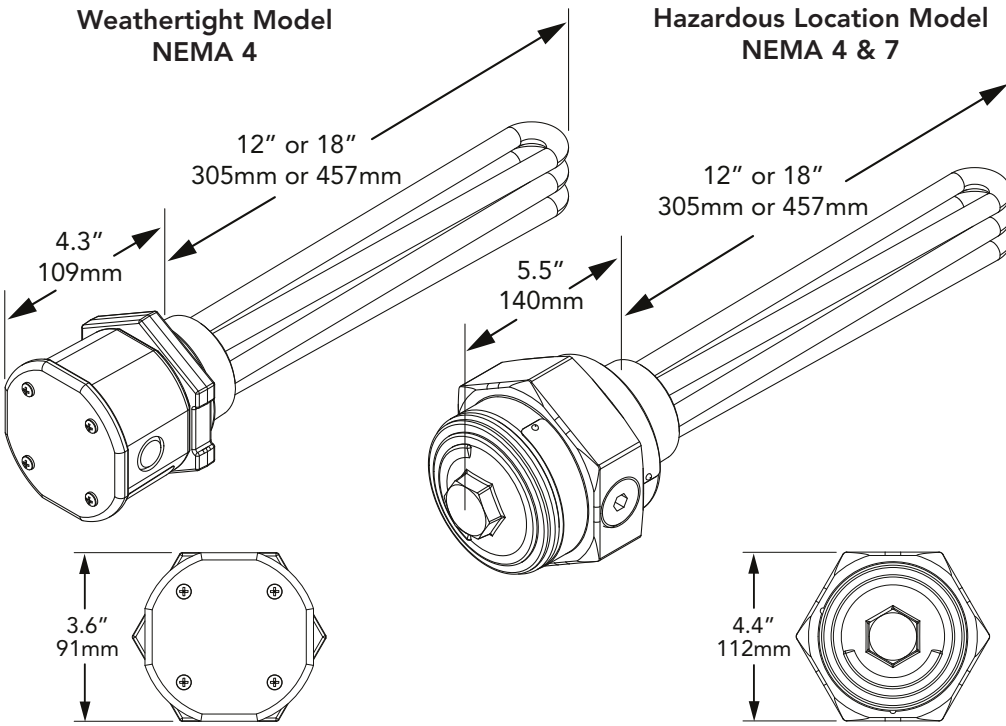
Hazardous Location models with thermostat also available.

Substitute the letter "W" in part number with the letter "E" to specify Hazardous Location models.

Industrial Immersion Heaters are also available for coolants and other process heating. Call factory.

Call HOTSTART for complete model number featuring adjustable thermostat.

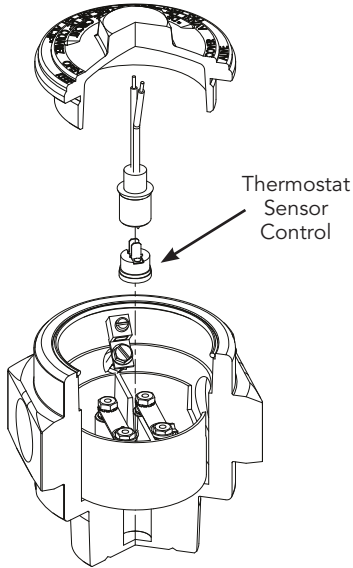
HOTSTART immersion heaters include a fixed-setting, built-in thermostat and are available with an adjustable thermostat.



Industrial Immersion Heaters

2" Screw Plug

Fixed Thermostat Assembly

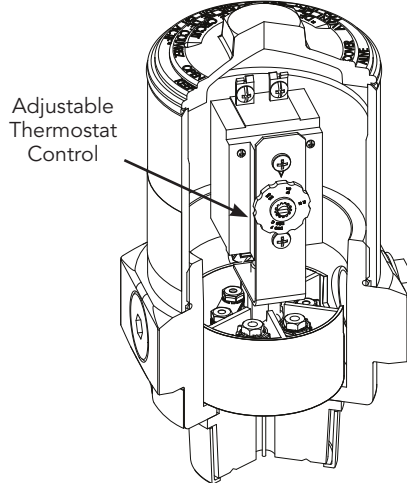


| TEMPERATURE RANGE | | CONTROL |
|-------------------|--------------|---------|
| ON | OFF | |
| 60°F (16°C) | 80°F (27°C) | HLC-6 |
| 80°F (27°C) | 100°F (38°C) | HLC-8 |
| 100°F (38°C) | 120°F (49°C) | HLC-10 |

ELECTRICAL RATING

15 Amps at 120 Vac
10 Amps at 240 Vac
10 Amps at 277 Vac

Adjustable Thermostat Assembly



| TEMPERATURE RANGE | | CONTROL |
|-------------------|-------------------------|-----------|
| OFF | 70°–210°F (21°–99°C) | AMT70-210 |

Nominal thermal differential is 8°F (-13°C)

ELECTRICAL RATING

30 Amps at 125 Vac
30 Amps at 240 Vac
30 Amps at 277 Vac
20 Amps at 480 Vac

NOTES:

On applications where level of fluid is subject to change, a liquid level switch mounted a minimum of 3–4" (76–102mm) above element is recommended. **Liquid level switch is not included with heater.**

All 380 V and 480 V heaters must be used in conjunction with contactor and control transformer.

All three phase models must be used with a contactor. See page 34.

Higher or lower temperature ranges are available. Consult HOTSTART.

V-Clamp Immersion Heaters

Threadless Design

Available with fixed or adjustable thermostat.



Weathertight Model
NEMA 4



Hazardous Location Model
NEMA 4 & 7

Models for larger capacities than shown are available. Call factory.

| Oil Capacity | HIGH LIMIT THERMOSTAT CONTROL SETTING | | | Volts | Watts | Amps | Watts/Sq. In. |
|--------------|---------------------------------------|------------------------------------|-------------------------------------|-------|-------|------|---------------|
| | On 60°F (16°C) Off 80°F (27°C) | On 80°F (27°C) Off 100°F (38°C) | On 100°F (38°C) Off 120°F (49°C) | | | | |

SINGLE PHASE — WITH A 12" (305mm) PROBE LENGTH

| | | | | | | | |
|-----------------|-----------------|-----------------|-----------------|-----|------|------|------|
| 30 - 45 Gallons | E01011W-156V-00 | E01011W-158V-00 | E01011W-151V-00 | 120 | 1000 | 8.3 | 17.0 |
| | E01081W-156V-00 | E01081W-158V-00 | E01081W-151V-00 | 208 | 1000 | 4.8 | 17.0 |
| | E01021W-156V-00 | E01021W-158V-00 | E01021W-151V-00 | 240 | 1000 | 4.2 | 17.0 |
| 113-170L | E01071W-156V-00 | E01071W-158V-00 | E01071W-151V-00 | 277 | 1000 | 3.6 | 17.0 |
| | | | | | | | |
| 45 - 60 Gallons | E01511W-156V-00 | E01511W-158V-00 | E01511W-151V-00 | 120 | 1500 | 12.5 | 17.0 |
| | E01581W-156V-00 | E01581W-158V-00 | E01581W-151V-00 | 208 | 1500 | 7.2 | 17.0 |
| | E01521W-156V-00 | E01521W-158V-00 | E01521W-151V-00 | 240 | 1500 | 6.3 | 17.0 |
| 170-227L | E01571W-156V-00 | E01571W-158V-00 | E01571W-151V-00 | 277 | 1500 | 5.4 | 17.0 |
| | | | | | | | |

THREE PHASE — WITH A 12" (305mm) PROBE LENGTH

| | | | | | | | |
|-----------------|-----------------|-----------------|-----------------|-----|------|-----|------|
| 30 - 45 Gallons | E01083W-106V-00 | E01083W-108V-00 | E01083W-101V-00 | 208 | 1000 | 2.8 | 11.0 |
| | E01023W-106V-00 | E01023W-108V-00 | E01023W-101V-00 | 240 | 1000 | 2.4 | 11.0 |
| | E01033W-106V-00 | E01033W-108V-00 | E01033W-101V-00 | 380 | 1000 | 1.5 | 11.0 |
| 113-170L | E01043W-106V-00 | E01043W-108V-00 | E01043W-101V-00 | 480 | 1000 | 1.2 | 11.0 |
| | | | | | | | |
| 45 - 60 Gallons | E01583W-156V-00 | E01583W-158V-00 | E01583W-151V-00 | 208 | 1500 | 4.2 | 17.0 |
| | E01523W-156V-00 | E01523W-158V-00 | E01523W-151V-00 | 240 | 1500 | 3.6 | 17.0 |
| | E01533W-156V-00 | E01533W-158V-00 | E01533W-151V-00 | 380 | 1500 | 2.3 | 17.0 |
| 170-227L | E01543W-156V-00 | E01543W-158V-00 | E01543W-151V-00 | 480 | 1500 | 1.8 | 17.0 |
| | | | | | | | |

SINGLE PHASE — WITH A 18" (457mm) PROBE LENGTH

| | | | | | | | |
|-----------------|-----------------|-----------------|-----------------|-----|------|------|------|
| 60 - 90 Gallons | E02011W-156V-00 | E02011W-158V-00 | E02011W-151V-00 | 120 | 2000 | 16.7 | 14.0 |
| | E02081W-156V-00 | E02081W-158V-00 | E02081W-151V-00 | 208 | 2000 | 9.6 | 14.0 |
| | E02021W-156V-00 | E02021W-158V-00 | E02021W-151V-00 | 240 | 2000 | 8.4 | 14.0 |
| | E02071W-156V-00 | E02071W-158V-00 | E02071W-151V-00 | 277 | 2000 | 7.2 | 14.0 |
| 227-341L | E02031W-156V-00 | E02031W-158V-00 | E02031W-151V-00 | 380 | 2000 | 5.3 | 14.0 |
| | E02041W-156V-00 | E02041W-158V-00 | E02041W-151V-00 | 480 | 2000 | 4.2 | 14.0 |
| | | | | | | | |

THREE PHASE — WITH A 18" (457mm) PROBE LENGTH

| | | | | | | | |
|-----------------|-----------------|-----------------|-----------------|-----|------|-----|------|
| 60 - 90 Gallons | E02083W-156V-00 | E02083W-158V-00 | E02083W-151V-00 | 208 | 2000 | 5.6 | 14.0 |
| | E02023W-156V-00 | E02023W-158V-00 | E02023W-151V-00 | 240 | 2000 | 4.8 | 14.0 |
| | E02033W-156V-00 | E02033W-158V-00 | E02033W-151V-00 | 380 | 2000 | 3.0 | 14.0 |
| 227-341L | E02043W-156V-00 | E02043W-158V-00 | E02043W-151V-00 | 480 | 2000 | 2.4 | 14.0 |
| | | | | | | | |

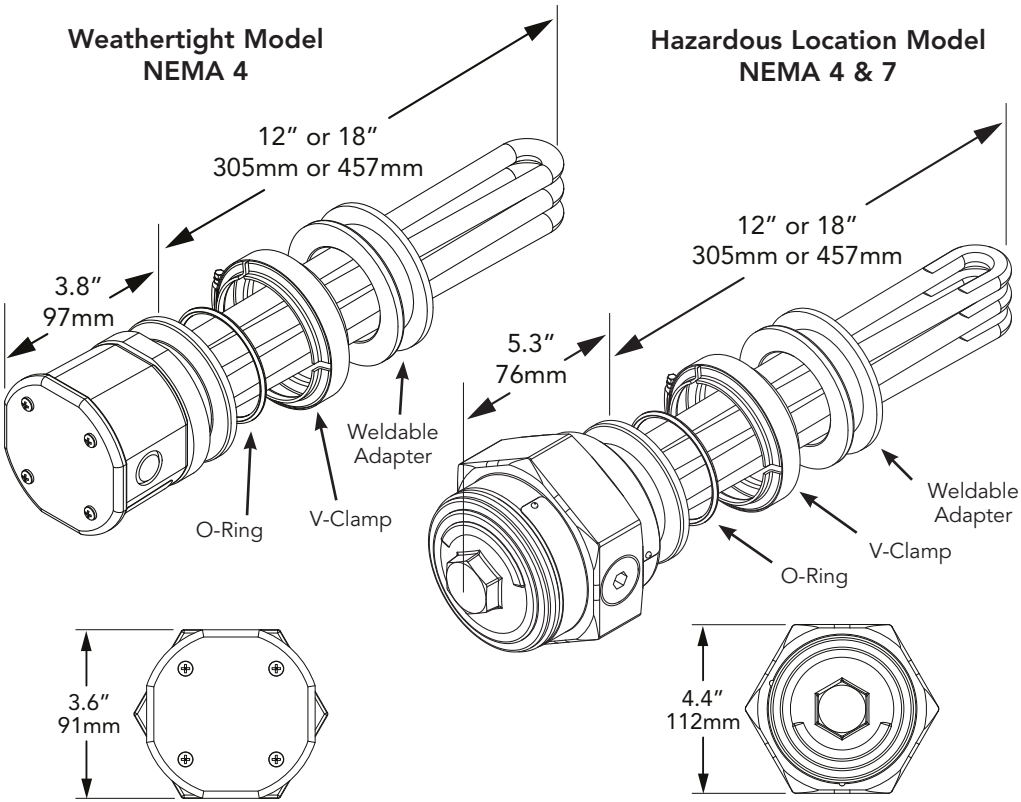
Hazardous Location models with thermostat also available.

