

Instruction Sheet

A053Y216 (Issue 2)

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Installation Instructions for Extreme Cold Weather Kit A054B984

1 Introduction

Read these instructions completely and become familiar with safety warnings, cautions and procedures before starting the installation.

The information contained within is based on information available at the time of going to print. In line with Cummins Power Generation policy of continuous development and improvement, information may change at any time without notice. The users should therefore make sure that before commencing any work, they have the latest information available.

The latest version of this instruction sheet is available on QuickServe Online (<https://qsol.cummins.com/info/index.html>).

2 Safety Precautions

2.1 General Safety Precautions

WARNING

Moving Parts

Moving parts can cause severe personal injury.

Use extreme caution around moving parts. All guards must be properly fastened to prevent unintended contact.

WARNING

Toxic Hazard

Used engine oils have been identified by some state and federal agencies to cause cancer or reproductive toxicity.

Do not ingest, breathe the fumes, or contact used oil when checking or changing engine oil. Wear protective gloves and face guard.

WARNING

Electrical Generating Equipment

Incorrect operation can cause severe personal injury or death.

Do not operate equipment when fatigued, or after consuming any alcohol or drug.

⚠ WARNING

Toxic Gases

Substances in exhaust gases have been identified by some state and federal agencies to cause cancer or reproductive toxicity.

Do not breathe in or come into contact with exhaust gases.

⚠ WARNING

Combustible Liquid

Ignition of combustible liquids is a fire or explosion hazard which can cause severe burns or death.

Do not store fuel, cleaners, oil, etc., near the generator set.

⚠ WARNING

High Noise Level

Generator sets in operation emit noise, which can cause hearing damage.

Wear appropriate ear protection at all times.

⚠ WARNING

Hot Surfaces

Contact with hot surfaces can cause severe burns.

Wear appropriate PPE when working on hot equipment and avoid contact with hot surfaces.

⚠ WARNING

Electrical Generating Equipment

Incorrect operation and maintenance can result in severe personal injury or death

Make sure that only suitably trained and experienced service personnel perform electrical and/or mechanical service.

⚠ WARNING

Combustible Liquid

Ignition of combustible liquids is a fire or explosion hazard which can cause severe burns or death.

Do not use combustible liquids like ether.

⚠ WARNING

Automated Machinery

Accidental or remote starting of the generator set can cause severe personal injury or death.

Isolate all auxiliary supplies and use an insulated wrench to disconnect the starting battery cables (negative [-] first).

⚠ WARNING

Fire Hazard

Materials drawn into the generator set are a fire hazard. Fire can cause severe burns or death.

Keep the generator set and the surrounding area clean and free from obstructions.

⚠ WARNING

Fire Hazard

Materials drawn into the generator set are a fire hazard. Fire can cause severe burns or death. Make sure the generator set is mounted in a manner to prevent combustible materials from accumulating under the unit.

⚠ WARNING

Fire Hazard

Accumulated grease and oil are a fire hazard. Fire can cause severe burns or death. Keep the generator set and the surrounding area clean and free from obstructions. Repair oil leaks promptly.

NOTICE

Keep multi-class ABC fire extinguishers handy. Class A fires involve ordinary combustible materials such as wood and cloth. Class B fires involve combustible and flammable liquid fuels and gaseous fuels. Class C fires involve live electrical equipment. (Refer to NFPA No. 10 in applicable region.)

NOTICE

Before performing maintenance and service procedures on enclosed generator sets, make sure the service access doors are secured open.

NOTICE

Stepping on the generator set can cause parts to bend or break, leading to electrical shorts, or to fuel, coolant, or exhaust leaks. Do not step on the generator set.

2.2 Generator Set Safety Code

Before operating the generator set, read the manuals and become familiar with them and the equipment. Safe and efficient operation can be achieved only if the equipment is properly operated and maintained. Many accidents are caused by failure to follow fundamental rules and precautions.

⚠ WARNING

Electrical Generating Equipment

Incorrect operation and maintenance can result in severe personal injury or death. Read and follow all Safety Precautions, Warnings, and Cautions throughout this manual and the documentation supplied with the generator set.

2.3 Electrical Shocks and Arc Flashes Can Cause Severe Personal Injury or Death

WARNING

Electric Shock Hazard

Voltages and currents present an electrical shock hazard that can cause severe burns or death. Contact with exposed energized circuits with potentials of 50 Volts AC or 75 Volts DC or higher can cause electrical shock and electrical arc flash. Refer to standard NFPA 70E or equivalent safety standards in corresponding regions for details of the dangers involved and for the safety requirements.

