AUTOMATIC HOME STANDBY GENERATORS

Carrier®

Turn to the Experts.℠

Installation Guide

This Installation Guide is intended to be used in conjunction with the *Owner's Manual*.

The *Owner's Manual* must first be read thoroughly prior to installation of the Home Standby generator.

⚠ Intended for outdoor installation only.

⚠ Not intended for life support applications.

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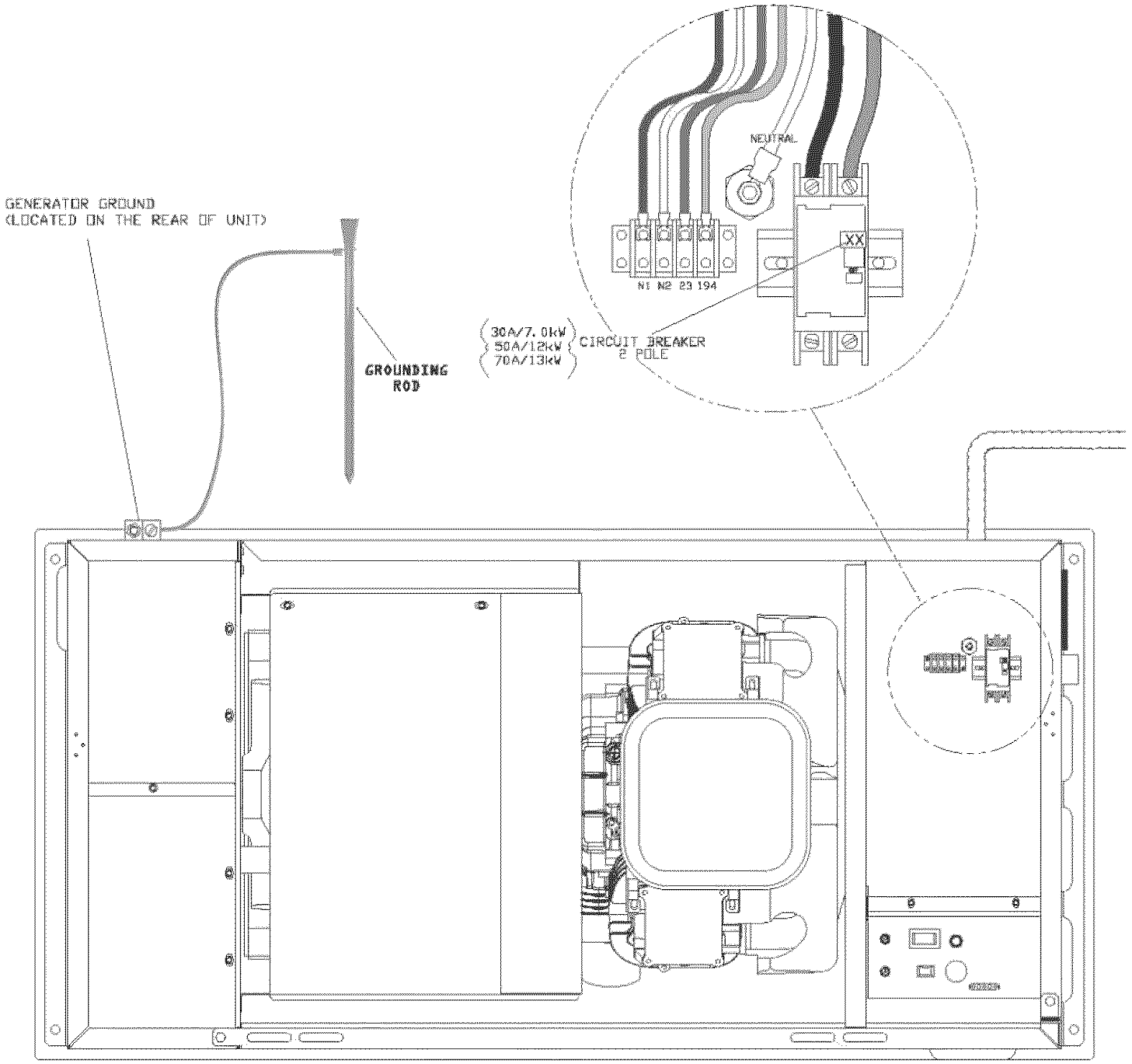
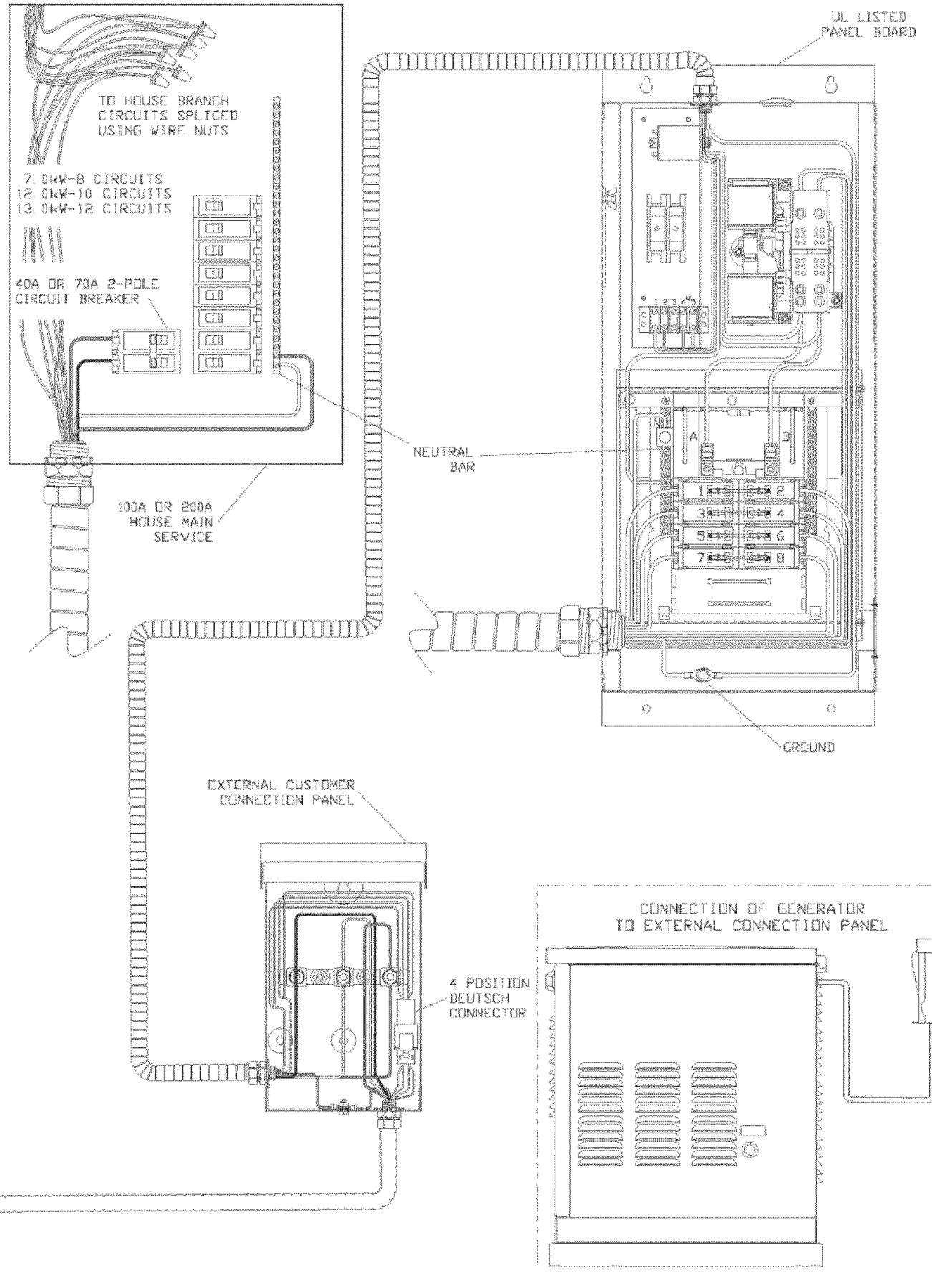
ELECTRICAL INSTALLATION DRAWING



