

INSTRUCTION SHEET

2017 NEC Required 9-22 kW Engine Shutdown Add-On Kit (445.18(B))

⚠ DANGER

Accidental start-up. Disconnect power and render unit inoperable before performing service work. Failure to do so will result in death or serious injury.

(000344)

⚠ WARNING

Only qualified service personnel may install, operate, and maintain this equipment. Failure to follow proper installation requirements could result in death, serious injury, and damage to equipment or property. (000182)

**⚠ WARNING**

Consult Manual. Read and understand manual completely before using product. Failure to completely understand manual and product could result in death or serious injury. (000100a)

Introduction

New specifications in Article 445.18(B) of the 2017 National Electrical Code (NEC) require generators to be equipped with an independent means of shutting down the prime mover (engine). The shutdown mechanism, when activated, requires a mechanical reset. Generators 15 kW and larger require an additional means of shutdown to be installed outside the generator enclosure.

This kit includes all components needed to install required engine stop switch(es) on Generac air-cooled optional standby generators equipped with Evolution 1.0 and 2.0 or Sync™ version 2.0 and 3.0 controllers.

NOTE: Verify controller version and identify correct installation instructions before proceeding. Failure to do so will result in improper installation and controller damage.

Installation Overview

The basic steps for installing this unit are:

1. Drill mounting hole(s) for switch(es).
2. Install switch(es).
3. Connect switch wiring to controller harness.
4. Start generator and test switch functionality.

Required Tools

The installer must be equipped with common installation tools such as a power drill, drill bits, center punch, wire cutters, wire stripper, crimper, pencil or marker, and electrical tape. Other tools required for this installation are:

- Step drill capable of boring a 13/16 inch (21 mm) diameter hole
- Clear silicone sealant

Prepare for Installation

Before installing this kit, prevent the generator from accidental startup:

1. Lift lid and turn the generator OFF.
2. Remove 7.5 A fuse.
3. Remove intake end panel.
4. Disconnect negative battery cable.
5. Remove controller fascia.

Controller Identification

See [Figure 1](#) to determine if generator is equipped with (A) an Evolution 1.0 (Sync 2.0) controller, or (B) an Evolution 2.0 (Sync 3.0) controller.

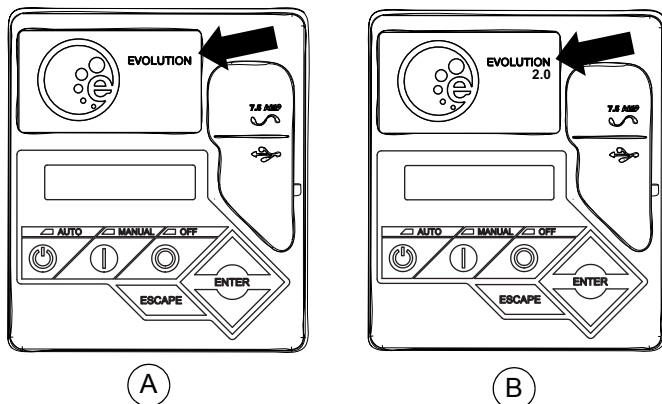


Figure 1 - Controller Identification

Install Wiring—Evolution 1.0 (Sync 2.0) Controller

See [Figure 2](#). The wiring harness in generators equipped with the Evolution 1.0 (Sync 2.0) controller includes multiple vacant pin sockets in controller connector J2. Sockets J2-9 and J2-10 are used in this installation. Two wire leads connect to the engine shutdown switch(es).

1. Remove controller.
2. Disconnect J2 connector from controller.
3. Cut extension wire in half to create two extension wires.
4. Strip 3/8 in. (10 mm) of insulation from ends.
5. Install extension wires in sockets J2-9 and J2-10.
6. Re-connect J2 connector to controller.

