IMC-400A

KIM HOTSTART
SINCE 1942

Product Catalog

Engine Heaters

Oil Heaters

Controls

Accessories

KIM HOTSTART PRODUCTS TRAVEL THE WORLD . . .

Kim Hotstart products are found around the world . . . On truck and railroad engines . . . far below the surface of the oceans . . . in desert wastelands . . . and high in the mountains.

Kim Hotstart is a manufacturer and world wide distributor of electric heating equipment for gasoline and diesel engines. Established in 1942, we have the experience and expertise to answer your engine heating questions.

Kim Hotstart, the Ultimate in Engine Pre-heating. Call us

Kim Hotstart Pre-Heaters

Easy Starts…

- Saves warm-up time
- Saves fuel
- Prolongs battery life
- Provides immediate defrosting

Reduces Engine Wear…

- 90% of engine wear is due to low water jacket temperature
- Stops destructive condensation
- Extends time between overhauls

Protects the Environment…

- Eliminates "White Smoke" upon start-up
- Reduces idle time
- Engine is ready for clean full power operation
- Reduces noise pollution
- No high speed idle

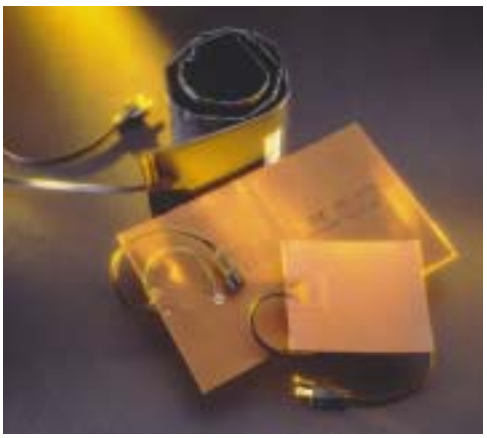
Tank Style Coolant Heaters That Meet Heating Requirements For a Wide Range of Engine Sizes and Applications.

- Constant circulation of coolant through the engine achieves even heat distribution.
- New one-piece, heavy-duty, pressure die-cast aluminum tank with a bolt-on flange element assembly.
- All parts replaceable — easy to service.
- Most models classified weathertight.
- Many models available for Class I, Group D (Hazardous Locations) applications.
- Various voltages and phases available.
- Most models carry the European CE mark.

Industrial Lube Oil Heaters and Process Oil Heaters. Multiple Sizes Available for Every Oil Heating Need.

- Reduces engine wear.
- Immediate flow of warm oil to critical engine parts.
- Stops destructive condensation and the forming of sludge in oil.
- Warm oil allows easier starts and prolongs battery life.
- Models designed for heating transmission fluid, hydraulic oil and diesel fuel.
- Low watt density elements assure safe heating of oils and will not char or coke.
- Thermostat control available and recommended for all models.
- Innovative threadless design V-clamp style mounting adapter available.

Battery Warming Pads and Thermal Wraps with a Built-in Thermostat Improve Cranking Power in the Coldest Conditions.



- Flexible SBR rubber pads are designed for installation under the battery to heat from the bottom up.
- Blanket-style heaters and pad heaters are impervious to battery acid and oil.
- Pad models for multiple battery applications available with accessory cords and thermostat assembly.
- Blanket-style warmers provide greater heat rise than plates or pads.
- Engineered to maintain batteries at 80°F/27°c to ensure full cranking power.

Silicone Hot Pads are Flexible and Easy to Install.

- Ideal for oil pans, hydraulic reservoirs, engine blocks and hydraulic cylinders.
- Durable silicone/fiberglass cover resists abrasion.

Thermostat Controls, Complete Control Systems and Other Accessories Ensure Proper and Efficient Performance of Kim Hotstart Heaters.

- General purpose, weathertight and explosion proof thermostats available for all engine heating, oil heating and battery heating applications.
- Fixed temperature and adjustable.
- Oil pressure switches for automatic cut-off of heaters on engine start-up.
- Complete control systems for 3 phase and high voltage engine preheaters factory assembled in electrical boxes for ease of installation.

All Kim-Glo Direct Immersion Heaters Carry CSA-C/US Approval and CE Mark.

- Long life Incoloy elements withstand higher temperatures to reduce element failure.
- Reduced heat in terminal connection area.
- Resists scale build-up on element surface.
- Tensile strength of Incoloy is three times that of copper, making it much less susceptible to engine and road vibration.
- Available in 120 volt and 240 volt.
- The 6ft. power cord and plug carries a lifetime warranty; standard equipment on all Kim-Glo heaters.
- Optional thermostat control and "Y" harness available for all Kim-Glo heaters.

ISO 9001:2000 OMI REGISTERED QUALITY SYSTEM

KIM HOTSTART SINCE 1942

TABLE OF CONTENTS

Section One

Industrial Tank Style Coolant Heaters

Small Tank Heaters

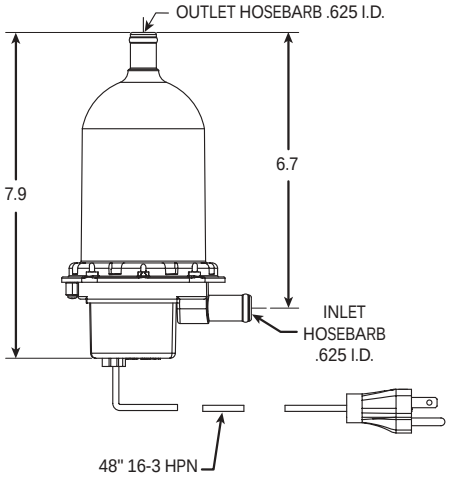
High Impact Plastic
Single Phase
500-2000 Watts
120V & 240V

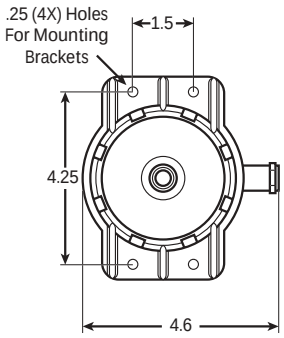
View of a Kim Hotstart TPS tank heater. This durable heater is assembled with a built-in thermostat and 4–foot power cord.

- Molded from Polyphenylene Sulfide (PPS).
- Rust-free, resists corrosion, exceptional tensile strength.
- Vibration and shock tested to extreme limits to guarantee durability.
- Greatly reduced heat loss for more efficient operation.
- Compatible with all chemicals.
- Incoloy element for longer service life.
- Thermostatically controlled.
- All parts are field replaceable — not a throw away heater.
- Compact design requires minimal mounting space.

Ambient Above -20° F	Ambient Below -20° F	Kim Hotstart Model Number	Volts	Phase	Watts	Amps	Thermostat Range On	Thermostat Range Off
150 Cubic Inch or Less	**150 Cubic Inch or Less**	TPS051GT8-000	120	1	500	4.2	80°F	100°F
		TPS051GT10-000	120	1	500	4.2	100°F	120°F
		TPS051GT12-000	120	1	500	4.2	120°F	140°F
		TPS051GT12-A00	120	1	500	4.2	ADJUSTABLE*	
		TPS052GT8-000	240	1	500	2.1	80°F	100°F
		TPS052GT10-000	240	1	500	2.1	100°F	120°F
		TPS052GT12-000	240	1	500	2.1	120°F	140°F
		TPS052GT12-A00	240	1	500	2.1	ADJUSTABLE*	
350 Cubic Inch or Less	**200 Cubic Inch or Less**	TPS101GT8-000	120	1	1000	8.4	80°F	100°F
		TPS101GT10-000	120	1	1000	8.4	100°F	120°F
		TPS101GT12-000	120	1	1000	8.4	120°F	140°F
		TPS101GT12-A00	120	1	1000	8.4	ADJUSTABLE*	
		TPS102GT8-000	240	1	1000	4.2	80°F	100°F
		TPS102GT10-000	240	1	1000	4.2	100°F	120°F
		TPS102GT12-000	240	1	1000	4.2	120°F	140°F
		TPS102GT12-A00	240	1	1000	4.2	ADJUSTABLE*	
350 — 500 Cubic Inch or Less	**200 — 300 Cubic Inch or Less**	TPS151GT8-000	120	1	1500	12.5	80°F	100°F
		TPS151GT10-000	120	1	1500	12.5	100°F	120°F
		TPS151GT12-000	120	1	1500	12.5	120°F	140°F
		TPS151GT12-A00	120	1	1500	12.5	ADJUSTABLE*	
		TPS152GT8-000	240	1	1500	6.3	80°F	100°F
		TPS152GT10-000	240	1	1500	6.3	100°F	120°F
		TPS152GT12-000	240	1	1500	6.3	120°F	140°F
		TPS152GT12-A00	240	1	1500	6.3	ADJUSTABLE*	
500 — 700 Cubic Inch or Less	**300 — 400 Cubic Inch or Less**	TPS181GT8-000	120	1	1800	15	80°F	100°F
		TPS181GT10-000	120	1	1800	15	100°F	120°F
		TPS181GT12-000	120	1	1800	15	120°F	140°F
		TPS181GT12-A00	120	1	1800	15	ADJUSTABLE*	
		TPS202GT8-000	240	1	2000	8.3	80°F	100°F
		TPS202GT10-000	240	1	2000	8.3	100°F	120°F
		TPS202GT12-000	240	1	2000	8.3	120°F	140°F
		TPS202GT12-A00	240	1	2000	8.3	ADJUSTABLE*	

***Off temperature – adjustable 90-130°F (On differential – 20° F)**





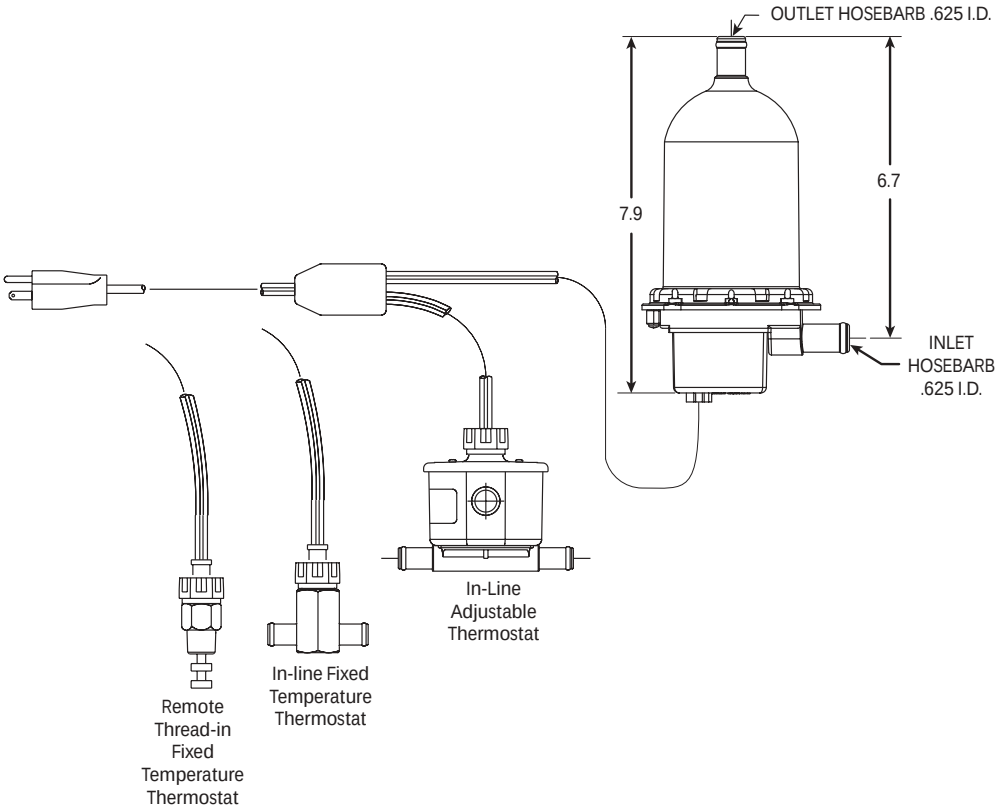
NEW!
NEW!
NEW!

- Off temperature – adjustable from 90°F to 130°F (on differential 20°F).
- Control your optimum desired temperature.
- 5/8" hose barb for easy in-line installations.
- Watertight enclosure.

TPS Heaters

Now available with in-line adjustable or fixed thermostat

Types of Thermostats Available



Also Available:

Models with "Y" harness and remote thread-in type thermostats in various fixed temperature ranges.

Models with "Y" harness and in-line type thermostats in various fixed temperature ranges.

For model numbers featuring ***fixed remote style thermostats***, please contact factory.

Industrial Tank Heaters

(Conduit Connection)

1500 - 5000 watt
Weathertight
Single Phase

CB Model without thermostat.

CB Model assembled with thermostat.

CL Model without thermostat.

CL Model assembled with thermostat.

Ambient Above -20° F	Ambient Below -20° F	Model Number without Thermostat	Model Number with Thermostat (see chart 1)	Volts	Phase	Watts	Amps	Fig.* No.
350 — 500 Cubic Inch or Less	**200 — 300 Cubic Inch or Less**	CB115100-000	CB1151XX-000	120	1	1500	12.5	1
		CB115800-000	CB1158XX-000	208	1	1500	7.2	1
		CB115200-000	CB1152XX-000	240	1	1500	6.3	1
		CB115700-000	CB1157XX-000	277	1	1500	5.4	1
		CB115300-000	CB1153XX-000	380	1	1500	3.9	1
		CB115400-000	CB1154XX-000	480	1	1500	3.1	1
500 — 600 Cubic Inch or Less	**300 — 400 Cubic Inch or Less**	CB120100-000	CB1201XX-000	120	1	2000	16.7	1
		CB120800-000	CB1208XX-000	208	1	2000	9.6	1
		CB120200-000	CB1202XX-000	240	1	2000	8.3	1
		CB120300-000	CB1203XX-000	380	1	2000	5.3	1
		CB120400-000	CB1204XX-000	480	1	2000	4.2	1
600 — 800 Cubic Inch or Less	**400 — 500 Cubic Inch or Less**	CB125100-000	CB1251XX-000	120	1	2500	20.8	1
		CB125800-000	CB1258XX-000	208	1	2500	12.0	1
		CB125200-000	CB1252XX-000	240	1	2500	10.4	1
		CB125700-000	CB1257XX-000	277	1	2500	9.0	1
		CB125300-000	CB1253XX-000	380	1	2500	6.6	1
		CB125400-000	CB1254XX-000	480	1	2500	5.2	1
800 — 1000 Cubic Inch or Less	**500 — 600 Cubic Inch or Less**	CL130100-100	CL1301XX-100	120	1	3000	25.0	3
		CL130800-100	CL1308XX-100	208	1	3000	14.4	3
		CL130200-100	CL1302XX-100	240	1	3000	12.5	3
		CL130700-100	CL1307XX-100	277	1	3000	10.8	3
		CL130300-100	CL1303XX-100	380	1	3000	7.9	3
		CL130400-100	CL1304XX-100	480	1	3000	6.3	3
1000 — 1350 Cubic Inch or Less	**600 — 800 Cubic Inch or Less**	CL140800-100	CL1408XX-100	208	1	4000	19.2	3
		CL140200-100	CL1402XX-100	240	1	4000	16.7	3
		CL140700-100	CL1407XX-100	277	1	4000	14.4	3
		CL140300-100	CL1403XX-100	380	1	4000	10.5	3
		CL140400-100	CL1404XX-100	480	1	4000	8.3	3
1350 — 1650 Cubic Inch or Less	**800 — 1000 Cubic Inch or Less**	CL150800-100	CL1508XX-100	208	1	5000	24.0	3
		CL150200-100	CL1502XX-100	240	1	5000	20.8	3
		CL150700-100	CL1507XX-100	277	1	5000	18.1	3
		CL150300-100	CL1503XX-100	380	1	5000	13.2	3
		CL150400-100	CL1504XX-100	480	1	5000	10.4	3

*Figure Number refers to technical drawings of heaters located on page 14.

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INSTALLATION TIPS

If you require a 1" NPT female thread on the thermostat intake, a coupler is available. Also, for the use of 3/4" or 1" ID heater hose, hose barb adapters are available. See below.

Part Number	Description
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 3/4" hose barb adapter. Installs in 1" NPT female inlet or outlet of the heater.
HB-C	1" NPT x 1" NPT aluminum coupler. Installs on 1" NPT inlet to T-Stat and allows the addition of HB-1 or HB-3/4.
HB-K3/4	Kit contains (2) HB-3/4 and (1) HB-C
HB-K1	Kit contains (2) HB-1 and (1) HB-C

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 Temperature Range 100° - 120°F
Catalog Number: Model CB1151**XX**-000
Order as: Model CB1151**10**-000

All heaters over 277v and all 3Ø units must use a control box

See Control Systems page 32

TEMPERATURE RANGE ON	TEMPERATURE RANGE OFF	NUMERICAL CODE
60°F	80°F	06
80°F	100°F	08
100°F	120°F	10
120°F	140°F	12
140°F	160°F	14
Adjustable 90° - 130°F		A3

Industrial Tank Heaters

(With Power Cord)

1500 - 4000 watt
Weathertight
Single Phase

Ambient Above -20° F	Ambient Below -20° F	Model Number without Thermostat	Model Number with Thermostat (see chart 1)	Volts	Phase	Watts	Amps	Fig.* No.
350 — 500 Cubic Inch or Less	**200 — 300 Cubic Inch or Less**	SB115100-000 SB115800-000 SB115200-000 SB115700-000	SB1151XX-000 SB1158XX-000 SB1152XX-000 SB1157XX-000	120 208 240 277	1 1 1 1	1500 1500 1500 1500	12.5 7.2 6.3 5.4	2 2 2 2
500 — 600 Cubic Inch or Less	**300 — 400 Cubic Inch or Less**	SB120100-000 SB120800-000 SB120200-000	SB1201XX-000 SB1208XX-000 SB1202XX-000	120 208 240	1 1 1	2000 2000 2000	16.7 9.6 8.3	2 2 2
600 — 800 Cubic Inch or Less	**400 — 500 Cubic Inch or Less**	SB122100-000 SB125800-000 SB125200-000 SB125700-000	SB1221XX-000 SB1258XX-000 SB1252XX-000 SB1257XX-000	120 208 240 277	1 1 1 1	2250 2500 2500 2500	18.8 12.0 10.4 9.0	2 2 2 2
800 — 1000 Cubic Inch or Less	**500 — 600 Cubic Inch or Less**	SL130100-000 SL130800-000 SL130200-000 SL130700-000	— SL1308XX-000 SL1302XX-000 SL1307XX-000	120 208 240 277	1 1 1 1	3000 3000 3000 3000	25.0 14.4 12.5 10.8	4 4 4 4
1000 — 1350 Cubic Inch or Less	**600 — 800 Cubic Inch or Less**	SL140800-000 SL140200-000 SL140700-000	SL1408XX-000 SL1402XX-000 SL1407XX-000	208 240 277	1 1 1	4000 4000 4000	19.2 16.7 14.4	4 4 4

*Figure Number refers to technical drawings of heaters located on page 14.