Substitute the letter "W" in part number with the letter "E" to specify Hazardous Location models.

Industrial Immersion Heaters are also available for coolants and other process heating. Call factory.

Call HOTSTART for complete model number featuring adjustable thermostat.

HOTSTART immersion heaters include a fixed-setting, built-in thermostat and are available with an adjustable thermostat.



V-Clamp Immersion Heaters

Threadless Design

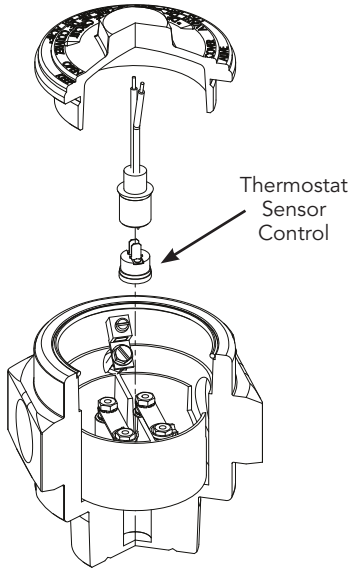
Element assembly includes **O-ring** only.

Installation kit sold separately.

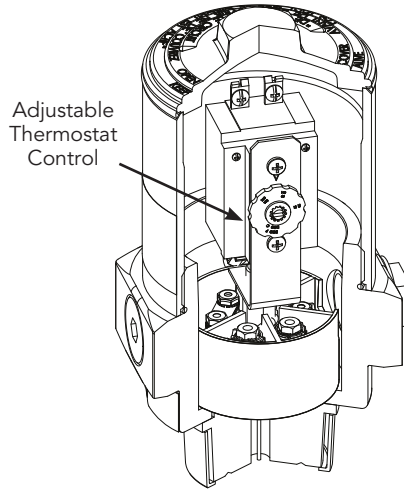
V-CLAMP INSTALL KIT

| Part Number | Parts Included |
|-------------|---|
| VC-SK | Steel weldable adapter V-Clamp O-Ring |

Fixed Thermostat Assembly



Adjustable Thermostat Assembly



NOTES:

On applications where level of fluid is subject to change, a liquid level switch mounted a minimum of 3–4" (76–102mm) above element is recommended. **Liquid level switch is not included with heater.**

All 380 V and 480 V heaters must be used in conjunction with contactor and control transformer.

All three phase heaters must be used with a contactor. See page 34.

Higher or lower temperature ranges are available. Consult HOTSTART.

| TEMPERATURE RANGE ON | TEMPERATURE RANGE OFF | CONTROL |
|----------------------|-----------------------|---------|
| 60°F (16°C) | 80°F (27°C) | HLC-6 |
| 80°F (27°C) | 100°F (38°C) | HLC-8 |
| 100°F (38°C) | 120°F (49°C) | HLC-10 |

ELECTRICAL RATING

15 Amps at 120 Vac
10 Amps at 240 Vac
10 Amps at 277 Vac

| TEMPERATURE RANGE | CONTROL |
|-------------------|-----------------------------------|
| OFF | 70°–210°F (21°–99°C) AMT70-210 |

Nominal thermal differential is 8°F (-13°C)

ELECTRICAL RATING

30 Amps at 125 Vac
30 Amps at 240 Vac
30 Amps at 277 Vac
20 Amps at 480 Vac

SECTION 3



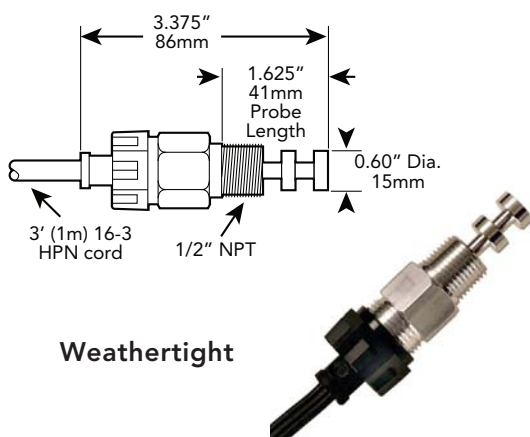
Remote Thermostats for Weathertight and Hazardous Location Oil Heaters (see p.24 for model numbers)

| REMOTE THERMOSTATS for OIL HEATERS | | | | | |
|------------------------------------|--------------------|-------------------|--------------|--------------|-------------|
| Weathertight | Hazardous Location | Temperature Range | | Sensing Unit | Thread Size |
| | | ON | OFF | | |
| DIT68 | DIT68EP | 60°F (16°C) | 80°F (27°C) | LSU-6 | 1/2" NPT |
| DIT810 | DIT810EP | 80°F (27°C) | 100°F (38°C) | LSU-8 | 1/2" NPT |
| DIT1012 | DIT1012EP | 100°F (38°C) | 120°F (49°C) | LSU-10 | 1/2" NPT |
| DIT1214 | DIT1214EP | 120°F (49°C) | 140°F (60°C) | LSU-12 | 1/2" NPT |

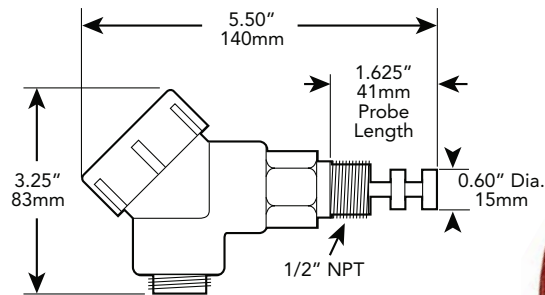
Switch Capacity

120 V - 15amp
 208 V - 10amp
 240 V - 10amp
 277 V - 10amp

12 V DC } Pilot
 24 V DC } Duty
 Only



Weathertight



Hazardous Location

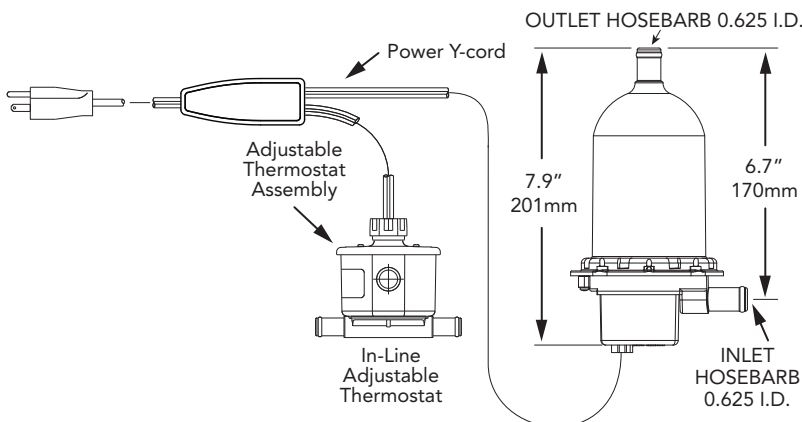
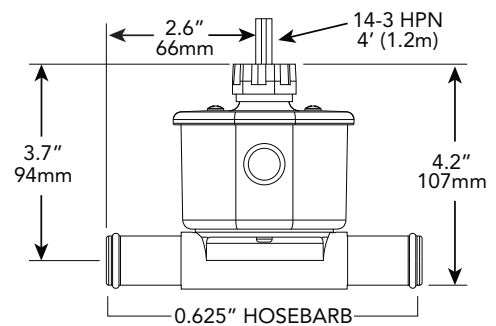


Remote Adjustable Thermostat for TPS Thermosiphon Engine Heater (see p.7 for model numbers)

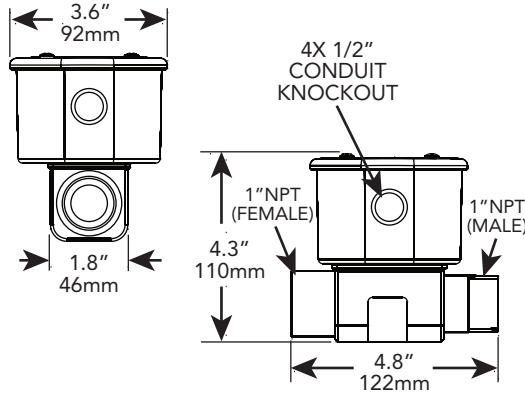
5/8" HB x 5/8" HB

| Part Number | Adjustable Range Temperature Setting | Sensing Unit |
|-------------|--------------------------------------|--------------|
| TFTA-5/8HB | Adjustable 90°-130°F (32°-54°C) | FSU90-130 |

Part number does not include "Y" cord

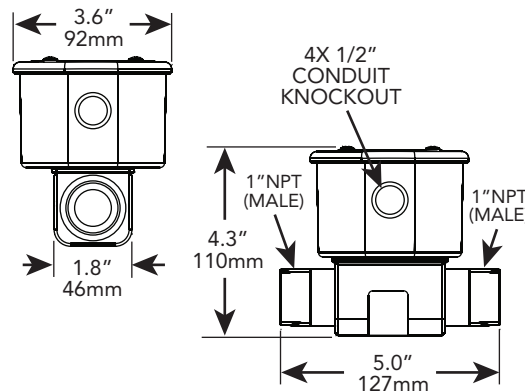


When using a thermostat above rated capacity or on 3 phase applications, select the proper control box with transformer and contactor as shown on page 34.



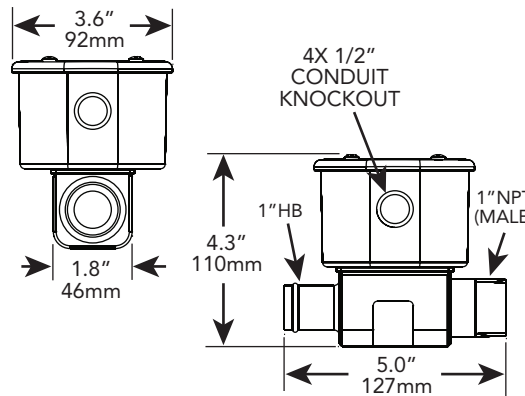
1" NPT female x 1" NPT male CONDUIT TYPE ENCLOSURE

| Part Number | Temperature Setting | | Maximum Capacity Ratings | | |
|-------------|---------------------------------|--------------|--------------------------|-------|---------|
| | On | Off | 120/240V | 277V | 480V |
| TFTC8-200 | 80°F (27°C) | 100°F (38°C) | 25amp | 22amp | 12.5amp |
| TFTC10-200 | 100°F (38°C) | 120°F (49°C) | 25amp | 22amp | 12.5amp |
| TFTC12-200 | 120°F (49°C) | 140°F (60°C) | 25amp | 22amp | 12.5amp |
| TFTCA-200 | Adjustable 90°-130°F (32°-54°C) | | 25amp | 22amp | 12.5amp |



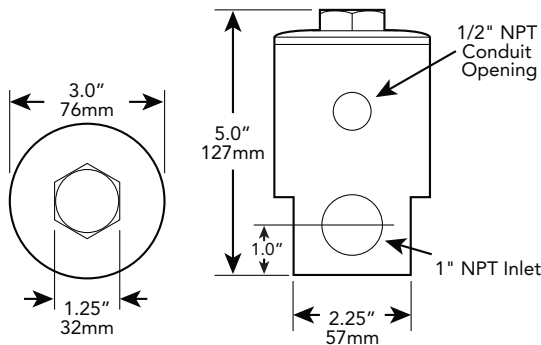
1" NPT male x 1" NPT male CONDUIT TYPE ENCLOSURE

| Part Number | Temperature Setting | | Maximum Capacity Ratings | | |
|-------------|---------------------------------|--------------|--------------------------|-------|---------|
| | On | Off | 120/240V | 277V | 480V |
| TFTC8-220 | 80°F (27°C) | 100°F (38°C) | 25amp | 22amp | 12.5amp |
| TFTC10-220 | 100°F (38°C) | 120°F (49°C) | 25amp | 22amp | 12.5amp |
| TFTC12-220 | 120°F (49°C) | 140°F (60°C) | 25amp | 22amp | 12.5amp |
| TFTCA-220 | Adjustable 90°-130°F (32°-54°C) | | 25amp | 22amp | 12.5amp |