TOP VIEW


TO HOUSE BRANCH
CIRCUITS SPLICED
USING WIRE NUTS
7.0kW-8 CIRCUITS
12.0kW-10 CIRCUITS
13.0kW-12 CIRCUITS
40A OR 70A 2-POLE
CIRCUIT BREAKER
100A OR 200A
HOUSE MAIN
SERVICE
UL LISTED
PANEL BOARD
NEUTRAL
BAR
GROUND
EXTERNAL CUSTOMER
CONNECTION PANEL
4 POSITION
DEUTSCH
CONNECTOR
CONNECTION OF GENERATOR
TO EXTERNAL CONNECTION PANEL

PLEASE NOTE: This basic installation guide is not a substitute for the "Owner's Manual" included with this system. Please read all information prior to installation and operation of your CARRIER Home Standby Generator.

Thank you for purchasing this model of the CARRIER product line. This model is a compact, high performance, air-cooled, engine-driven generator designed to automatically supply electrical power to operate critical loads during a utility power failure.

This unit is factory installed in an all-weather, acoustical metal enclosure that is intended exclusively for outdoor installation. This generator will operate using either liquid propane gas (LPG) or natural gas (NG).

READ THIS MANUAL THOROUGHLY

If you do not understand any portion of this manual, contact CARRIER at 1-877-600-2792.

Throughout this publication, and on tags and decals affixed to the generator, **DANGER**, **WARNING**, **CAUTION** and **NOTE** blocks are used to alert you to special instruction about a particular operation that may be hazardous if performed incorrectly or carelessly. Observe them carefully. Their definitions are as follows:

DANGER **After this heading, you can read instructions that, if not strictly complied with, will result in personal injury or property damage.**

WARNING **After this heading, you can read instructions that, if not strictly complied with, may result in personal injury or property damage.**

CAUTION **After this heading, you can read instructions that, if not strictly complied with, could result in damage to equipment and/or property.**

NOTE: After this heading, you can read explanatory statements that require special emphasis.

These safety warnings cannot eliminate the hazards that they indicate. Common sense and strict compliance with the special instructions while performing the service are essential to preventing accidents.

Four commonly used safety symbols accompany the **DANGER**, **WARNING** and **CAUTION** blocks. The type of information each indicates follows:

⚠ **This symbol points out important safety information that, if not followed, could endanger personal safety and/or property of you and others.**

This symbol points out potential explosion hazard.

This symbol points out potential fire hazard.

⚠ **This symbol points out potential electrical shock hazard.**

⚠ **SAVE THESE INSTRUCTIONS - The manufacturer suggests that these rules for safe operation be copied and posted near the unit's installation site. Safety should be stressed to all operators and potential operators of this equipment.**

WARNING The engine exhaust from this product contains chemicals known to the state of California to cause cancer, birth defects or other reproductive harm.

WARNING The product contains or emits chemicals known to the state of California to cause cancer, birth defects or other reproductive harm.

Study these **SAFETY RULES** carefully before installing, operating or servicing this equipment. Become familiar with this Installation Guide and the *Owner's Manual* included with the unit. The generator can operate safely, efficiently and reliably only if it is properly installed, operated and maintained. Many accidents are caused by failing to follow simple and fundamental rules or precautions.

CARRIER cannot possibly anticipate every possible circumstance that might involve a hazard. The warnings in this manual, and on tags and deca ls affixed to the unit are, therefore, not all-inclusive. If you use a procedure, work method or operating technique CARRIER does not specifically recommend, you must satisfy yourself that it is safe for you and others. You also must make sure the procedure, work method or operating technique that you choose does not render the generator unsafe.

DANGER **Despite the safe design of this generator, operating this equipment imprudently, neglecting its maintenance or being careless can cause possible injury or death. Permit only responsible and capable persons to operate or maintain this equipment.**

⚠ **Potentially lethal voltages are generated by these machines. Ensure all steps are taken to render the machine safe before attempting to work on the generator.**

⚠ **Parts of the generator are rotating and/or hot during operation. Exercise care near running generators.**

⚠ GENERAL HAZARD ⚠

For safety reasons, CARRIER recommends that the installation, initial start up and maintenance of this equipment is carried out by a CARRIER dealer.

- The engine exhaust fumes contain carbon monoxide, which can be **DEADLY**. This dangerous gas, if breathed in sufficient concentrations, can cause unconsciousness or even death. This exhaust system must be installed properly, in strict compliance with applicable codes and standards. Following installation, you must do nothing that might render the system unsafe or in noncompliance with such codes and standards.
- Keep hands, feet, clothing, etc., away from drive belts, fans, and other moving or hot parts. Never remove any drive belt or fan guard while the unit is operating.
- Adequate, unobstructed flow of cooling and ventilating air is critical to correct generator operation. Do not alter the installation or permit even partial blockage of ventilation provisions, as this can seriously affect safe operation of the generator. The generator MUST be installed outdoors.
- When working on this equipment, remain alert at all times. Never work on the equipment when you are physically or mentally fatigued.
- Inspect the generator regularly, and contact your nearest CARRIER Dealer for parts needing repair or replacement.
- Before performing any maintenance on the generator, disconnect its battery cables to prevent accidental start up. Disconnect the cable from the battery post indicated by a NEGATIVE, NEG or (–) first. Reconnect that cable last.

