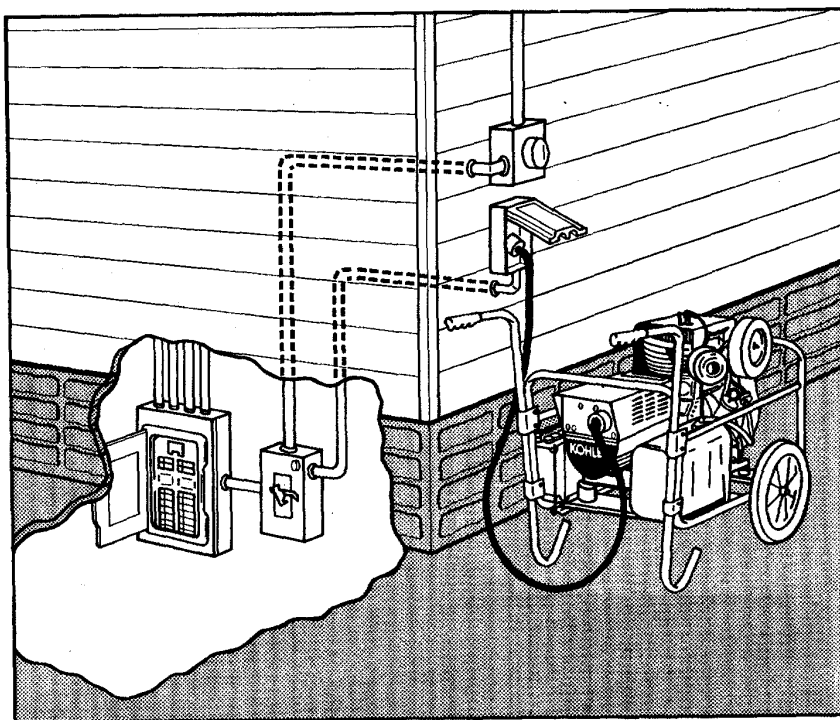




HOME STANDBY CONNECTION KITS

PA-239040 (100 Amp.)

PA-239041 (200 Amp.)



OPERATOR'S INSTRUCTIONS

and electrician's installation guide

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INTRODUCTION

Thank you for purchasing a Kohler Home Standby Connection Kit. This manual covers the steps needed to hook-up a Kohler Home Standby portable generator set to the connection box and the sequence of operation of the transfer switch.

The installation guide is included specifically and solely to aid a certified electrical contractor or electrician in supplying you with a safe and "conforming-to-Code" Kohler Home Standby system for your home.

NOTE

Installation is NOT to be performed by home owner.

Before using your Home Standby system carefully read the "System Operation" section of this manual and the manual(s) supplied with the respective generator set to acquaint yourself with their proper operation. This manual

should be regarded as part of the transfer switch and transferred to the new owner should the home or building be sold.

The 100 Amp. Connection Kit PA-239040 contains the following:

- A-238698 Cord Assembly
- B-238997 Outdoor Receptacle Box
- B-238962 Transfer Switch Assembly

The 200 Amp. Connection Kit PA-239041 contains the following:

- A-238698 Cord Assembly
- B-238997 Outdoor Receptacle Box
- A-239069 Transfer Switch Assembly

A typical installation and connection is shown in Figure 1-1.