All 208v, 277v and 3000w/120v models come with cord only - no plug.

SB Models include hi-limit thermostats and carry CSA approval.

C US

INSTALLATION TIPS

If you require a 1" NPT female thread on the thermostat intake, a coupler is available. Also, for the use of 3/4" or 1" ID heater hose, hose barb adapters are available. See below.

Part Number	Description
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 3/4" hose barb adapter. Installs in 1" NPT female inlet or outlet of the heater.
HB-C	1" NPT x 1" NPT aluminum coupler. Installs on 1" NPT inlet to T-Stat and allows the addition of HB-1 or HB-3/4.
HB-K3/4	Kit contains (2) HB-3/4 and (1) HB-C
HB-K1	Kit contains (2) HB-1 and (1) HB-C

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 Temperature Range 100° - 120°F
Catalog Number: Model SB1151**XX**-000
Order as: Model SB1151**10**-000

	TEMPERATURE RANGE		NUMERICAL CODE
	ON	OFF	
	60°F	80°F	06
	80°F	100°F	08
	100°F	120°F	10
	120°F	140°F	12
	140°F	160°F	14

SB Model with power cord; no thermostat

SB Model with thermostat and power cord

SL Model with power cord; no thermostat.

SL Model with thermostat and power cord.

Industrial Tank Heaters

1500 - 5000 watt
Weathertight
Three Phase

WL Model without thermostat

WL Model with thermostat

Ambient Above -20° F	Ambient Below -20° F	Model Number without Thermostat	Model Number with Thermostat (see chart 1)	Volts	Ø	Watts	Amp	Fig.* No.
500 Cubic Inch or Less	**300 Cubic Inch or Less**	WL315800-000 WL315200-000 WL315400-000	WL3158XX-000 WL3152XX-000 WL3154XX-000	208 240 480	3 3 3	1500 1500 1500	4.2 3.6 1.8	5 5 5
500 — 600 Cubic Inch or Less	**300 — 400 Cubic Inch or Less**	WL320800-000 WL320200-000 WL320300-000 WL320400-000 WL320500-000	WL3208XX-000 WL3202XX-000 WL3203XX-000 WL3204XX-000 WL3205XX-000	208 240 380 480 575	3 3 3 3 3	2000 2000 2000 2000 2000	5.6 4.8 3.0 2.4 2.0	5 5 5 5 5
600 — 800 Cubic Inch or Less	**400 — 500 Cubic Inch or Less**	WL325800-000 WL325200-000 WL325300-000 WL325400-000 WL325500-000	WL3258XX-000 WL3252XX-000 WL3253XX-000 WL3254XX-000 WL3255XX-000	208 240 380 480 575	3 3 3 3 3	2500 2500 2500 2500 2500	6.9 6.0 3.8 3.0 2.5	5 5 5 5 5
800 — 1000 Cubic Inch or Less	**500 — 600 Cubic Inch or Less**	WL330800-000 WL330200-000 WL330300-000 WL330400-000 WL330500-000	WL3308XX-000 WL3302XX-000 WL3303XX-000 WL3304XX-000 WL3305XX-000	208 240 380 480 575	3 3 3 3 3	3000 3000 3000 3000 3000	8.3 7.2 4.6 3.6 3.0	5 5 5 5 5
1000 — 1350 Cubic Inch or Less	**600 — 800 Cubic Inch or Less**	WL340800-000 WL340200-000 WL340300-000 WL340400-000 WL340500-000	WL3408XX-000 WL3402XX-000 WL3403XX-000 WL3404XX-000 WL3405XX-000	208 240 380 480 575	3 3 3 3 3	4000 4000 4000 4000 4000	11.1 9.6 6.1 4.8 4.0	5 5 5 5 5
1350 — 1650 Cubic Inch or Less	**800 — 1000 Cubic Inch or Less**	WL350800-000 WL350200-000 WL350300-000 WL350400-000 WL350500-000	WL3508XX-000 WL3502XX-000 WL3503XX-000 WL3504XX-000 WL3505XX-000	208 240 380 480 575	3 3 3 3 3	5000 5000 5000 5000 5000	13.9 12.0 7.6 6.0 5.0	5 5 5 5 5

*Figure Number refers to technical drawings of heaters located on page 14.

INSTALLATION TIPS

If you require a 1" NPT female thread on the thermostat intake, a coupler is available. Also, for the use of 3/4" or 1" ID heater hose, hose barb adapters are available. See below.

Part Number	Description
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 3/4" hose barb adapter. Installs in 1" NPT female inlet or outlet of the heater.
HB-C	1" NPT x 1" NPT aluminum coupler. Installs on 1" NPT inlet to T-Stat and allows the addition of HB-1 or HB-3/4.
HB-K3/4	Kit contains (2) HB-3/4 and (1) HB-C
HB-K1	Kit contains (2) HB-1 and (1) HB-C

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 Temperature Range 100° - 120°F
Catalog Number: Model WL3152**XX**-000
Order as: Model WL3152**10**-000

All heaters over 277v and all 3Ø units must use a control box See Control Systems page 32	TEMPERATURE RANGE		NUMERICAL CODE
	ON	OFF	
	60°F	80°F	06
	80°F	100°F	08
	100°F	120°F	10
	120°F	140°F	12
	140°F	160°F	14
	Adjustable 90° - 130°F		A3

Industrial Tank Heaters

Original Equipment Replacement Heaters

- Large NEMA 4 enclosure with 1/2" and 3/4" knockouts.
- Rubber insulating sleeve around tank.
- Internal adjustable thermostat. Adjustable setpoints from 70°F - 210°F.
- Incoloy sheath elements.
- Four wattage/voltage options. Three corresponding to Caterpillar part numbers.
- Vertical mount only.

For Original Equipment Replacement:

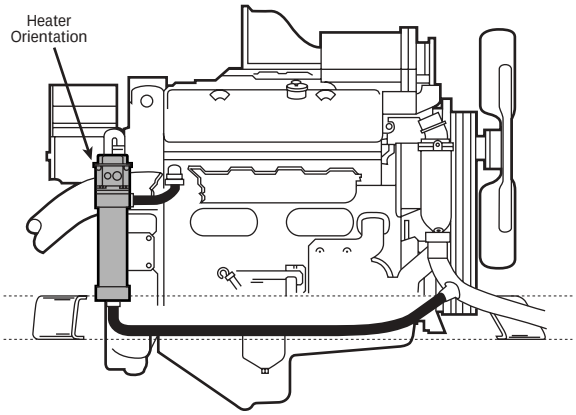
- Two 5" stainless steel worm-drive clamps are included to mount heater to existing bracket.

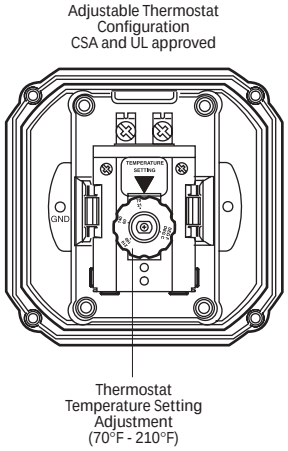
For New Installations:

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

Kim Hotstart Part Number	Caterpillar Part Number	Wattage	Voltage	Pre-wired at Assembly
CL130DA2-000	**7E-6247**	3kw	120/240 VAC	120V
CL160EA2-000	**7E-6248***	6kw	240/480 VAC	240V
CL160CA2-000	**7E-6249**	6kw	120 VAC	2-120V Circuits
CL140EA2-000	**—**	4kw	240/480 VAC	240V

* Part Number changed to **2006504**





Forced Circulating Heating System

With 10 GPM Pump

CSS Model

For Engines From 1,000 to 4,000 CID

These systems have proven to be a superior method of preheating engines that normally require the use of two thermosiphon heaters.

Forced circulation offers many benefits over thermosiphon units.

- Reduced electrical consumption
- Even heating over entire cooling system
- Reduced temperature at outlet extends hose life
- Longer heating element life
- Control circuitry pre-wired for easy installation

- Universal mounting for varied mounting configuration.
- 65°F to 140°F adjustable thermostat.
- On/Off switch for manual control.
- Small, compact design for easy installation.
- 24VDC Control
- Shipping weight, 70lbs

Ambient Above -20° F	Ambient Below -20° F	MODEL NUMBER	KW	VOLTS	Ø	Total Amps	GPM
1000 TO 1300 Cubic Inch or Less	700 TO 1000 Cubic Inch or Less	CSS10408-000	4	208	1	20	10
		CSS10402-000	4	240	1	18	10
		CSS10404-000	4	480	1	10	10
		CSS30402-000	4	240	3	10	10
		CSS30404-000	4	480	3	6	10
1300 TO 2000 Cubic Inch or Less	1000 TO 1300 Cubic Inch or Less	CSS10608-000	6	208	1	30	10
		CSS10602-000	6	240	1	26	10
		CSS10604-000	6	480	1	14	10
		CSS30602-000	6	240	3	15	10
		CSS30604-000	6	480	3	8	10
2000 TO 3000 Cubic Inch or Less	1300 TO 1800 Cubic Inch or Less	CSS10908-000	9	208	1	45	10
		CSS10902-000	9	240	1	39	10
		CSS10904-000	9	480	1	20	10
		CSS30902-000	9	240	3	23	10
		CSS30904-000	9	480	3	12	10
3000 TO 4000 Cubic Inch or Less	1800 TO 2500 Cubic Inch or Less	CSS11208-000	12	208	1	60	10
		CSS11202-000	12	240	1	51	10
		CSS11204-000	12	480	1	26	10
		CSS31202-000	12	240	3	30	10
		CSS31204-000	12	480	3	16	10

Other voltages available. Consult the factory.

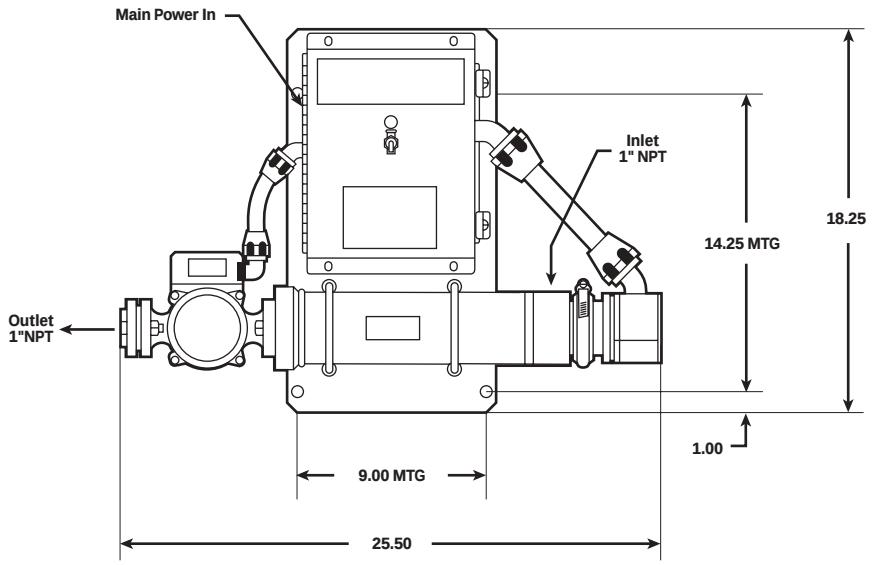
C US

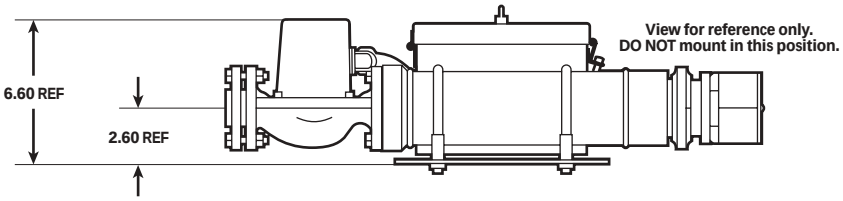
The Solid State Adjustable thermostat provides 5° incremental settings between 65° and 140°F. All CSS models come complete with manual controls but can operate automatically by supplying a 24 Volt DC signal to the provided contacts.

Field testing has shown substantial energy savings in comparison to traditional thermo-siphon heating methods.

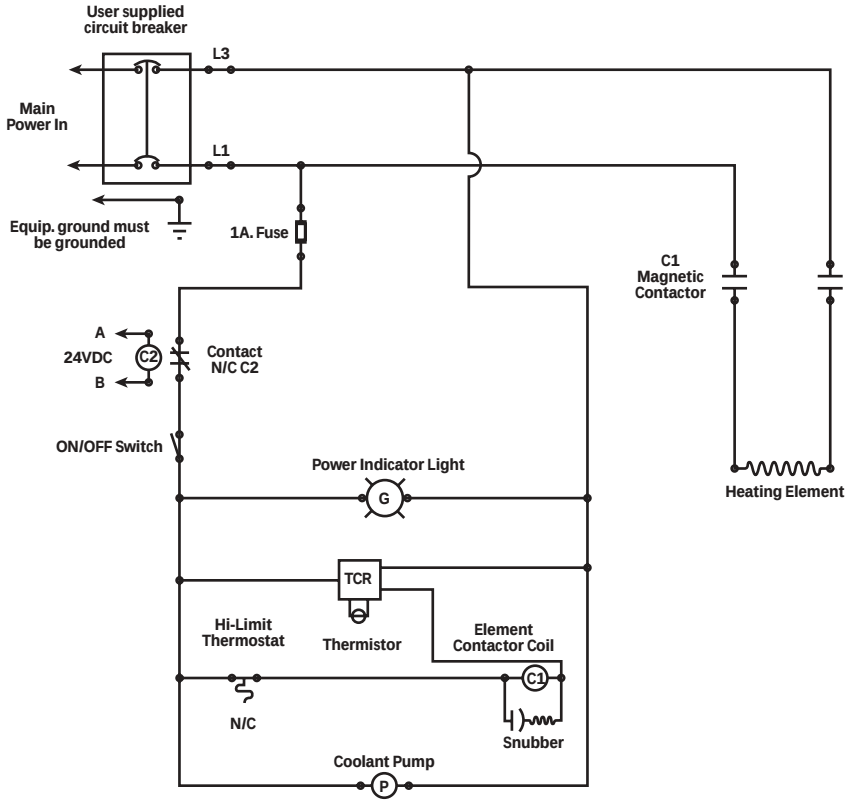
System Drawings

CSS Model Dimensions





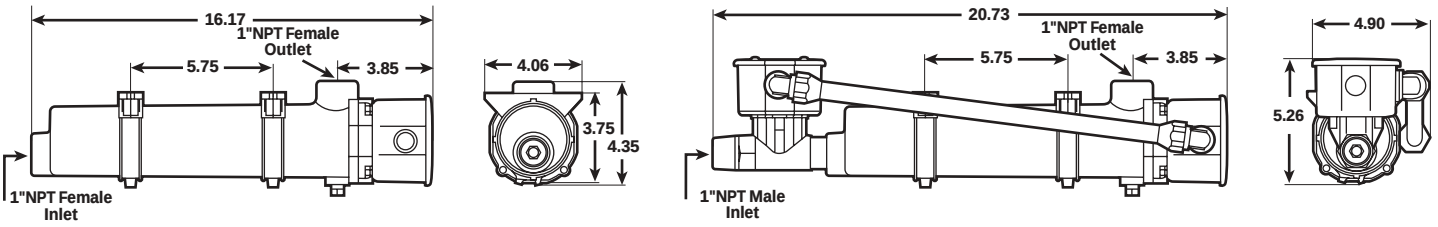
Typical Single Phase Wiring Diagram



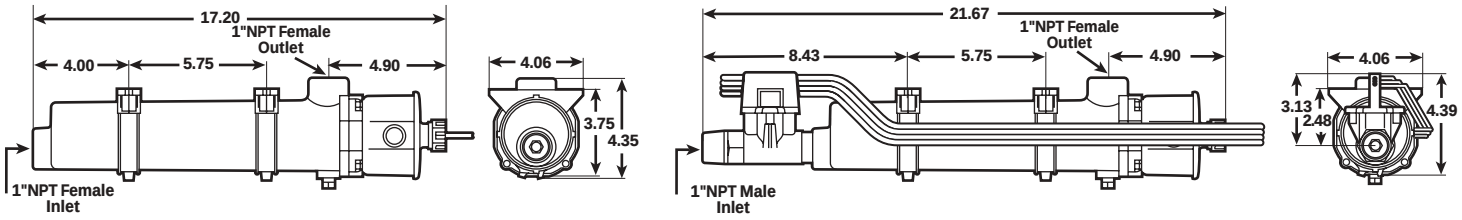
Technical Drawings

all dimensions in inches

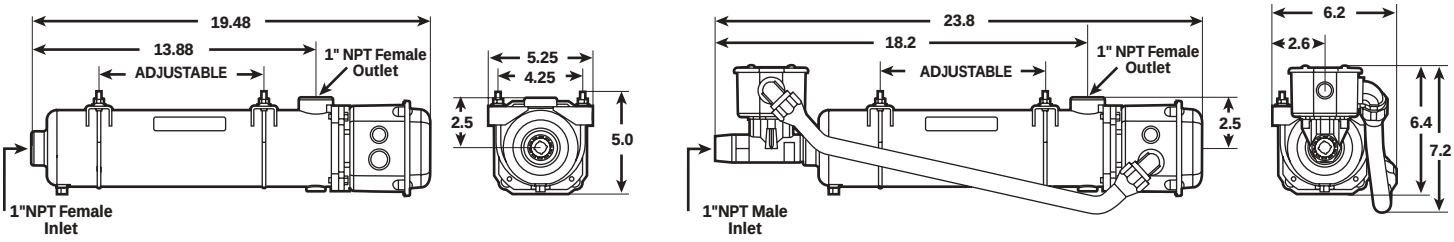
CB Style Heater without thermostat (pg. 8) **FIGURE 1** **CB Style Heater with thermostat (pg. 8)**