Guidelines to follow when working on de-energized electrical systems:

- Use proper PPE. Do not wear jewelry and make sure that any conductive items are removed from pockets as these items can fall into equipment and the resulting short circuit can cause shock or burning. Refer to standard NFPA 70E for PPE standards.
- De-energize and lockout/tagout electrical systems prior to working on them. Lockout/Tagout is intended to prevent injury due to unexpected start-up of equipment or the release of stored energy.
- De-energize and lockout/tagout all circuits and devices before removing any protective shields or making any measurements on electrical equipment.
- Follow all applicable regional electrical and safety codes.

In summary:

- Do not tamper with or bypass interlocks unless you are authorized to do so.
- Understand and assess the risks - use proper PPE.
- Make sure that an accompanying person who can undertake a rescue is nearby.

3 Instruction

3.1 Installation of Extreme Cold Weather Kit

This section describes the installation of extreme cold weather kit A054B984.

Because the installation presents a severe shock hazard, this kit must be installed by trained and experienced personnel only.

Read these installation instructions completely and become familiar with safety warnings, cautions and installation procedure before starting.

NOTICE

All M6 hex head cap screws and nuts removed to take off panels for installation of this kit should be tightened to 44 - 58 in-lb (5 - 6.6 Nm) during re-installation of the panels.

1. Install the oil heater:

⚠ WARNING

Automatic startup of the generator set during installation can cause severe personal injury or death.

Make sure the generator set is shut down and disabled:

- a. Press the generator set's red STOP button on the local display to stop the generator set. Allow the generator set to thoroughly cool to the touch.**
- b. Turn off and disconnect the battery charger from the AC source before disconnecting the battery cables.**
- c. Disconnect the negative (-) cable from the battery and secure it from contacting the battery terminals to prevent accidental starting.**

⚠ CAUTION

Ensure that AC power to the generator set has been de-energized and locked out to prevent accidental energizing of the circuit.

NOTICE

The oil and battery heaters run on AC power supplied by the utility. The regulator heater runs on DC power supplied by the generator set battery. The energy supplied by the battery for the regulator heater comes from the same source as the generator set-mounted battery charger. If the battery charger is not operating, the generator set battery will eventually discharge enough to not start the generator set.

NOTICE

Prior to the start of the oil heater installation, the correct engine oil must be available, and must conform to the requirement listed in the operator manual. This may be a different oil than what is currently in the engine.

- a. Prior to installing the oil heater, the engine oil must be drained. Follow the oil drain procedure in the generator set operator manual.
- b. Remove the panels shown below.