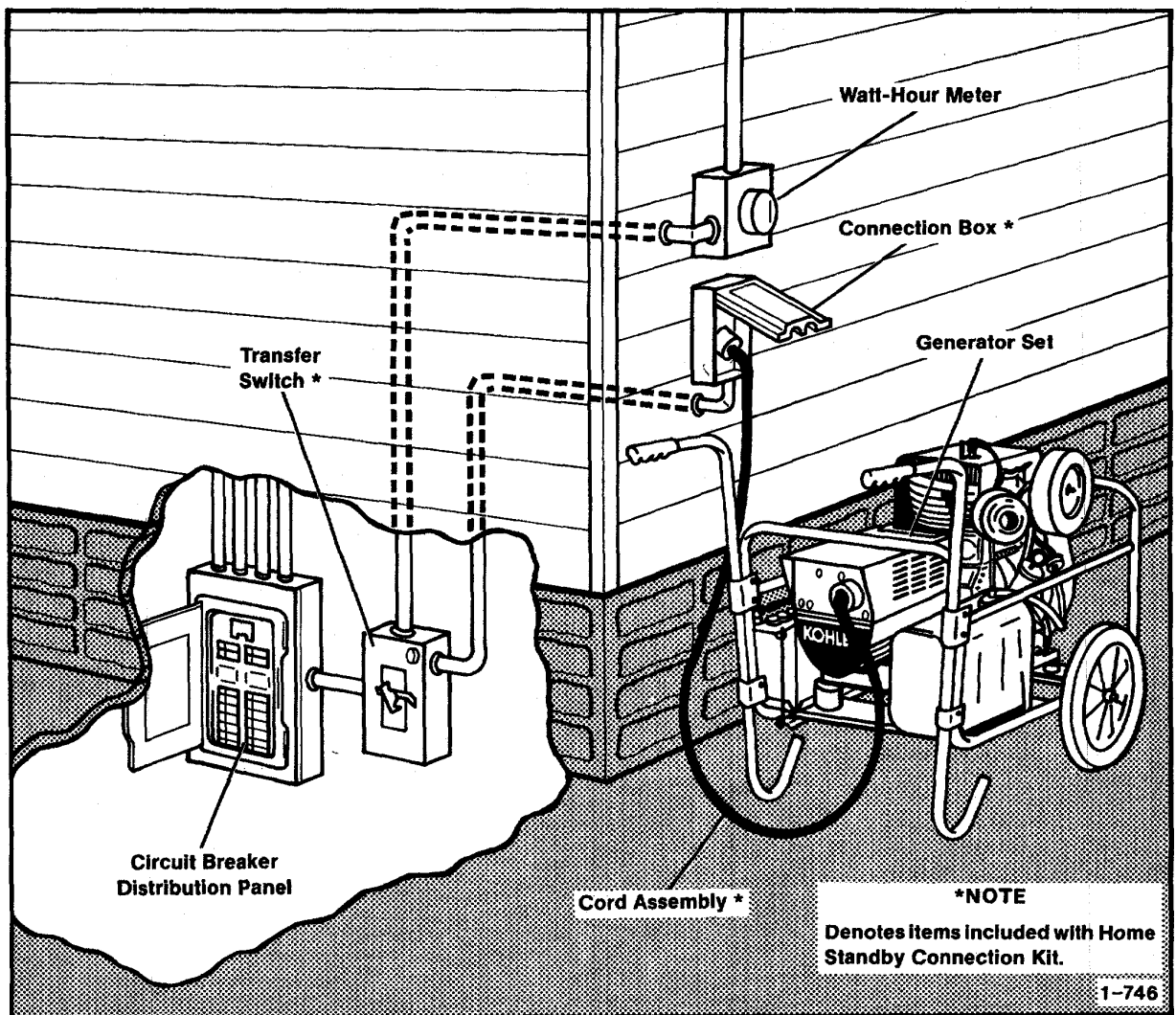


Figure 1-1. Typical Home Standby Installation and Connection

SPECIFICATIONS

	100 Amp.	200 Amp.
Circuit Breaker/Transfer Switch Rating (Normal Source)	100 Amp.	—
Circuit Breaker/Transfer Switch Rating (Emergency Source)	60 Amp.	—
Transfer Switch Rating (Normal Source)	—	200 Amp.
Transfer Switch Rating (Emergency Source)	—	100 Amp.
Transfer Switch Interrupting Current Rating (Amps.)	10,000	200,000*
Power Cord and Connection Box Plug/Receptacle Rating Type	20 Amps. at 120/240 Volts Nema L14-20R	
Connection Box to Transfer Switch Wire (Gauge)	#10	#10
Transfer Switch to Circuit Breaker Box Wire (Gauge)	#3	#3
Cord Assembly (Gauge)	#12	#12
Connection Box Mounting Height (Center)	4 ft. (1.2 m)	
Transfer Switch Mounting Height (Center)	6.5 ft. (2.0 m)	
Connection Box Dimensions (L x W x H)	12-1/2 x 7 x 4-7/8 in. (318 x 178 x 124 mm)	
Transfer Switch Dimensions (L x W x H)	13-1/2 x 7-1/4 x 3-5/8 in. (343 x 184 x 92 mm)	28-1/4 x 14-1/2 x 5-5/8** in. (718 x 368 x 143** mm)
Connection Box Mounting Hole ***	(1) 2-1/2 in.	(1) 2-1/2 in.
Transfer Switch Knockouts	(2) 1-3/4 - 2 in. (5) 1-1/8 - 1-3/8 in. (2) 7/8 in.	(1) 2-1/4 in. NPT (top) (3) 1-3/4 - 2-3/8 in. (1) 7/8 - 1-3/8 in. (1) 5/8 in.)