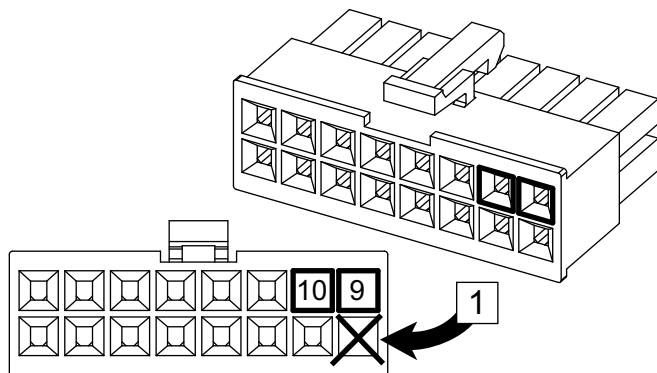


Figure 2 - J2 Connector (Evolution 1.0)

IMPORTANT NOTE: Verify wire leads are correctly installed in connector positions J2-9 and J2-10 as shown. **Do NOT mistake position J2-1 for J2-10.** Accidental use of J2-9 and J2-1 will cause an electrical short and permanently damage the controller.

Install Wiring—Evolution 2.0 (Sync 3.0) Controller

Two extension wires for the engine shutdown switch are already installed in the wiring harness in generators equipped with the Evolution 2.0 (Sync 3.0) controller. Therefore, the extension wires included in the engine shutdown kit are not used.

1. Remove controller.
2. Locate existing extension wires in generator harness (connected to form a jumper). Separate connectors in jumper so two individual wires extend from J2 connector as shown in [Figure 3](#).

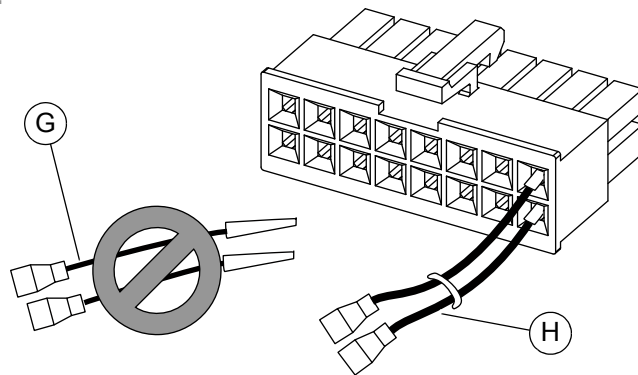


Figure 3 - Install Wiring (Evolution 2.0)

3. Carefully cut off quick connectors on the end of wire leads (H). While firmly holding wires, strip 3/8 in. (10 mm) of insulation from ends. **DO NOT** pull wires out of J2 connector.
4. Connect wire leads to engine shutdown wiring.

NOTE: Some units may only have one wire installed to form a jumper. If this is the case, cut the jumper wire in half to create the two required leads and follow the remaining installation instructions.

Switch Installation

Switches must be installed so that the UP position is ON and that the DOWN position is OFF. Use a continuity tester to verify switch ON position (normally closed).

- 15 kW and larger generators require two switches.
- For generators smaller than 15 kW, install the exterior mounted switch for minimum NEC code compliance.

Rear Panel Installation

1. See [Figure 4](#). Measure 1.5 in. (3.81 cm) down from top edge of rear panel and 3 in. (7.6 cm) from left edge of rear panel. Mark an X at this location. This will be the center point for the switch mounting hole.

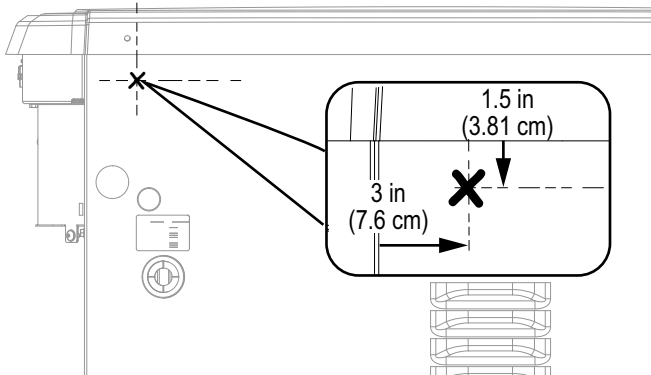


Figure 4 - Prepare Rear Panel

2. Use a step drill to bore a 13/16 in. (20.5 mm) diameter hole in the rear panel.

IMPORTANT NOTE: Do NOT drill hole larger than 13/16 in. (20.5 mm)! An oversize hole will prevent switch installation and cannot be repaired in the field. The rear panel must be replaced.

3. See [Figure 5](#). Insert switch (supplied) into hole and apply a small amount of silicone sealant around perimeter for added weather resistance.