1" hose barb x 1" NPT male CONDUIT TYPE ENCLOSURE

| Part Number | Temperature Setting | | Maximum Capacity Ratings | | |
|-------------|---------------------------------|--------------|--------------------------|-------|---------|
| | On | Off | 120/240V | 277V | 480V |
| TFTC8-240 | 80°F (27°C) | 100°F (38°C) | 25amp | 22amp | 12.5amp |
| TFTC10-240 | 100°F (38°C) | 120°F (49°C) | 25amp | 22amp | 12.5amp |
| TFTC12-240 | 120°F (49°C) | 140°F (60°C) | 25amp | 22amp | 12.5amp |
| TFTCA-240 | Adjustable 90°-130°F (32°-54°C) | | 25amp | 22amp | 12.5amp |



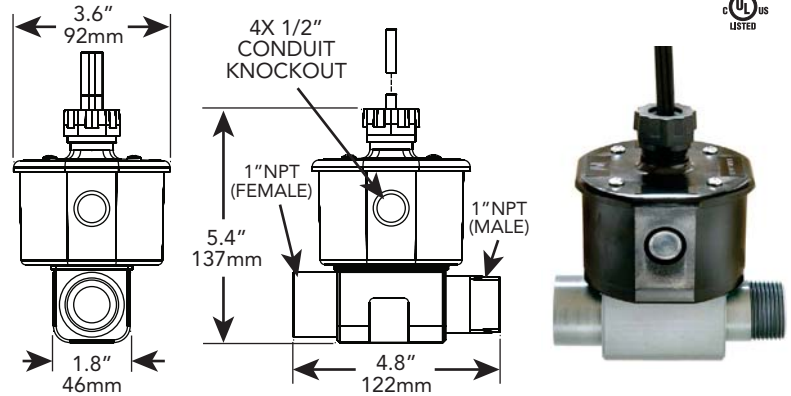
HAZARDOUS LOCATION CONDUIT TYPE ENCLOSURE

| Part Number | Temperature Setting | | Maximum Capacity Ratings | | |
|-------------|---------------------|--------------|--------------------------|-------|---------|
| | On | Off | 120/240V | 277V | 480V |
| TFT10ER | 100°F (38°C) | 120°F (49°C) | 25amp | 22amp | 12.5amp |

When using a thermostat above rated capacity or on 3 phase applications, select the proper control box with transformer and contactor as shown on page 34.

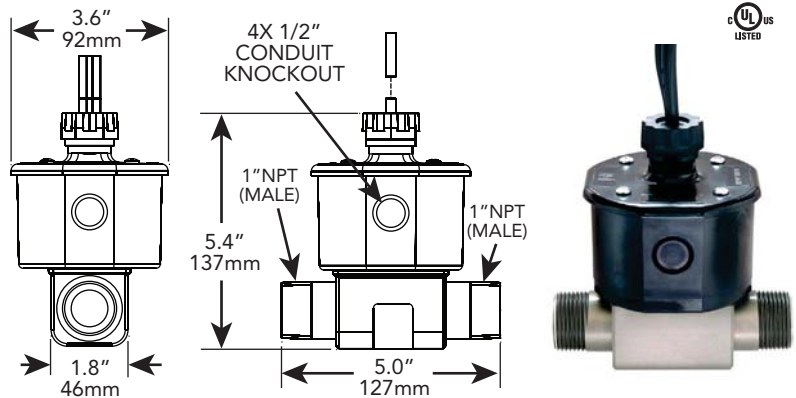
1" NPT female x 1" NPT male CORD CONNECTED

| Part Number | Temperature Setting | | Maximum Capacity Ratings | |
|-------------|---------------------------------|--------------|--------------------------|-------|
| | On | Off | 120/240V | 277V |
| TFT8-200 | 80°F (27°C) | 100°F (38°C) | 15amp | 15amp |
| TFT10-200 | 100°F (38°C) | 120°F (49°C) | 15amp | 15amp |
| TFT12-200 | 120°F (49°C) | 140°F (60°C) | 15amp | 15amp |
| TFTA-200 | Adjustable 90°–130°F (32°–54°C) | | 15amp | 15amp |



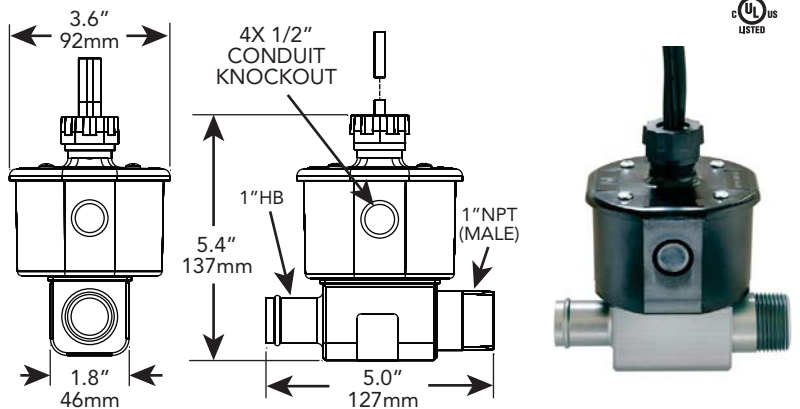
1" NPT male x 1" NPT male CORD CONNECTED

| Part Number | Temperature Setting | | Maximum Capacity Ratings | |
|-------------|---------------------------------|--------------|--------------------------|-------|
| | On | Off | 120/240V | 277V |
| TFT8-220 | 80°F (27°C) | 100°F (38°C) | 15amp | 15amp |
| TFT10-220 | 100°F (38°C) | 120°F (49°C) | 15amp | 15amp |
| TFT12-220 | 120°F (49°C) | 140°F (60°C) | 15amp | 15amp |
| TFTA-220 | Adjustable 90°–130°F (32°–54°C) | | 15amp | 15amp |



1" hose barb x 1" NPT male CORD CONNECTED

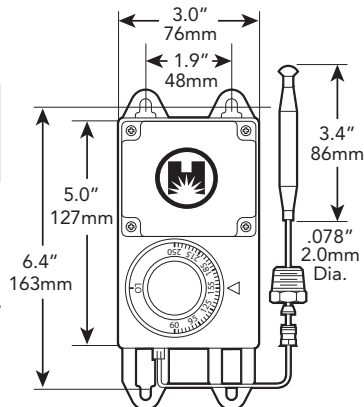
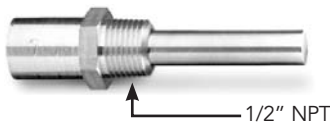
| Part Number | Temperature Setting | | Maximum Capacity Ratings | |
|-------------|---------------------------------|--------------|--------------------------|-------|
| | On | Off | 120/240V | 277V |
| TFT8-240 | 80°F (27°C) | 100°F (38°C) | 15amp | 15amp |
| TFT10-240 | 100°F (38°C) | 120°F (49°C) | 15amp | 15amp |
| TFT12-240 | 120°F (49°C) | 140°F (60°C) | 15amp | 15amp |
| TFTA-240 | Adjustable 90°–130°F (32°–54°C) | | 15amp | 15amp |



REMOTE ADJUSTABLE With 5' (1.5m) Capillary Probe

| Part Number | Adjustable Range Temperature Setting | Maximum Capacity Ratings | | |
|-------------|---|--------------------------|-------|------|
| | | 120/208/240V | 277V | 480V |
| AT6525 | 65 - 250°F (18 - 121°C) (Open or Off Setting) Differential 4°F (2.2°C) (Close or On Setting) | 25amp | 22amp | 5amp |

ATW
Aluminum
Well for
AT6525



Customer Service:
hotstart.com

Control systems allow for quick electrical installation of all HOTSTART engine heaters. They are designed as a time and labor saving component. Control systems are especially useful on installations that require two coolant heaters or combinations of a coolant heater and oil heater/hydraulic heater etc.

All control boxes on this page are NEMA 4, 12 & IP66.

CONTROL SYSTEMS

CONTROL SYSTEMS featuring AUTOMATIC SHUTDOWN DEVICES
With 24 V DC Relay

| Amps | Volts | 1 Heater, 1 Thermostat per application | 2 Heaters, 2 Thermostats per application |
|---------|-------|--|--|
| 30A Max | 120 | JBC11-100 | JBC21-100 |
| 30A Max | 208 | JBC18-100 | JBC28-100 |
| 30A Max | 240 | JBC12-100 | JBC22-100 |
| 30A Max | 400 | JBC1A-100 | JBC2A-100 |
| 30A Max | 480 | JBC14-100 | JBC24-100 |
| 30A Max | 575 | JBC15-100 | JBC25-100 |



Model JBC14-100

See wiring schematic page 35



Model JBC24-100

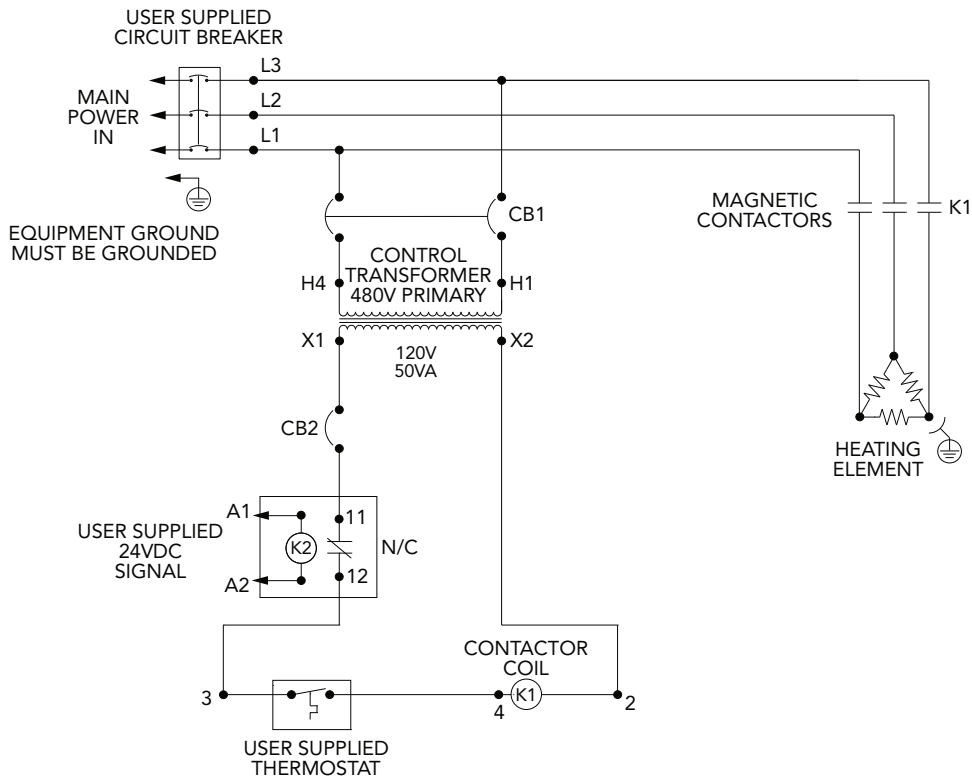
See wiring schematic page 35

All HOTSTART heaters with thermostat, operating on three phase current (at any voltage), require the use of a control system with a 3-pole contactor. All HOTSTART heaters with thermostat, operating over 480 V (single or three phase) require a control system to reduce the primary voltage to 120 V for the control circuit. For increased thermostat life, use a control system on all heaters above 277 V either single or three phase.

All control boxes can be used with either single or three phase heaters. Control boxes are available in Hazardous Location models - contact factory for part number.