*When used with class "J" or "R" fuses.

**Handle extends 5 in. (127 mm) beyond enclosure when in OFF position.

***Appropriate size hub available from Square D Company.

IN THE INTEREST OF YOUR SAFETY

Read these warnings and all operating instructions carefully. Any electro-mechanical appliance may cause bodily injury and/or damage to the appliance if carelessly operated or maintained. Be careful of possible dangers and use good common sense.

WARNING

HIGH VOLTAGE! Remember that the function of a generator set is to produce electricity and wherever electrical energy is present, there is the potential danger of electrocution. Keep everyone, especially children, away from the set while it is running and take precautions to prevent unqualified personnel from tampering with or attempting to operate your generator set. Have the set and electrical circuits serviced only by qualified technicians. Wiring should be inspected frequently — replace leads that are frayed or in poor condition. Be sure that generator and appliances are properly grounded. Do not operate electrical equipment when standing in water, on wet ground, or when your hands are wet.

WARNING

DANGEROUS FUELS! Gasoline is very explosive. Store only in approved red containers marked GASOLINE. Keep away from children and any flame or spark-producing equipment. Do not store in home or occupied buildings. Shut off engine and allow to cool before adding gasoline to fuel tank.

WARNING

HIGH VOLTAGE! Transfer Switch INTERLOCK must not be removed. Damage to equipment or personal injury may result.

WARNING

HIGH VOLTAGE! Arrange for electrical utility personnel to remove and replace watt-hour meter as necessary to perform EMERGENCY SYSTEM installation! Unauthorized tampering with watt-hour meter is unlawful and can result in electrocution.

WARNING

LETHAL EXHAUST GAS! Engines give off deadly gases when running. They are odorless and may cause death even when inhaled for a short time. Run generator set only outdoors and away from windows, vents, doors, and air conditioners which might draw exhaust gases into buildings. Avoid breathing exhaust gases when working on or near generator set.

WARNING

ELECTROCUTION! Your generator set **MUST NOT** be used to "back feed" by connecting it to building electrical circuits. Doing so can cause serious injury or death to utility personnel working to repair a power outage, and may also seriously injure persons in your household. Unauthorized connection may be unlawful in some states and/or localities. A transfer switch must be installed when using a generator set for "home standby" purposes.

SYSTEM OPERATION

Using Standby Power

Managing Your Power Demands

When using electricity generated by your standby set, remember that the power is very limited in comparison to the commercial-utility power normally available. Consider operating those lights and appliances which are most needed, in order to keep power or wattage demands within your generator set's capabilities. You may limit the wattage demand by one or a combination of the following three methods:

1. Trip circuit breakers at your main breaker panel or any sub-panels, to shut "off" areas in the house where need for electricity is not critical (have your electrician tag each breaker to describe the household circuit area protected). See Figure 1-2. It will still be necessary to calculate the wattage demand created by the lights and appliances which you may be operating simultaneously. See "Wattage Requirements."
2. Have your electrician install a selected-circuit breaker box to supply standby power only to critical areas. Wattage demands of lights and appliances used simultaneously must be calculated. See "Wattage Requirements."
3. Use lights and appliances only when necessary, and calculate load to keep demand within generator set's capabilities. See "Wattage Requirements."

Discuss the use of standby power with your electrician regarding the wattage limitation method to be used.