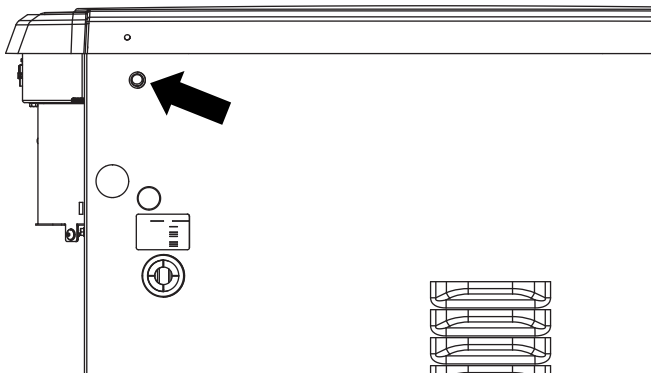


Figure 5 - Switch Installed on Rear Panel

Divider Panel Installation

1. See [Figure 6](#). Measure 2 in. (5.1 cm) down from underside of flange at top of divider panel. Measure 5 in. (12.7 cm) inward from front face of divider panel. Mark an X at this location. This will be the center point for the switch mounting hole.

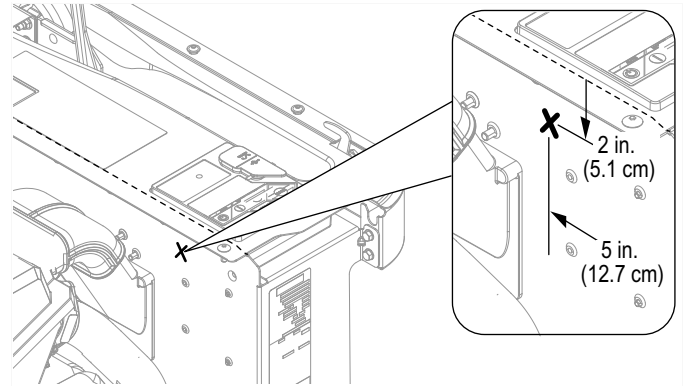


Figure 6 - Prepare Divider Panel

2. Use a step drill to bore a 13/16 in. (20.5 mm) diameter hole in the divider panel.

IMPORTANT NOTE: Do NOT drill hole larger than 13/16 in. (20.5 mm)! An oversize hole will prevent switch installation and cannot be repaired in the field. The divider panel must be replaced.

3. See [Figure 7](#). Insert switch into hole.

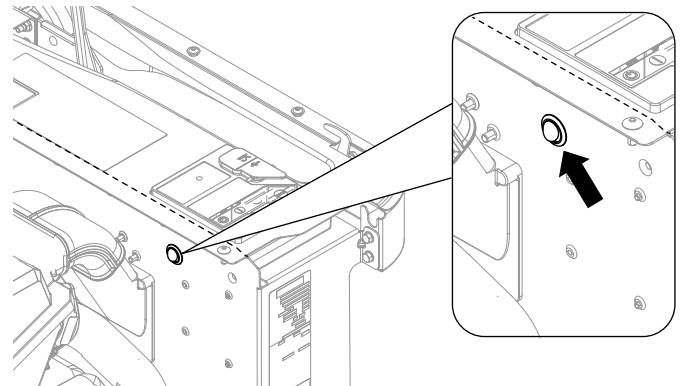


Figure 7 - Switch Installed on Divider Panel

Switch Wiring Installation

Switch(es) must be connected to the wire leads added to the J2 wiring harness connector. If two switches are installed, the switches must be wired in series with each other.

Single Switch Wiring

(rear panel)

1. Cut two lengths of 18 AWG wire at 18 in. (46 cm).
2. Strip 3/8 in. (10 mm) of insulation from ends of both wires.
3. Crimp an insulated quick disconnect connector to one end of each wire.
4. Route stripped ends of each wire under generator controller
5. Using insulated barrel splice crimp connectors (supplied), crimp stripped end of each length of wire to open wire leads in J2 wiring harness connector.
6. Connect other ends of wires (with quick disconnect connectors) to switch terminals at rear panel.
7. If controller was removed during installation, install controller. Re-attach controller fascia and intake end panel.
8. See [Figure 8](#). Apply supplied engine shutdown decal next to the switch.