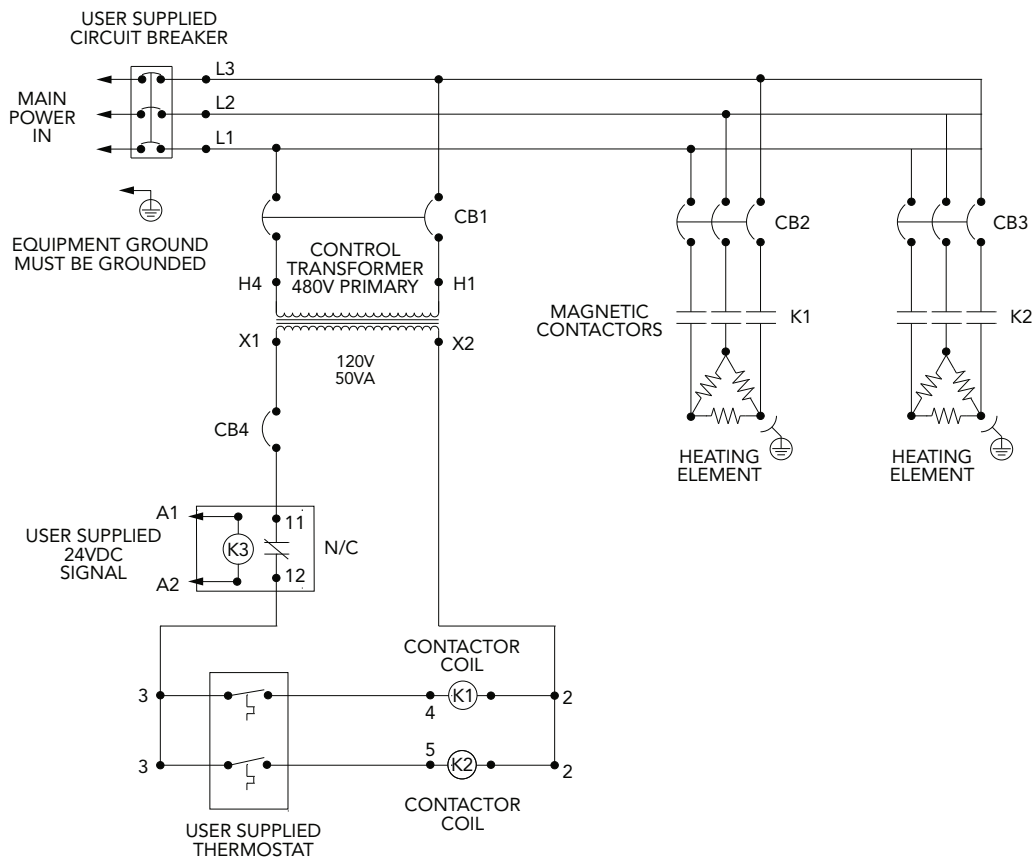
For heater protection and power savings, HOTSTART recommends de-energizing the heater when engine is running. Control boxes are supplied with a 24 V relay to de-energize the heater upon engine start-up.

Wiring Schematic for JBC14-100



To control one 480 V heater at maximum 30 amps on manual start engine.

Wiring Schematic for JBC24-100



To control two 480 V heaters at maximum 30 amps on automatic start engines.

Control Systems



Model JBC14-100



Model JBC24-100

POWER DISTRIBUTION BOX

Use to simplify wiring on equipment when a variety of heaters and controls are required. All models have ten, 25 Amp terminal blocks. Power Distribution Boxes are rated NEMA 4 and IP66/67



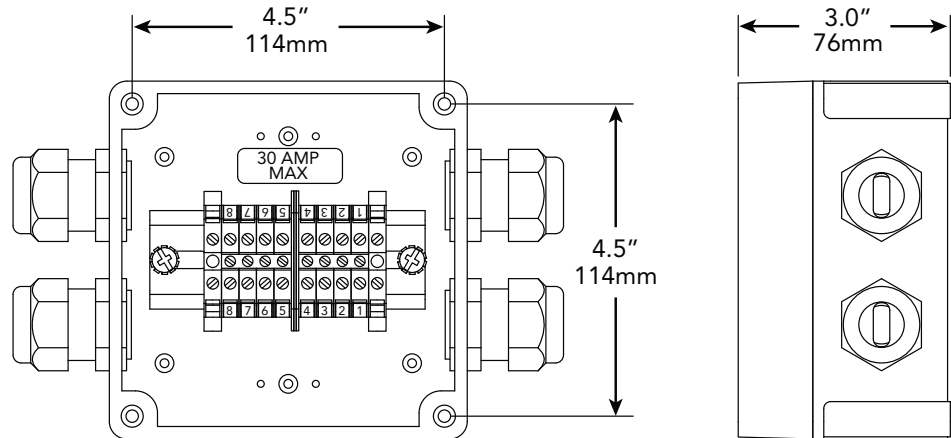
PDB-000



A6553-2

| Part Number | Number of Openings |
|-------------|--------------------|
| PDB-000 | 8* |

*Box comes assembled with 4 strain relief connectors. For additional connectors, order part# A6553-2.



OIL PRESSURE SWITCH

For automatic cut-off of heaters when engine starts.

Maximum Current Capacity:
 120 V/208 V/240 V/277 V — 25 Amps
 380 V/480 V/575 V — 15 Amps
 Two pole single throw

To prevent overheating of the heating element on standby equipment and automatic start engines, HOTSTART recommends turning the coolant heater off when the engine is running. A pressure switch that senses engine oil pressure is utilized to shut the heater off on increase of oil pressure and to turn the heater on when engine oil pressure drops.



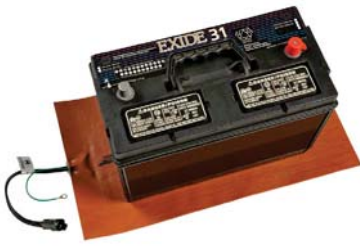
NEMA 1

| Part Number | Enclosure Type |
|-------------|--------------------------------|
| PS252 | Dry Locations |
| PS252R | Dry Locations (Reverse Action) |
| PS252WT | Wet Locations |
| PS252EP | Hazardous Locations |

SECTION 4

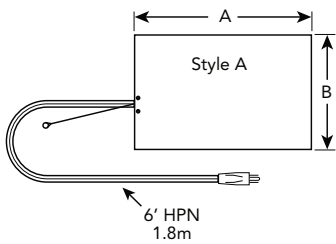


Battery Heating Pads

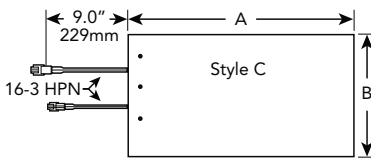
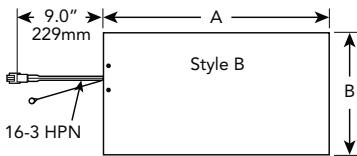


Battery heater not recommended for nickel cadmium batteries. When batteries are placed in an insulated battery box, a thermostat is recommended to sense battery box temperature to prevent overheating the battery.

Standard Pad for Single Battery

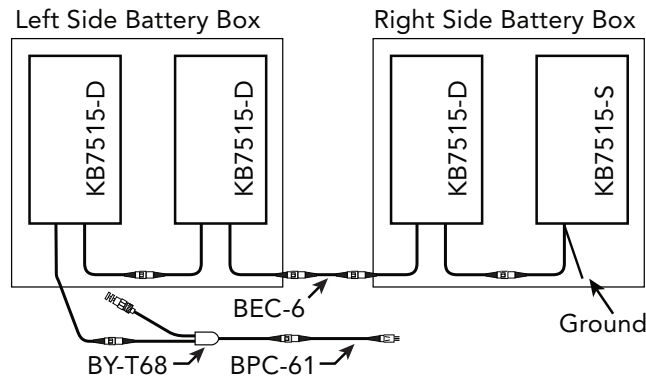


Special Pads for Multiple Batteries



| Model Number | Volts | Watts | Amps | Nominal Dimensions | | Battery Size | Style |
|--------------|-------|-------|------|--------------------|---------------|--------------|-------|
| | | | | A | B | | |
| KB5015 | 120 | 50 | .42 | 12.75" (324mm) | 8.25" (210mm) | 4D | A |
| KB5015-S | 120 | 50 | .42 | 12.75" (324mm) | 8.25" (210mm) | 4D | B |
| KB5015-D | 120 | 50 | .42 | 12.75" (324mm) | 8.25" (210mm) | 4D | C |
| KB7515 | 120 | 75 | .63 | 19.5" (495mm) | 10.5" (267mm) | 8D | A |
| KB7515-S | 120 | 75 | .63 | 19.5" (495mm) | 10.5" (267mm) | 8D | B |
| KB7515-D | 120 | 75 | .63 | 19.5" (495mm) | 10.5" (267mm) | 8D | C |
| KB7523 | 240 | 75 | .31 | 19.5" (495mm) | 10.5" (267mm) | 8D | A |
| KB7523-S | 240 | 75 | .31 | 19.5" (495mm) | 10.5" (267mm) | 8D | B |
| KB7523-D | 240 | 75 | .31 | 19.5" (495mm) | 10.5" (267mm) | 8D | C |

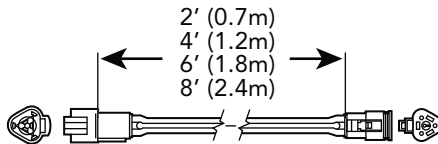
Typical Connection - 2 Batteries on Each Side of Vehicle



Accessories For Multiple Battery Heating

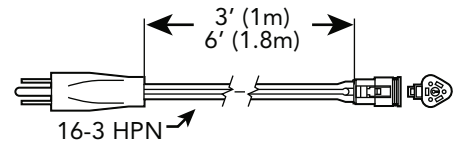
EXTENSION CORDS

| Part Number | Length |
|-------------|-----------|
| BEC-2 | 2' (0.7m) |
| BEC-4 | 4' (1.2m) |
| BEC-6 | 6' (1.8m) |
| BEC-8 | 8' (2.4m) |



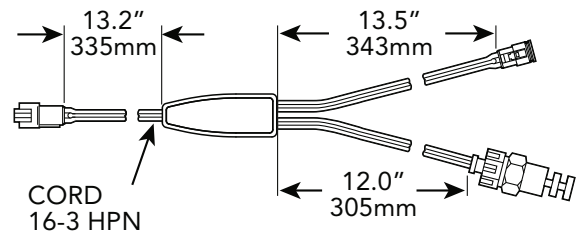
POWER SUPPLY CORDS

| Part Number | Length | Volts |
|-------------|-----------|-------|
| BPC-31 | 3' (1m) | 120 |
| BPC-32 | 3' (1m) | 240 |
| BPC-61 | 6' (1.8m) | 120 |
| BPC-62 | 6' (1.8m) | 240 |



THERMOSTAT & "Y" CORD ASSEMBLY

| Part Number | Temperature Control | |
|-------------|---------------------|-------------|
| | On | Off |
| BY-T68 | 60°F (16°C) | 80°F (27°C) |



UL RECOGNIZED BATTERY THERMAL WRAP — WITH THERMOSTAT

Thermostat range: 60 °F - 80 °F (16 °C - 27 °C)

| Battery Group* | Model Number | Volts | Watts | Wrap Length | 72" Power Cord** | Replacement Strap |
|--|----------------------------------|------------|------------|--------------------------------|------------------|-------------------|
| 22NF | BW0513006S-000 BW0523006S-000 | 120 240 | 50 50 | 30" (762 mm) 30" (762 mm) | BPC-61 BPC-62 | BW-S-55 |
| 24, 24F, 24H, 24R, 24T, 25, 27, 27H, 34, 34R, 35, 75, 78, GC2 | BW0613806S-000 BW0623806S-000 | 120 240 | 65 65 | 38" (965 mm) 38" (965 mm) | BPC-61 BPC-62 | BW-S-55 |
| 30H, 31 | BW0814606S-000 BW0824606S-000 | 120 240 | 80 80 | 46" (1168 mm) 46" (1168 mm) | BPC-61 BPC-62 | BW-S-55 |
| 2E | BW1015406S-000 BW1025406S-000 | 120 240 | 100 100 | 54" (1372 mm) 54" (1372 mm) | BPC-61 BPC-62 | BW-S-80 |
| 4D, 6D | BW1316206S-000 BW1326206S-000 | 120 240 | 130 130 | 62" (1575 mm) 62" (1575 mm) | BPC-61 BPC-62 | BW-S-80 |
| 8D | BW1617006S-000 BW1627006S-000 | 120 240 | 160 160 | 70" (1778 mm) 70" (1778 mm) | BPC-61 BPC-62 | BW-S-80 |

EURO BATTERY THERMAL WRAP FOR SCHUKO PLUG— WITH THERMOSTAT

Thermostat range: 60 °F - 80 °F (16 °C - 27 °C)

| Battery Group* | Model Number | Volts | Watts | Wrap Length | 72" Power Cord** | Replacement Strap |
|--|----------------|-------|-------|---------------|------------------|-------------------|
| 22NF | BW0523006S-100 | 240 | 50 | 30" (762 mm) | BPC-62E | BW-S-55 |
| 24, 24F, 24H, 24R, 24T, 25, 27, 27H, 34, 34R, 35, 75, 78, GC2 | BW0623806S-100 | 240 | 65 | 38" (965 mm) | BPC-62E | BW-S-55 |
| 30H, 31 | BW0824606S-100 | 240 | 80 | 46" (1168 mm) | BPC-62E | BW-S-55 |
| 2E | BW1025406S-100 | 240 | 100 | 54" (1372 mm) | BPC-62E | BW-S-80 |
| 4D, 6D | BW1326206S-100 | 240 | 130 | 62" (1575 mm) | BPC-62E | BW-S-80 |
| 8D | BW1627006S-100 | 240 | 160 | 70" (1778 mm) | BPC-62E | BW-S-80 |

* Not all battery groups listed. For wrap sizing, consult the factory.