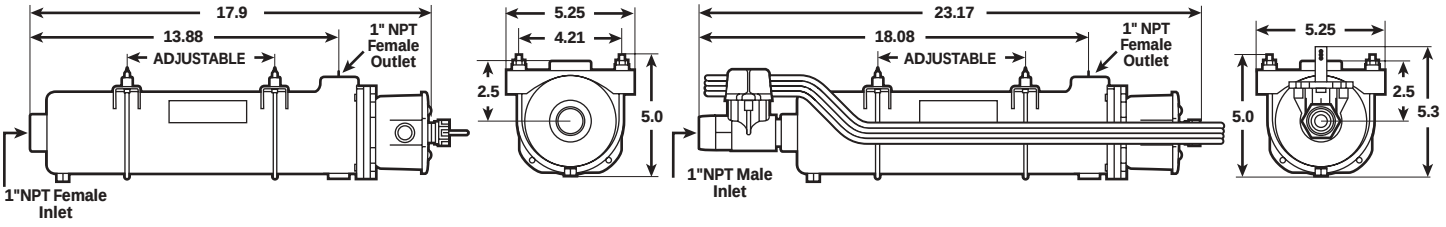
SB Style Heater without thermostat (pg. 9) **FIGURE 2** **SB Style Heater with thermostat (pg. 9)**



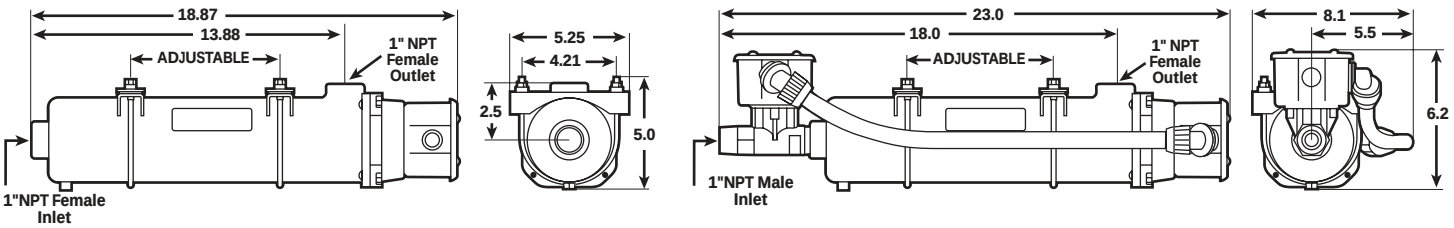
CL Style Heater without thermostat (pg. 8) **FIGURE 3** **CL Style Heater with thermostat (pg. 8)**



SL Style Heater without thermostat (pg. 9) **FIGURE 4** **SL Style Heater with thermostat (pg. 9)**



WL Style Heater without thermostat (pg. 10) **FIGURE 5** **WL Style Heater with thermostat (pg. 10)**



Section One-A

Industrial Tank Style Coolant Heaters

Hazardous Location

Industrial Tank Heaters

1500 - 5000 watt
Hazardous Location
Single Phase

EE Model without thermostat.

EE Model assembled with thermostat.

Ambient Above -20° F	Ambient Below -20° F	Model Number without Thermostat	Fig.* No.	Model Number with Thermostat (see chart 1)	Fig.* No.	Volt	Ø	Watt	Amp
500 Cubic Inch or Less	**300 Cubic Inch or Less**	EE115100-000	1	EE1151XX-000	2	120	1	1500	12.5
		EE115800-000	1	EE1158XX-000	2	208	1	1500	7.2
		EE115200-000	1	EE1152XX-000	2	240	1	1500	6.3
		EE115700-000	1	EE1157XX-000	2	277	1	1500	5.4
		EE115300-000	1	EE1153XX-000	2	380	1	1500	3.9
		EE115400-000	1	EE1154XX-000	2	480	1	1500	3.1
		EE115500-000	1	EE1155XX-000	2	575	1	1500	2.6
500 - 600 Cubic Inch or Less	**300 - 400 Cubic Inch or Less**	EE120100-000	1	EE1201XX-000	2	120	1	2000	16.7
		EE120800-000	1	EE1208XX-000	2	208	1	2000	9.6
		EE120200-000	1	EE1202XX-000	2	240	1	2000	8.3
		EE120300-000	1	EE1203XX-000	2	380	1	2000	5.3
		EE120400-000	1	EE1204XX-000	2	480	1	2000	4.2
		EE120500-000	1	EE1205XX-000	2	575	1	2000	3.5
600 - 800 Cubic Inch or Less	**400 - 500 Cubic Inch or Less**	EE125100-000	1	EE1251XX-000	2	120	1	2500	20.8
		EE125800-000	1	EE1258XX-000	2	208	1	2500	12.0
		EE125200-000	1	EE1252XX-000	2	240	1	2500	10.4
		EE125700-000	1	EE1257XX-000	2	277	1	2500	9.2
		EE125300-000	1	EE1253XX-000	2	380	1	2500	6.6
		EE125400-000	1	EE1254XX-000	2	480	1	2500	5.2
		EE125500-000	1	EE1255XX-000	2	575	1	2500	4.3
800 - 1000 Cubic Inch or Less	**500 - 600 Cubic Inch or Less**	EE130100-000	1	EE1301XX-000	2	120	1	3000	25.0
		EE130800-000	1	EE1308XX-000	2	208	1	3000	14.4
		EE130200-000	1	EE1302XX-000	2	240	1	3000	12.5
		EE130700-000	1	EE1307XX-000	2	277	1	3000	10.8
		EE130300-000	1	EE1303XX-000	2	380	1	3000	7.9
		EE130400-000	1	EE1304XX-000	2	480	1	3000	6.3
		EE130500-000	1	EE1305XX-000	2	575	1	3000	5.2
1000 - 1350 Cubic Inch or Less	**600 - 800 Cubic Inch or Less**	EE140800-000	1	EE1408XX-000	2	208	1	4000	19.2
		EE140200-000	1	EE1402XX-000	2	240	1	4000	16.7
		EE140700-000	1	EE1407XX-000	2	277	1	4000	14.4
		EE140300-000	1	EE1403XX-000	2	380	1	4000	10.5
		EE140400-000	1	EE1404XX-000	2	480	1	4000	8.3
		EE140500-000	1	EE1405XX-000	2	575	1	4000	7.0
1350 - 1650 Cubic Inch or Less	**800 - 1000 Cubic Inch or Less**	EE150800-000	1	EE1508XX-000	2	208	1	5000	24.0
		EE150200-000	1	EE1502XX-000	2	240	1	5000	20.8
		EE150700-000	1	EE1507XX-000	2	277	1	5000	18.1
		EE150300-000	1	EE1503XX-000	2	380	1	5000	13.2
		EE150400-000	1	EE1504XX-000	2	480	1	5000	10.4
		EE150500-000	1	EE1505XX-000	2	575	1	5000	8.7

*Figure Number refers to technical drawings of heaters located on page 18.

INSTALLATION TIPS

For the use of 3/4" or 1" ID heater hose, hose barb adapters are available. See below.

Part Number	Description
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 3/4" hose barb adapter. Installs in 1" NPT female inlet or outlet of the heater.

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 Temperature Range 100° - 120°F
Catalog Number: Model EE1151**XX**-000
Order as: Model EE1151**10**-000

All heaters over 277v and all 3Ø units must use a control box See Control Systems page 32	TEMPERATURE RANGE		NUMERICAL CODE
	ON	OFF	
	60°F	80°F	06
	80°F	100°F	08
	100°F	120°F	10
	120°F	140°F	12
	140°F	160°F	14

Industrial Tank Heaters

1500 - 5000 watt
Hazardous Location
Three Phase

Ambient Above -20° F	Ambient Below -20° F	Model Number without Thermostat	Fig.* No.	Model Number with Thermostat (see chart 1)	Fig.* No.	Volt	Ø	Watt	Amp
500 Cubic Inch or Less	**300 Cubic Inch or Less**	EE315800-000 EE315200-000 EE315400-000	1 1 1	EE3158XX-000 EE3152XX-000 EE3154XX-000	2 2 2	208 240 480	3 3 3	1500 1500 1500	4.2 3.6 1.8
500 - 600 Cubic Inch or Less	**300 - 400 Cubic Inch or Less**	EE320800-000 EE320200-000 EE320300-000 EE320400-000 EE320500-000	1 1 1 1 1	EE3208XX-000 EE3202XX-000 EE3203XX-000 EE3204XX-000 EE3205XX-000	2 2 2 2 2	208 240 380 480 575	3 3 3 3 3	2000 2000 2000 2000 2000	5.6 4.8 3.0 2.4 2.0
600 - 800 Cubic Inch or Less	**400 - 500 Cubic Inch or Less**	EE325800-000 EE325200-000 EE325300-000 EE325400-000 EE325500-000	1 1 1 1 1	EE3258XX-000 EE3252XX-000 EE3253XX-000 EE3254XX-000 EE3255XX-000	2 2 2 2 2	208 240 380 480 575	3 3 3 3 3	2500 2500 2500 2500 2500	6.9 6.0 3.8 3.0 2.5
800 - 1000 Cubic Inch or Less	**500 - 600 Cubic Inch or Less**	EE330800-000 EE330200-000 EE330300-000 EE330400-000 EE330500-000	1 1 1 1 1	EE3308XX-000 EE3302XX-000 EE3303XX-000 EE3304XX-000 EE3305XX-000	2 2 2 2 2	208 240 380 480 575	3 3 3 3 3	3000 3000 3000 3000 3000	8.3 7.2 4.6 3.6 3.0
1000 - 1350 Cubic Inch or Less	**600 - 800 Cubic Inch or Less**	EE340800-000 EE340200-000 EE340300-000 EE340400-000 EE340500-000	1 1 1 1 1	EE3408XX-000 EE3402XX-000 EE3403XX-000 EE3404XX-000 EE3405XX-000	2 2 2 2 2	208 240 380 480 575	3 3 3 3 3	4000 4000 4000 4000 4000	11.1 9.6 6.1 4.8 4.0
1350 - 1650 Cubic Inch or Less	**800 - 1000 Cubic Inch or Less**	EE350800-000 EE350200-000 EE350300-000 EE350400-000 EE350500-000	1 1 1 1 1	EE3508XX-000 EE3502XX-000 EE3503XX-000 EE3504XX-000 EE3505XX-000	2 2 2 2 2	208 240 380 480 575	3 3 3 3 3	5000 5000 5000 5000 5000	13.9 12.0 7.6 6.0 5.0

*Figure Number refers to technical drawings of heaters located on page 18.

EE Model without thermostat.

EE Model assembled with thermostat.

INSTALLATION TIPS

For the use of 3/4" or 1" ID heater hose, hose barb adapters are available. See below.

Part Number	Description
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 3/4" hose barb adapter. Installs in 1" NPT female inlet or outlet of the heater.

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:

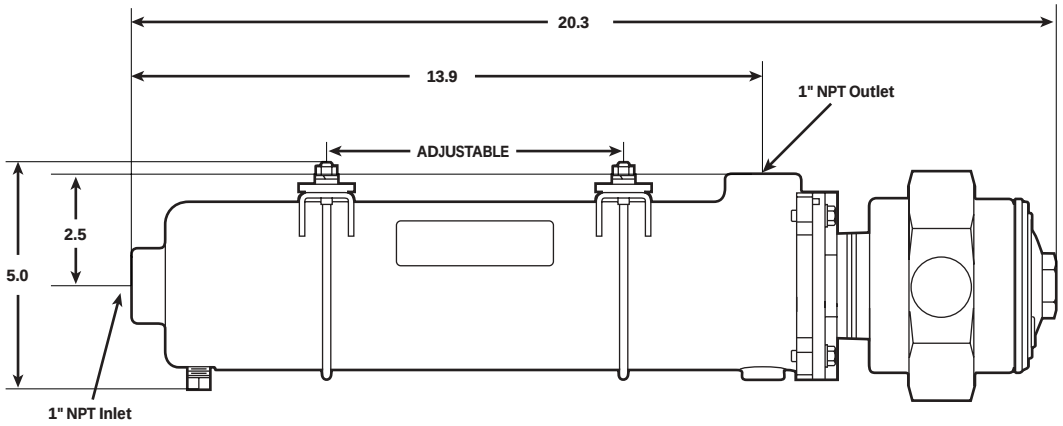
Desired Temperature Range 100° - 120°F
Catalog Number: Model EE3152**XX**-000
Order as: Model EE3152**10**-000

All heaters over 277v and all 3Ø units must use a control box See Control Systems page 32	TEMPERATURE RANGE		NUMERICAL CODE
	ON	OFF	
	60°F	80°F	06
	80°F	100°F	08
	100°F	120°F	10
	120°F	140°F	12
	140°F	160°F	14

Technical Drawings

all dimensions in inches

FIGURE 1



EE Style Heater without thermostat (pg. 16 and 17)

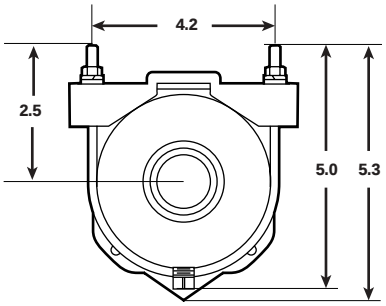
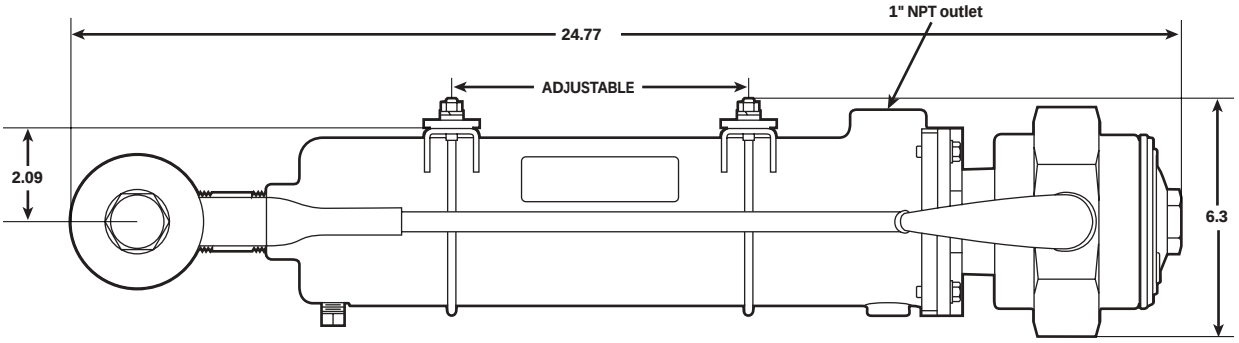
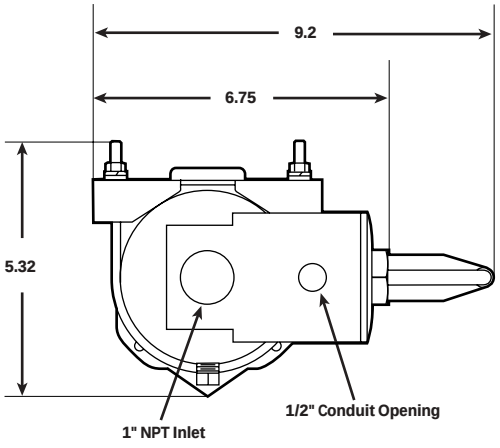


FIGURE 2



EE Style Heater with thermostat (pg. 16 and 17)



Section Two

Standard Industrial Oil Heaters

Industrial Immersion Heaters – Thread-in style and threadless V-clamp style

DC Oil Heaters

Temperature Controls

Oil Heaters

C US

Oil Capacity	Weathertight Heater Only	Weathertight With Thermostat (see chart p.21)	Class 1, Group D Hazardous Locations Heater Only	Volts	Watts	Amps	Watts Per Square Inch
3/8" N.P.T. THREAD WITH A 2 1/8" PROBE LENGTH							
2 Quarts or Less	OW005100-000 OW005200-000	— —	— —	120 240	50 50	.4 .2	17.0 17.0
1/2" N.P.T. THREAD WITH A 4" PROBE LENGTH							
2 Quarts to 6 Quarts	OW212100-000 OW212200-000	OW2121XX-000 OW2122XX-000	OE212100-000 OE212200-000	120 240	125 125	1.0 .5	14.0 14.0
3/4" N.P.T. THREAD WITH A 5" PROBE LENGTH							
1 Gallon to 5 Gallons	OW415100-000 OW415200-000	OW4151XX-000 OW4152XX-000	OE415100-000 OE415200-000	120 240	150 150	1.3 .6	9.0 9.0
5 Gallons to 15 Gallons	OW430100-000 OW430800-000 OW430200-000	OW4301XX-000 OW4308XX-000 OW4302XX-000	OE430100-000 OE430800-000 OE430200-000	120 208 240	300 300 300	2.6 1.1 1.2	18.0 18.0 18.0
1" N.P.T. THREAD WITH A 5 1/4" PROBE LENGTH							
1 Gallon to 5 Gallons	OW615100-000 OW615200-000	OW6151XX-000 OW6152XX-000	OE615100-000 OE615200-000	120 240	150 150	1.3 .6	6.5 6.5
5 Gallons to 15 Gallons	OW630100-000 OW630800-000 OW630200-000 OW630700-000 — —	OW6301XX-000 OW6308XX-000 OW6302XX-000 OW6307XX-000 — —	OE630100-000 OE630800-000 OE630200-000 OE630700-000 OE630300-000 OE630400-000	120 208 240 277 380 480	300 300 300 300 300 300	2.6 1.6 1.2 1.1 1.0 .6	13.0 13.0 13.0 13.0 13.0 13.0
15 Gallons to 30 Gallons	OW650100-000 OW650800-000 OW650200-000 OW650700-000 — — —	OW6501XX-000 OW6508XX-000 OW6502XX-000 OW6507XX-000 — — —	OE650100-000 OE650800-000 OE650200-000 OE650700-000 OE650300-000 OE650400-000 OE650500-000	120 208 240 277 380 480 575	500 500 500 500 500 500 500	4.1 2.4 2.0 1.8 1.3 1.0 0.8	26.0 26.0 26.0 26.0 26.0 26.0 26.0

NOTES: Weathertight heaters are standard with a 4 foot oil and heat resistant power cord.