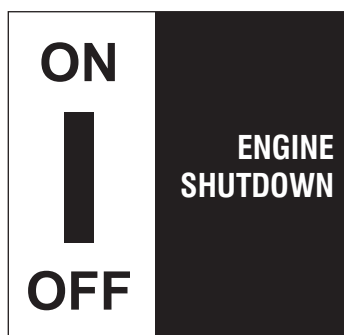


Figure 8 - Engine Shutdown Decal

Dual Switch Wiring

(rear panel and divider panel)

1. Cut one length of 18 AWG wire at 12 in. (30 cm), one length of wire at 18 in. (46 cm), and one length of wire at 19 in. (48 cm).
2. Strip 3/8 in. (10 mm) of insulation from each end of all three wires.
3. Crimp an insulated quick disconnect connector (supplied) to one end of the 12 in. (30 cm) and 18 in. (46 cm) lengths of wire.
4. Crimp an insulated quick disconnect connector to each end of the 19 in. (48 cm) length of wire.
5. Connect crimped ends of 18 in. (46 cm) and 19 in. (48 cm) wires to switch terminals at rear panel.
6. Route loose ends of 18 in. (46 cm) and 19 in. (48 cm) wires under the generator controller.
7. Crimp an insulated barrel splice crimp connector (supplied) to stripped end of 18 in. (46 cm) wire. Connect to one of the J2 wiring harness connector leads.
8. Crimp an insulated barrel splice crimp connector to stripped end of 12 in. (30 cm) wire. Connect to the other J2 wiring harness connector lead.
9. Connect 12 in. (30 cm) and 19 in. (48 cm) wires to switch terminals at divider panel.
10. If controller was removed during installation, install controller. Re-attach controller fascia and intake end panel.
11. See [Figure 8](#). Apply supplied engine shutdown decals next to switches.
12. Connect negative battery cable.
13. Install 7.5 A fuse and configure install wizard.

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Firmware Update—Evolution 1.0 (if required)

The generator controller may require a firmware update. For EcoGen™ and Synergy™ generators, firmware version 1.14 or higher is required. For all other generators with Evolution or Sync 2.0 controllers, version 1.18 or higher is required.

Verify controller firmware version. If an update is required, install latest version before testing engine shutdown switch(es).

1. With generator controller OFF, enter Edit menu.
2. Scroll through the options and select “Update Firmware.” Press Enter.
3. Insert a USB drive with current firmware into controller port. Follow prompts.
4. After firmware has been updated, press “Escape” until sub menu screen displays.

Activate Engine Shutdown Functionality (Evolution 1.0 only)

Verify firmware version of the controller is correct as specified in [Firmware Update—Evolution 1.0 \(if required\)](#). If an update is required, download and install the latest firmware before proceeding.

The controller must detect the installed switch to activate engine shutdown functionality.

1. Verify controller is powered and in the Off mode.
2. Turn switch(es) ON to verify switch(es) are engaged (closed).
3. Turn switch OFF. The controller should recognize that the switch has been disengaged and display “Auxiliary Shutdown Alarm.”
 - If alarm appears on controller screen, turn switch ON and clear alarm
 - If alarm does not appear on controller screen, engine shutdown is not functioning. Verify firmware version meets requirements. Disconnect power and re-check wiring installation. Contact Generac Technical Support if the problem cannot be identified or if you need assistance.

Test Switch Operation



Engine damage. Verify proper type and quantity of engine oil prior to starting engine. Failure to do so could result in engine damage.

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Test engine shutdown switch(es) after installation to verify proper operation.

1. Verify switch(es) are ON.
2. Use controller to manually start generator.
3. With engine running, turn one switch OFF. Engine should shut down immediately.
 - **If engine stops**, turn switch ON, clear alarm on controller, and restart engine to verify generator is operating normally. After verifying normal operation of first switch, verify operation of second switch, if installed.
 - **If engine does not stop**, switch is not functioning correctly. Stop generator through the control panel, and re-check wiring installation. Contact Generac Technical Support if the problem cannot be identified or if you need assistance.
4. Show homeowner how to operate the engine shutdown switch. Remind him or her that the engine shutdown switch is not intended to be the primary means to shut down the generator under normal operating conditions. Accidental activation of an engine shutdown switch will prevent the generator from operating during a power outage.

Complete Installation

To turn generator back ON:

1. Move generator main line circuit breaker (generator disconnect) to ON (Closed).
2. Place controller in AUTO.
3. Close lid.