



# Installation Instructions

216061-047 rev-5



## FR Series In-Block Engine Heaters

**WARNING** READ CAREFULLY FOR PROPER INSTALLATION & OPERATION

Customer Support: 509-536-8660  
www.hotstart.com

### I. LOCATING THE PROPER AREA OF INSTALLATION

A. This in-block engine heater replaces a similar core plug on the engine.

Engine	120 Volt	240 Volt	Watts	Installation
<b>CATERPILLAR</b>				
3204	CATX-751 CATX-101	CATX-752 CATX-102	750 1000	Replaces 1.75" core plug on either side of engine.
<b>CUMMINS</b>				
4BT 3.9L 6BT 5.9L	CUB-751FP CUB-101FP	CUB-752FP CUB-102FP	750 1000	Replaces core plug on right side of engine.
6CT 8.3L	CUC-151FP	CUC-152FP	1500	Replaces core plug on right rear side of engine.
<b>INTERNATIONAL by NAVISTAR</b>				
INLINE 6 cylinder ALL SERIES	INTA-121	INTA-122	1250	Replaces core plug on left side of engine. Element should point toward 1 O'clock position.
<b>MACK</b>				
E6 smooth bore 1981 and later	MASB-151	MASB-152	1500	Replaces 1.75" core plug on side of engine.
<b>PERKINS</b>				
3-152	PER-751FP PER-101FP	PER-752FP PER-102FP	750 1000	Replaces the 1.25" core plug on right side of engine.
4-236				Replaces 1.25" core plug 2nd from the rear on left side of engine.
6-354				Replaces 1.25" core plug on right rear side of engine.
1004 left side	PER-751FP PER-101FP	PER-752FP PER-102FP	750 1000	Replaces 1.25" core plug on left side of engine.
1004 right side	FR751-002 FR101-000	FR752-002 FR102-000	750 1000	Replaces 1.5" core plug on right side of engine.
1006	PER-151FP	PER-152FP	1500	Replaces 1.5" core plug on right side of engine.
1103C	FR531-000	FR532-000	530	Replaces 1.25" core plug on right rear side of engine. Element should point toward 1 O'clock position.
1106C	PER-151FP	PER-152FP	1500	Replaces 1.5" core plug on right side of engine.
1106D	FR101-003	FR102-003	1000	Replaces 1.25" core plug on right front of engine. Element should point toward 6 O'clock position.

See reverse side for further installation instructions.

## II. MOUNTING THE IN-BLOCK ENGINE HEATER

- A. Drain the cooling system.
- B. Remove the existing core plug.
- C. Clean and dry the walls of the core plug opening. Remove any burrs, sharp edges or debris from the machined surfaces. **Do not nick or scar the mounting surface of engine.**
- D. Apply a light coat of grease to the O-ring and bore.
- E. Insert heater into the core plug opening so that the element is centered in the cavity .
- F. Push the heater into the engine by hand and finish by tapping the heater with the end of a hammer handle until the flange sits flush against the engine block.

### NOTICE

Avoid a rocking motion while inserting heater. This will damage the retaining ring.

### NOTICE

The element should not touch any cavity walls. Contact with the walls may cause the element to fail.

### NOTICE

If heater is removed from engine, retaining rings must be replaced before re-installing.

## III. ATTACHING THE CORD

- A. Align cord with element pins and press on. If thread-on style plug, tighten nut "hand tight". If push-on style plug, position clamp around plug and tighten "hand tight" plus two clicks with the help of pliers.
- B. Route the cord to any convenient point and tie cord down to prevent damage and strain. Keep cord away from hot surfaces, moving objects, abrasion points and road hazards.

### NOTICE

Do not plug heater into power supply prior to filling the engine with coolant and bleeding the coolant system of trapped air. Premature element failure can occur (within minutes) if all of the trapped air is not bled from the cooling system. Premature element continuity failure is not warrantable.

## IV. TESTING THE IN-BLOCK ENGINE HEATER

- A. Refill the coolant system. Run engine until internal thermostat opens and continue running engine for 15 to 20 minutes to eliminate air pockets. Allow engine to cool. Check for leaks and proper coolant level.
- B. Plug heater into power supply and test for proper operation. The block near the heater should get hot.

## V. OPERATION & MAINTENANCE

- A. Plug heater into appropriate power supply based on wattage and voltage listed on heater label.

### CAUTION

Use appropriate type and size extension cord based on extension cord manufacturer's recommendation.

### CAUTION

To avoid possibility of electrical or fire hazard, inspect power plug and exposed cord for damage or wear before each use.

- B. To avoid heater damage, disconnect power to heater before starting engine.