

CONNECTICUT ELECTRIC

W E P O W E R H O M E S

EmerGen Switch[®] Manual Transfer Switch

OWNER'S MANUAL AND INSTALLATION INSTRUCTIONS

For Models 6-7501G2 & 10-7501G2
Convertible Indoor / Outdoor Manual Transfer Switch



Conforms to standards UL-1008
and CSA C22.2 no. 178.2 and NEC
Article 702.



**PLEASE READ THIS MANUAL IN ITS ENTIRETY
BEFORE INSTALLING AND/OR OPERATING YOUR
EmerGen Switch[®]
RETAIN THIS MANUAL FOR FUTURE REFERENCE**

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Your new EmerGen Switch (EGS) will provide you with a way to safely utilize your generator power through your existing electrical wiring during a power outage. You'll install your switch next to your home's electrical panel load center and then you'll connect circuit breaker wires to the transfer switch's circuits. Once you power up your portable generator, you will manually turn on each switch and that generator energy is transferred as electrical power and goes through the house circuits you have previously chosen.

Your EmerGen Switch is easy for a licensed electrician or qualified professional to install, safe for a homeowner to operate, and will work with 120/240V single phase AC generators, factory equipped with NEMA type receptacles L14-20R or L14-30R.

Your EmerGen Switch cannot permit connection to both utility and generator power at the same time eliminating the possibility of back feeding.

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Warning:

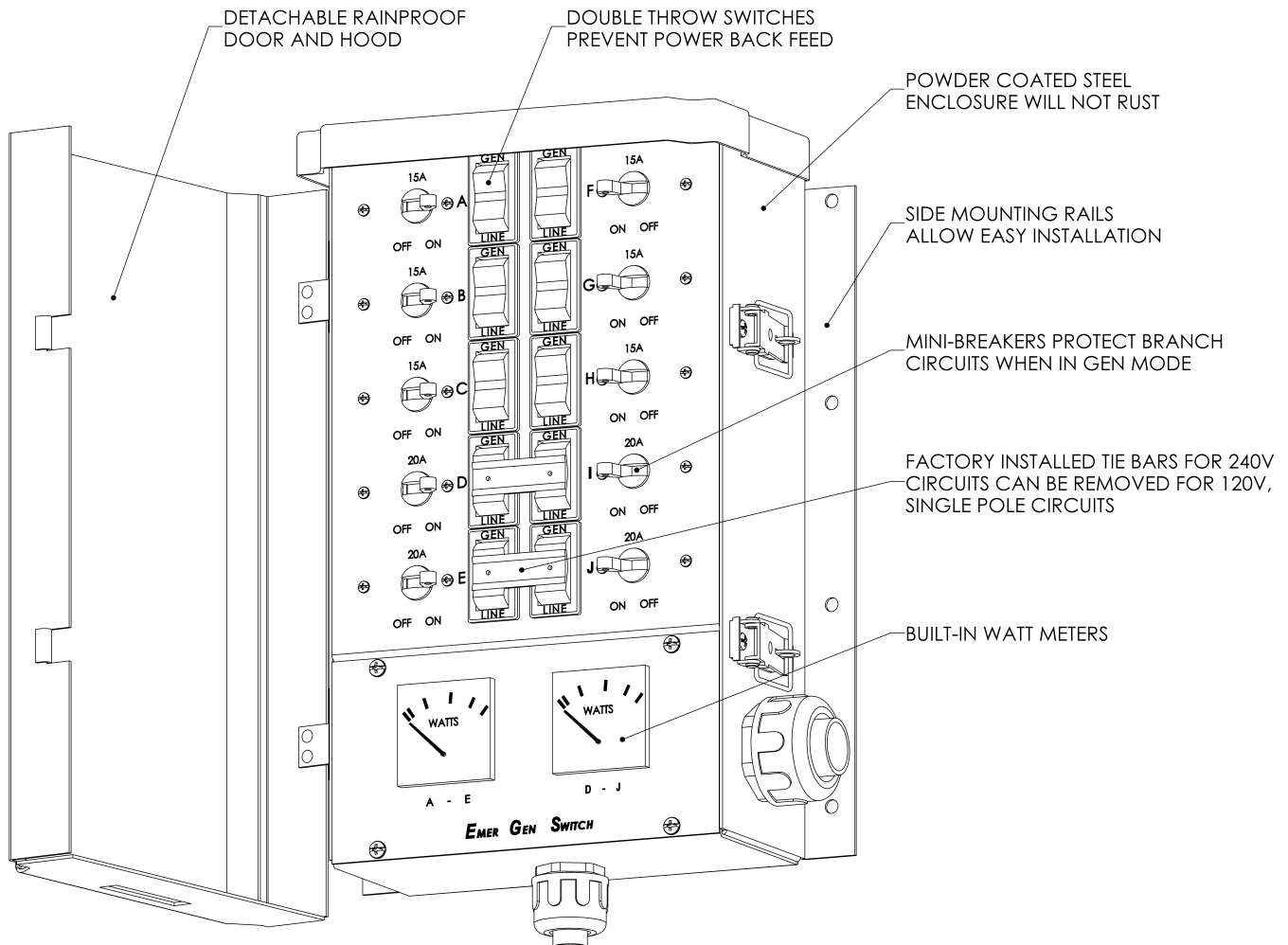
Improper installation of this transfer switch could cause damage or personal injury by electrocution or fire. Installation must be performed by a licensed electrician or qualified professional in accordance with applicable electrical codes. Inspection of the installation by the local inspection authority is required. Inspection records should be kept for insurance claims.