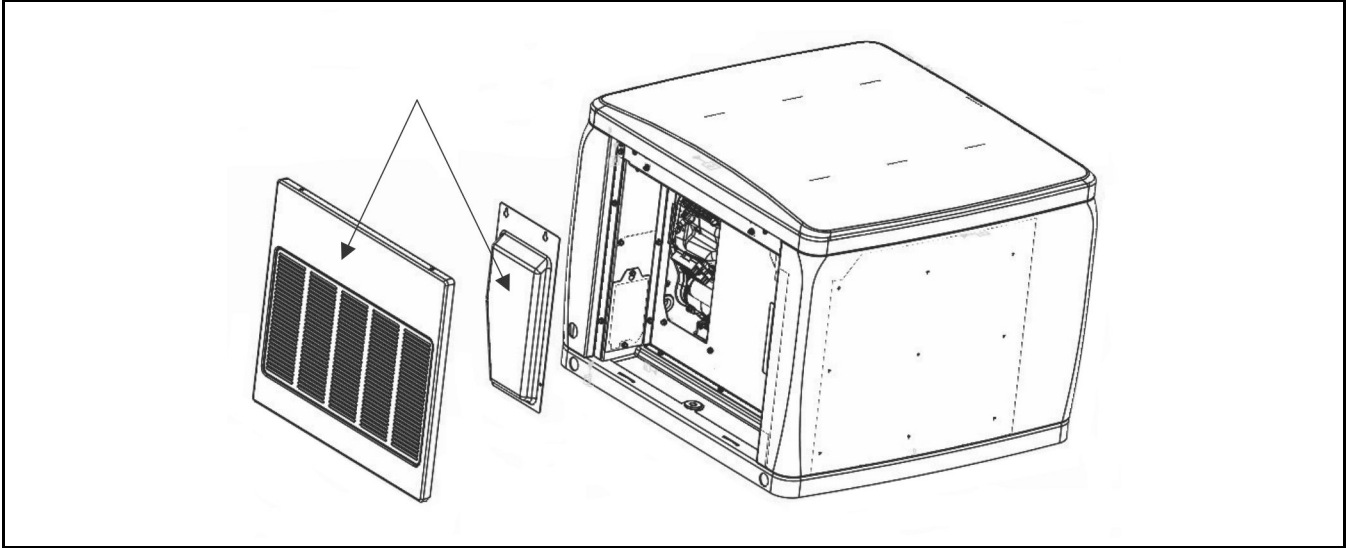


FIGURE 1. PANELS REMOVED

- c. Remove the plug and washer from the oil pan. Replace with heater and washer provided in kit. Tighten to 22.5 - 25.9 ft-lb (30 - 35 Nm).

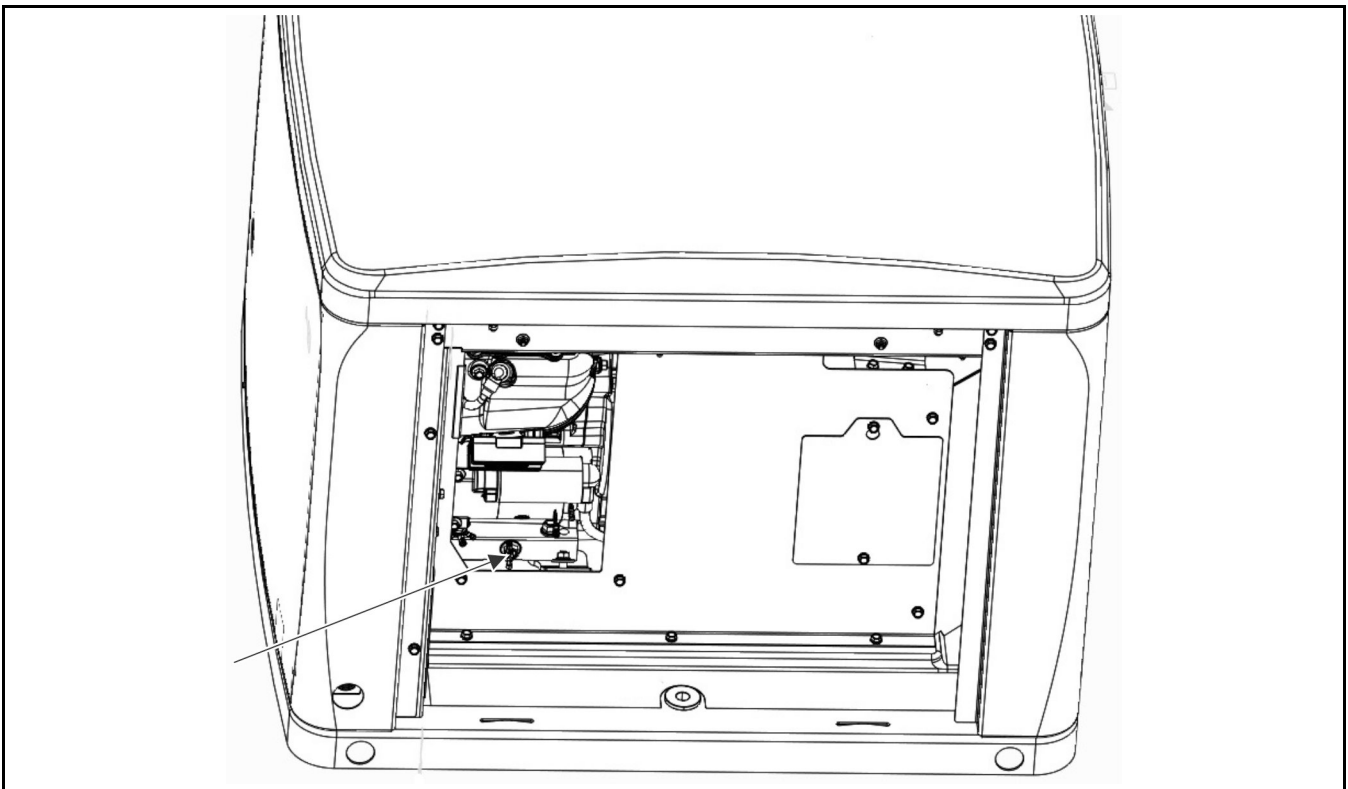


FIGURE 2. PLUG AND WASHER LOCATION

- d. Remove and discard the mating terminal connections from the oil heater leads in the generator set harness.