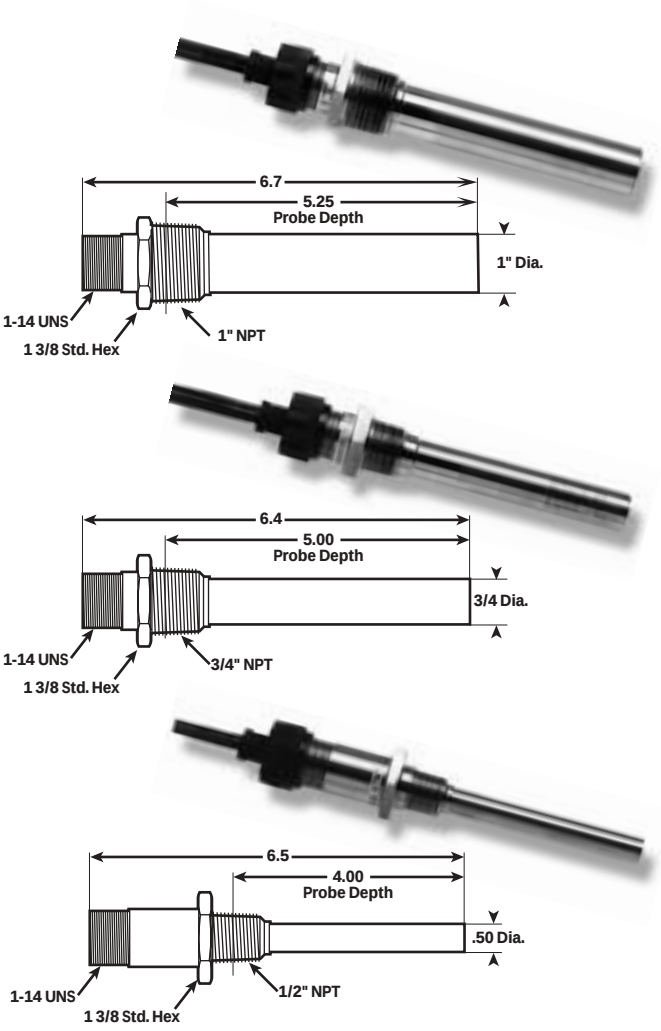
Class 1, Group D heaters are standard with 18" of lead wire for connection to the power leads in an approved splice box.

For Class 1, Group D thermostats, see page 26.

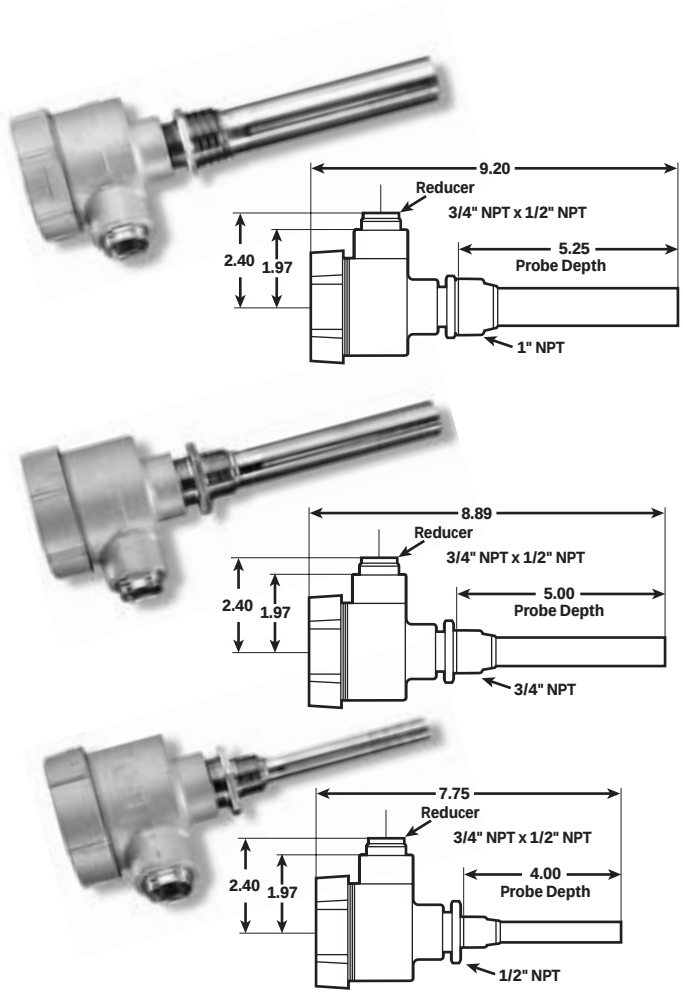
WEATHERTIGHT CLASS 1, GROUP D

for hazardous locations

heater only



heater only



For Class 1, Group D thermostats, see page 26.

Heaters with Y-type harness and thermostat (see page 26 for drawings with dimensions)

Use a thermostat with all lube oil heaters to protect the oil from overheating if the heater is energized while the engine is hot or running.

Lube oil heaters must always be installed in the sump with the entire heater submerged below the oil level at all times.

120 Volt and 240 Volt are complete with a 3-prong plug.

Kim Hotstart Assembled Lube Oil Heaters eliminate the need for splice boxes or field wiring of the thermostat and heater.

Always mount the thermostat above and to one side of the heater for the most efficient control.

OIL HEATERS WITH THERMOSTATS

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

Example:

Desired Temperature Range 100° - 120°
Catalog Number: Model OW2121**XX**-000
Order as: Model OW2121**10**-000

NUMERICAL CODE	TEMPERATURE RANGE		SWITCH CAPACITY	THREAD SIZE
	On	Off		
06	60°F	80°F	120V - 15 Amps	1/2" N.P.T.
08	80°F	100°F	208V - 10 Amps	
10	100°F	120°F	240V - 10 Amps	
12	120°F	140°F	277V - 10 Amps	

Industrial Immersion Heaters

For: Lube Oils, Hydraulics and Diesel Fuels

2" Screw Plug

With Fixed-Setting, Built-In Thermostat (Pg. 23) or Adjustable Thermostat (Pg. 25)

Weather Tight NEMA 4 Enclosure

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 / Off 80° F	On 80° F / Off 100° F	On 100° F / Off 120° F				
SINGLE PHASE — 2" N.P.T. WITH A 12" PROBE LENGTH							
30 to 45 Gallons	E01011W-156A-00 E01081W-156A-00 E01021W-156A-00 E01071W-156A-00	E01011W-158A-00 E01081W-158A-00 E01021W-158A-00 E01071W-158A-00	E01011W-151A-00 E01081W-151A-00 E01021W-151A-00 E01071W-151A-00	120 208 240 277	1000 1000 1000 1000	8.3 4.8 4.2 3.6	17.0 17.0 17.0 17.0
45 to 60 Gallons	E01511W-156A-00 E01581W-156A-00 E01521W-156A-00 E01571W-156A-00	E01511W-158A-00 E01581W-158A-00 E01521W-158A-00 E01571W-158A-00	E01511W-151A-00 E01581W-151A-00 E01521W-151A-00 E01571W-151A-00	120 208 240 277	1500 1500 1500 1500	12.5 7.2 6.3 5.4	17.0 17.0 17.0 17.0
THREE PHASE — 2" N.P.T. WITH A 12" PROBE LENGTH							
30 to 45 Gallons	E01083W-106A-00 E01023W-106A-00 E01033W-106A-00	E01083W-108A-00 E01023W-108A-00 E01033W-108A-00	E01083W-101A-00 E01023W-101A-00 E01033W-101A-00	208 240 380	1000 1000 1000	2.8 2.4 1.5	11.0 11.0 11.0
45 to 60 Gallons	E01583W-156A-00 E01523W-156A-00 E01533W-156A-00 E01543W-156A-00	E01583W-158A-00 E01523W-158A-00 E01533W-158A-00 E01543W-158A-00	E01583W-151A-00 E01523W-151A-00 E01533W-151A-00 E01543W-151A-00	208 240 380 480	1500 1500 1500 1500	4.2 3.6 2.3 1.8	17.0 17.0 17.0 17.0
SINGLE PHASE — 2" N.P.T. WITH A 18" PROBE LENGTH							
60 to 90 Gallons	E02011W-156A-00 E02081W-156A-00 E02021W-156A-00 E02071W-156A-00 E02031W-156A-00 E02041W-156A-00	E02011W-158A-00 E02081W-158A-00 E02021W-158A-00 E02071W-158A-00 E02031W-158A-00 E02041W-158A-00	E02011W-151A-00 E02081W-151A-00 E02021W-151A-00 E02071W-151A-00 E02031W-151A-00 E02041W-151A-00	120 208 240 277 380 480	2000 2000 2000 2000 2000 2000	16.7 9.6 8.4 7.2 5.3 4.2	14.0 14.0 14.0 14.0 14.0 14.0
THREE PHASE — 2" N.P.T. WITH A 18" PROBE LENGTH							
60 to 90 Gallons	E02083W-156A-00 E02023W-156A-00 E02033W-156A-00 E02043W-156A-00	E02083W-158A-00 E02023W-158A-00 E02033W-158A-00 E02043W-158A-00	E02083W-151A-00 E02023W-151A-00 E02033W-151A-00 E02043W-151A-00	208 240 380 480	2000 2000 2000 2000	5.6 4.8 3.0 2.4	14.0 14.0 14.0 14.0

Class I, Group D heaters with thermostat for hazardous locations also available.
Substitute the letter **"W"** in part number with the letter **"E"** to specify Class I, Group D heaters.

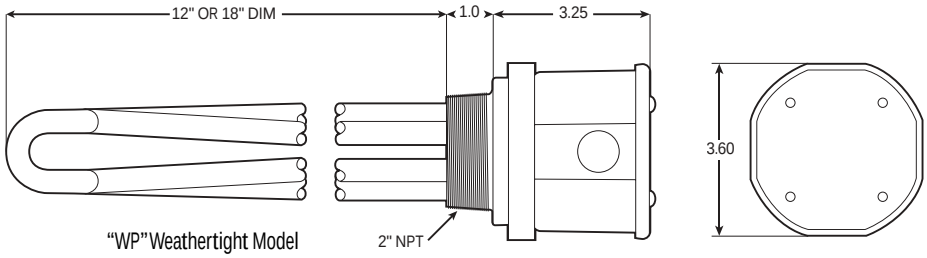
Industrial Immersion Heaters are also available for coolants and other process heating. Call factory.

Industrial Immersion Heaters

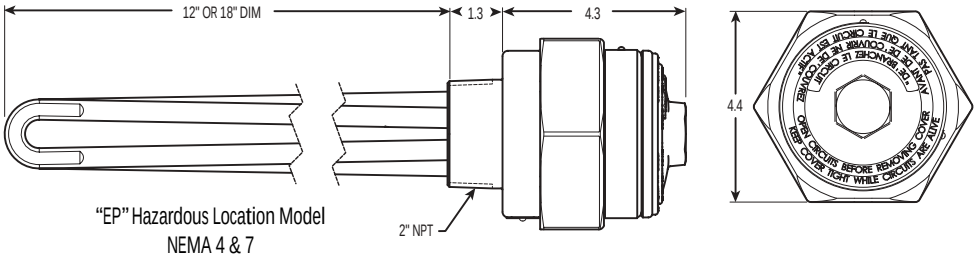
2" Screw Plug

Kim Hotstart immersion heaters are complete with a fixed-setting, built-in thermostat (shown below). All models are also available with an adjustable thermostat (pg. 25).

They are ideal for heating hydraulic reservoirs on construction equipment and the sumps of large industrial engines.



"WP" Weathertight Model
NEMA 4



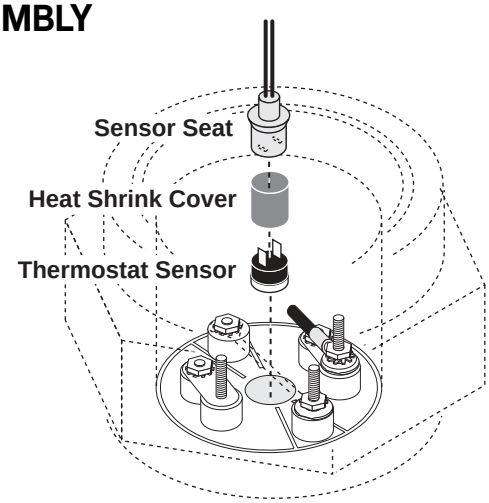
"EP" Hazardous Location Model
NEMA 4 & 7

"WP" Weathertight Model
NEMA 4

"EP" Hazardous Location Model
NEMA 4 & 7

FIXED THERMOSTAT ASSEMBLY

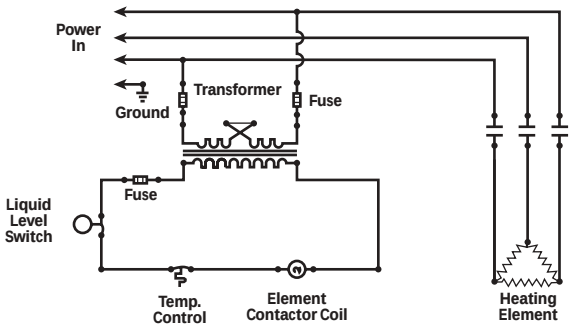
Thermostat assembly shown in "EP" housing.



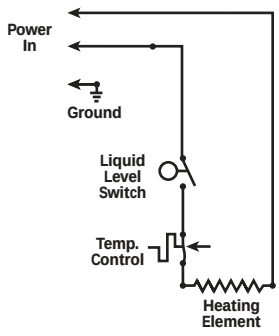
ELECTRICAL RATING		
15 Amps	at	120 VAC
10 Amps	at	240 VAC
10 Amps	at	277 VAC

TYPICAL WIRING DIAGRAMS

Three phase and single phase above 277 VAC



Single phase 277 VAC and below



NOTES:

On applications where level of fluid is subject to change, a liquid level switch mounted a minimum of 3 to 4 inches above element is recommended. **Liquid level switch is not included with heater.**

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

All three phase heaters must be used with a contactor. See pages 31 & 32.

Higher or lower temperature ranges are available. Consult Kim Hotstart.

Industrial Immersion Heaters

V-Clamp Threadless Design

For: Lube Oils, Hydraulics and Diesel Fuels

With Fixed-Setting, Built-In Thermostat (Pg. 23) or Adjustable Thermostat (Pg. 25)

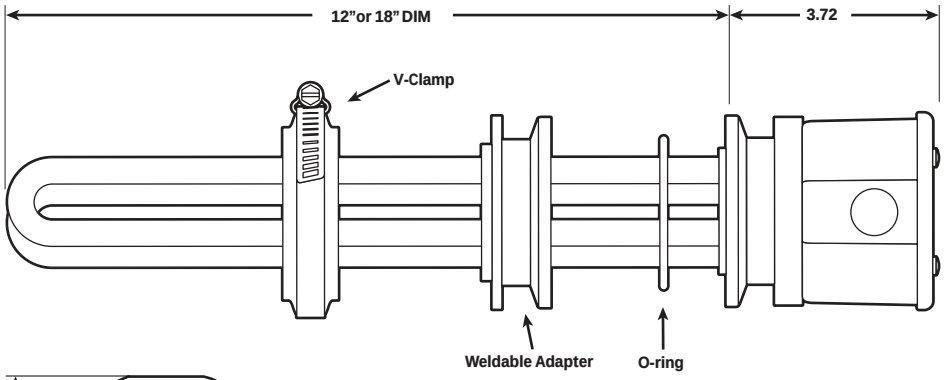
Weather Tight NEMA 4 Enclosure

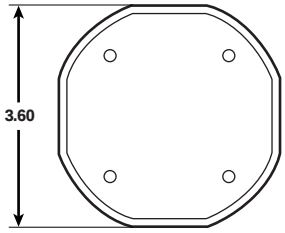
Models for larger capacities than shown are available. Call factory.

Oil Capacity	HIGH LIMIT THERMOSTAT CONTROL SETTING			Volts	Watts	Amps	Watts Sq. In.
	On 60° F / Off 80° F	On 80° F / Off 100° F	On 100° F / Off 120° F				
SINGLE PHASE — WITH A 12" PROBE LENGTH							
30 to 45 Gallons	E01011W-156V-00 E01081W-156V-00 E01021W-156V-00 E01071W-156V-00	E01011W-158V-00 E01081W-158V-00 E01021W-158V-00 E01071W-158V-00	E01011W-151V-00 E01081W-151V-00 E01021W-151V-00 E01071W-151V-00	120 208 240 277	1000 1000 1000 1000	8.3 4.8 4.2 3.6	17.0 17.0 17.0 17.0
45 to 60 Gallons	E01511W-156V-00 E01581W-156V-00 E01521W-156V-00 E01571W-156V-00	E01511W-158V-00 E01581W-158V-00 E01521W-158V-00 E01571W-158V-00	E01511W-151V-00 E01581W-151V-00 E01521W-151V-00 E01571W-151V-00	120 208 240 277	1500 1500 1500 1500	12.5 7.2 6.3 5.4	17.0 17.0 17.0 17.0
THREE PHASE — WITH A 12" PROBE LENGTH							
30 to 45 Gallons	E01083W-106V-00 E01023W-106V-00 E01033W-106V-00	E01083W-108V-00 E01023W-108V-00 E01033W-108V-00	E01083W-101V-00 E01023W-101V-00 E01033W-101V-00	208 240 380	1000 1000 1000	2.8 2.4 1.5	11.0 11.0 11.0
45 to 60 Gallons	E01583W-156V-00 E01523W-156V-00 E01533W-156V-00 E01543W-156V-00	E01583W-158V-00 E01523W-158V-00 E01533W-158V-00 E01543W-158V-00	E01583W-151V-00 E01523W-151V-00 E01533W-151V-00 E01543W-151V-00	208 240 380 480	1500 1500 1500 1500	4.2 3.6 2.3 1.8	17.0 17.0 17.0 17.0
SINGLE PHASE — WITH A 18" PROBE LENGTH							
60 to 90 Gallons	E02011W-156V-00 E02081W-156V-00 E02021W-156V-00 E02071W-156V-00 E02031W-156V-00 E02041W-156V-00	E02011W-158V-00 E02081W-158V-00 E02021W-158V-00 E02071W-158V-00 E02031W-158V-00 E02041W-158V-00	E02011W-151V-00 E02081W-151V-00 E02021W-151V-00 E02071W-151V-00 E02031W-151V-00 E02041W-151V-00	120 208 240 277 380 480	2000 2000 2000 2000 2000 2000	16.7 9.6 8.4 7.2 5.3 4.2	14.0 14.0 14.0 14.0 14.0 14.0
THREE PHASE — WITH A 18" PROBE LENGTH							
60 to 90 Gallons	E02083W-156V-00 E02023W-156V-00 E02033W-156V-00 E02043W-156V-00	E02083W-158V-00 E02023W-158V-00 E02033W-158V-00 E02043W-158V-00	E02083W-151V-00 E02023W-151V-00 E02033W-151V-00 E02043W-151V-00	208 240 380 480	2000 2000 2000 2000	5.6 4.8 3.0 2.4	14.0 14.0 14.0 14.0

Class I, Group D heaters with thermostat for hazardous locations also available.
Substitute the letter **"W"** in part number with the letter **"E"** to specify Class I, Group D heaters.