Attention:

Une mauvaise installation de ce commutateur de transfert pourrait causer des dommages ou des blessures par électrocution ou d'incendie. L'installation doit être effectuée par un électricien agréé ou qualifié, conformément aux codes électriques. Inspection de l'installation par l'autorité de contrôle local est nécessaire. Les dossiers d'inspection doivent être conservés pour créances d'assurance.

Specifications

Model Number	Maximum Combined Loads at 250 VAC	Total Circuits	Number of 15 Amp Circuits	Number of 20 Amp circuits
6-7501G2	30 Amps	6	4	2
10-7501G2	30 Amps	10	6	4



SAFETY INFORMATION

1. The National Electrical Code states the connection of a generator to any electrical circuit normally powered by an electrical utility, must be by means of an approved transfer switch so as to isolate the electrical circuit from the utility system when the generator is operating.
2. A licensed electrician or qualified professional must install this EmerGen Switch according to local code.
3. **WARNING:**To reduce the risk of electrical shock, the MAIN circuit breaker in the load center must be in the OFF position during the course of installation.
ATTENTION: Ouvrir L'interrupteur principal ou le disjoncteur dans le panneau de distribution avant l'installation ou l'entretien.

GENERATOR

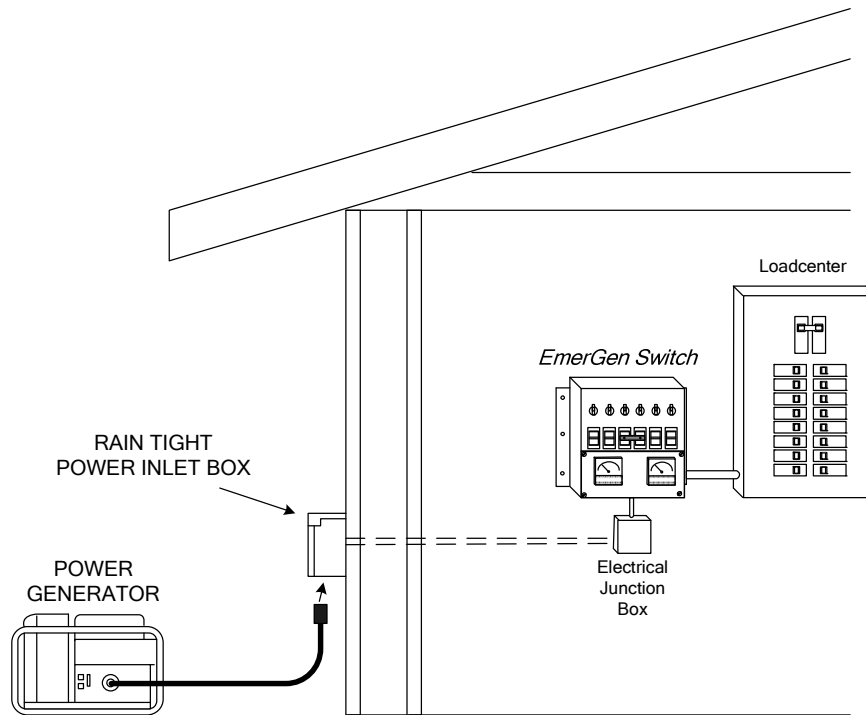
1. The portable generator used with your EmerGen Switch, must be operated outside of any building.
2. This product is suitable only for use with a generator with floating neutral.
3. **Warning:** Follow generator' manufacturer's instructions for removing bond between generator neutral and frame.
Attention: Respecter les instructions du fabricant de la generatrice pour retirer la connexion entre le neuter de la generatrice et le bati.
4. Always plug the power cord set into your generator and into the power inlet box before starting the generator and always shut the generator down before detaching the power cord set.
5. Do not overload your generator or its circuit breakers will trip. Using the EmerGen Switch's built-in watt meters, you can balance the loads to avoid impeding your generator's performance.