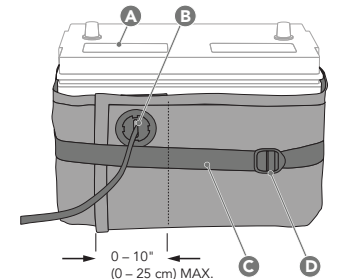
** Power cord sold separately. For other cord lengths, consult the factory.

Battery wrap comes with a 9" (229 mm) pigtail. BPC-61 and BPC-62 have a NEMA plug. BPC-62E has a Schuko plug. **Please order the necessary power cord to complete your wrap assembly.**

UL Recognized thermostatically controlled battery thermal wraps provide optimum heating regardless of ambient temperature. At 80 °F (27 °C), the battery will achieve maximum cold cranking amps.

- Thermostat will eliminate battery damage caused by overheating and acid spill.
- Adjustable strap included for securing wrap around the battery.
- For optimized heating, properly overlap the wrap and have the thermostat stay in contact with the battery. Maximum allowable overlap is 10" (25 cm).
- If placed inside a case or box, HOTSTART recommends a minimum clearance of 1.5" (38 mm) between battery and enclosure wall.
- Euro battery wraps not UL Recognized.

Battery Thermal Wrap

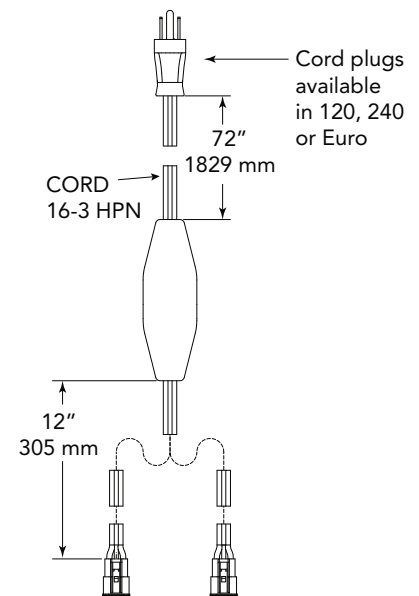


Battery wrap installation, showing battery (A), cord (B), strap (C) and buckle (D). Maximum overlap is 10 inches (25 cm).

Optional Y-Cords for connecting two battery heating wraps. NEMA or Euro Plug available.

"Y" CORD ASSEMBLY

| Part Number | Voltage | Plug Type |
|-------------|---------|-----------|
| BW-Y-1 | 120 | NEMA |
| BW-Y-2 | 240 | NEMA |
| BW-Y-E | 230 | Euro |



Battery Thermal Wrap



BATTERY THERMAL WRAP — NO THERMOSTAT

| Model Number | Volts | Watts | Length |
|--------------|-------|-------|---------------|
| KBW5015-000 | 120 | 50 | 28" (711 mm) |
| KBW8015-000 | 120 | 80 | 36" (914 mm) |
| KBW16015-000 | 120 | 160 | 72" (1829 mm) |

Prolong the life of your battery with HOTSTART thermal battery wraps. Wraps without a thermostart are not UL Recognized.

- Durable, fire-retardant vinyl cover that resists oils and acids.
- All standard battery pads and battery wraps come with 6' (1.8 m) grounded cord and plug.
- Fast, easy installation.
- Boosts battery cranking power as much as 75%.

Versatile and Easy to Install

HOTSTART adhesive pad heaters can be used on oil pans, hydraulic reservoirs, engine blocks, hydraulic cylinders and diesel fuel tanks.

- Easy peel and stick application.
- Etched foil heating element for optimal heat transfer and long life.
- Durable silicone/fiberglass cover resists abrasion.
- 120 V models are assembled with a standard 6' (1.8m) HPN cord and plug. 240 V models include 6' (1.8m) HPN cord without plug.

Silicone Pad Heaters



Not for use on batteries

| Model Number | Volts | Watts | Dimensions |
|--------------------|------------|------------|----------------------------|
| AF10015 AF10024 | 120 240 | 100 100 | 4" x 5" (102mm x 127mm) |
| AF15015 AF15024 | 120 240 | 150 150 | 4" x 5" (102mm x 127mm) |
| AF25015 AF25024 | 120 240 | 250 250 | 5" x 6" (127mm x 152mm) |
| AF40015 AF40024 | 120 240 | 400 400 | 6" x 8" (152mm x 203mm) |

| Application Guideline | 100 Watt | 150 Watt | 250 Watt | 400 Watt |
|-----------------------|-------------------------------|--------------------------------|---------------------------------|----------------------------------|
| Engine oil pan | 2 - 5 quarts 1.9 - 4.7L | 5 - 8 quarts 4.7 - 7.5L | 2 - 5 gallons 7.5 - 19.0L | 5 - 8 gallons 19.0 - 30.3L |
| Diesel Tank | 5 - 7 gallons 19.0 - 26.5L | 7 - 10 gallons 26.5 - 38.0L | 10 - 20 gallons 38.0 - 75.7L | 20 - 30 gallons 75.7 - 113.5L |
| Hydraulic Tank | 1 - 5 gallons 4.0 - 19.0L | 5 - 10 gallons 19.0 - 38.0L | 10 - 20 gallons 38.0 - 75.7L | 20 - 30 gallons 75.7 - 113.5L |
| Water Tank | up - 2 gallons up - 7.5L | 2 - 4 gallons 7.5 - 15.0L | 4 - 7 gallons 15.0 - 26.5L | 7 - 10 gallons 26.5 - 38.0L |

CAUTION: Do not use pads with higher than recommended wattage for specific oil capacities. For use on metal surfaces only.

SECTION 5



In-block Heaters

In-block heaters are complete with 2-wire w/ground 6' (1.8m) HPN cord and plug.
For cord replacements or "Y" Thermocord energy saver, please reference page 52.



| Engine Model | Part Number 120V | Part Number 240V | Watts | Application Information | Heat Shield Required | Photo |
|--|-------------------------------------|-------------------------------------|---------------------|---|-----------------------------|---|
| Allis Chalmers | | | | | | |
| 670T & I 685T & I 6138LT, T & I 25000 (844 CID) | AC-101 CATV-151 | AC-102 CATV-152 | 1000 1500 | Replaces 1" thread-in plug on the oil cooler at rear of the engine on right side. Not all of the engines have this opening. | |  |
| Case/IH – Agricultural | | | | | | |
| ALL 4 CYL 390 ALL 6 CYL 590 | CUB-751FP CUB-101FP CUB-151FP | CUB-752FP CUB-102FP CUB-152FP | 750 1000 1500 | Inserts in any of the core plugs on right side of engine. | |  |
| ALL 6 CYL 830 | CUC-151FP | CUC-152FP | 1500 | Inserts in the core plug at right rear of engine block. | |  |
| Caterpillar | | | | | | |
| C-10 C-12 | TF121-000 | TF122-000 | 1250 | Replaces the threaded plug in the oil cooler bonnet on the right side of engine. | YES |  |
| C-9 Non ACERT C-15 Non ACERT C-16 Non ACERT | CATV-151 | CATV-152 | 1500 | C-9: Replaces 1" NPT plug in the right rear of engine block. C-15, C-16: Replaces the threaded plug in the back of the oil cooler. | |  |
| C7 ACERT 3126 | FP101-001 FP151-001 | FP102-001 FP152-001 | 1000 1500 | Replaces the 44mm core plug on right side of engine just below the turbo charger. | YES |  |
| C7 ACERT rear port | TL101-000 | TL102-000 | 1000 | Replaces the threaded 1-1/16" (1.0625") plug in the rear of engine block. | |  |
| C9 ACERT | CATV-151 | CATV-152 | 1500 | Replace 1" NPT plug in the right rear of engine block. | |  |
| C11 ACERT C13 ACERT | TF151-008 | TF152-008 | 1500 | Replace any 1-5/16" (1.3125") plug in the rear of the oil cooler on right side of engine. | Check Exhaust Routing |  |
| C15 ACERT w/o breaksaver | TF151-009 | TF152-009 | 1500 | Replace 1-3/16" (1.1875") plug in rear of oil cooler on right side of engine. | |  |
| C15 ACERT with breaksaver | TF151-008 | TF152-008 | 1500 | Replace any 1-5/16" (1.3125") plug in the oil cooler on right side of engine. | |  |
| C9 2007 ACERT C13 2007 ACERT C15 2007 ACERT | TF151-012 | TF152-012 | 1500 | Replace any 1-3/16" (1.1875") plug in rear of oil cooler on right side of engine. | |  |
| 1674 | CATB-151 | CATB-152 | 1500 | Replace the 1-1/2" (1.5") plug on right side of engine. | |  |
| 1693 & D343 | CATC-151 | CATC-152 | 1500 | Replaces the water jacket access plate on left side of engine. | |  |
| 1693T & 1693TA | CATC-151-S | CATC-152-S | 1500 | Replaces the water jacket access plate on left side of engine. | |  |
| 3013 1.5L 3014 2.0L | FP531-003 | FP532-003 | 530 | Replaces 40mm core plug on the front left side of engine. | |  |

In-block heaters are complete with 2-wire w/ground 6' (1.8m) HPN cord and plug.
For cord replacements or "Y" Thermocord energy saver, please reference page 52.





| Engine Model | Part Number 120V | Part Number 240V | Watts | Application Information | Heat Shield Required | Photo |
|--|--|--|------------------------------|---|-------------------------|---|
| Caterpillar — Continued | | | | | | |
| 3024 2.22L | FP531-003 | FP532-003 | 530 | Replaces 40mm core plug on the front left side of the engine. | |  |
| 3034 2.95L | FP531-001 | FP532-001 | 530 | Replaces 50mm core plug located at rear of head. | |  |
| 3044 3.3L | PF531-001 | PF532-001 | 530 | Replaces the plate in oil cooler case on left side of engine. | |  |
| 3046 5.0L | PF531-000 | PF532-000 | 530 | Replaces 35mm core plug located at rear of engine, left side. | |  |
| 3054 3.99L 3054B 4.23L | PER-751FP PER-101FP | PER-752FP PER-102FP | 750 1000 | Mounts in the 1-1/4" (1.25") core plug opening on left side of engine. | |  |
| 3054C | PER-751FP | PER-752FP | 750 | Mounts in 1-1/4" (1.25") core plug at right rear of engine with element oriented in the 12 O'clock position. | |  |
| 3056 6.0L | PER-151FP | PER-152FP | 1500 | Mounts in the 1-1/2" (1.5") core plug on right side of engine. | |  |
| 3114 3116 | FP101-001 FP151-001 | FP102-001 FP152-001 | 1000 1500 | Replaces the 44mm core plug on right side of engine just below the turbocharger. | YES |  |
| 3176 10.3L through 1995 | DD8L-101 CAT-12015 TF151-001 | DD8L-102 CAT-12023 TF152-001 | 1000 1250 1500 | Replaces the 3/4" (0.75") threaded plug on the right side of engine just below the head. | |  |
| 3176 10.3L 1996 and later | TF121-000 | TF122-000 | 1250 | Replaces the 1" threaded plug in the oil cooler bonnet on right side of engine. | YES |  |
| 3196 12.0L | TF121-000 | TF122-000 | 1250 | Replaces the 1" threaded plug in oil cooler bonnet on right side of engine. | YES |  |
| 3204 all 1100 series | CATX-751 CATX-101 | CATX-752 CATX-102 | 750 1000 | Replaces 44mm core plug on right rear side of engine. | |  |
| 3208 — 2 heaters with a single cord | CATX-2-751-Y | CATX-2-752-Y | 1500 total | Use on industrial engines when clear access is available. Replaces any core plug - one on each side of engine. | |  |
| 3208 Recommended aftermarket installation | JD3/4-101IN JD1-101IN JD3/4-151IN JD1-151IN | JD3/4-102IN JD1-102IN JD3/4-152IN JD1-152IN | 1000 1000 1500 1500 | Replaces any of the 3/4" (0.75") or 1" plugs on the water transfer casting (right front of engine). 3/4" use JD3/4 — 1" use JD1 | |  |
| 3304 3306 | DD8L-101 CAT-12015 TF151-001 | DD8L-102 CAT-12023 TF152-001 | 1000 1250 1500 | Replaces the 3/4" (0.75") plug on left side of engine. | |  |
| 3406C/E 14.6L | AC-101 CATV-151 | AC-102 CATV-152 | 1000 1500 | Replaces 1" threaded plug in the rear of the oil cooler bonnet on right side of engine. | |  |