- Never use the generator or any of its parts as a step. Stepping on the unit can stress and break parts, and may result in dangerous operating conditions from leaking exhaust gases, fuel leakage, oil leakage, etc.

⚠ ELECTRICAL HAZARD ⚠

- All generators covered by this manual produce dangerous electrical voltages and can cause fatal electrical shock. Utility power delivers extremely high and dangerous voltages to the transfer switch as does the standby generator when it is in operation. Avoid contact with bare wires, terminals, connections, etc., while the unit is running. Ensure all appropriate covers, guards and barriers are in place before operating the generator. If you must work around an operating unit, stand on an insulated, dry surface to reduce shock hazard.

- Do not handle any kind of electrical device while standing in water, while barefoot, or while hands or feet are wet. **DANGEROUS ELECTRICAL SHOCK MAY RESULT.**

- The National Electrical Code (NEC) requires the frame and external electrically conductive parts of the generator to be connected to an approved earth ground. Local electrical codes also may require proper grounding of the generator electrical system.

- After the home standby electrical system has been installed it will be capable of cranking and starting at any time while in the "Auto" mode. When the unit starts in "Auto" the load circuits are transferred to the STANDBY (generator) power source. To prevent possible injury when working on the system **always** set the generator's Auto/Off/Manual switch to "OFF", remove control panel fuses and disconnect the starting battery.

- In case of accident caused by electric shock, immediately shut down the source of electrical power. If this is not possible, attempt to free the victim from the live conductor. **AVOID DIRECT CONTACT WITH THE VICTIM.** Use a non-conducting implement, such as a rope or board, to free the victim from the live conductor. If the victim is unconscious, apply first aid and get immediate medical help.

- Never wear jewelry when working on this equipment. Jewelry can conduct electricity resulting in electric shock, or may get caught in moving components causing injury.

⚠ FIRE HAZARDS ⚠

- For fire safety, the generator must be installed and maintained properly. Installation always must comply with applicable codes, standards, laws and regulations. Adhere strictly to local, state and national electrical and building codes. Comply with regulations the Occupational Safety and Health Administration (OSHA) has established. Also, ensure that the generator is installed in accordance with the manufacturer's instructions and recommendations. Following proper installation, do nothing that might alter a safe installation and render the unit in noncompliance with the aforementioned codes, standards, laws and regulations.

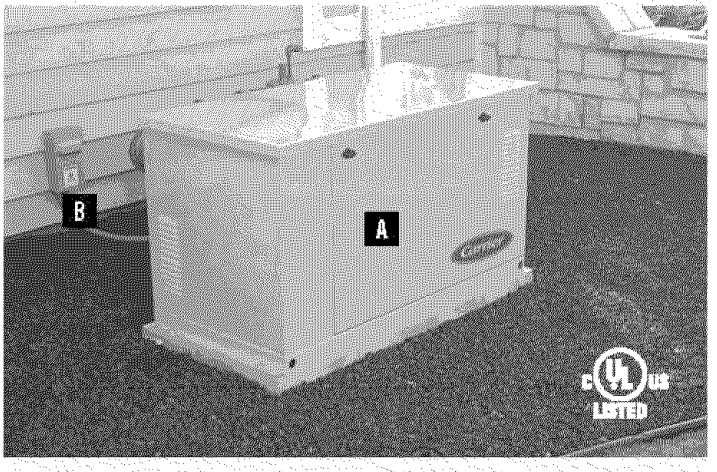
- Keep a fire extinguisher near the generator at all times. Extinguishers rated "ABC" by the National Fire Protection Association are appropriate for use on the standby electric system. Keep the extinguisher properly charged and be familiar with its use. If you have any question pertaining to fire extinguishers, consult your local fire department.

⚠ EXPLOSION HAZARDS ⚠

- Do not smoke around the generator. Wipe up any fuel or oil spills immediately. Ensure that no combustible materials are left in the generator compartment, or on or near the generator, as **FIRE** or **EXPLOSION** may result. Keep the area surrounding the generator clean and free from debris.

- Gaseous fluids such as natural gas and liquid propane (LP) gas are extremely **EXPLOSIVE**. Install the fuel supply system according to applicable fuel-gas codes. Before placing the home standby electric system into service, fuel system lines must be properly purged and leak tested according to applicable code. After installation, you must inspect the fuel system periodically for leaks. No leakage is permitted.