INSTALLATION PREPARATION

1. Decide which circuits will be powered by the generator during a power outage. The recommended circuits include the fireplace fan or furnace fan (gas or fuel only), sump pump, refrigerator, freezer, one lighting or kitchen appliance circuit, and perhaps one lighting circuit elsewhere. Most well pumps are 240V—or any other 240V appliance—will utilize two EmerGen Switch circuits. (C&D on the 6 circuit models or D&I or E&J on the 10 circuit models). **NOTE—ONLY 15A AND 20A CIRCUITS CAN BE CONNECTED TO THE EMERGEN SWITCH!**
2. Identify the load center circuits you've determined are 15 amps or less. Designate each EmerGen Switch circuit that will be used. Identify the load center circuits that are 20 amps. Designate these circuits for use on the 20 amp EmerGen Switch circuits. **ANY CIRCUITS GREATER THAN 20A CANNOT BE CONNECTED!**

Note: If a circuit you have selected is a GFCI or AFCI circuit breaker, it will not be GFCI or AFCI protected while it is powered by the generator.

TYPICAL INSTALLATION



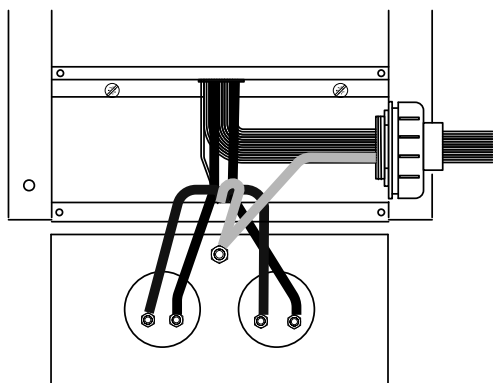
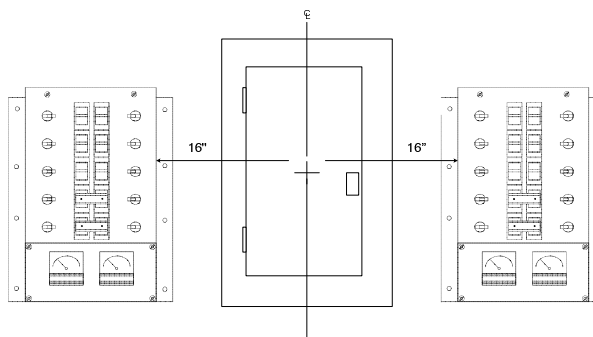
WATTAGE REQUIREMENTS

Appliance	Running Wattage	Start-Up Wattage
Furnace Fan (gas or fuel)		
1/8 Horsepower	300	500
1/6 Horsepower	500	750
1/4 Horsepower	600	1000
1/3 Horsepower	700	1400
1/2 Horsepower	875	2350
Well Pump		
1/3 Horsepower	750	1400
1/2 Horsepower	1000	2100
Sump Pump		
1/3 Horsepower	800	1300
1/2 Horsepower	1050	2150
Light Bulbs (incandescent)	as marked	0
Refridgerator or Freezer	700	2200
Garage Door Opener		
1/4 Horsepower	550	1100
1/3 Horsepower	725	1400
Microwave Oven (600 watt)	600	800
Television	300	0
Coffe Maker (typical)	1750	0
Dehumidifier	650	800
Portable Heater	1000 - 1500	0
Water Heater	3500	0