In-block Heaters

In-block heaters are complete with 2-wire w/ground 6' (1.8m) HPN cord and plug.
For cord replacements or "Y" Thermocord energy saver, please reference page 52.



| Engine Model | Part Number 120V | Part Number 240V | Watts | Application Information | Heat Shield Required | Photo |
|---|---------------------|---|--------------|---|-------------------------|---|
| Caterpillar — Continued | | | | | | |
| 3406 & 3408 except 1998 ADEM 2 | AC-101 CATV-151 | AC-102 CATV-152 | 1000 1500 | Replaces 1" threaded plug in the rear of the oil cooler bonnet on right side of engine. | |  |
| 3406E 1998 ADEM 2 engines only | TF151-002 | TF152-002 | 1500 | Replaces the 1" threaded plug that points downward on the top of the rear of the oil cooler bonnet. | YES |  |
| 3406E ADEM 3 and ADEM 2000 engines | AC-101 CATV-151 | AC-102 CATV-152 | 1000 1500 | Replaces 1" threaded plug in the rear of the oil cooler bonnet on right side of engine. | |  |
| 3456 15.8L | AC-101 CATV-151 | AC-102 CATV-152 | 1000 1500 | Replaces 1" threaded plug in the rear of the oil cooler bonnet on right side of engine. | |  |
| Cummins | | | | | | |
| 6 Cylinder Engines: H, NT, NH, N Family 743 CID, 855 CID, 927 CID, "N14" | | | | | | |
| 1. Cummins engines are often referred to by their horsepower rating "i.e. 350 Cummins" | | | | | | |
| 2. Cummins engines are often referred to as Big Cam, Big Cam2, 3, 4, full flow cooling, etc. | | | | | | |
| All refer to engines of 855 CID Size – listed below | | | | | | |
| Group I | | | | | | |
| Flat plate design | CUN-151B | CUN-152B | 1500 | 6 bolt flat plate on the right side of the engine. May use either the forward or rear opening depending on clearance. | |  |
| Flat plate design when the 1/2" NPT opening is used | CUN-151BH | CUN-152BH | 1500 | | |  |
| Group II | | | | | | |
| When an external oil cooler is used.. | | Note: When a 4 bolt flat plate element design is encountered, remove the next two bolts on the casting, remove the whole casting, and replace the casting and element with either CNT-151B/CNT-152B OR CNT151B90/CNT152B90 | | | | |
| When connection is 1 1/2" rubber hose Engines produced Aug. 1975 thru June 1982 | CNT-151B-90 | CNT-152B-90 | 1500 | 6 bolt, flat plate design with an elbow that will rotate 360 degrees to connect with any hose or casting. | |  |
| Uses an "O" ring for the 1 1/4" water tube connection Engines produced prior to August '75 | CNT-151B | CNT-152B | 1500 | 6 bolt, flat plate design with an elbow that will rotate 360 degrees to connect with any hose or casting. | |  |
| Group III | | | | | | |
| For industrial engines with hole pattern reversed | CUN-151BREV | CUN-152BREV | 1500 | Six bolt flat plate on the right side of engine block. | |  |
| Group IV | | | | | | |
| 1998 and later N14 Industrial | PF151-002 | PF152-002 | 1500 | Six bolt flat plate on the right side of engine block. | |  |

In-block heaters are complete with 2-wire w/ground 6' (1.8m) HPN cord and plug.
For cord replacements or "Y" Thermocord energy saver, please reference page 52.



| Engine Model | Part Number 120V | Part Number 240V | Watts | Application Information | Heat Shield Required | Photo |
|---|-------------------------------------|-------------------------------------|---------------------|---|-----------------------------|---|
| Cummins — Continued | | | | | | |
| Cummins A 4 cyl & 6 cyl | CUA-101F | CUA-102F | 1000 | Inserts in any of the core plugs on right side of engine. Element points down. | |  |
| ISC/QSC 8.3L ISL/QLS 9.0L | DD8L-101 TF751-002 | DD8L-102 TF752-002 | 1000 750 | Replaces 3/4" (0.75") NPT plug in right front side of engine. | |  |
| L10, M11 ISM 2007 | CUL-151 | CUL-152 | 1500 | Inserts in the forward opening of the heater casting on the right rear of engine block. | |  |
| QSB 3.9L, 5.9L ISB 5.9 | TF751-002 | TF752-002 | 750 | Replaces 3/4" (0.75") NPT plug in the front of the oil cooler casting. | |  |
| ISM/QSM 11.0L Flat Plate Design | PF151-003 | PF152-003 | 1500 | Right rear. Replaces plate. | |  |
| ISX, QSX Signature 600 Pre 2007 | PF151-004 | PF152-004 | 1500 | Mounts in the oval shaped plate on the right side of engine block. | |  |
| 4BT 3.9L | CUB-751FP CUB-101FP | CUB-752FP CUB-102FP | 750 1000 | Replaces 57.8mm core plug on right side of engine. | Check Exhaust Routing |  |
| 6BT 5.9L | CUB-751FP CUB-101FP CUB-151FP | CUB-752FP CUB-102FP CUB-152FP | 750 1000 1500 | Replaces 57.8mm core plug on right side of engine. | Check Exhaust Routing |  |
| 6CT 8.3L | CUC-151FP | CUC-152FP | 1500 | Replaces 57.8mm core plug on right rear side of engine. | |  |
| Detroit Diesel | | | | | | |
| SERIES 10 4 cylinder Phaser engines | PER-751FP PER-101FP | PER-752FP PER-102FP | 750 1000 | Mounts in the 1-1/4" (1.25") core plug opening on either side of engine. | |  |
| SERIES 10 6 cylinder Phaser engines | PER-151FP | PER-152FP | 1500 | Mounts in the 1-1/4" (1.25") core plug on right side of engine. | |  |
| SERIES 30 | DD8L-101 TF751-002 | DD8L-102 TF752-002 | 1000 750 | Mounts in the 3/4" (0.75") NPT opening in engine block. | |  |
| SERIES 40 all versions | PER-751FP INTA-121 FR151-001 | PER-752FP INTA-122 FR152-001 | 750 1250 1500 | Mounts in the core plug opening on right side of engine. | |  |

In-block Heaters

In-block heaters are complete with 2-wire w/ground 6' (1.8m) HPN cord and plug.
For cord replacements or "Y" Thermocord energy saver, please reference page 52.



| Engine Model | Part Number 120V | Part Number 240V | Watts | Application Information | Heat Shield Required | Photo |
|---|--|-----------------------|--------------|---|-------------------------|-------|
| Detroit Diesel – continued | | | | | | |
| SERIES 50 SERIES 60 Pre 2007 | AC-101 CATV-151 | AC-102 CATV-152 | 1000 1500 | Mounts in the 1" NPT opening in either water pick up pipe (up to 1991) or in the 1" NPT opening on the oil cooler housing after 1991. | Yes on 1991 and later | |
| SERIES 55 | PF151-000 | PF152-000 | 1500 | Mounts in the triangle plate on the side of engine block. | | |
| 3-53, 4-53, 3-71, 4-71 with water cooled air compressor | DD-751-S | DD-752-S | 750 | Mounts in the oval shaped plate on engine block. Check clearance. | | |
| 3-53, 4-53, 3-71, 4-71 without water cooled air compressor | DD-751 | DD-752 | 750 | Mounts in the oval shaped plate on engine block. Check clearance. | | |
| 6-71 with water cooled air compressor | DD-151-S | DD-152-S | 1500 | Mounts in the oval shaped plate on engine block. Check clearance. | | |
| 6-71 without water cooled air compressor | DD-151 | DD-152 | 1500 | Mounts in the oval shaped plate on engine block. Check clearance. | | |
| 8.2 L V-8 Diesel | DD8L-101 TF751-002 | DD8L-102 TF752-002 | 1000 750 | Threads into the 3/4" (0.75") NPT opening on engine block. | | |
| 6V-53 with water cooled air compressor | DD6V-751-S | DD6V-752-S | 750 | Mounts in the oval shaped plate on engine block. Check clearance. | | |
| 6V-53 without water cooled air compressor | DD6V-751 | DD6V-752 | 750 | Mounts in the oval shaped plate on engine block. Check clearance. | | |
| 6V71 & 8V71 Alternate location | AC-101 CATV-151 | AC-102 CATV-152 | 1000 1500 | Threads into 1" NPT plug in the front face of engine block. | | |
| 6V-71 & 8V-71 6V-92 & 8V-92 except GMC General models | DDV-151B | DDV-152B | 1500 | Mounts in the square plate on engine block. | | |
| 6V92 & 8V92 alternate location - threads into oil cooler | DD8L-101 TF751-002 | DD8L-102 TF752-002 | 1000 750 | Threads into the 3/4" (0.75") NPT opening in the oil cooler housing. Note - not all engines have this opening. | | |
| Deutz | | | | | | |
| BF4L913 BF6L913 F3L912 F3L913 F6L913 1011 SERIES oil cooled engines | OLT221515 and A22M48M (adapter) | n/a | 150 | Use adapter kit to mount the 22mm heater in the 48mm opening. | | |

In-block heaters are complete with 2-wire w/ground 6' (1.8m) HPN cord and plug.
For cord replacements or "Y" Thermocord energy saver, please reference page 52.



| Engine Model | Part Number 120V | Part Number 240V | Watts | Application Information | Heat Shield Required | Photo |
|--|----------------------------|----------------------------|--------------|--|-----------------------------|-------|
| Deutz – continued | | | | | | |
| 1012 — 4 & 6 cyl 1013 — 4 cyl | PF751-000 PF121-001 | PF752-000 PF122-001 | 750 1250 | Mounts in the oval shaped plate opening on the oil cooler casting. | | |
| 1013 6 cyl | PF121-001 PF751-000 | PF122-001 PF752-000 | 1250 750 | Mounts in the oval shaped plate opening on the top of the oil cooler. | | |
| 1015 6 & 8 cyl | TL151-004 | TL152-004 | 1500 | Replaces 30mm plug in water elbow on front of engine. | | |
| 2012 — 4 & 6 cyl without electric fuel injection | PF751-002 | PF752-002 | 750 | Replace oval shaped plate on the top of the oil cooler. | | |
| Ford | | | | | | |
| 7.3L V-8 diesels from 1994 on | TF751-002 DD8L-101 | TF752-002 DD8L-102 | 750 1000 | Mounts in the 3/4" (0.75") NPT plug in the engine's block. | | |
| Hino | | | | | | |
| 3.8L, 5.8L, 6.0L, 6.4L, 6.7L, H06C-T, H07C-B, W04C-T, W06E | DD8L-101 TF751-002 | DD8L-102 TF752-002 | 1000 750 | Threads into 3/4" (0.75") NPT opening in engine block. | YES | |
| Isuzu | | | | | | |
| 4BD1 6HE1 6BD1 6SA1 6BG1 | TF401-001 | NONE | 400 | Replaces 1" NPT plug on left rear of engine. | | |
| Iveco | | | | | | |
| NEF 4cyl NEF 6 cyl | PF751-001 | PF752-001 | 750 | Mount in front opening on right side of engine block. | | |
| John Deere | | | | | | |
| With 3/4" plug in the back of the block | JD3/4-101IN JD3/4-151IN | JD3/4-102IN JD3/4-152IN | 1000 1500 | 3/4" (0.75") NPT opening in the rear face of engine block. | Check Exhaust Routing | |
| With 1" plug in the back of the block | JD1-101IN JD1-151IN | JD1-102IN JD1-152IN | 1000 1500 | 1" NPT opening in the rear face of engine block. | | |
| With 1-5/8" opening on the side of the water jacket | JDS-101 JDS-151 | JDS-102 JDS-152 | 1000 1500 | 1-5/8" (1.625") threaded opening on the side of the block in the water distribution channel. | | |

In-block Heaters

In-block heaters are complete with 2-wire w/ground 6' (1.8m) HPN cord and plug.
For cord replacements or "Y" Thermocord energy saver, please reference page 52.