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



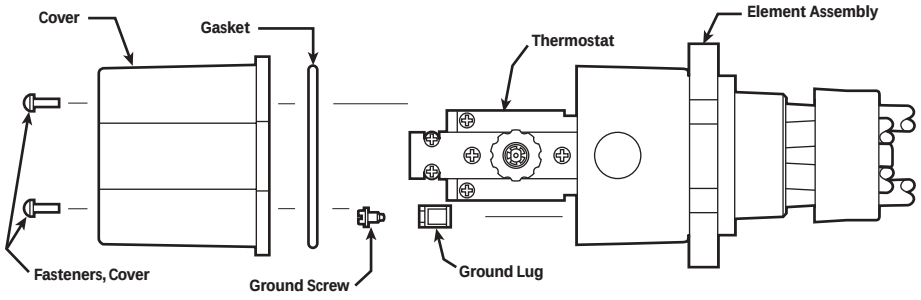


NOTE: Replacement elements supplied with **"O" Ring** only. For new installations, order kit - P/N **VC-SK**.
Kit Includes:
1 – steel weldable adapter
1 – worm-drive V-Clamp
1 – "O" Ring

ADJUSTABLE THERMOSTAT ASSEMBLY

TEMPERATURE RANGE	
OFF	70°F to 210°F
ELECTRICAL RATING	
30 Amps at 125 VAC	
30 Amps at 240 VAC	
30 Amps at 277 VAC	
20 Amps at 480 VAC	
Nominal thermal differential is 8°F	

C US



Call Kim Hotstart for complete model number featuring adjustable thermostat.

V-Clamp Industrial Immersion Heater

Threadless Design

Kim Hotstart immersion heaters are complete with a fixed-setting, built-in thermostat (shown on page 23). All models are available with an adjustable thermostat (shown below). Consult factory for model number.

They are ideal for heating hydraulic reservoirs on construction equipment and the sumps of large industrial engines.

"WP" Weathertight Model
NEMA 4

"EP" Hazardous Location Model
NEMA 4 & 7

NOTES:

On applications where level of fluid is subject to change, a liquid level switch mounted a minimum of 3 to 4 inches above element is recommended. **Liquid level switch is not included with heater.**

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

All three phase heaters must be used with a contactor. See pages 31 & 32.

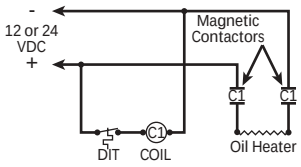
Higher or lower temperature ranges are available. Consult Kim Hotstart.

DC Oil Heaters

12 and 24 volt

12 VOLT/24 VOLT DC CONTROL BOXES		
25 Amps Maximum	12V 24V	JBMC330DC-12V JBMC330DC-24V

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



Oil Capacity	Volts	Watts	Kim Hotstart Model Numbers			Amps	Watts Per Square Inch
			1/2" N.P.T. With a 4" Probe Length	3/4" N.P.T. With a 4 7/8" Probe Length	1" N.P.T. With a 5 3/8" Probe Length		
2 Quarts or Less	12 24	75 75	OW207900-012 OW207900-024	OW407900-012 OW407900-024	— —	6.3 3.1	1/2" are all 8.4 WSI 3/4" are all 4.5 WSI
2 to 6 Quarts	24	125	OW212900-024	—	—	5.2	14.0 WSI
1 to 5 Gallons	12 24	150 150	— —	OW415900-012 OW415900-024	OW615900-012 OW615900-024	12.5 6.3	3/4" are all 9.0 WSI 1" are all 6.5 WSI
5 to 15 Gallons	12 24	300 300	— —	— OW430900-024	OW630900-012 OW630900-024	25.0 12.5	3/4" are all 18 WSI 1" are all 13 WSI
15 to 30 Gallons	24	500	—	—	OW650900-024	20.8	26.0 WSI

NOTE: Kim Hotstart also has DC oil heaters available for hazardous locations. Change "OW" in model number to "OE".

Please see page 21 for photos and technical drawings of "OW" and "OE" style oil heaters.

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

NOTE: Heater amperage as shown in the table above will determine the life of the battery — (Amps x Hours = Amp hours).

Example: A 12.5 Amp heater will completely drain a 100 Amp-hour battery in 8 hours. $\frac{\text{100 Amp/hour}}{\text{12.5 Amp}}$ = 8 Hours

Temperature Controls

Weathertight

Weathertight models are furnished with a 3 ft. 16/3 HPN power cord. Class I, Group D model is furnished with 18" of lead wire for connection to the power leads in an approved splice box.

Class I, Group D Hazardous Location

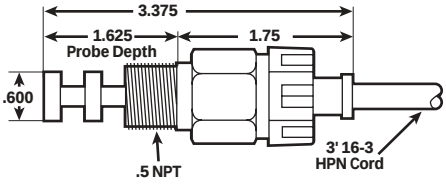
Lube oil temperature controls hold lube oil at the desired temperature.

If the heater is energized while the engine is hot or running, Kim Hotstart recommends using thermostats with all lube oil heaters to protect the oil from overheating.

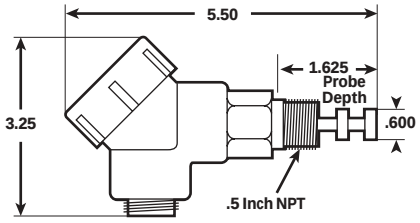
The sensing unit can be changed without draining the sump.

C SA US

Weathertight Model Number	Class I, Group D Model Number	Temp. Range On	Temp. Range Off	Thread Size	Switch Capacity
DIT68	DIT68EP	60°F	80°F	1/2" N.P.T.	120v - 15 amps 208v - 10 amps 240v - 10 amps 277v - 10 amps
DIT810	DIT810EP	80°F	100°F	1/2" N.P.T.	
DIT1012	DIT1012EP	100°F	120°F	1/2" N.P.T.	
DIT1214	DIT1214EP	120°F	140°F	1/2" N.P.T.	12v DC } Pilot Duty Only 24v DC }



Weathertight Model Dimensions



Class 1, Group Model Dimensions

Section Three

Kim-Stat Thermostat Controls

Pressure Switch

Magnetic Contactors

Junction Boxes

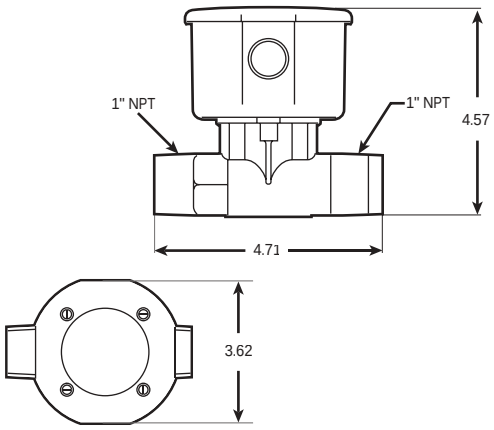
Complete Control Systems – for manual and automatic start engines

Temperature Controls

Weathertight

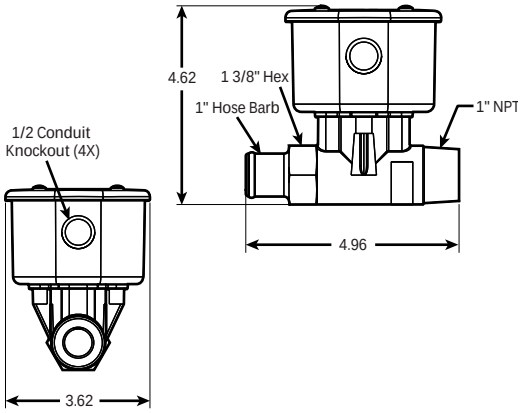
NOTE: When using a Kim-Stat above 277 volt or on 3 phase applications, select the proper control box with transformer and contactor as shown on pages 31 or 32.

Fixed Setting



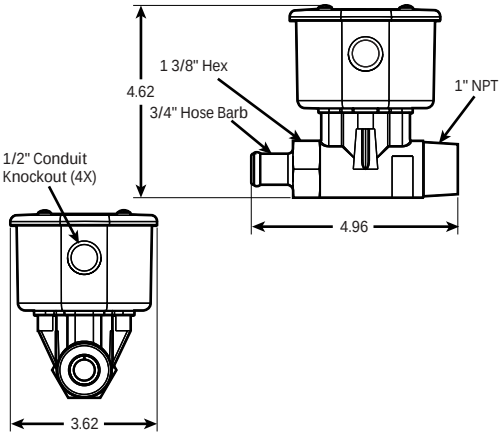
1"NPT x 1"NPT
CONDUIT TYPE ENCLOSURE

Part Number	Temp. Setting		Maximum Capacity Ratings	
	On	Off	120/240Volt	277 Volt
TFTC6-1NPT	60°F	80°F	25 amps	22 amps
TFTC8-1NPT	80°F	100°F	25 amps	22 amps
TFTC10-1NPT	100°F	120°F	25 amps	22 amps
TFTC12-1NPT	120°F	140°F	25 amps	22 amps
TFTC14-1NPT	140°F	160°F	25 amps	22 amps



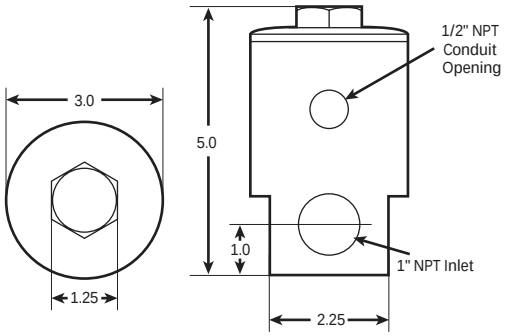
1"NPT x 1" HOSE BARB
CONDUIT TYPE ENCLOSURE

Part Number	Temp. Setting		Maximum Capacity Ratings	
	On	Off	120/240Volt	277 Volt
TFTC6-1HB	60°F	80°F	25 amps	22 amps
TFTC8-1HB	80°F	100°F	25 amps	22 amps
TFTC10-1HB	100°F	120°F	25 amps	22 amps
TFTC12-1HB	120°F	140°F	25 amps	22 amps
TFTC14-1HB	140°F	160°F	25 amps	22 amps



1"NPT x 3/4" HOSE BARB
CONDUIT TYPE ENCLOSURE

Part Number	Temp. Setting		Maximum Capacity Ratings	
	On	Off	120/240Volt	277 Volt
TFTC6-3HB	60°F	80°F	25 amps	22 amps
TFTC8-3HB	80°F	100°F	25 amps	22 amps
TFTC10-3HB	100°F	120°F	25 amps	22 amps
TFTC12-3HB	120°F	140°F	25 amps	22 amps
TFTC14-3HB	140°F	160°F	25 amps	22 amps



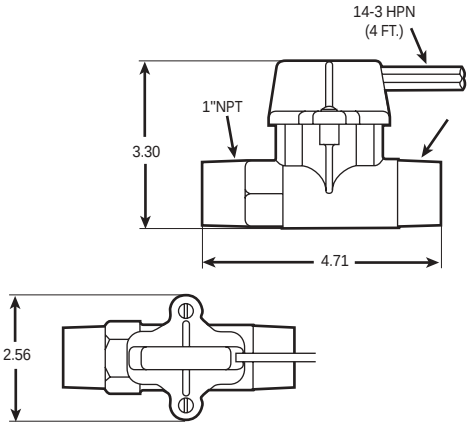
CLASS 1, GROUP D
CONDUIT TYPE ENCLOSURE

Part Number	Temp. Setting		Maximum Capacity Ratings	
	On	Off	120/240Volt	277 Volt
TFT6ER	60°F	80°F	25 amps	22 amps
TFT8ER	80°F	100°F	25 amps	22 amps
TFT10ER	100°F	120°F	25 amps	22 amps
TFT12ER	120°F	140°F	25 amps	22 amps
TFT14ER	140°F	160°F	25 amps	22 amps

Temperature Controls

Weathertight

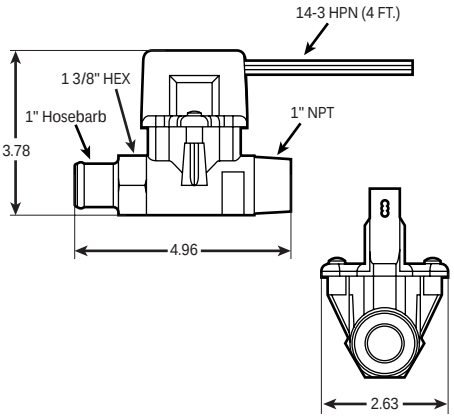
NOTE: When using a Kim-Stat above 277 volt or on 3 phase applications, select the proper control box with transformer and contactor as shown on pages 31 or 32.



1"NPT x 1"NPT

CORD TYPE ENCLOSURE

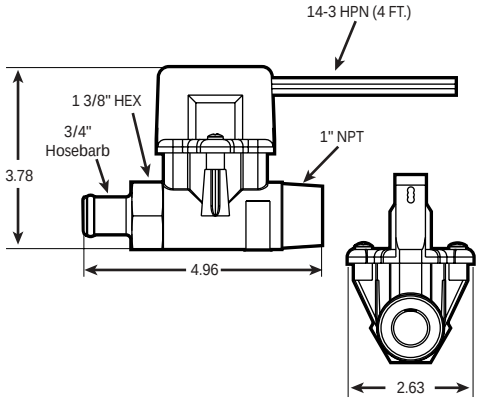
Part Number	Temp. Setting		Maximum Capacity Ratings	
	On	Off	120/240Volt	277 Volt
TFT6-1NPT	60°F	80°F	25 amps	22 amps
TFT8-1NPT	80°F	100°F	25 amps	22 amps
TFT10-1NPT	100°F	120°F	25 amps	22 amps
TFT12-1NPT	120°F	140°F	25 amps	22 amps
TFT14-1NPT	140°F	160°F	25 amps	22 amps



1"NPT x 1" HOSE BARB

CORD TYPE ENCLOSURE

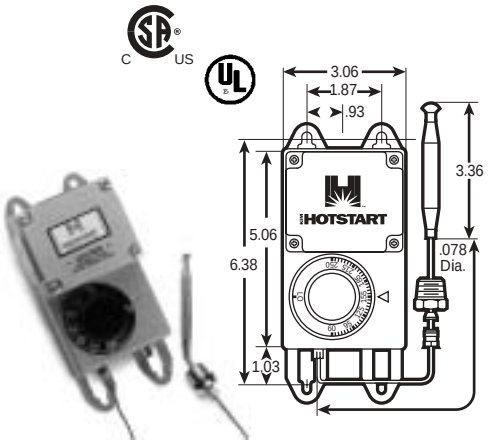
Part Number	Temp. Setting		Maximum Capacity Ratings	
	On	Off	120/240Volt	277 Volt
TFT6-1HB	60°F	80°F	25 amps	22 amps
TFT8-1HB	80°F	100°F	25 amps	22 amps
TFT10-1HB	100°F	120°F	25 amps	22 amps
TFT12-1HB	120°F	140°F	25 amps	22 amps
TFT14-1HB	140°F	160°F	25 amps	22 amps



1"NPT x 3/4" HOSE BARB

CORD TYPE ENCLOSURE

Part Number	Temp. Setting		Maximum Capacity Ratings	
	On	Off	120/240Volt	277 Volt
TFT6-3HB	60°F	80°F	25 amps	22 amps
TFT8-3HB	80°F	100°F	25 amps	22 amps
TFT10-3HB	100°F	120°F	25 amps	22 amps
TFT12-3HB	120°F	140°F	25 amps	22 amps
TFT14-3HB	140°F	160°F	25 amps	22 amps



REMOTE-MOUNT ADJUSTABLE

With 60" Capillary Probe

Part Number	Adjustable Range / Maximum Capacity Ratings
AT6525	**Adjustable Range** 65°F to 250° (Open or Off Setting) Differential 7°F (Close or On Setting) **Maximum Capacity Ratings** 120/240 Volt – 25 Amps 277 Volt – 22 Amps
ATW Aluminum Protective Well for AT6525	.5 inch NPT

Temperature Controls

Adjustable Thermostat

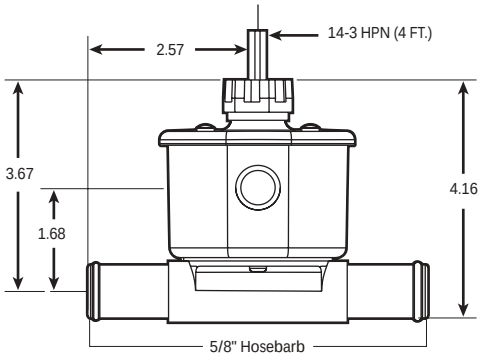
Reduce engine heater cycle time in both warm and cold ambient temperatures.

Kim Hotstart now offers an adjustable thermostat as an option on weathertight engine preheaters and as a stand-alone unit. Control your optimum desired temperature with Kim Hotstart's adjustable thermostat.

- Adjustable from 90°F to 130°F.
- Stock one thermostat to fit all needs.
- 5/8" hose barb or 1" NPT thread connections allow for easy in-line installations on a variety of heating units.
- Watertight enclosure.
- Rated up to 480 volts.