1. Most appliances and motors have current ratings noted directly on the units. Light bulb wattages are noted on the bulb.
2. Some electrical motors surge in power when first started. Your EmerGen Switch has watt meters so you can monitor the flow of these start-up surges without impeding your generator's performance.
3. Load balance is obtained by the pre-determination of chosen circuits. Try to distribute loads with similar wattage requirements equally on the left and right sides of the EmerGen Switch. Example: place the refrigerator on circuit A and the freezer on circuit F. Attempt to balance loads to within 1000W on each side.

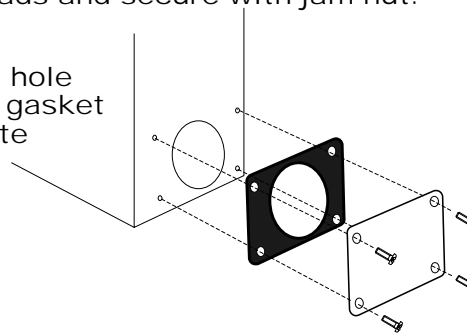
INSTALLATION INSTRUCTIONS

1. Determine where you want your EmerGen Switch located, either to the left or right of the load center. If the EmerGen Switch is to be located to the right of the load center, you will need to relocate the wire bundle out the left side. The EGS is factory assembled with the wire bundle exiting right.

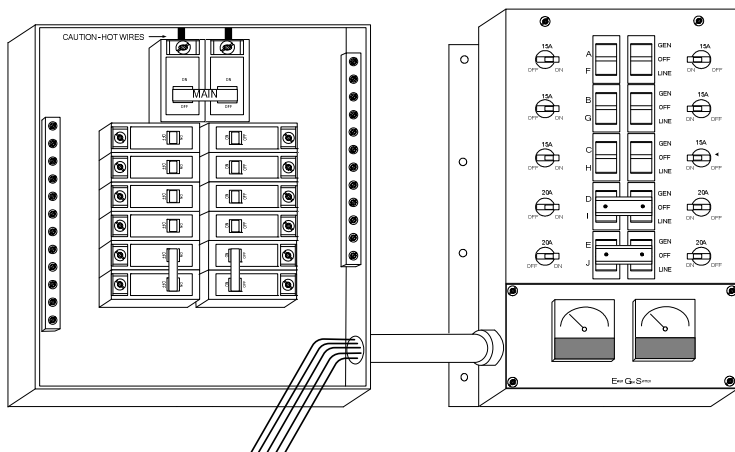


2. To relocate the wire bundle, open the front cover by removing the four screws. Knock out the appropriate knockout on the left side. Remove conduit fitting and carefully remove wire bundle and route through the jam nut and through the hole on the left side. Slide conduit fitting over leads and secure with jam nut.

3. Cover open hole with supplied gasket and cover plate



4. **TURN OFF POWER.** The main circuit breaker, or service disconnect, to your load center (typically located at the top) should be switched to the OFF position. **CAUTION—THIS DOES NOT AFFECT THE WIRES ON THE LINE SIDE OF THE MAIN BREAKER—THEY WILL REMAIN LIVE!** Remove the cover of the load center.
Advertisement: Ouvrir L'interrupteur principal ou le disjoncteur dans le panneau de distribution avant l'installation ou l'entretien.



5. Identify the appropriate knockout to remove in the load center. 1" trade size for the 6 circuit models, 1-1/4" for the 10 circuit model.

6. Trim the supplied conduit to the desired length and slide over the EmerGen Switch wires. Attach to the fitting on the EmerGen Switch. Slide the supplied fitting over the wires and attach to the conduit.

7. Insert the wires from the conduit through the knockout, taking care not to nick or gouge the wires on the metal edge. Slide the locknut over the loads and tighten securely onto the conduit fitting.

8. Without over-manipulating the flex conduit, secure your EmerGen Switch to the wall with fasteners appropriate for the wall's construction. If you are mounting this unit flush in the wall, follow Flush Install Instructions.