Carrier **PRE-PACKAGED COMPONENTS INCLUDES:**



A. CARRIER Home Standby Generator

B. Outdoor connection box prewired to generator controls and main line circuit breaker.

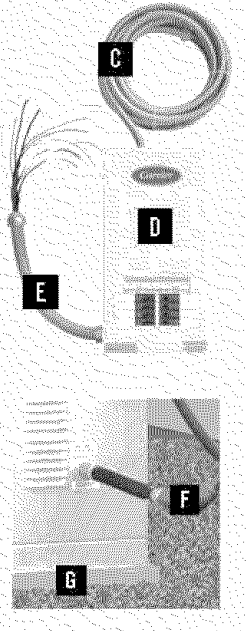
C. 30' pre-wired flexible conduit for hook-up to outdoor connection box.

D. Automatic transfer switch with built-in load center.

E. 2' pre-wired conduit for easy connection to the main electrical distribution panel.

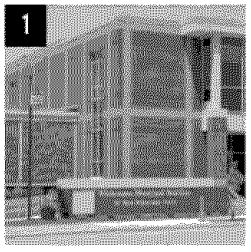
F. Flexible fuel line for connection from rigid gas pipe to generator fuel inlet.

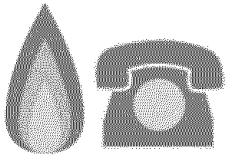
G. Composite mounting pad - eliminates the need to pour concrete.

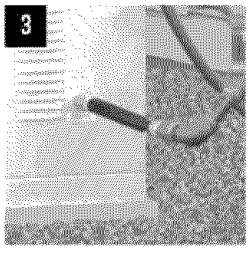


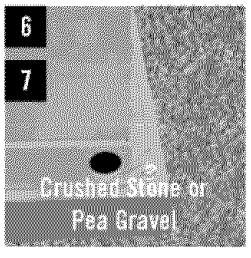
All CARRIER air-cooled generators are listed to applicable U.S. and Canadian safety standards by Underwriters Laboratories Inc. UL 2200 covers safety standards for engine generator assemblies and UL 1008 covers standards for transfer switches. UL Listing is your only assurance of local building inspection approval, safety and certified kW power ratings.

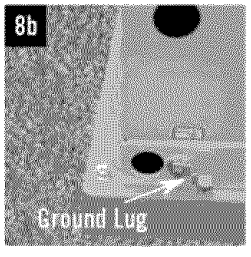
STEP 1 SITE PREPARATION











1. It will be necessary to pay a visit to your local municipal offices to apply for a building permit. Building permits are necessary to ensure proper installation, safety and adherence to all local building code specifications. The location and phone number can be found in the government section of your local phone book.
2. Plan the location of your generator. **NOTE: Do not place the generator directly under a window.** Select an area outside of your home nearest your incoming gas service.
3. Arrange for installation of rigid gas piping (per local code specifications) to the location where you intend to position your generator. Fuel piping should include a fuel shut-off valve. Optimally, the termination of the rigid piping should be within 8-10" inches of the fuel inlet of the generator in-line with the inlet.
4. Clear an area 5-1/2 feet by 5 feet minimum of grass and vegetation to a depth of 5 inches. This includes the distance the generator should be set away from any structure (3 feet) and 6 inches beyond the width and length of the generator mounting pad (48" L x 24" W). **NOTE: Local codes may supercede these requirements.**
5. Lay black poly-film to cover the area.
6. Fill the area to ground level with pea gravel or crushed stone.
7. Place the generator, which is attached to the mounting pad, on the area you have just prepared.

8a. Drive an 8 ft. grounding rod into the ground to grade.

8b. Attach one end of the grounding strap (No. 12 AWG stranded copper wire) to grounding rod and the other end to the grounding lug (located at rear corner of unit). Make sure grounding rod and strap are not exposed above ground level. (NEC code applies to grounding method.)

NOTE: Generator mode switch should be placed in the "off" position. Generator main line circuit breaker should be switched to "off" or open position.