C US

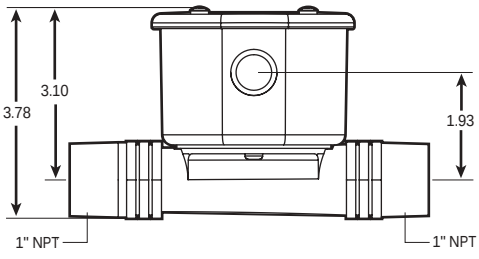
Cord Type

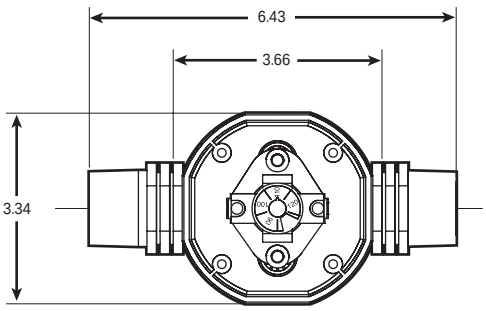


Conduit Type Model Number	Type Plumbing Connections	Cord Type Model Number
TFTCA-1NPT TFTCA-5/8HB	1" NPT X 1" NPT 5/8" HB X 5/8" HB	TFTA-1NPT TFTA-5/8HB

Adjustable Range	Electrical Rating
90°F to 130°F (Open or Off Setting) Differential 20°F (Close or On Setting)	120/240 Volt — 25 Amps 277 Volt — 22Amps 480 Volt — 12.5 Amps

Conduit Type





Control Components

Oil Pressure Switches

For automatic cut-off of heaters when engine starts

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

To prevent overheating of the heating element on standby equipment and automatic start engines, Kim 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.

Kim Hotstart Model Number	Enclosure Type
PS252	Dry Locations
PS252R	Dry Locations (Reverse Action)
PS252WT	Wet Locations
PS252EP	Hazardous Locations

PS252

MC330

Magnetic Contactors

	Kim Hotstart Model Number	Coil Voltage
30 AMPS 3 POLE	**DRY LOCATIONS**	
	MC330L MC330	120V 240V
	WET LOCATIONS	
	JBW11-000 JBW12-000	120V 240V
	HAZARDOUS LOCATIONS	
	JBE11-000 JBE12-000	120V 240V

Inrush Voltamps (VA) 35 VA
Holding Voltamps (VA) 8 VA

	Kim Hotstart Model Number	Coil Voltage
60 AMPS 3 POLE	**DRY LOCATIONS**	
	MC360L MC360	120V 240V
	WET LOCATIONS	
	JBW11-060 JBW12-060	120V 240V
	HAZARDOUS LOCATIONS	
	JBE11-060 JBE12-060	120V 240V

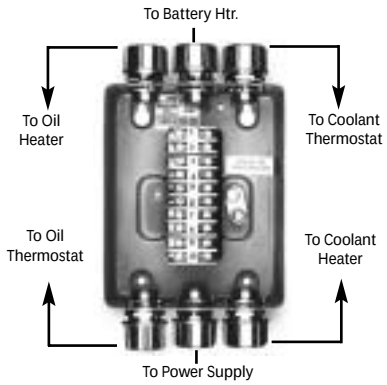
Inrush Voltamps (VA) 92 VA
Holding Voltamps (VA) 10 VA

Junction Boxes

Use to simplify wiring on equipment when a variety of heaters and controls are required. All models have ten, 25 Amp terminal blocks.

Kim Hotstart Model Number			
Dry Locations	**Wet or Damp Locations**	**Hazardous Locations**	**Number of Openings**
AWPJ30-4	AWPJ30-4WT	AWPJ30-4ER	4
AWPJ30-5	AWPJ30-5WT	AWPJ30-5ER	5
AWPJ30-6	AWPJ30-6WT	AWPJ30-6ER	6
AWPJ30-7	AWPJ30-7WT	AWPJ30-7ER	7
AWPJ30-8	AWPJ30-8WT	AWPJ30-8ER	8
AWPJ30-9	AWPJ30-9WT	AWPJ30-9ER	9
AWPJ30-10	AWPJ30-10WT	AWPJ30-10ER	10

AWPJ30-6



Complete Control Systems

For heater protection and power savings Kim Hotstart recommends de-energizing the heater when engine is running. On automatic start engines this can be accomplished with a control system using an Oil Pressure Switch or a 24 Volt Relay.

Volts	Kim Hotstart Model Number MANUAL START ENGINES	Amps	Kim Hotstart Model Number AUTOMATIC START ENGINES	Volts
Single Ø — One Heater and Thermostat Per Engine				
120V 208V 240V 277V	Use thermostat only. See pages 26 through 30.	**25 Amps or Less**	Use oil pressure switch (PS252) & thermostat. See pages 26-30 and page 31.	120V 208V 240V 277V

Volts	Manual Control Systems	Box Size		Automatic Control Systems				Volts
				With 24 Volt Relay	Box Size	With Pressure Switch	Box Size	
120V 208V 240V 380V 480V 575V	JBW11-000 JBW18-000 JBW12-000 JBW13-000 JBW14-000 JBW15-000	A A A B B B	**30 Amps Maximum**	JBW11-100 JBW18-100 JBW12-100 JBW13-100 JBW14-100 JBW15-100	B B B B B B	JBW11-200 JBW18-200 JBW12-200 JBW13-200 JBW14-200 JBW15-200	C C C C C C	120V 208V 240V 380V 480V 575V
120V 480V	JBW11-060 JBW14-060	A B	**60 Amps Maximum**	JBW11-160 JBW14-160	B B	JBW11-260 JBW14-260	C C	120V 480V
Three Ø — One Heater and Thermostat Per Engine								
208V 240V 380V 480V 575V	JBW18-000 JBW12-000 JBW13-000 JBW14-000 JBW15-000	A A B B B	**30 Amps or Less**	JBW18-100 JBW12-100 JBW13-100 JBW14-100 JBW15-100	B B B B B	JBW18-200 JBW12-200 JBW13-200 JBW14-200 JBW15-200	C C C C C	208V 240V 380V 480V 575V
480V	JBW14-060	B	**60 Amps Maximum**	JBW14-160	B	JBW14-260	C	480V
Single Ø — Two Heaters and Two Thermostats Per Engine								
120V 208V 240V 277V	Use one thermostat with each heater. See pages 26 through 30.		**25 Amps Per Heater or Less**	Use one oil pressure switch (PS252) & thermostat with each heater. See pages 26 through 30 and page 31.				120V 208V 240V 277V
380V 480V 575V	JBW23-000 JBW24-000 JBW25-000	D D D		JBW23-100 JBW24-100 JBW25-100	D D D	JBW23-200 JBW24-200 JBW25-200	D D D	380V 480V 575V
120V 208V 240V 380V 480V 575V	JBW21-000 JBW28-000 JBW22-000 JBW23-000 JBW24-000 JBW25-000	C C C D D D	**30 Amps Per Heater Maximum**	JBW21-100 JBW28-100 JBW22-100 JBW23-100 JBW24-100 JBW25-100	D D D D D D	JBW21-200 JBW28-200 JBW22-200 JBW23-200 JBW24-200 JBW25-200	D D D D D D	120V 208V 240V 380V 480V 575V
Three Ø — Two Heaters and Two Thermostats Per Engine								
208V 240V 380V 480V 575V	JBW28-000 JBW22-000 JBW23-000 JBW24-000 JBW25-000	C C D D D	**30 Amps Per Heater or Less**	JBW28-100 JBW22-100 JBW23-100 JBW24-100 JBW25-100	D D D D D	JBW28-200 JBW22-200 JBW23-200 JBW24-200 JBW25-200	D D D D D	208V 240V 380V 480V 575V

All control boxes are available for Class 1 Group D hazardous locations, change prefix "JBW" to "JBE". Consult factory for price and availability.

Box Size Code: A – 6 x 6 x 4, B – 8 x 8 x 4, C – 10 x 8 x 4, D – 12 x 10 x 5

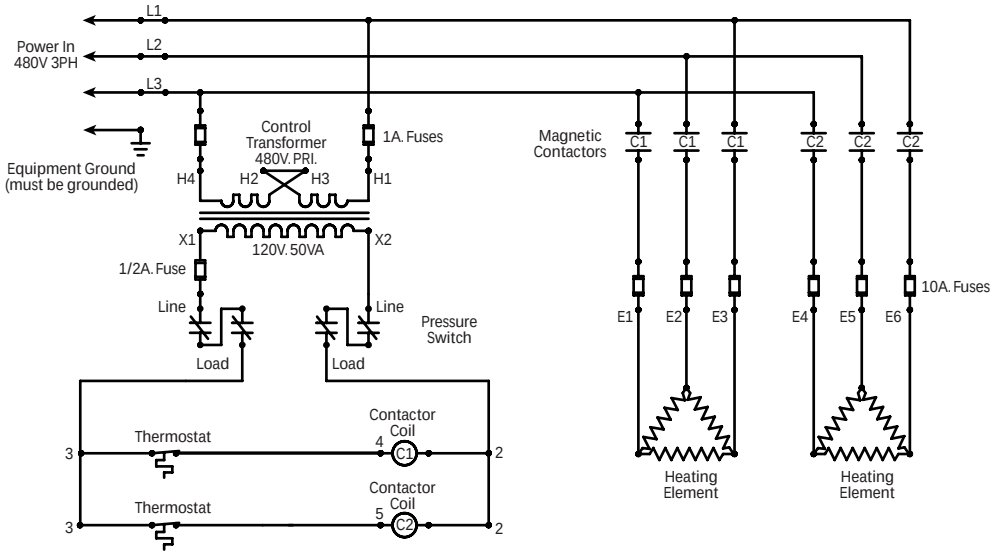
Typical Control Box System Components

All Kim Hotstart heaters with thermostats, designed to operate on 3-phase current (at any voltage), require the use of a control system with a 3-pole contactor. All Kim Hotstart heaters with thermostat designed to operate over 480 volt (1 phase or 3 phase) require a control system to reduce the primary voltage to 120 volts for the control circuit. For increased thermostat life, use a control system on all heaters above 277 volts either single or three phase.

These control systems allow for quick electrical installation of all Kim Hotstart engine preheaters. They are designed as a time and labor saving component. They 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 and preceding page are NEMA 12 & 13.

All control boxes are available for Class 1 Group D hazardous locations. Change prefix "JBW" to "JBE" and consult factory for price and availability.

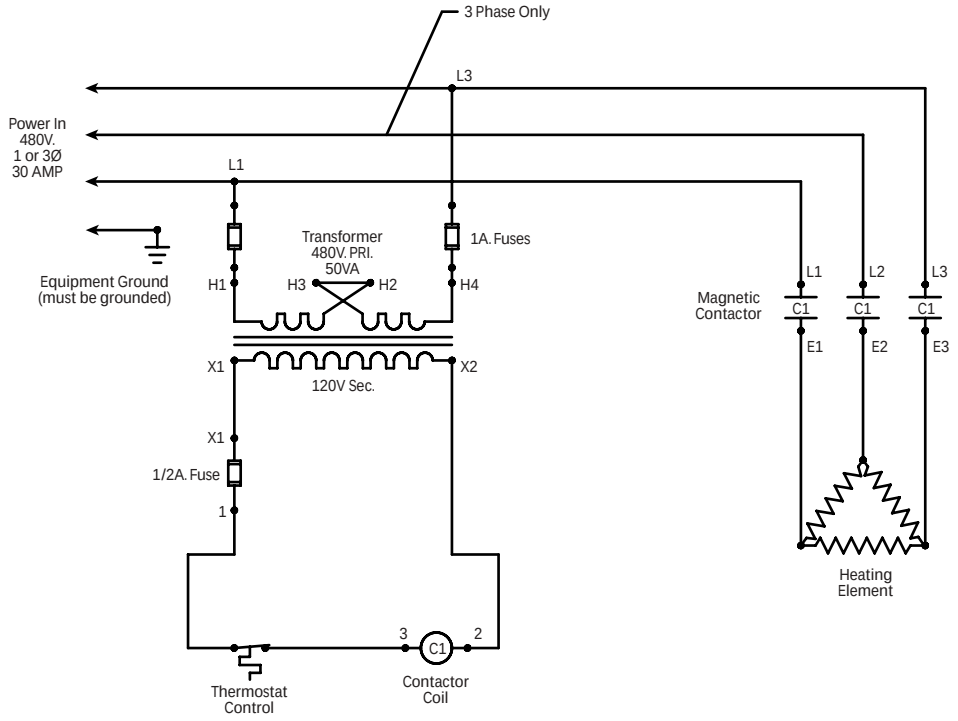


To control two 480 volt heaters at maximum 30 amps on automatic start engines.

Model JBW24-200
With pressure switch

or

Model JBW24-100
With 24 volt relay



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

Model JBW14-000
No automatic control

Technical Information & Heater Installation Instructions
OPERATING PRINCIPLE

The Kim Hotstart Engine Heater operates on the principle of a thermosiphon. As the temperature of the coolant in the heater tank increases, it's density decreases causing it to rise through the outlet of the tank to the engine. The coolant leaving the heater tank is replaced with coolant drawn from the engine and the cycle is repeated. A flow-through thermostat is available for the inlet of the engine heater that keeps coolant within the preset temperature range.

CAUTION

Prior to heater installation, check the cooling system. Poor coolant conditions will interfere with proper function of the heater and can also cause element failure. If there is sediment or foreign matter present or the coolant does not meet the engine manufacturer's specifications, the system should be drained, cleaned, flushed and refilled with a 50/50 mixture of low silicate antifreeze, deionized water, and low silicate supplemental coolant additives. Do not exceed a concentration of more than 60% antifreeze, as element failure may result. A cooling system containing anti-leak additives can cause premature element failure.

MOUNTING

Mount the tank heater in a horizontal position with the outlet neck pointed up. The heater can also be mounted vertically with the inlet neck as the low point (see figure 1).

Bolt the heater to the truck frame or skid frame on a generator package with the mounting straps provided. See Figure 2. The heater must be mounted below the lowest level of the engine water jacket to ensure a good gravity flow of coolant to the heater.

CAUTION

DO NOT mount the heater to the engine. Engine vibration can damage the heater and void the warranty.

Connect the heater intake to the lowest accessible point of the water jacket. If a connection point is unavailable in the water jacket area, connect heater intake line to lower radiator hose. This hose should run down to heater intake.

Connect heater outlet to the highest accessible point in the engine's water jacket area at the furthest point from the engine's thermostat. The heater outlet must be connected at a higher point on the engine than the intake. See Figure 3.

CAUTION

DO NOT route outlet hose above engine block connection, or loop or kink hoses. This will cause air locks in the hose and block circulation of the coolant by the heater. See Figure 3.

To eliminate air locks in the heater and hoses, refill the engine with the heater outlet line disconnected at the engine until outlet line is full of coolant. See Figure 4-1. Then connect the outlet line to the engine and finish filling the engine. See Figure 4-2.

Before energizing heater, all air must be bled out of the system by running the engine. If not, air could be trapped in the block causing the heater to fail.

CAUTION

The bi-directional ball check valve located in the inlet of the heater allows a reduced amount of coolant to reverse flow through the heater when the engine is running. This will maintain a full coolant level in the tank at all times to protect the element from overheating. This is a safety device only. Kim Hotstart recommends NOT running the engine with the engine heater energized.

On standby and automatic start engines, heaters should be de-energized when engine starts. This requires an oil pressure switch or other automatic cut-off. These systems are often operated at voltages above the 277 Volt rating of the Kim Hotstart thermostat and are also often 3 Phase. All heaters above 277 Volt should be used in conjunction with a contactor and control transformer. All three phase heaters must be used with a contactor. See pages 31, 32, and 33.

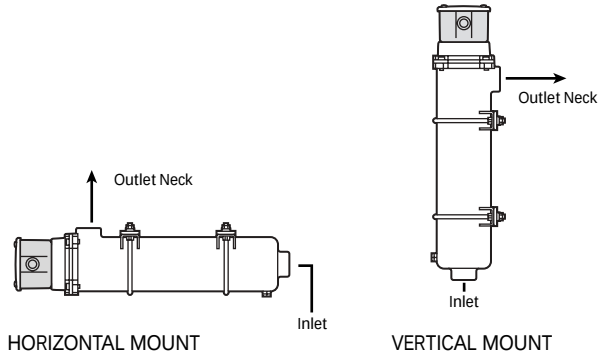


FIGURE 1

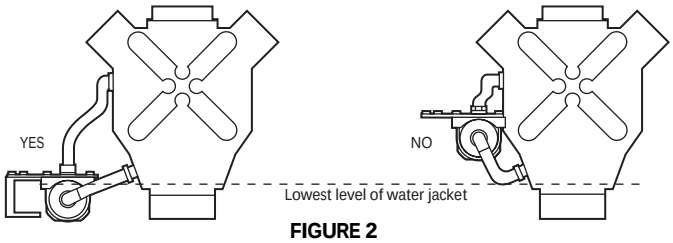


FIGURE 2

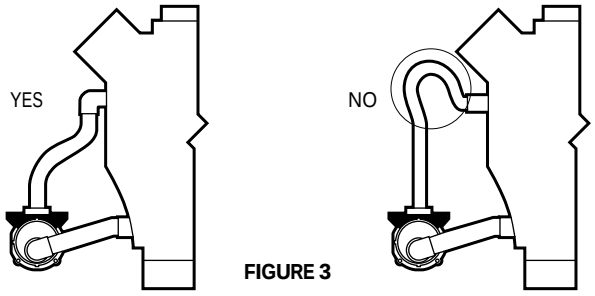


FIGURE 3

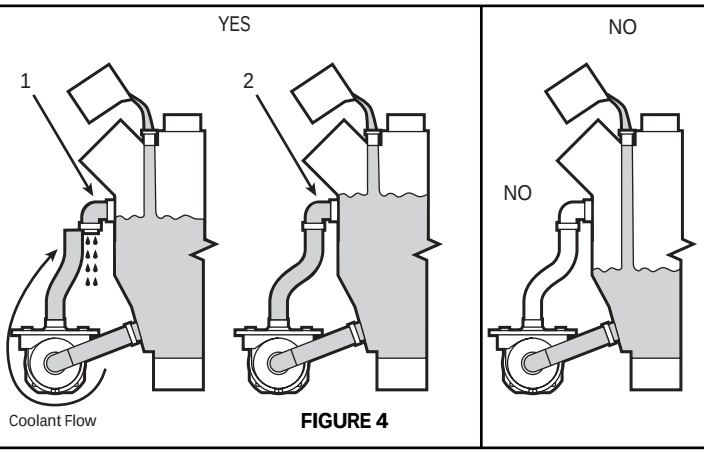


FIGURE 4

Note: It is recommended for "V" engines larger than eight cylinders or over 1000 C.I.D. that 2 heaters of equal wattage be used. One heater installed on each bank of the "V".

Example: To adequately heat a 1000 cubic inch "V" engine for ambient temperature above -20°F use (2) 2000 watt heaters — total 4000 watts.