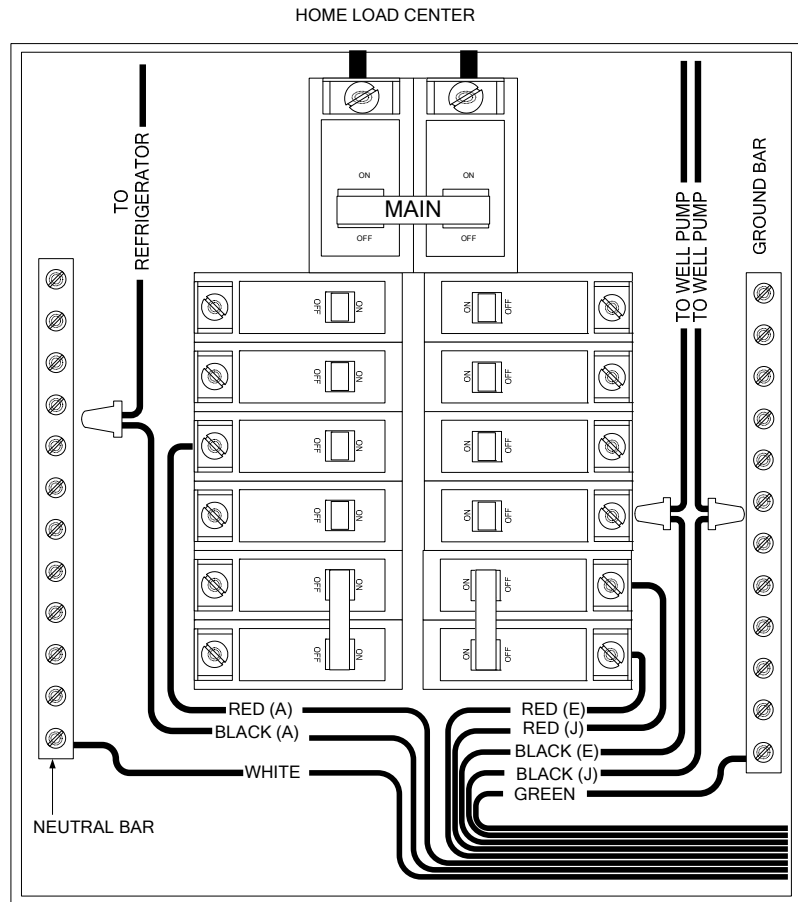
WIRING THE EMERGEN SWITCH TO THE LOAD CENTER

1. From your plan, locate the circuit breaker that is to be connected to the EmerGen Switch circuit "A". We will use the refrigerator circuit for this example. Turn that circuit breaker to the OFF position. Loosen the lug securing the wire and remove the wire.

WARNING: Transfer switch circuits with 20 amp breakers must be installed to circuits using 20 amp circuit breakers in your load center. Transfer switch circuits with 15 amp breakers can be installed on either 15 or 20 amp circuit breakers in the load center.
DO NOT INSTALL ANY TRANSFER SWITCH CIRCUIT ON BRANCH CIRCUITS GREATER THAN 20 AMPS.

2. Find both the red and black EmerGen Switch wires labeled "A". Using good workmanship, route both of these wires close to the selected circuit breaker.

- a) The red EmerGen Switch "A" wire is trimmed, stripped and installed into the circuit breaker, securely tightening the breaker lug.
- b) The black EmerGen Switch "A" wire and the hot wire from the circuit breaker (removed in step 1) are placed up the side of the load center together.
- c) After removing 5/8" of the insulation from the black EmerGen Switch "A" wire, insert both wires into an approved wire connector and fasten together. Push the wires back into the wiring compartment of the load center.



3. Repeat step 2 for each 120 volt circuit. See the following section for the installation of 240 volt circuits.

INSTALLING 240 VOLT (2 POLE) CIRCUITS

EmerGen Switch products provide circuits for the connection of 240 volt appliances that are connected to 2 pole branch circuit breakers in your load center. These EmerGen Switch circuits for 240 volt operation have a handle tie installed that ties two circuit selector switches together in the following positions:

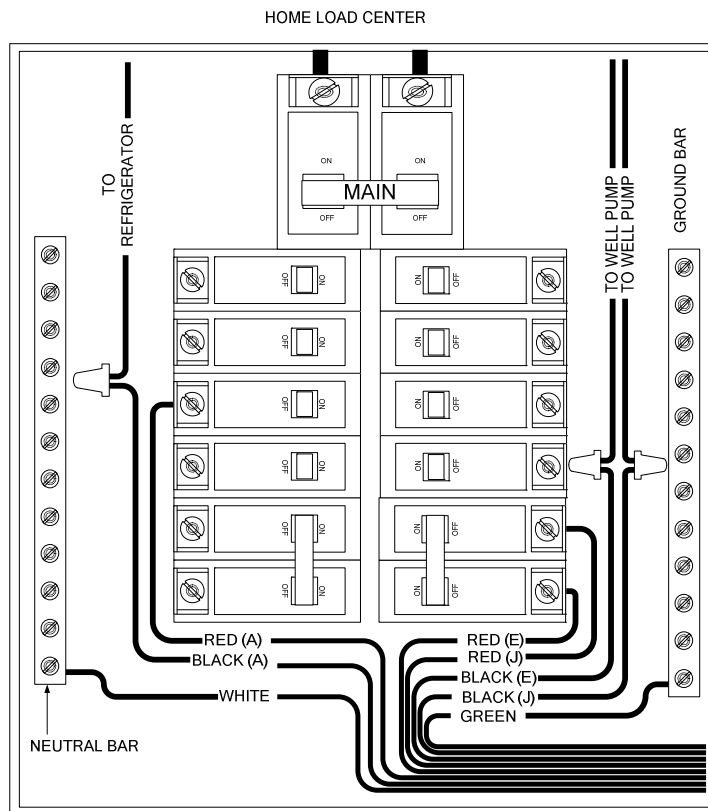
Models 6-7501G2 Circuits C & D

Model 10-7501G2 Circuits D & I, Circuits E & J

If you do not wish to use the designated circuits as 2 pole circuits, simply remove the handle tie by removing the two screws.

For the purpose of this example, circuits E & J of model 10-7501G2 and a 2-pole 20A well pump circuit in the load center will be used.

- Start by removing the two load wires from the selected circuit breaker.
- The red EmerGen Switch "E" wire is trimmed, stripped and securely installed into one side of the 2 pole circuit breaker.
- The black EmerGen Switch "E" wire and one of the hot wires from the circuit breaker are placed up the side of the load center. Insert both wires into an approved connector and fasten together. Push the wires back into the wiring compartment of the load center.
- The red EmerGen Switch "J" wire is trimmed, stripped and securely installed into the remaining side of the 2 pole circuit breaker.
- The black EmerGen Switch "J" wire and the remaining hot wire from the circuit breaker are placed up the side of the load center. Insert both wires into an approved wire connector and fasten together. Push the wires back into the wiring compartment of the load center.



COMPLETING THE INSTALLATION

- 1) When the preceding steps have been completed for all desired circuits, the EmerGen Switch white (neutral) wire needs to be installed.
 - a. Select any unused hole on the neutral bar in the load center.
 - b. Cut and strip the wire appropriately. Insert the wire into the hole in the neutral bar and tighten securely.

- 2) The EmerGen Switch green (ground) wire needs to be installed into an unused hole in the ground bar in the load center.
 - a. Select an unused hole in the ground bar in the load center.
 - b. Cut and strip the wire appropriately. Insert the wire into the hole in the ground bar and tighten securely.

NOTE: If no separate Ground Bar exists, connect the green wire to an unused position in the Neutral bar.

- 3) Replace the load center cover. All circuit breakers can now be turned on including the MAIN circuit breaker.

- 4) All EGS switches should be in the "Line" position. The "Off" position is generally not used.

- 5) Fill out the chart supplied with your EmerGen Switch describing each emergency circuit and corresponding circuit breaker. Place this label on or near your EmerGen Switch for easy reference.