| Engine Model | Part Number 120V | Part Number 240V | Watts | Application Information | Heat Shield Required | Photo |
|--|------------------------|------------------------|---------------|--|-------------------------|-------|
| John Deere – continued | | | | | | |
| 6105 (10.5L) 6125 (12.5L) | AC-101 CATV-151 | AC-102 CATV-152 | 1000 1500 | 1" NPT opening in the oil cooler casting. | | |
| Komatsu | | | | | | |
| L10 (10L) M11(11L) | CUL-151 | CUL-152 | 1500 | Inserts in the forward opening of the heater casting on the right rear of engine block. | | |
| SA6D125 | MA-151 | MA-152 | 1500 | Threads into the core plug opening in engine block. | | |
| Kubota | | | | | | |
| B, L, M Series D905 V1205 D1005 V1305 D1105 V1505 D3000B V4000B D3200B V4300B DH905 VH1205 DH1005 VH1305 | TF401-001 | NONE | 400 | Replaces 1" NPT plug on left front of engine. | | |
| Mack | | | | | | |
| Mid liner E3 MS200 & MS250 | MAM-101 | MAM-102 | 1000 | Mounts in rear face of block. | | |
| Mid liner E5 MS300 | MAM-151 | MAM-152 | 1500 | Mounts in the oil cooler bonnet. | | |
| E6 engines "smooth bore" 1981 and later | MASB-151 | MASB-152 | 1500 | Replaces 1-3/4" (1.75") core plug on side of engine. | | |
| E6 engines threaded core plug opening Pre-1981 END 465, 711, EN438, 504, 707, 673, 675, 676 (1957 through 1981) | MA-151 | MA-152 | 1500 | Mounts in any threaded core plug opening. | | |
| E7 Engines Except E-Tech water pump mount | PF151-001 PF101-000 | PF152-001 PF102-000 | 1500 1000 | Mounts in the plate in either the front or rear face of the block in the water jacket passage. For 2002 engine – mounts in rear face of block. | | |
| E9, ENDT865, 866 and 1000 series V8 engines Use two heaters | DD8L-101 | DD8L-102 | 2000 total | Threads into the 3/4" (0.75") NPT opening on each side of engine block. | | |

In-block heaters are complete with 2-wire w/ground 6' (1.8m) HPN cord and plug.
For cord replacements or "Y" Thermocord energy saver, please reference page 52.



| Engine Model | Part Number 120V | Part Number 240V | Watts | Application Information | Heat Shield Required | Photo |
|---|------------------------|------------------------|--------------|--|-------------------------|---|
| MAN | | | | | | |
| D2840 D2842 D2848 | PF121-003 | PF122-003 | 1250 | Replace oval shaped plate in lower water pipe on right side of engine. | |  |
| D2866 D2876 | PF151-006 | PF152-006 | 1500 | Replace 3 bolt plate on left side of engine. May require adapter if 3 bolt opening is not available on engine. Consult customer service. | |  |
| Massey Ferguson | | | | | | |
| 3 cylinder 4 cylinder 6 cylinder | PER-751FP PER-101FP | PER-752FP PER-102FP | 750 1000 | Mounts in any of the 1-1/4" (1.25") core plug openings in the engine. | YES |  |
| Mercedes Benz | | | | | | |
| MBE904 MBE906 MBE924 MBE925 | PF101-001 | PF102-001 | 1000 | Replaces 60mm core plug on right rear of engine. | |  |
| Navistar/International | | | | | | |
| V800 (796 CID) | AC-101 CATV-151 | AC-102 CATV-152 | 1000 1500 | Threads into a 1" NPT opening in the oil cooler bonnet. | |  |
| INLINE 6 CYLINDER — all series — 312, 360, 414, 436, 466 & 530 | INTA-121 INTA-101 | INTA-122 INTA-102 | 1250 1000 | Replaces third or fourth core plug on left side of engine. Element should point toward 1 O'clock position. | |  |
| 7.3L & T444 1994 and later | TF751-002 DD8L-101 | TF752-002 DD8L-102 | 750 1000 | Mounts in the 3/4" (0.75") NPT plug in the engine's block. | |  |
| 9.0L — V8 diesel | INT9-101F | INT9-102F | 1000 | Mounts in a core plug. | |  |
| Oliver | | | | | | |
| ALL EXCEPT 1265, 1365 & 1900 | TF751-002 DD8L-101 | TF752-002 DD8L-102 | 750 1000 | Threads into a 3/4" (0.75") NPT opening in the block. | |  |
| Onan — See Cummins "A" Series | | | | | | |
| Perkins | | | | | | |
| 3.152 4.236 6.354 | PER-751FP PER-101FP | PER-752FP PER-102FP | 750 1000 | Mounts in the 1-1/4" (1.25") core plug opening on right side of engine. | |  |
| 103.15 104.22 404.22 | FP531-003 | FP532-003 | 530 | Replaces core plug on left front of engine. | |  |

In-block Heaters

In-block heaters are complete with 2-wire w/ground 6' (1.8m) HPN cord and plug. For cord replacements or "Y" Thermocord energy saver, please reference page 52.



| Engine Model | Part Number 120V | Part Number 240V | Watts | Application Information | Heat Shield Required | Photo |
|--|-------------------------------------|-------------------------------------|---------------------|---|-------------------------|---|
| Perkins – continued | | | | | | |
| 700 Series 704.30 | FP531-001 | FP532-001 | 530 | Replaces 50mm core plug located at rear of head. | |  |
| 800 Series | PF531-001 | PF532-001 | 530 | Mounts in oval shaped plate on the left front of the block. | |  |
| 1004 (right side) | FR751-002 FR101-000 PER-151FP | FR752-002 FR102-000 PER-152FP | 750 1000 1500 | Mounts in the 1-1/2" (1.5") core plug opening on right side of engine. | |  |
| 1004 (left side) | PER-751FP PER-101FP | PER-752FP PER-102FP | 750 1000 | Mounts in the 1-1/4" (1.25") core plug opening on left side of engine. | |  |
| 1006 (6 Cyl) A & B | PER-151FP | PER-152FP | 1500 | Mounts in the 1-1/2" (1.5") core plug on right side of engine. | |  |
| 1103C | FR531-000- WOC | FR532-000- WOC | 530 | Replaces 1-1/4" (1.25") core plug on right rear of engine. Element should point towards 1 O'clock position. | |  |
| 1104 (4 Cyl) C & D | PER-751FP PER-101FP | PER-752FP PER-102FP | 750 1000 | Mounts in 1-1/4" (1.25") core plug opening on right side of engine. | |  |
| Volvo | | | | | | |
| D9 | PF151-007 | PF152-007 | 1500 | Replaces oval shaped plate on right side of engine. | |  |
| D12C Prior to Serial #250502 | PF151-005 | PF152-005 | 1500 | Replaces oval shaped plate on right side of engine. | YES |  |
| D12C After Serial #250502 | PF121-002 | PF122-002 | 1250 | Replaces oval shaped plate on right side of engine. | YES |  |
| TD60, TD61, TD70, TD71, TD100, TD101, VE10, TD120, TD121 | VT6-101 | VT6-102 | 1000 | Mounts into threaded opening on left side of engine. | |  |
| Yanmar | | | | | | |
| 3T72HLE 4TN82E D4T YYDXL4.41 | TF401-001 | NONE | 400 | 1" NPT No replacement cord available. | |  |

NOTE: The only replacement part for in-block heaters is the power cord. Please see the power cord section on page 52 for the proper replacement cord set.

For thermostat control of in-block heaters, see page 52. The energy saver Thermocord is available in various temperature ranges.

Supplemental heat for engines using in-block heaters can be achieved by the installation of lube-oil heaters in the oil pan. Reference pages 24 and 25 of this catalog or consult factory.

Instructions for:
In-block heaters
Please refer to specific instructions that accompany heater.

THREADED PLUG TYPE HEATERS



- A. Drain the cooling system.
- B. Remove the recommended core plug. (See instructions with heater)
- C. Apply teflon tape to pipe threads or grease to O-ring.
- D. Thread heater into engine.

Please follow these steps to ensure proper operation of your HOTSTART in-block heater.

1. Align cord with pins on the heater and press the cord into the heater. Place clamp around cord & heater. **DO NOT PLUG IN HEATER YET!**
2. Route the cord, keeping away from hot or moving surfaces.
3. Re-fill the cooling system. Run engine until engine thermostat opens and continue running for another 20 minutes to eliminate air.
4. Stop engine and let cool. Check for leaks. Check coolant level.
5. Plug heater into power supply and test for proper operation. Block should feel warm near heater.

PLATE TYPE HEATERS



- A. Drain the cooling system.
- B. Remove the recommended plate. (See instructions with heater)
- C. Clean the gasket area.
- D. Apply gasket sealant to plate and engine surfaces.
- E. Insert heater into engine. Tighten bolts.

Please follow these steps to ensure proper operation of your HOTSTART in-block heater.

1. Align cord with pins on the heater and press the cord into the heater. Place clamp around cord & heater. **DO NOT PLUG IN HEATER YET!**
2. Route the cord, keeping away from hot or moving surfaces.
3. Re-fill the cooling system. Run engine until engine thermostat opens and continue running for another 20 minutes to eliminate air.
4. Stop engine and let cool. Check for leaks. Check coolant level.
5. Plug heater into power supply and test for proper operation. Block should feel warm near heater.

FREEZE (CORE) PLUG TYPE HEATERS



- A. Drain the cooling system.
- B. Remove the recommended core plug. (See instructions with heater)
- C. Clean, smooth and dry core plug opening.
- D. If retaining ring style, apply a light coat of grease to the O- ring and core plug opening. If press-in style, apply a light coat of high-temperature, high-strength retaining compound (Loctite 640 recommended).
- E. Insert heater into engine and position properly. Push the heater into the engine by hand, then tap in using a suitable tool until flange is even with engine block.

Please follow these steps to ensure proper operation of your HOTSTART in-block heater.

1. Align cord with pins on the heater and press the cord into the heater. Place clamp around cord & heater. **DO NOT PLUG IN HEATER YET!**
2. Route the cord, keeping away from hot or moving surfaces.
3. Re-fill the cooling system. Run engine until engine thermostat opens and continue running for another 20 minutes to eliminate air.
4. Stop engine and let cool. Check for leaks. Check coolant level.
5. Plug heater into power supply and test for proper operation. Block should feel warm near heater.

Replacement Cords & Thermostats

Heat Shield

HS1



Use when exhaust manifold or turbo come close to heater termination.

For use with In-block Heaters

| Cord Length | Plug Style | 120 Volt | 240 Volt |
|-------------|------------|----------|----------|
| 6' 1.8m | 1 | IM6-1IN | IM6-2IN |
| 11' 3.4m | 1 | IM11-1IN | IM11-2IN |
| 16' 4.8m | 1 | IM16-1IN | IM16-2IN |
| Cord Length | Plug Style | 120 Volt | 240 Volt |
| 6' 1.8m | 2 | 11PR72T | 21PR72T |
| 11' 3.4m | 2 | 11PR132T | 21PR132T |
| 16' 4.8m | 2 | 11PR192T | 21PR192T |

STYLE 1



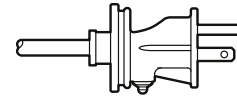
15amp, 120V



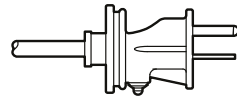
15amp, 240V

Fits most competitor's applications.

STYLE 2



15amp, 120V



15amp, 240V

TwinStat™ Thermocord

HOTSTART's TwinStat™ Thermocord is an energy efficient, idle reduction heater cord ideal for fleet operations. The cord's twin thermostats monitor engine temp and ambient temp, allowing for heating to happen only when needed. Contact HOTSTART customer service to select the best heater cord for your fleet.

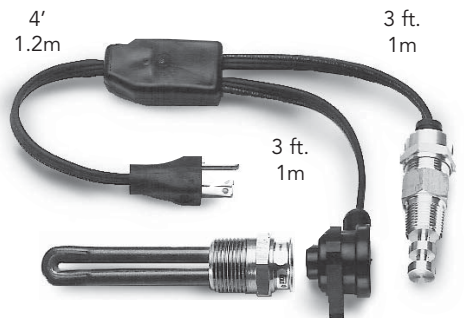


NOTE: When ordering in-block heater **and** thermocord, place suffix **-WOC** (which stands for **without cord**) after the heater model number to save cost as the standard 6' (1.8m) heater cord is replaced by the Thermocord harness.