For the most efficient heating of this size engine and electrical savings, see the forced circulatiing heating systems on pages 12 & 13.

Section Four

Battery Pads
Battery Wraps

Silicone Hot Pads

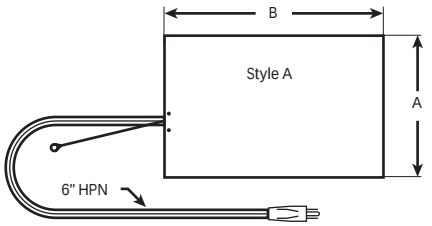
Battery Heating Pads

A fully charged battery has only 40% cranking power at 0° F when compared to 100% cranking power at 80° F.

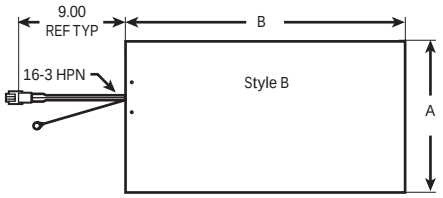
When batteries are placed in an insulated battery box, a thermostat is recommended to sense battery box temperature to prevent overheating the battery.

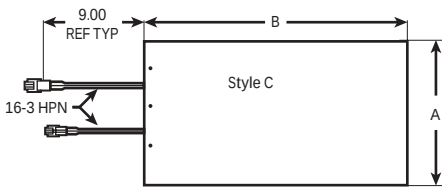
Battery heater not recommended for nickel cadmium batteries.

Standard Pad for Single Battery

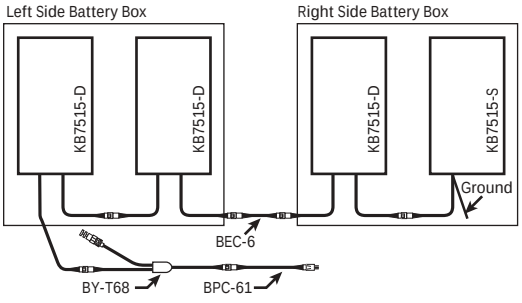


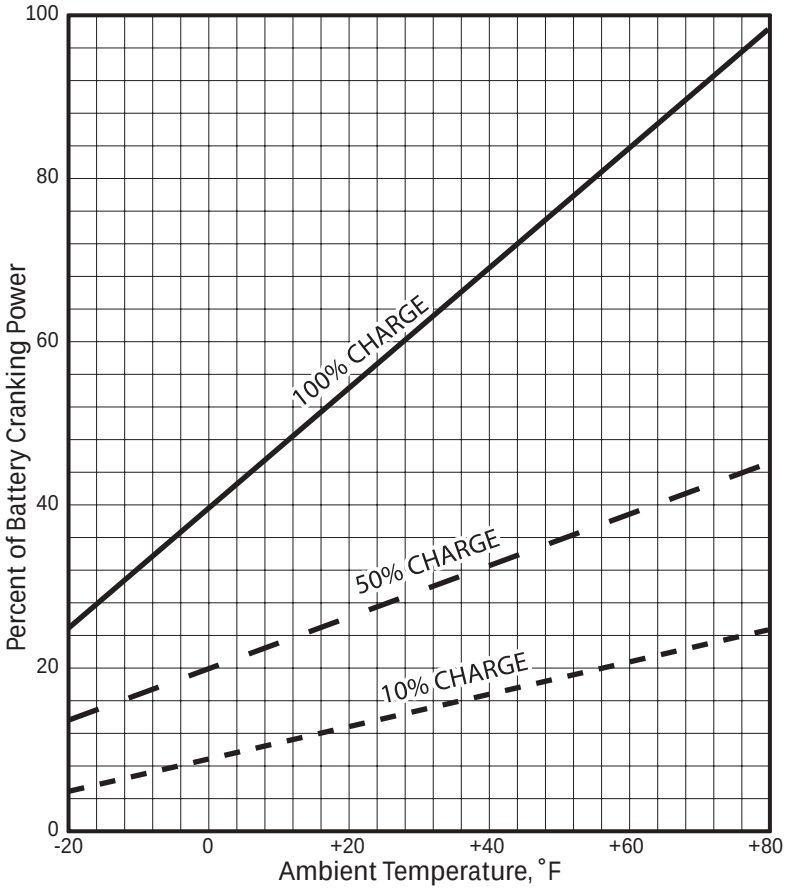
Special Pads for Multiple Batteries





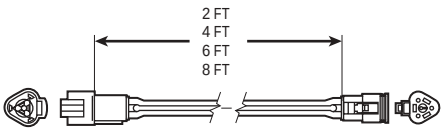
Typical Connection - 2 Batteries on Each Side of Vehicle

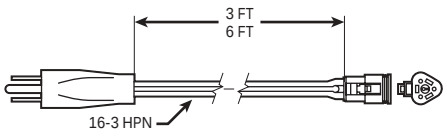


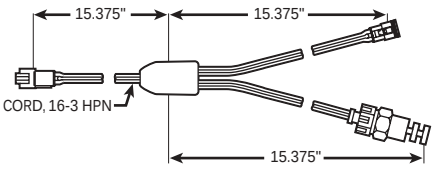


Model Number	Volts	Watts	Amps	Nominal Dimensions		Batt. Size	Style
				A	B		
KB5015	120	50	.42	8 1/4	13	4D	A
KB5015-S	120	50	.42	8 1/4	13	4D	B
KB5015-D	120	50	.42	8 1/4	13	4D	C
KB7515	120	75	.63	10 1/2	18 1/2	8D	A
KB7515-S	120	75	.63	10 1/2	19 1/2	8D	B
KB7515-D	120	75	.63	10 1/2	19 1/2	8D	C
KB7523	240	75	.31	10 1/2	18 1/2	8D	A
KB7523-S	240	75	.31	10 1/2	19 1/2	8D	B
KB7523-D	240	75	.31	10 1/2	19 1/2	8D	C

Accessories For Multiple Battery Heating







EXTENSION CORDS	
Model	Length
BEC-2	2'
BEC-4	4'
BEC-6	6'
BEC-8	8'

POWER SUPPLY CORDS		
Model	Length	Volts
BPC-31	3'	120
BPC-32	3'	240
BPC-61	6'	120
BPC-62	6'	240

THERMOSTAT & "Y" CORD ASSEMBLY		
Model	Temperature Control	
	On	Off
BY-T68	60°F	80°F

Battery Thermal Wrap

Prolong the life of your battery with Kim Hotstart thermal battery wraps with or without thermostat.

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

BATTERY THERMAL WRAP — NO THERMOSTAT			
Model Number	**Volts**	**Watts**	**Length**
KBW5015-000	120	50	28'
KBW8015-000	120	80	36'
KBW16015-000	120	160	72'

Thermostatically controlled battery thermal wraps provide optimum heating regardless of ambient temperature.

- At 80°F, the battery will achieve maximum cold cranking amps.
- Battery is constantly maintained at 80°F.
- Provides greater heat rise than plates or pads.
- Thermostat will eliminate battery damage caused by overheating and acid spill.

Thermostat range: 65°F - 80°F

BATTERY THERMAL WRAP — WITH THERMOSTAT			
Model Number	**Volts**	**Watts**	**Length**
KBW5015T-000 KBW5024T-000	120 240	50 50	26' 26'
KBW8015T-000 KBW8024T-000	120 240	80 80	44' 44'
KBW10015T-000 KBW10024T-000	120 240	100 100	56' 56'

Silicone Hot Pads

Not for use on batteries

Flexible, Versatile and Easy to install.

Kim Hotstart adhesive Hot Pad Heaters are ideal for oil pans, hydraulic reservoirs, engine blocks, hydraulic cylinders and diesel fuel tanks.

- Available in 3 sizes at 120 and 240 volt
- Easy peel and stick application
- Etched foil heating element for optimal heat transfer and long life
- Durable silicone/fiberglass cover resists abrasion
- Assembled with a standard 6 ft. HPN cord and plug

Model Number	Dimensions	Volts	Watts
AF10015 AF10024	4" x 5"	120 240	100 100
AF15015 AF15024	4" x 5"	120 240	150 150
AF25015 AF25024	5" x 6"	120 240	250 250
AF40015 AF40024	6" x 8"	120 240	400 400

Application Guidline	100 Watt	150 Watt	250 Watt	400 Watt
Engine oil pan	2 to 5 quarts	5 to 8 quarts	2 to 5 gallons	5 to 8 gallons
Diesel Tank	5 to 7 gallons	7 to 10 gallons	10 to 20 gallons	20 to 30 gallons
Hydraulic Tank	1 to 5 gallons	5 to 10 gallons	10 to 20 gallons	20 to 30 gallons
Water Tank	up to 2 gallons	2 to 4 gallons	4 to 7 gallons	7 to 10 gallons

CAUTION: Do not use pads with higher than recommended wattage for specific oil capacities.

Section Five

Kim-GLO Heaters

Direct Immersion Cords

Thermocords

Flush Mount Kits

Kim-Glo
Direct Immersion Heaters

Note: Kim-Glo heaters are complete with 2-wire w/ground 6 foot HPN cord and plug. For cord replacements or "Y" thermocord energy saver, please reference page 48.

Engine Model	Part Number 120 Volts	Part Number 240 Volts	Watts	Product Image	Application Information	Heat Shield Required	Oil Heater Thread Size*
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 the right side. Note that 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 freeze plugs right side of engine		22mm
ALL 6 CYL 830	CUC-151FP	CUC-152FP	1500		Inserts in the freeze plug right rear of the block		22mm
Caterpillar							
C7 ACERT	FP101-001 FP151-001	FP102-001 FP152-001	1000 1500		Replace 44mm frost plug on right hand side of engine just below the turbo charger.	YES	
C9 ACERT	CATV-151	CATV-152	1500		Replace 1" NPT plug in the right rear of the engine block		
C11 ACERT C13 ACERT	TF151-008	TF152-008	1500		Replace any of the 1 5/16" plugs in rear of oil cooler on the right hand side of the engine	Check Exhaust Routing	1 5/16"-2 STOR
C15 ACERT	TF151-009	TF152-009	1500		Replace 1 3/16" plug in rear of the oil cooler on the right hand side of the engine		
C-10 C-12	TF121-000	TF122-000	1250		Replaces the 1" threaded plug in the oil cooler bonnet	YES	1" NPT
C-9 Non ACERT C-15 Non ACERT C-16 Non ACERT	CATV-151	CATV-152	1500		C-9 Only: Mount in rear face of block C-15, C-16: Mount in rear oil cooler bonnet from the back end		1" NPT
1674	CATB-151	CATB-152	1500		Replaces the 1 1/2" thread-in plug on the right side of the engine		
1693 & D343	CATC-151	CATC-152	1500		Replaces water jacket access plate on the left side of the engine		
1693T & 1693TA	CATC-151-S	CATC-152-S	1500		Replaces water jacket access plate on the left side of the engine		
3013 1.5L 3014 2.0L	FP531-003	FP532-003	530		Replaces 40mm core plug on the front, left side of the engine		
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 back of head		
3044 3.3L	PF531-001	PF532-001	530		Mounts in "football shaped" opening on the right of the engine		

* If supplemental oil heating is desired, this column gives the correct thread size in oil pan. See NOTE on page 47.

Kim-Glo
Direct Immersion Heaters

Note: Kim-Glo heaters are complete with 2-wire w/ground 6 foot HPN cord and plug.
For cord replacements or "Y" thermocord energy saver, please reference page 48.

C US

Engine Model	Part Number 120 Volts	Part Number 240 Volts	Watts	Product Image	Application Information	Heat Shield Required	Oil Heater Thread Size*
Caterpillar — Continued							
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" freeze plug opening on the right side of the engine		
3054C	PER-751FP	PER-752FP	750		Mounts in 1 1/4" freeze plug at right rear of engine with element straight up in 12 O'clock position.		
3056 6.0L	PER-151FP	PER-152FP	1500		Mounts in the 1 1/2" freeze plug on the right side of the engine		
3114 3116 3126	FP101-001 FP151-001	FP102-001 FP152-001	1000 1500		Replaces the core plug on the right side of the engine just below the turbocharger	YES	11/16"X12
3176 10.3L through 1995	DD8L-101 CAT-12015 TF151-001	DD8L-102 CAT-12023 TF152-001	1000 1250 1500		Replaces the 3/4" plug on the right side of the engine just below the head.		1" NPT
3176 10.3L 1996 and later	TF121-000	TF122-000	1250		Replaces the 1" threaded plug in the oil cooler bonnet	YES	11/16"X12
3196 12.0L	TF121-000	TF122-000	1250		Replaces 1" threaded plug in oil cooler bonnet	YES	11/16"X12
3204 all 1100 series	CATX-751 CATX-101	CATX-752 CATX-102	750 1000		Replaces the core plug on the right side of the engine just below the turbocharger		22mm
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 the 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" or 1" plugs on the water transfer casting (right front of the 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" plug on the left side of the engine		
3406C/E 14.6L	AC-101 CATV-151	AC-102 CATV-152	1000 1500		Replaces 1" thread-in plug in the rear of the oil cooler bonnet on the right side of the engine		1" NPT
3406 & 3408 except 1998 Adem 2	AC-101 CATV-151	AC-102 CATV-152	1000 1500		Replaces 1" thread-in plug in the rear of the oil cooler bonnet on the right side of the engine		1" NPT
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	1" NPT
3406 E ADEM 3 and ADEM 2000 engines	AC-101 CATV-151	AC-102 CATV-152	1000 1500		Replaces 1" thread-in plug in the rear of the oil cooler bonnet on the right side of the engine		1" NPT

* If supplemental oil heating is desired, this column gives the correct thread size in oil pan. See NOTE on page 47.

Kim-Glo
Direct Immersion Heaters

Note: Kim-Glo heaters are complete with 2-wire w/ground 6 foot HPN cord and plug.
For cord replacements or "Y" thermocord energy saver, please reference page 48.

Engine Model	Part Number 120 Volts	Part Number 240 Volts	Watts	Product Image	Application Information	Heat Shield Required	Oil Heater Thread Size*
Caterpillar — Continued							
3456 15.8L	AC-101 CATV-151	AC-102 CATV-152	1000 1500		Replaces 1" thread-in plug in the rear of the oil cooler bonnet on the right side of the engine		1" NPT
Chevrolet/GMC (Small Truck)							
5.7L V8 (350 CID)	FC601-501	NONE	600		Mounts in the freeze plug in the engine's block No replacement cord available		
6.2L V8 Diesel 6.5L V8 Diesel	FC601-PY2						
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.		1" NPT
Flat plate design when the 1/2" NPT opening is used	CUN-151BH	CUN-152BH	1500				1" NPT
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		1" NPT
Uses an "O" ring for the 1¼" 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		1" NPT
Group III							
For industrial engines with hole pattern reversed	CUN-151BREV	CUN-152BREV	1500		Six bolt flat plate on the right side of the block		1" NPT
Group IV							
1998 and later N14 Industrial	PF151-002	PF152-002	1500		Six bolt flat plate on the right side of the block		1" NPT

* If supplemental oil heating is desired, this column gives the correct thread size in oil pan. See NOTE on page 47.

Kim-Glo
Direct Immersion Heaters

Note: Kim-Glo heaters are complete with 2-wire w/ground 6 foot HPN cord and plug. For cord replacements or "Y" thermocord energy saver, please reference page 48.

Engine Model	Part Number 120 Volts	Part Number 240 Volts	Watts	Product Image	Application Information	Heat Shield Required	Oil Heater Thread Size*
Additional Cummins Engine Models							
Cummins A 4 cyl & 6 cyl	CUA-101F	CUA-102F	1000		Inserts in any of the freeze plugs on right side of engine. Element points down.		
ISC/QSC 8.3L ISL/QSL 9.0L	DD8L-101	DD8L-102	750		3/4" NPT threaded plug in the right rear side of engine		22mm
L10, M11 ISM	CUL-151	CUL-152	1500		Inserts in the forward opening of the heater casting on the right rear of block		1" NPT
QSB 3.9L, 5.9L ISB 5.9	TF751-002	TF752-002	750		3/4" NPT threaded plug in the front of the oil cooler casting		22mm
ISM/QSM 11.0L Flat Plate Design	PF151-003	PF152-003	1500		Right rear. Replaces plate.		1" NPT
QSX, ISX Signature 600	PF151-004	PF152-004	1500		Mounts in the "football shaped" plate on the right side of the block		27mm
4BT 3.9L	CUB-751FP CUB-101FP	CUB-752FP CUB-102FP	750 1000		Inserts in any of the freeze plugs right side of engine	Check Exhaust Routing	22mm
6BT 5.9L	CUB-751FP CUB-101FP CUB-151FP	CUB-752FP CUB-102FP CUB-152FP	750 1000 1500		Inserts in any of the freeze plugs right side of engine	Check Exhaust Routing	22mm
6CT 8.3L	CUC-151FP	CUC-152FP	1500		Inserts in the freeze plug right rear of the block		22mm
Detroit Diesel							
SERIES 10 4 cylinder Phaser engines	PER-751FP PER-101FP	PER-752FP PER-102FP	750 1000		Mounts in the 1 1/4" freeze plug opening on either side of the engine		
SERIES 10 6 cylinder Phaser engines	PER-151FP	PER-152FP	1500		Mounts in the 1 1/2" freeze plug on the right side of the engine		
Series 30	DD8L-101	DD8L-102	1000		Mounts in the 3/4" NPT opening in the block		
SERIES 40 all versions	PER-751FP INTA-121 FR151-001	PER-752FP INTA-122 FR152-001	750 1250 1500		Mounts in the frost plug opening on the left side of the engine		
SERIES 50 SERIES 60	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	3/4" NPT
SERIES 55	PF151-000	PF152-000	1500		Mounts in the triangle plate on the side of the block		
3-53, 4-53, 3-71, 4-71 with water cooled air compressor	DD-751-S	DD-752-S	750		Mounts in the "football shaped" plate on the block. Check clearance.		

* If supplemental oil heating is desired, this column gives the correct thread size in oil pan. See NOTE on page 47.

Kim-Glo
Direct Immersion Heaters

Note: Kim-Glo heaters are complete with 2-wire w/ground 6 foot HPN cord and plug. For cord replacements or "Y" thermocord energy saver, please reference page 48.