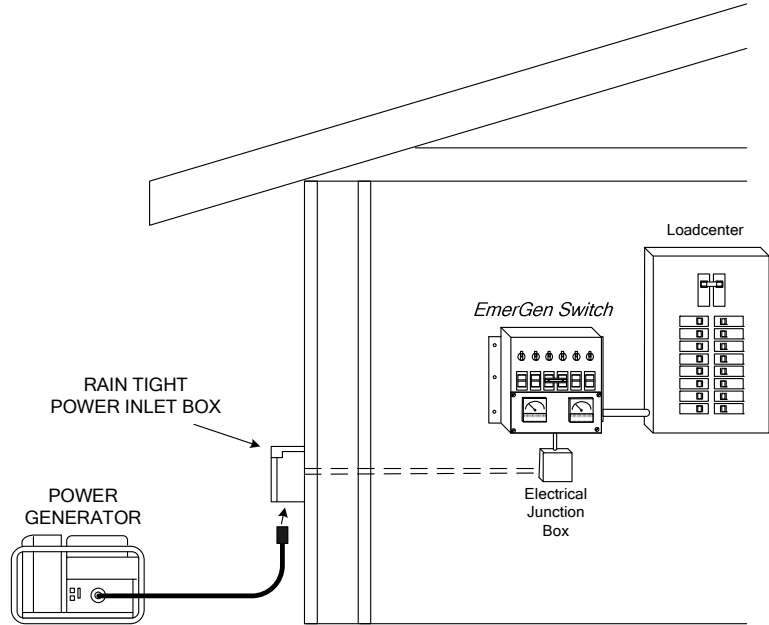
EmerGen Switch		
EGS Circuit	Circuit No. at Load Center	Circuit Description
A	8A	Freezer
B	5B	Rec Room Lights
C	2A	Barn Pump
D	3A	
E	4B	Lights
F	10B	Furnace Fan

WIRING THE EMERGEN SWITCH TO THE GENERATOR

Wiring the generator to the EmerGen Switch will require the use of an outdoor Power Inlet box, an electrical junction box and some permanent wiring.

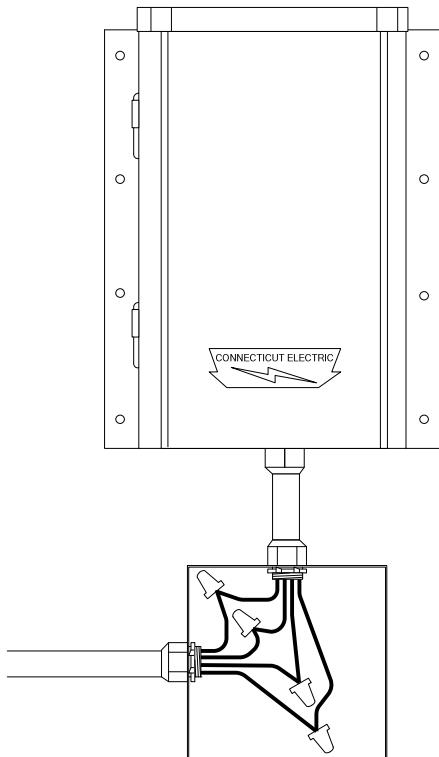
Mount an electrical junction box six (6) inches below the transfer switch. Route the EGS input wires through 1/2" Type B conduit and into the junction box. Use an appropriate 1/2" fitting to secure the conduit to the junction box.

Install four conductor (Hot, Hot, Neutral, Ground) permanent wiring between the junction box and power inlet box according to local code requirements. Recommended wire size is 12GA for 20 amp generators and 10GA for 30 amp generators.



Caution!

Locate inlet box a minimum of 10 feet away from any opening in the building that would allow carbon monoxide to enter the premises.



Connect the EmerGen Switch input wires to your permanent wiring as follows:

1. EGS blue (1) to red (hot)
2. EGS blue (2) to black (hot)
3. EGS white to white (neutral)
4. EGS green to ground

Use an appropriate wire connectors to make the connections.

Check your local electrical codes for grounding and bonding requirements for the junction box.

OPERATION / TEST PROCEDURE

1. Switch positions should remain in the "LINE" position under normal utility power. The "OFF" position is generally not used. The "GEN" positions are used when utilizing your generator power source. Keep the EGS circuit breakers set in the ON position at all times.
2. When testing and/or switching to generator power after a power outage, ensure all switches are in the "LINE" position. (There is no need to turn off any load center circuit breakers including the MAIN circuit breaker).
3. Plug your power cord set into your generator by aligning the male prongs with the female terminals of your generator's receptacle, push the connector in and twist clockwise to lock. Align the female socket of the cord set into your remote power inlet box, push it in and turn clockwise to lock.
4. Move your generator outdoors before starting it up. Check to see that fluids and fuel are adequate and start your generator according to the manufacturer's instructions. Allow approximately 10 minutes for your generator to warm up.
5. At your EmerGen Switch, move one circuit to the "GEN" position, making a note of how much wattage is used on the watt meter. While monitoring the load, flip each circuit—one at a time—to the "GEN" position. You do not need to go "in order" and you want to balance the loads so that both meters read approximately the same. Attempt to balance the two meters to within 1000W of each other. Do not switch on more loads than your generator can supply.
6. Test generation and transfer switch regularly to ensure proper operation.