- e. Connect the leads of the oil heater to the wires marked OIL- HTR-N and OIL HTR-L in the generator set harness.
 - f. Using the cable ties provided, dress the leads in an orderly manner. Do not allow the wires to rest against sharp corners. Do not stretch the wires taut; allow for the motion of the engine and generator assembly.
 - g. After the oil heater is installed, replenish the oil. Follow the oil fill instructions in the generator set operator manual.
 - h. Re-install the panels shown in [Figure 1](#).
2. Install the battery heater and the temperature switch:

⚠ WARNING

Do not bypass the thermostat to power the heaters. If the heaters do not turn off, damage can occur to generator set components, and create a hazardous condition.

NOTICE

The temperature switch must be installed for the battery and oil heaters to function.

- a. Remove the air inlet access panel.

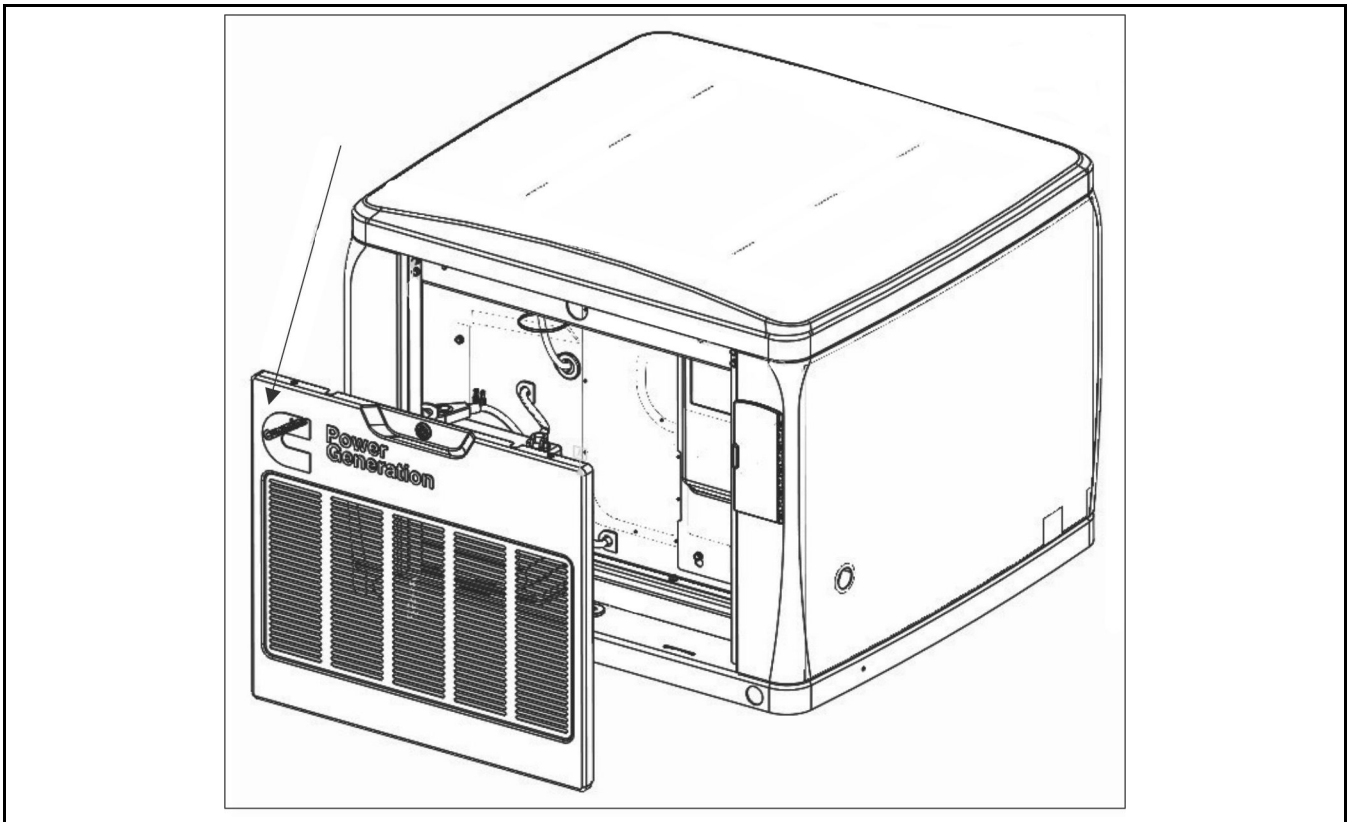


FIGURE 3. AIR INLET ACCESS PANEL LOCATION

- b. Disconnect the battery cables, following the instructions in the operator or installation manual.
- c. Remove the battery from the tray, complying with all cautions, warnings, and danger notifications listed in the installation and operator manuals.