Engine Model	Part Number 120 Volts	Part Number 240 Volts	Watts	Product Image	Application Information	Heat Shield Required	Oil Heater Thread Size*
Detroit Diesel – continued							
3-53, 4-53, 3-71, 4-71 without water cooled air compressor	DD-751	DD-752	750		Mounts in the "football shaped" plate on the block. Check clearance.		
6-71 with water cooled air compressor	DD-151-S	DD-152-S	1500		Mounts in the "football shaped" plate on the block. Check clearance.		
6-71 without water cooled air compressor	DD-151	DD-152	1500		Mounts in the "football shaped" plate on the block. Check clearance.		
8.2 L V-8 Diesel	DD8L-101	DD8L-102	1000		Threads into the 3/4" NPT opening on the block		
6V-53 with water cooled air compressor	DD6V-751-S	DD6V-752-S	750		Mounts in the "football shaped" plate on the block. Check clearance.		
6V-53 without water cooled air compressor	DD6V-751	DD6V-752	750		Mounts in the "football shaped" plate on the 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 the block		
6V-71 & 8V-71 6V-92 & 8V-92 except GMC General models	DDV-151B	DDV-152B	1500		Mounts in the square plate on the block		
6V92 & 8V92 alternate location - threads into oil cooler.	DD8L-101	DD8L-102	1000		Threads into the 3/4" 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 plus A22M48M (adapter)	n/a	150		Use adapter kit to mount the 22MM heater in the 48MM opening		22MM or 48MM
1012 — 4 & 6 cyl 1013 — 4 cyl	PF751-000	PF752-000	750		Mounts in the "football shaped" plate opening on the oil cooler casting		
1013 6 cyl	PF121-001	PF122-001	1250		Mounts in the "football shaped" plate opening on the oil cooler casting		
1015 6 & 8 cyl	TL151-004	TL152-004	1500		Mounts in 30MM plug in water elbow on front of the engine		
2012 — 4 & 6 cyl	PF751-002	PF752-002	750		Mounts in the "football shaped" plate opening on the oil cooler casting		
Ford							
6.9L & 7.3L V-8 diesels through 1993	FC101-PY1	None	1000		Mounts in a freeze plug on the engine's block. No replacement cord available.		
7.3L V-8 diesels from 1994 on	TF751-002 DD8L-101	TF752-002 DD8L-102	750 1000		Mounts in the 3/4" NPT plug in the engine's block		

* If supplemental oil heating is desired, this column gives the correct thread size in oil pan. See NOTE on page 47.

Kim-Glo
Direct Immersion Heaters

Note: Kim-Glo heaters are complete with 2-wire w/ground 6 foot HPN cord and plug. For cord replacements or "Y" thermocord energy saver, please reference page 48.

Engine Model	Part Number 120 Volts	Part Number 240 Volts	Watts	Product Image	Application Information	Heat Shield Required	Oil Heater Thread Size*
Ford Lehman (english)							
4 AND 6 CYL engines	FP531-002 FP751-000 FP101-002	FP532-002 FP752-000 FP102-002	530 750 1000		Mounts in freeze plug in the block		
Hino							
3.8L, 5.8L, 6.0L 6.4L, 6.4L, 6.7L, W04C-T, W06E, H06C-T, H07C-B	DD8L-101	DD8L-102	1000		Threads into 3/4" NPT opening in the block	YES	
Isuzu							
4BD1 6HE1 6BD1 6SA1 6BG1	TF401-501	NONE	500		No replacement cord available		
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" NPT opening in the rear face of the 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 the block		
With 1 5/8" opening on the side of the water jacket	JDS-101	JDS-102	1000		1 5/8" threaded opening on the side of the block in the water distribution channel		
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 the block		
SA6D125	MA-151	MA-152	1500		Threads into the freeze plug opening in the block		
Kubota							
M, B, L Series D905 V1205 D1005 V1305 D1105 V1505 D3000B V4000B D3200B V4300B DH905 VH1205 DH1005 VH1305	TF401-501	N/A	400		1" NPT No replacement cord available		
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		

* If supplemental oil heating is desired, this column gives the correct thread size in oil pan. See NOTE on page 47.

Kim-Glo
Direct Immersion Heaters

Note: Kim-Glo heaters are complete with 2-wire w/ground 6 foot HPN cord and plug. For cord replacements or "Y" thermocord energy saver, please reference page 48.

Engine Model	Part Number 120 Volts	Part Number 240 Volts	Watts	Product Image	Application Information	Heat Shield Required	Oil Heater Thread Size*
Mack - continued							
E6 engines "smooth bore" from 1981 on	MASB-151	MASB-152	1500		Mounts in the freeze plug opening. Smooth opening design.		
E6 engines threaded freeze plug opening not produced after '81 END 465, 711, EN438, 504, 707, 673, 675, 676 (1957 through 1981)	MA-151	MA-152	1500		Mounts in any threaded freeze plug opening		
E7 Engines Except E-Tech water pump mount	PF151-001	PF152-001	1500		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" NPT opening on each side of the block		
MAN							
D2840 D2842 D2848	PF121-003	PF122-003			Replace "football shaped" plate in lower water pipe on right side of engine		
D2866 D2876	PF151-006	PF152-006			Replace 3 bolt plate on left side of engine. May require adapter if 3 bolt opening is not available on engine. Consult customer service.		
Mercedes Benz							
MBE904 MBE906	PF101-001	PF102-001	1000		Right side rear. Replaces frost plug.	YES	
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" freeze plug openings in the 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	PER-751FP INTA-121 FR151-001	PER-752FP INTA-122 FR152-001	750 1250 1500		Mounts in the frost plug on the left side of the engine. Fits all series of these engines.		
6.9L & 7.3L V8 diesels through 1993	FC101-PY1 or FC601-501	None	1000 600		No replacement cord available. Mounts in a freeze plug above starter		
7.3L & T444 all series	DD8L-101	DD8L-102	1000		3/4" NPT threaded opening in the block		
9.0L — V8 diesel	INT9-101F	INT9-102F	1000		Mounts in a freeze plug		

* If supplemental oil heating is desired, this column gives the correct thread size in oil pan. See NOTE on page 47.

Kim-Glo
Direct Immersion Heaters

Note: Kim-Glo heaters are complete with 2-wire w/ground 6 foot HPN cord and plug. For cord replacements or "Y" thermocord energy saver, please reference page 48.

Engine Model	Part Number 120 Volts	Part Number 240 Volts	Watts	Product Image	Application Information	Heat Shield Required	Oil Heater Thread Size*
Oliver							
ALL EXCEPT 1265, 1365 & 1900	TF751-002 DD8L-101	TF752-002 DD8L-102	750 1000		Threads into a 3/4" NPT opening in the block		
Onan — See Cummins "A" Series							
Perkins							
3.152 4.236 6.354 1004 (4 Cyl) A & B	PER-751FP PER-101FP	PER-752FP PER-102FP	750 1000		Mounts in the 1 1/4" freeze plug opening on the right side of the engine		
1006 (6 Cyl) A & B	PER-151FP	PER-152FP	1500		Mounts in the 1 1/2" freeze plug on the right side of the engine		
1104 (4 Cyl) C	PER-751FP PER-101FP	PER-752FP PER-102FP	750 1000		Mounts in 1 1/4" freeze plug openining on right rear of engine with element straight up in 12 O'clock position		
103.15 104.22	FP531-003	FP532-003	530		Mounts in freeze plug		
700 Series 704.30	FP531-001	FP532-001	530		Mounts in freeze plug in rear of head		
Volvo							
D9	PF151-007	PF152-007	1500		Mounts in the "football shaped" plate on the front, right side of the engine		
D12C Prior to Serial # 250502	PF151-005	PF152-005	1500		Mounts below turbo charger on right center of engine	YES	
D12C After Serial # 250502	PF121-002	PF122-002	1250			YES	
TD60, TD61, TD70, TD71, TD100, TD101, VE10, TD120, TD121	VT6-101	VT6-102	1000		Mounts into threaded opening (44mm) in the front of the engine		
Yanmar							
3T72HLE 4TN82E D4T YYDXL4.41	TF401-501	N/A	400		1" NPT No replacement cord available		

NOTE: The only replacement parts for the direct immersion heaters is the power cord. Please see the power cord section on page 48 for the proper replacement cord set.

For thermostat control of Kim-Glo Direct Immersion Heaters see page 48. The energy saver Thermocord is available in various temperature ranges.

Supplemental heat for engines using Kim-Glo heaters can be acquired by the installation of oil pan heaters in the lube-oil. Reference pages 20 and 21 of this catalog or consult factory.

* If supplemental oil heating is desired, this column gives the correct thread size in oil pan. See NOTE on page 47.

Replacement Cords & Thermocords

Heat Shield

Model No.	
HS1	

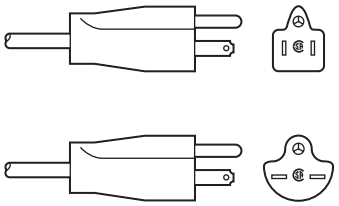
Use when exhaust manifold or turbo come close to heater termination.

NOTE: When ordering Kim-Glo Heater **and** Thermocord, place suffix **–WOC** (which stands for ***without cord***) after the heater model number to save cost as the standard 6 foot heater cord is replaced by the Thermocord harness.

For use with Kim-Glo Direct Immersion heaters

Cord Length	Plug Style	120 Volt	240 Volt
6’	1	IM6-1IN	IM6-2IN
11’	1	IM11-1IN	IM11-2IN
16’	1	IM16-1IN	IM16-2IN

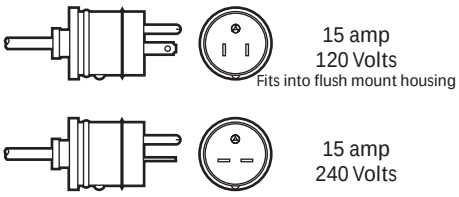
STYLE 1



Fits most competitor's applications.

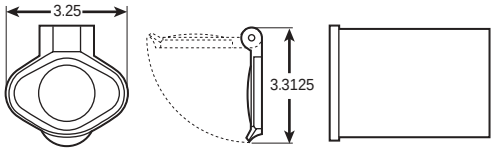
Cord Length	Plug Style	120 Volt	240 Volt
6’	2	11PR72T	21PR72T
11’	2	11PR132T	21PR132T
16’	2	11PR192T	21PR192T

STYLE 2



Flush mount kits for Kim-Glo Direct Immersion heaters

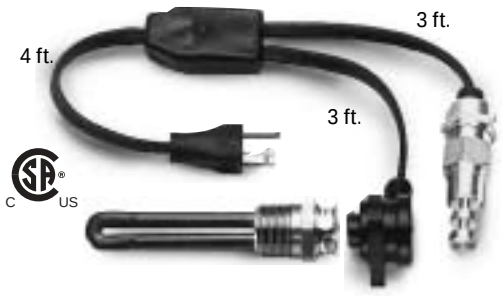
Cord Length	Plug Style	120 Volt	240 Volt
6’	2	IM6-1IN-FM	IM6-2IN-FM
11’	2	IM11-1IN-FM	IM11-2IN-FM
16’	2	IM16-1IN-FM	IM162IN-FM



Thermocord for Kim-Glo Direct Immersion heaters

ENERGY SAVER

Part No.	Volts	Thread Size	Temp Range
A-2822-ØB	120	1/2"	100-120
A-2822-ØC	120	1/2"	120-140
A-2822-ØH	240	1/2"	100-120
A-2822-ØI	240	1/2"	120-140
A-2822-ØM	120	1/2"	80-100
A-2822-ØP	240	1/2"	80-100



Heater shown for illustration purposes only.

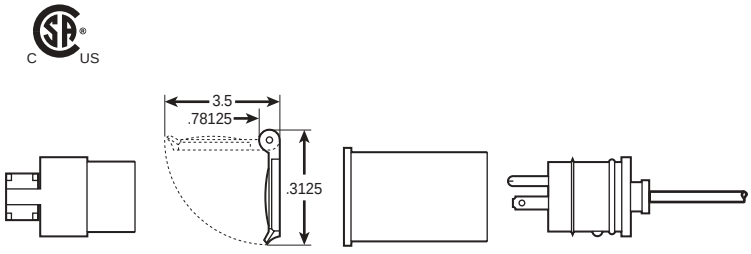
Tank Heater Accessories

Flush Mount Kits for Tank Style Heaters

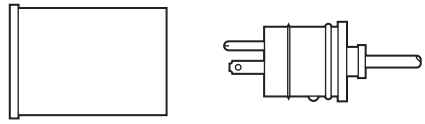
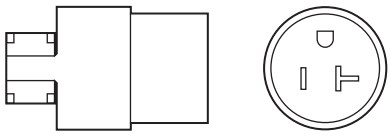
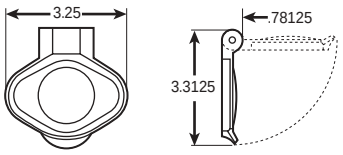
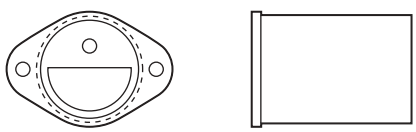
For Tank Heaters			
Model Number	**Volts**	**Amps**	**For Heater with Wattage of:**
FM15120	120	15	500 to 1800
FM15240	240	15	500 to 3000
FM20120	120	20	2000 to 2250

All Kits Include . . .

Molded recessed male receptacle with 6 ft. cord, no female termination, black hinged spring-loaded cover, and female connector



Other Accessories

Recessed Male Receptacle –with 6 ft. cord (no female connectors)			
Model Number	**Volts**	**Amps**	
RMS-15 RM6-16 RM5-2Ø RM6-2Ø	120 240 120 240	15 15 20 20	
Female Connector Only - for extension cords			
Model Number	**Volts**	**Amps**	
FM1G2ØA FM2G2ØA	120 240	15/20 15/20	
Hinged Cover Only			
Model Number	**Description**		
*FC-KH FC-KH-C	Black/Kim Logo Chrome/Kim Logo		
*Note: Standard with kit			
Plug Housing			
Model Number			
A-2223-PH			

Specifying an Engine Pre-Heater

1. Determine the best type of heater to be used for the application.
   - Direct Immersion or Tank Type?
   - Weathertight unit for all indoor or outdoor applications (hospital, communications building, shopping mall, pump station, off-road equipment).
   - Explosion Proof unit for Hazardous Locations (off-shore platform, oil rig, gas compression station).
2. Determine engine size.
   - Cubic inch or litre displacement.
3. Determine wattage required by using this general formula:
   - 3 watts x cubic inch displacement = watts required.

   Example: Engine is 855 C.I.D. — 855 x 3 = 2565. Requirement is 2500 watt heater.
   - This formula is a very good rule of thumb to use down to 0°F ambient temperature. This formula will generally hold engine temperature at approximately 100°F above ambient.
   - Very large engines may require a forced circulation system (see pages 12, 13 and 51).
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 to 120°F 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 pre-heater from the many products listed in this catalog. For other technical information and installation tips, see page 34. 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

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

Conversion Chart
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	26.5°C
90°F	32.0°C
100°F	37.5°C
110°F	43.5°C
120°F	49.0°C
130°F	54.5°C
140°F	60.0°C
150°F	65.5°C
160°F	71.0°C
170°F	76.5°C
180°F	82.0°C
190°F	88.0°C
200°F	93.5°C
210°F	99.0°C

F = C x 9/5 + 32
C = (F - 32) x 5/9

Industrial Circulating Systems - Large engine applications

Kim Hotstart offers complete circulating heating systems for any large industrial engine. These systems are engineered and designed specifically for installation on a large generator, compressor package, marine engine, or locomotive. Most systems are mounted on a steel plate with a pre-wired junction box, pump and motor components, a flow detection device and in-line high-limit thermostats. Plus, most systems have fused 120 volt control voltage, regardless of applied voltage.

Several systems are available for lube oil heating, coolant heating, diesel fuel heating or combinations of any aforementioned fluid. Systems are adaptable to function in wet/damp locations or hazardous environments. 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 Kim Hotstart's circulating heating systems, please contact Kim Hotstart and have all your questions answered by one of our engine heating product specialists.

CL Model
Coolant only, watertight circulating heating system

COLER Model
Class I Group D combination circulating heating system

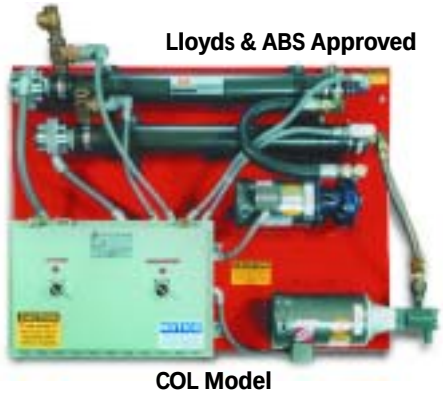
Kim Hotstart's large capacity systems heat and circulate coolant or lube oil to efficiently maintain an engine's optimum temperature during shut-down and layover periods.

COR Model
for locomotive engines
coolant/lube oil combination heating system

Circulating-type combination heating systems combine the benefits of coolant heating and oil heating into one pre-wired, pre-assembled dual heating system.

OER Model
Oil only, Class I Group D circulating heating system

Lloyds & ABS Approved



COL Model
Watertight with NEMA 12 enclosures combination circulating heating system

All Kim Hotstart circulating heating systems come pre-wired and pre-assembled for easy installation, operation and maintenance.

Customer Services

To better serve you, Kim Hotstart provides a customer service department to answer all your engine heating concerns, any questions regarding Kim Hotstart products or to take your sales order.

Customer Support Department:
(509) 536-8660

For even more convenience and time saving, Kim Hotstart offers a toll-free FAX number. Sending your sales order by FAX saves time!

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.

Kim 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 Kim Hotstart Manufacturing Company, 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 Kim Hotstart Manufacturing Company, 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 Kim Hotstart Manufacturing Company, Inc. without prior factory authorization.

Upon factory authorization, return the defective part or product , freight prepaid, to: Kim Hotstart Manufacturing Company, Inc., 5723 E. Alki, Spokane, WA 99212. Telephone (509) 534-6171; FAX (509) 534-4216.

Defective items will be repaired or replaced, at our option, at no charge. Such repair or replacements is the exclusive right of Kim Hotstart Manufacturing Company, Inc. Kim Hotstart Manufacturing Company, 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.

KIM HOTSTART MANUFACTURING COMPANY, INC.

KIM HOTSTART
SINCE 1942

P.O. Box 11245
Spokane, Washington U.S.A 99211-0245

Phone: (509) 534-6171
Fax: (509) 534-4216
Toll Free Fax: (800) 224-5550
www.kimhotstart.com

Distributor

02-04