ITEMS YOU MUST PURCHASE:

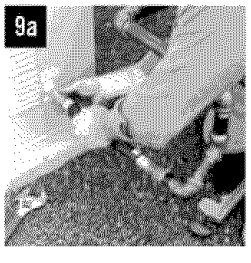
- Battery - Automotive type group 26/26R negative ground with a minimum 350 CCA at 0° F (7 kW) or minimum 525 CCA at 0° F (12 kW and 15 kW)
- 40 Amp (7 kW) or 70 Amp (12 kW and 15 kW) double pole circuit breaker (Must be compatible with your main distribution panel.)
- Grounding rod with grounding strap
- Crushed stone or pea gravel (approximately 10-12 cubic feet)
- Black poly-film or other vegetation blocking fabric (5-1/2' x 5')
- Silicone caulk
- Pipe sealant (suitable for gaseous fuel connections)
- Fasteners (to mount external connection box and automatic transfer switch with built-in emergency load center)

TOOLS REQUIRED:

Drill, drill bits, hole saw *(type and length will be determined by the materials you will be drilling and cutting)*, open-end wrenches or adjustable wrenches, socket wrenches or nut drivers, standard and Phillips screwdrivers, level, sledge hammer, channel-lock pliers, spade shovel, pencil and safety goggles.

PLEASE NOTE: Natural gas pressure to the fuel inlet on the generator must be 5 - 7" W.C. (0.18 to 0.25 psi). LP gas pressure to the fuel inlet on the generator must be 11 - 14" W.C. (0.4 to 0.5 psi) A primary regulator must be used if unit is connected to an LP fuel tank (Primary regulator is not supplied).

STEP 2 FUEL HOOK UP & CHECK FOR LEAKS

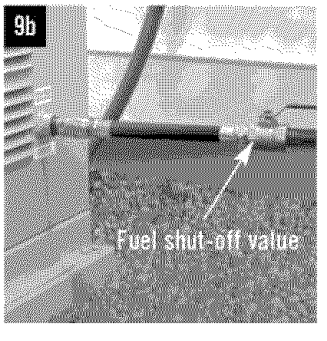


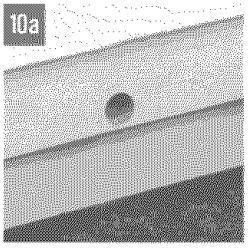
9a. Make the connection between the rigid fuel piping and the generator using the supplied threaded flexible fuel line. The flex hose should be straight. **Do not bend the hose in place of using pipe elbows.** Use a pipe sealant suitable for gaseous fuel connections. Check connections for leaks by opening manual fuel shut-off valve and swab or spray connections with soapy water. If a leak exists the area will bubble with the presence of the soapy water.

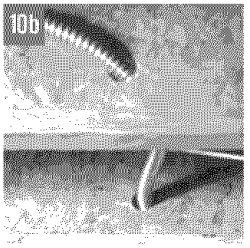
9b. If a leak is located, shut off fuel, and disconnect flexible piping. Dry the threaded ends and reapply an adequate amount of pipe sealant. Reconnect flexible fuel line, open fuel supply and recheck for leaks. If leak still exists, repeat step 9b.

CONVERTING TO LP GAS

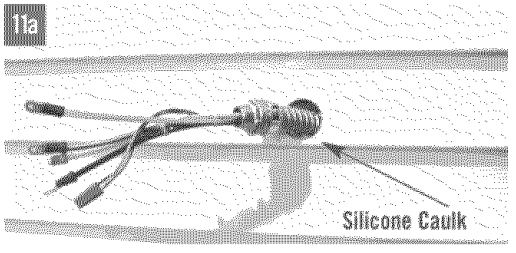
From the factory, units are set-up on natural gas. To convert operation to LP gas, refer to *"Reconfiguring the fuel system"* in the **Parts, Adjustments & Maintenance Manual.**



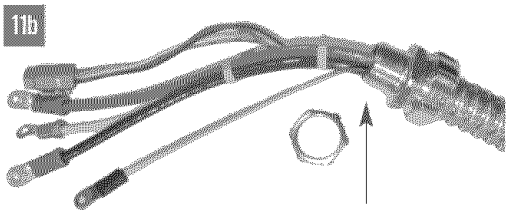




1-3/4" Diameter Hole (7 kW and 12 kW)
2-1/2" Diameter Hole (15 kW)



The outer diameter of the conduit connector is :
1-1/16" (7 kW and 12 kW) or 2-3/8" (15 kW)



The outer diameter of the threaded end is:
15/16" (7 kW and 12 kW) or 1-3/8" (15 kW)

STEP 3 CONNECTION TO EXTERNAL CONNECTION BOX

10a. Determine where the flexible conduit will pass through the house from inside to outside. When you are certain you have clearance on each side and within the wall, drill a small pilot hole through the wall to mark the location.

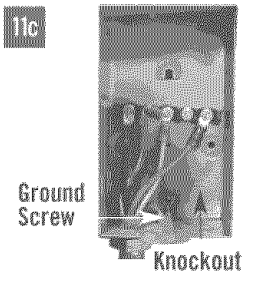
10b. Using a hole saw, drill the appropriate size hole in the house's wall to allow the conduit to fit through.