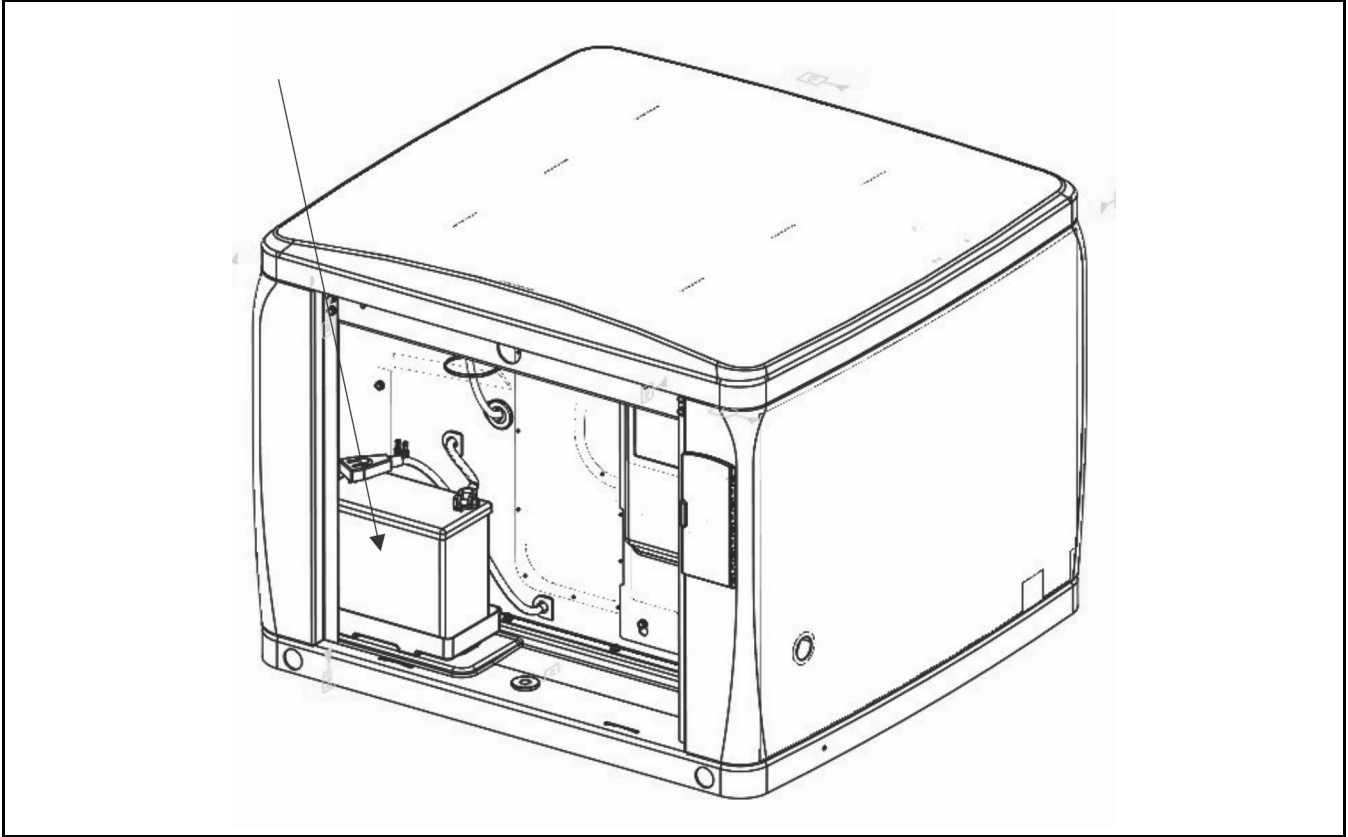
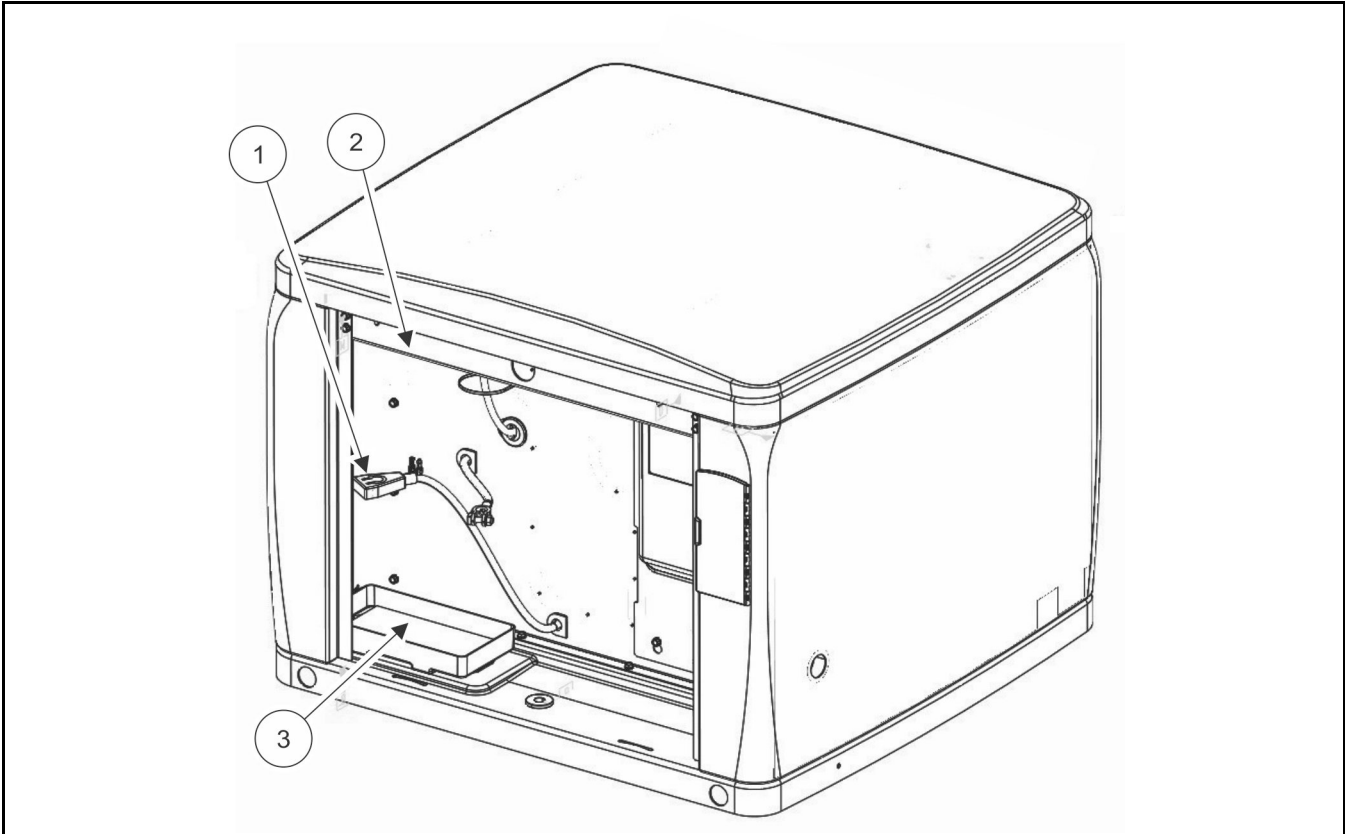


FIGURE 4. BATTERY LOCATION

- d. Remove and discard the mating terminal connections from the battery heater leads in the generator set harness.
- e. Connect the wires from the battery heater to the wires marked BATT HTR – L and BATT HTR-N in the generator set harness.



