



FR Series
Direct Immersion
Engine Heaters

CATX-751
CATX-101

CATX-752
CATX-102

INTA-101
INTA-121
FR101-003
FR531-000
FR151-001

INTA-102
INTA-122
FR102-003
FR532-000
FR152-001

CUB-751FP
CUB-101FP
CUB-151FP

CUB-752FP
CUB-102FP
CUB-152FP

MASB-151

MASB-152

PER-751FP
PER-101FP
PER-151FP

PER-752FP
PER102FP
PER-152FP

CUC-151FP

CUC-152FP

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

Customer Support: 509-536-8660

I. LOCATING THE PROPER AREA OF INSTALLATION

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

CATX-751 CATX-752
CATX-101 CATX-102

Caterpillar
3204

Replaces 1 3/4" core plug on either side of engine.

PER-751FP PER-752FP
INTA-101 INTA-102
INTA-121 INTA-122
FR151-001 FR152-001

Navistar/International
Inline 6 cylinder (all series)

Mounts in the freeze plug on the left side of the engine.

PER-151FP PER-152FP

Perkins
1006, 1106C

Replaces 1 1/2" core plug on right side of engine. Element should point toward 12 o'clock position.

CUB-751FP CUB-752FP
CUB-101FP CUB-102FP
CUB-151FP CUB-152FP

Cummins
B Series

Mount on right side of engine in any available core plug.

MASB-151 MASB-152

Mack
E6 smooth bore

Replaces 1 3/4" smooth bore core plug on left side of engine

FR531-000 FR532-000

Perkins
1103

Replaces 1 1/4" core plug on right rear of engine. Element should point toward one o'clock position.

CUC-151FP CUC-152FP

Cummins
6C Series through 1997

Mount on right side of engine in any available core plug.

PER-751FP PER-752FP
PER-101FP PER-102FP

Perkins
3.152, 4.236, 6.354, 1004*

Replaces 1 3/4" core plug second from rear on left side of engine.

*Replaces 1 1/4" core plug on left side between oil cooler and fuel pump.

FR101-003 FR-102-003

Perkins
1106D

Replaces 1 1/2" core plug on right side of engine. Element should point toward 6 o'clock position.

II. MOUNTING THE IN-BLOCK DIRECT IMMERSION HEATER

- Drain the cooling system.
- Remove the existing plug.
- Clean and dry the walls of the core plug opening. Remove any burrs, sharp edges or debris from the machined surfaces of the hole. **Do not nick or scar the mounting surface of engine.**
- Apply a light coating of grease to the O-Ring and core plug opening.
- Insert heater into the engine so that the element is centered in cavity. If applicable, position element according to heater model notes listed above.and position properly.
- 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 engine block.

NOTICE

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

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 installing heater, 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 DIRECT IMMERSION 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.