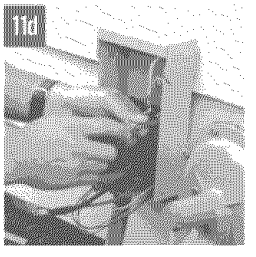
11a. From the inside of the house, feed the end of the 30-foot conduit (which is pre-wired from transfer switch) through the wall to outside.

11b. Remove the threaded lock nut from the conduit coupling.

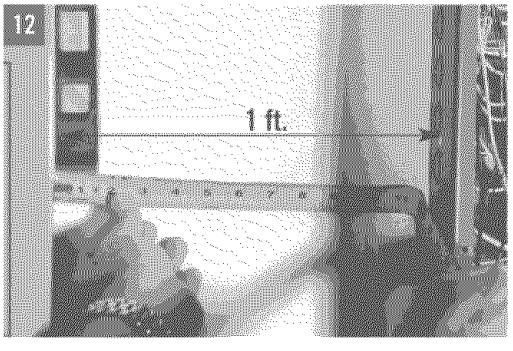
11c. Remove the knock out in the lower right corner of the external connection box. From the rear of the connection box, feed wires & 4 pin plug into box. Slip the lock nut over wires and plug and tighten securely onto conduit coupling. Connect wires to lugs; Black to black, white to white, and red to red. Snap together the 4-pin plug connector. Loosen nut from grounding lug and attach ground wire (green) from conduit. Reinstall nut and tighten. This wiring is complete.

11d. Using appropriate fasteners, mount external connection box over pre-drilled hole to fully conceal the hole. (Seal around the hole and conduit with silicone caulk from both inside and outside of the home.





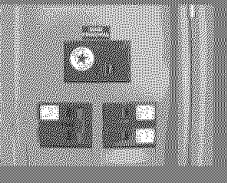
STEP 4 MOUNTING THE AUTOMATIC TRANSFER SWITCH



12. Locate automatic transfer switch with built-in emergency load center within one foot of main distribution panel. The automatic transfer switch with built-in load center can be located to the left or right of main distribution panel. Hold transfer switch against the mounting surface. Level the transfer switch and mark the mounting holes. Drill the appropriate size pilot holes. Mount automatic transfer switch with built-in load center to mounting surface with appropriate fasteners.

DANGER: Although you may choose to perform electrical connections yourself, CARRIER recommends that a licensed electrician or individual with complete knowledge of electricity perform the procedures in sections 12, 13a, and 13b.

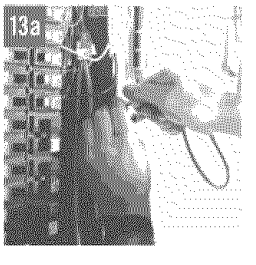
DANGER: Switch service main circuit breaker to "off" or open position prior to removal of cover or removal of any wiring of the main electrical distribution panel. The wires connected to the service main circuit breaker remain live or "hot". Avoid contact with these wires and the service main circuit breaker connection lugs.



NOTE: Balance must be maintained when moving circuit locations from main electrical distribution panel to emergency load center. Circuit breaker positions alternate buss bars vertically. Circuits sharing a neutral wire should either be moved together to adjacent positions in emergency load center or not moved. If you are unsure of proper procedure or if your installation differs from that described in this guide, consult a licensed professional at this time.

STEP 5 CONNECTION OF EMERGENCY CIRCUITS

13a. Remove the main electrical distribution panel cover. Remove appropriate size knockout from the bottom or side of the main panel. (A 2 ft. flexible conduit is pre-wired from the transfer switch with built-in load center.) Remove threaded lock nut from conduit coupling. Feed all wires through knockout into main panel. Slip lock nut over wires and tighten securely on conduit coupling. Remove the black (hot) wire from a circuit breaker that protects a circuit you want to have powered in the event of a power failure. - *continued on page 8*



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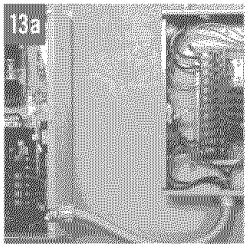
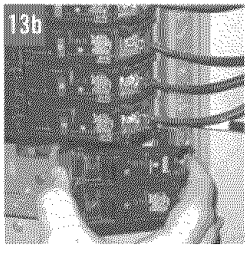


Wire nut the black wire to the matching circuit lead wire from the emergency circuit breaker from load center in the transfer switch. (All circuit wires are color coded and labeled for easy identification). **UL approved wire nuts are included in installation kit.** Repeat this process with remaining circuits to be powered by the generator. White wires (neutral) in your main distribution panel should remain connected to neutral bar. It is not necessary to move them. The emergency load center in the transfer switch supplies the following circuits: 7 kW (5) 15A 120V, (1) 20A 120V and (1) 30A 240V. 12 kW (3) 15A 120V, (3) 20A 120V, (1) 20A 240V & (1) 30A 240V. Model 15 kW will include circuits listed for the 12 kW and (2) additional 15A 120V circuits.