Thermocord for In-block Heaters

| Part No. | Volts | Thread Size | Temp Range |
|--------------|-------|-------------|-----------------------|
| TC031310-866 | 120 | 1/2" | 100°-120°F (38°-49°C) |
| TC031312-866 | 120 | 1/2" | 120°-140°F (49°-60°C) |
| TC032310-866 | 240 | 1/2" | 100°-120°F (38°-49°C) |
| TC032312-866 | 240 | 1/2" | 120°-140°F (49°-60°C) |
| TC031308-866 | 120 | 1/2" | 80°-100°F (27°-38°C) |
| TC032308-866 | 240 | 1/2" | 80°-100°F (27°-38°C) |



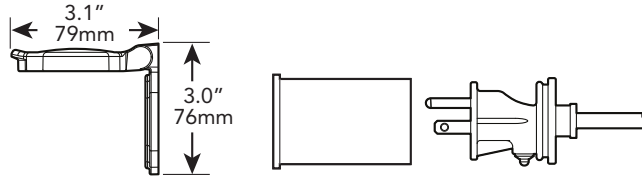
Heater shown for illustration purposes only



Flush Mount Kits for In-block Heaters

| Model Number 120 Volt | Model Number 240 Volt | Cord Length | Plug Style |
|--------------------------|--------------------------|-------------|------------|
| IM6-1IN-FM | IM6-2IN-FM | 6' (1.8.m) | 2 |
| IM11-1IN-FM | IM11-2IN-FM | 11' (3.4m) | 2 |
| IM16-1IN-FM | IM16-2IN-FM | 16' (4.8m) | 2 |

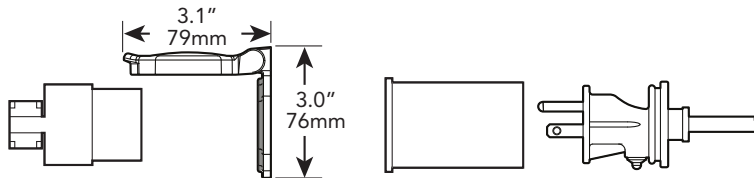
Kits include:
11PR- style
cord (shown
on page 52),
recessed male
receptacle and
hinged flip
cover.



Flush Mount Kits for Thermosiphon Engine Heaters

| Model Number | Volts | Amps | For Heater with Wattage of: |
|--------------|-------|------|-----------------------------|
| FM15120 | 120 | 15 | 500 to 1800 |
| FM15240 | 240 | 15 | 500 to 3000 |
| FM20120 | 120 | 20 | 2000 to 2250 |

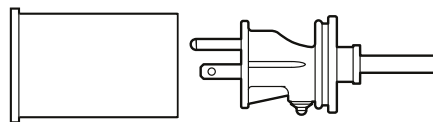
Kits include:
Recessed male
receptacle with 6'
(1.8m) cord (no female
connectors), hinged
flip cover and female
connector.



Other Accessories

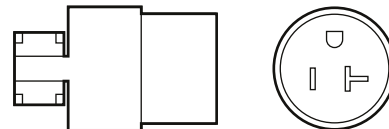
Recessed Male Receptacle – with 6' (1.8m) cord (no female connectors)

| Model Number | Volts | Amps |
|--------------|-------|------|
| RM5-15 | 120 | 15 |
| RM6-15 | 240 | 15 |
| RM5-2Ø | 120 | 20 |
| RM6-2Ø | 240 | 20 |



Female Connector - for extension cords

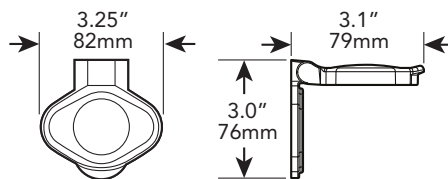
| Model Number | Volts | Amps |
|--------------|-------|-------|
| FM1G2ØA | 120 | 15/20 |
| FM2G2ØA | 240 | 15/20 |



Hinged Cover

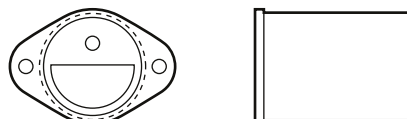
| Model Number | Description |
|--------------|----------------------|
| *FC-KH | Black/HOTSTART Logo |
| FC-KH-C | Chrome/HOTSTART Logo |

*Standard with kit



Plug Housing

| Model Number |
|--------------|
| A-2223-PH |



Specifying an Engine Heater

1. Determine the best type of heater to be used for the application.
 - In-block or Thermosiphon Engine Heater?
 - Weathertight model for all indoor or outdoor applications (hospital, communications building, shopping mall, pump station, off-road equipment).
 - Hazardous Location model (off-shore platform, oil rig, gas compression station).
2. Determine engine size.
 - Cubic inch or liter displacement.
3. Determine wattage required by using this general formula:
 - 3 watts x cubic inch displacement = watts required.
Example: Engine is 855 CID. Requirement is 2500 watt heater. (855 x 3 = 2565)
 - This formula is a very good rule of thumb to use down to 0°F (-18°C) ambient temperature. This formula will generally hold engine temperature at approximately 100°F (38°C) above ambient.
 - Engines over 1250 CID (20 L) and V-type engines require forced circulation preheating systems (CTM, CSM models — see pages 4-5).
4. Now that you have the required wattage, you need to determine:
 - Voltage available that will power the heater (120, 208, 277, 240, 380, 480).
 - Is the power source Single Phase or Three Phase?
5. For thermostat selection, determine the desired engine temperature to be maintained.
 - 100°F (38°C) to 120°F (49°C) applies 95% of the time. However, specifications vary with respect to the user and a higher or lower range may be required.

You now have the specifications needed to select the required engine preheater from the many products listed in this catalog. For other technical information and installation tips, see pages 22 and 51. If you have other questions or need additional assistance, please contact our customer service department.

Conversion Factors

Litres x 1.0567 = Quarts
 Quarts x 0.94635 = Litres
 Litres x 0.26417 = Gallons
 Gallons x 3.7854 = Litres

Cubic Inches - Litres Conversion Chart

| Cubic Inches | Litres | Cubic Inches | Litres | Cubic Inches | Litres |
|--------------|--------|--------------|--------|--------------|--------|
| 150 | 2.46 | 1600 | 26.22 | 3050 | 49.98 |
| 200 | 3.28 | 1650 | 27.04 | 3100 | 50.80 |
| 250 | 4.10 | 1700 | 27.86 | 3150 | 51.62 |
| 300 | 4.92 | 1750 | 28.68 | 3200 | 52.44 |
| 350 | 5.74 | 1800 | 29.50 | 3250 | 53.26 |
| 400 | 6.55 | 1850 | 30.32 | 3300 | 54.08 |
| 450 | 7.37 | 1900 | 31.13 | 3350 | 54.90 |
| 500 | 8.19 | 1950 | 31.95 | 3400 | 55.71 |
| 550 | 9.01 | 2000 | 32.77 | 3450 | 56.53 |
| 600 | 9.83 | 2050 | 33.59 | 3500 | 57.35 |
| 650 | 10.65 | 2100 | 34.41 | 3550 | 58.17 |
| 700 | 11.47 | 2150 | 35.23 | 3600 | 58.99 |
| 750 | 12.29 | 2200 | 36.05 | 3650 | 59.81 |
| 800 | 13.11 | 2250 | 36.87 | 3700 | 60.63 |
| 850 | 13.93 | 2300 | 37.69 | 3750 | 61.45 |
| 900 | 14.75 | 2350 | 38.51 | 3800 | 62.27 |
| 950 | 15.57 | 2400 | 39.33 | 3850 | 63.09 |
| 1000 | 16.39 | 2450 | 40.15 | 3900 | 63.91 |
| 1050 | 17.21 | 2500 | 40.97 | 3950 | 64.73 |
| 1100 | 18.03 | 2550 | 41.79 | 4000 | 65.55 |
| 1150 | 18.84 | 2600 | 42.61 | 4050 | 66.37 |
| 1200 | 19.66 | 2650 | 43.42 | 4100 | 67.19 |
| 1250 | 20.48 | 2700 | 44.24 | 4150 | 68.00 |
| 1300 | 21.30 | 2750 | 45.06 | 4200 | 68.82 |
| 1350 | 22.12 | 2800 | 45.88 | 4250 | 69.64 |
| 1400 | 22.94 | 2850 | 46.70 | 4300 | 70.46 |
| 1450 | 23.76 | 2900 | 47.52 | 4350 | 71.28 |
| 1500 | 24.58 | 2950 | 48.34 | 4400 | 72.10 |
| 1550 | 25.40 | 3000 | 49.16 | 4450 | 72.92 |

Temperature

| Fahrenheit | Celsius |
|------------|---------|
| -40°F | -40°C |
| -30°F | -34°C |
| -20°F | -29°C |
| -10°F | -23°C |
| 0°F | -18°C |
| 10°F | -12°C |
| 20°F | -7°C |
| 30°F | -1°C |
| 40°F | 4.5°C |
| 50°F | 10.0°C |
| 60°F | 15.5°C |
| 70°F | 21.0°C |
| 80°F | 27.0°C |
| 90°F | 32.0°C |
| 100°F | 38.0°C |
| 110°F | 43.0°C |
| 120°F | 49.0°C |
| 130°F | 54.0°C |
| 140°F | 60.0°C |
| 150°F | 65.5°C |
| 160°F | 71.0°C |
| 170°F | 77.0°C |
| 180°F | 82.0°C |
| 190°F | 88.0°C |
| 200°F | 93.0°C |
| 210°F | 99.0°C |

C x 1.8 + 32 = °F
 (F - 32) x 0.55 = °C

Cubic Inches x 0.01639 = Liters
 Liters x 61.024 = Cubic Inches

HOTSTART forced circulation preheating systems are ideal for engines ranging in size from 10 L to the largest displacement currently in production. These systems are designed specifically for installation on a generator, compressor package, marine engine or locomotive. HOTSTART offers forced circulation heating systems for coolant heating, lube oil heating and diesel fuel heating. Combination systems are also available that heat and circulate coolant and oil in one pre-assembled unit. Complete with all necessary components and controls, these automated systems are available in various wattage, voltage and phase combinations to accommodate most large industrial preheating needs.

For additional information regarding HOTSTART's forced circulation heating systems, please visit www.hotstart.com or contact HOTSTART and have all your questions answered by one of our engine heating product specialists.

CMM/CLM Models



Coolant-only Heating Systems

Voltage Range: 230–690 V
Heat Power: 6–144 kW



CLA/CLE Models

Coolant heating systems are designed to heat and circulate coolant throughout the engine's cooling system to efficiently maintain an engine at optimum starting temperatures. Maintaining jacket water temperatures ensures easy starting, reduces harmful emissions at start-up and allows engines to go to full power without needless idling.

OSM Model



Oil-only Heating Systems

Voltage Range: 120–690 V
Heat Power: 1–12 kW



OLA/OLE Models

Oil heating systems provide uniform heating to the oil throughout the engine oil sump and external piping, enhancing engine or compressor availability and decreasing wear and tear from cold startups.

Coolant and Oil Heating Systems OCLA/OCLE Models



Voltage Range: 230 V, 400 V
Heat Power (Oil): 2.5–12 kW
Heat Power (Coolant): 6–36 kW

Auxiliary Power Unit for Locomotive Engines



The HOTSTART APU allows an idling locomotive to be shut down in cold weather at any location. This self-contained system runs off the locomotive's fuel supply. It will maintain water temperature at 100°F (38°C) above ambient and provides cab heat.

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Customer Services



To better serve you, HOTSTART provides a customer service department to answer all your engine heating concerns and questions or to take your sales order.

Customer Service Department:
509.536.8660

Sales orders and requests for quotes can also be faxed to our toll-free FAX line.

Toll-free FAX line: 800.224.5550

Warranty Information

The warranty below has been drafted to comply with the Federal Law applicable to products manufactured after December 31, 1976. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

HOTSTART products are warranted against defects in workmanship and materials. No other express warranty, written or oral, applies. No person is authorized to give any other warranty or assume any liability except by written statement from an officer of HOTSTART, Inc.

The warranty extends for twelve months from date of shipment from factory or authorized distributor.

Products must be installed and maintained in accordance with HOTSTART, Inc. instructions. Users are responsible for the suitability of the products to their application. There is no warranty against damage resulting from corrosion, misapplication, improper specification or other operating conditions beyond our control. Claims against carriers for damage in transit must be filed by the buyer.

Absolutely no material can be returned to HOTSTART, Inc. without prior factory authorization.

Upon factory authorization, return the defective part or product, freight prepaid, to: HOTSTART, 5723 E Alki Ave, Spokane, WA 99212.

Defective items will be repaired or replaced, at our option, at no charge. Such repair or replacements is the exclusive right of HOTSTART, Inc. HOTSTART, Inc. is not liable for labor costs incurred in removal, reinstallation, or unauthorized repair of the product or for damage of any type whatsoever including incidental or consequential damage. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the preceding limitation or exclusion may not apply to you.

Exports, re-exports and imports of HOTSTART products are subject to U.S. export controls. If you are an exporter, importer, distributor, customer or end-user, you are responsible for complying with U.S. export controls and any local export laws in your jurisdiction. We encourage you to seek appropriate legal advice before you export, re-export or sell HOTSTART products.

For more information on exporting products under the U.S. Export Administration Regulations (EAR), please visit the Bureau of Industry and Security (BIS) website: <http://www.bis.doc.gov>

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