No.	Description	No.	Description
1	Battery Cable	3	Battery Tray
2	Harness Connections (Not Visible)		

FIGURE 5. BATTERY CABLE AND BATTERY TRAY LOCATIONS

- f. Remove and discard the mating terminal connections from the temperature switch leads in the generator set harness.
- g. Connect the leads of the temperature switch to the wires marked TSAT-1 and TSAT-2 in the generator set harness. See the figure below (panels were removed from the image for clarity).

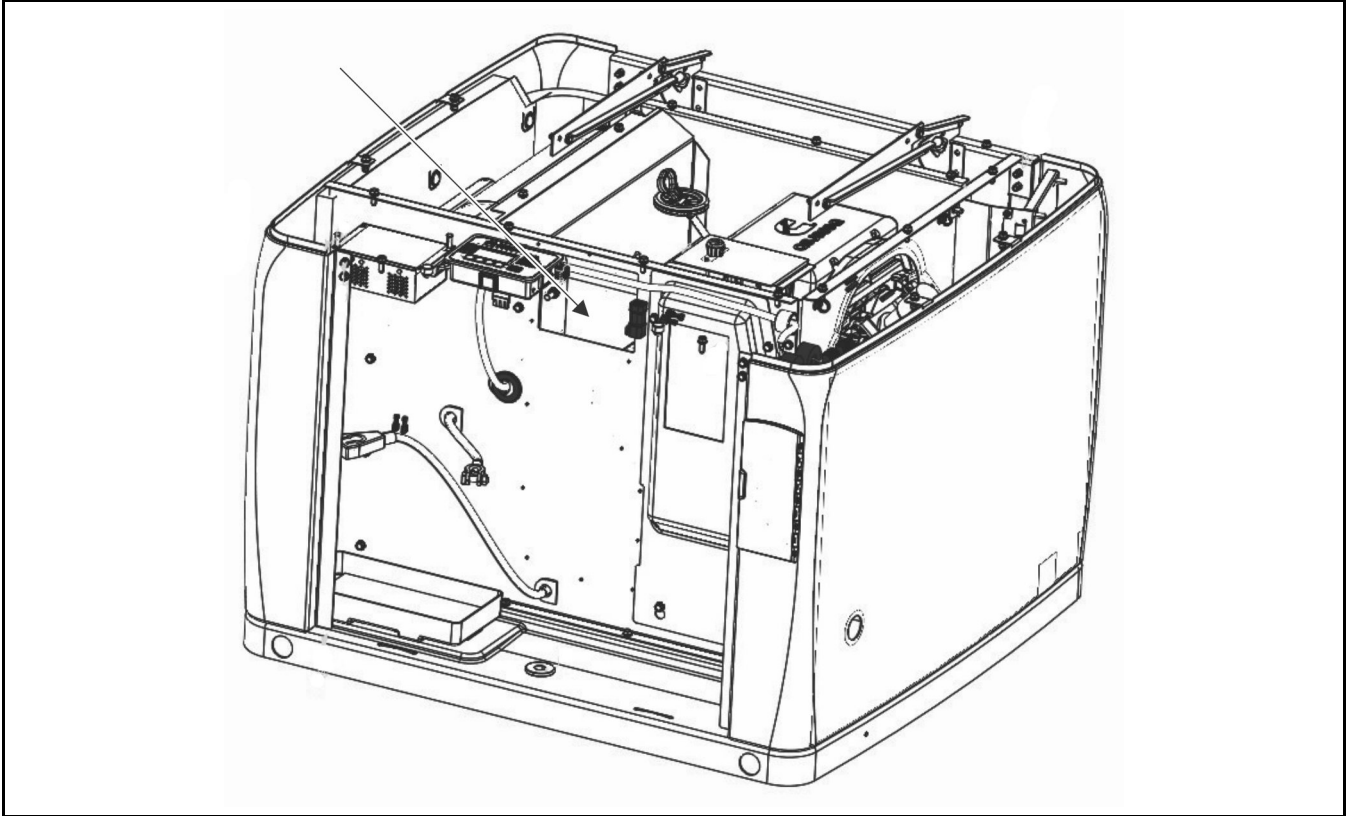


FIGURE 6. APPROXIMATE MOUNTING LOCATION FOR TEMPERATURE SWITCH

- h. Using the cable ties provided, dress the leads in an orderly manner.
- i. Re-install the battery in the tray after the heater is installed, complying with all cautions, warnings, and danger notifications listed in the installation and operator manuals.