NOTE: Circuits to be moved must be protected by same size breaker. For example, a 15 Amp circuit in main panel must be 15 Amp circuit in transfer switch.

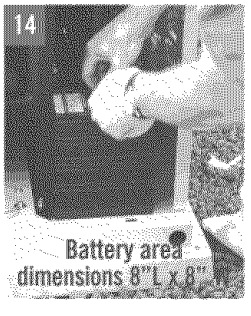
13b. Install the 40 Amp or 70 Amp double pole circuit breaker that you have purchased into main electrical distribution panel. This circuit breaker **must be compatible with your main electrical distribution panel.** It may be necessary to reposition remaining circuit breakers or remove circuit breakers that have been disconnected to accommodate the insertion of the 40 Amp or 70 Amp double pole circuit breaker. Connect white wire to the main distribution panel neutral bar. Connect green wire to main electrical panel ground bar. Connect the black and red wires to the 40 Amp or 70 Amp double pole circuit breaker.



STEP 6 CONNECT STARTING BATTERY

14. Recommended battery is automotive type group 26 12V negative ground with a minimum 350 CCA at 0° F (7 kW) or minimum 525 CCA at 0° F (12 kW and 15 kW). The hold down clamp is included.

    Connect positive (+) (red) cable to positive (+) battery post. Connect negative **(-) (black)** ground cable to negative **(-)** battery post.



⚠ **WARNING set the generators AUTO / OFF / MANUAL switch to "OFF." Turn off utility power supply to the transfer switch. If the AUTO / OFF / MANUAL switch is not set to its "OFF" position, the generator can crank and start as soon as the battery cables are connected. If the utility power supply is not turned off sparking can occur at the battery posts and cause an explosion.**

NOTE: Dielectric grease should be used on battery posts to aid in the prevention of corrosion.

NOTE: In areas where temperatures regularly fall below 10°F (-12°C) it is recommended that a pad type battery heater be installed to aid in cold climate starting.

STEP 7 READY THE SYSTEM FOR RETURN AUTOMATIC OPERATION

15. Switch service main circuit breaker to "on" or closed position. Switch the circuit breakers in the emergency distribution panel to the "on" or closed position. Switch the generator main line circuit breaker to the "on" or closed position. Verify that the 40 Amp or 70 Amp double pole circuit breaker that was inserted in the main electrical distribution panel is switched to the "on" or closed position. Place generator mode switch in the "AUTO" position. Verify that fuel valve on rigid gas piping is open. **Perform steps in *Parts, Adjustments & Maintenance Manual* prior to testing the system.**

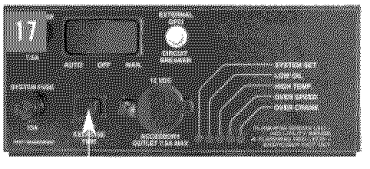
STEP 8 TEST SYSTEM

16. Switch service main circuit breaker to "off" or open position. This simulates the loss of utility power. The generator should crank and start within 20 seconds. Load transfer should occur within 10 seconds of generator start. To return system to automatic mode, switch service main breaker to "on" or closed position. This simulates the return of power from the utility. The generator will run for a short cool down period of several minutes while the entire system stands ready for the next power outage.

NOTE: When utility voltage source is lost by the generator, the system set light will flash rapidly.

STEP 9 SET EXERCISER

17. A switch on the control panel allows you to select the day and time for the system to exercise. The generator will start and run for approximately twelve minutes and then shut down on its own. To select a time and day of the week you must perform the following sequence at that time. Verify that the Auto/Off/Manual switch is set to "AUTO."



Exerciser Switch

Hold down the "Set Exercise Time" switch until the generator starts (approximately 10 seconds) and release. The generator is now set to exercise on that day and at that time every week. If the battery is disconnected for any reason the exercise time must be reset.

NOTE: Until the exerciser is set, all the red LED's will flash in the Auto or Manual mode.

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