Note: Wattage must not exceed the maximum printed on the meters.

LOAD MANAGEMENT

1. All circuits can be used simultaneously if your generator has sufficient wattage capacity. If an electrical load on the EmerGen Switch is exceeded by its capacity, the mini-breaker may trip.

To Reset:

- a. Eliminate the overload condition.
- b. Move the rocker switch with the tripped breaker to the "OFF" position.
- c. Reset the breaker by switching it to the OFF position and then to the ON position.
- d. Move the switch back to the "GEN" position. It should now operate properly. If it does not, you may need to contact an electrician or qualified professional.

Trouble Shooting

Problem	Cause	Solution
Gen. running but no output available.	<ol style="list-style-type: none"> 1. Generator circuit breaker has tripped. 2. Poor connection or defective cord set. 3. Connected device is bad. 4. Fault in generator. 	<ol style="list-style-type: none"> 1. Reset circuit breaker. 2. Check and repair. 3. Select a different load or appliance in good condition. 4. Contact a qualified professional.
Generator runs good but bogs down when loads are connected.	<ol style="list-style-type: none"> 1. Short circuit in a connected load. 2. Generator is overloaded. 	<ol style="list-style-type: none"> 1. Disconnect shorted electrical load. 2. Review load power requirements and rearrange.
Switches not working with gen. power.	<ol style="list-style-type: none"> 1. Switches are in OFF or LINE position. 2. Generator circuit breaker has tripped. 3. Poor connection or defective cord set. 4. Connected device is bad. 5. Fault in generator. 	<ol style="list-style-type: none"> 1. Move switches to GEN position. 2. Reset circuit breaker. 3. Check and repair. 4. Select a different load or appliance in good condition. 5. Contact a qualified professional.
Appliances do not operate after utility power is restored.	<ol style="list-style-type: none"> 1. Switches are in GEN or OFF position. 2. Circuit breaker tripped. 	<ol style="list-style-type: none"> 1. Move switches to LINE position. 2. Reset circuit breaker.
Only some loads work on generator power.	<ol style="list-style-type: none"> 1. Circuit breaker tripped. 2. Switch on generator in 120V position 3. Poor connection or defective cord set. 	<ol style="list-style-type: none"> 1. Reset circuit breaker. 2. Move generator switch to 120/240V position. 3. Check and repair.
GFCI breaker on generator trips when connected to switch	<ol style="list-style-type: none"> 1. Neutral / Ground bond in generator 	<ol style="list-style-type: none"> 1. The EGS will not function with a GFCI protected generator output.

Product Warranty

Every EmerGen Switch is guaranteed against mechanical or electrical failure due to manufacturing defects for a period of five years from the date of purchase.

Connecticut Electric warrants to the purchaser that this product will be free from defects in material and workmanship and will be of the kind and quality designated. This warranty shall apply only to defects appearing within one year of the original date of purchase.

Defective products are to be returned to the place of purchase for an exchange or refund.

Connecticut Electric will not be liable for any loss, damage, incidental or consequential damage of any kind, whether based upon warranty contact, or negligence, and/or arising in connection with the sale, use, installation or repair of this product. Connecticut Electric's maximum liability shall not, in any case, exceed the contract price for the products claimed to be defective or unsuitable.

This warranty does not extend to any product manufactured by Connecticut Electric which has been subjected to misuse, neglect, accident, improper installation or use in violation of instructions furnished.

This warranty does not extend to or apply to any unit which has been repaired or altered, either to the product or to the components manufactured by any other supplier other than Connecticut Electric.

If you require assistance, contact our Customer Help Line at (800) 730-2557 Ext. 200.