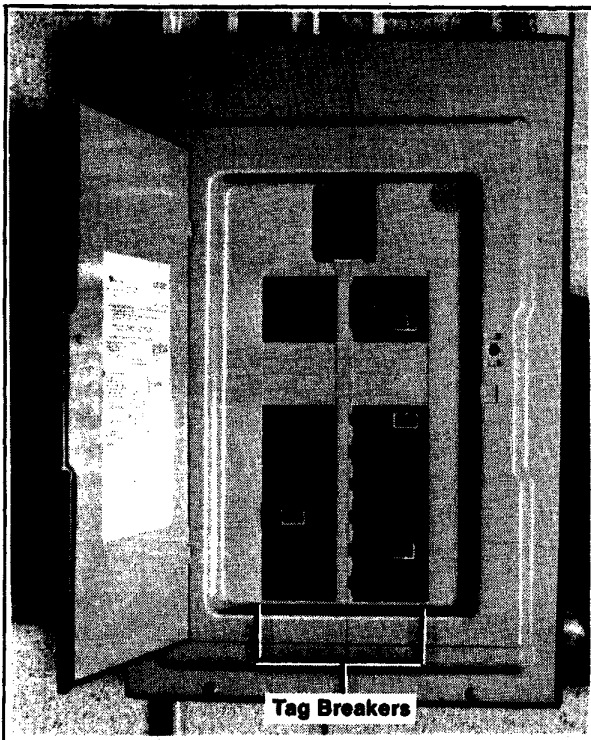


Figure 1-2. Main Breaker Panel

Portable Power

Your generator set may also be used for portable power in locations where commercial-utility power is not available. Lights, power tools, and other 120-Volt appliances may be plugged into the two conventional receptacles on the Kohler generator set power panel, see Figure 1-3. A portion of the set's rated power (2400 watts) is available from each receptacle. Reference the generator set Owner's Manual for additional information.

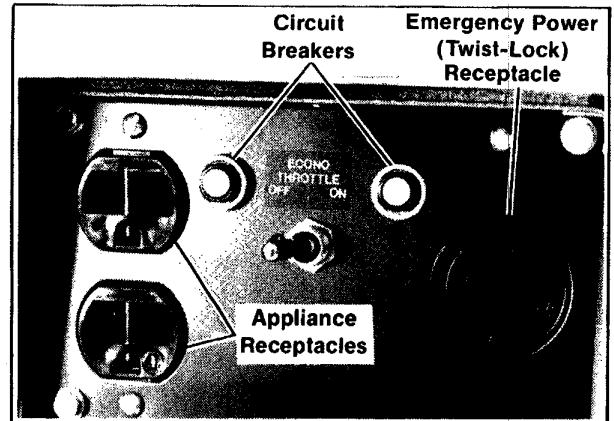


Figure 1-3. Receptacles and Circuit Breakers
(Model 5CM65-HS Shown)

Wattage Requirements

The wattage demand which you put on your generator set will be a total of the wattage ratings for the lights and appliances used at one time. Determine the lighting load by adding the watt ratings of the lights and lamps being used, see Figure 1-4. Check the nameplate rating on



Figure 1-4. Calculating Lighting Load

appliances and motors for their wattages. Table 1-1 lists some common appliances and the typical wattage required. Always check the appliance's nameplate to be sure its wattage requirements are within your generator's rating (see generator set Owner's Manual for specifications).

If the appliance wattage is not shown, use the following formula:

Volts x Amps. = Watts (Example: 120 Volts x 3 Amps. = 360 Watts)

	Motor Starting Watts	Running Watts
Entertainment		
Phonograph	—	30-50
Radio	—	50-100
Tape Deck	—	150
Television	—	300-750
Video Recorder	—	50
Garden/Yard Tools		
Edger	1500	1100
Hedge Trimmer	600	330
Power Snow Shovel 12"	1500	800
Pruning Saw	900	480
Saw, Chain 14"	3000	1200
Weed Trimmer	600-900	300-450
Construction Tools		
Air Compressor (Small)	1500	725
Air Compressor 3/4 hp	4000+	2000
Drill, 1/4"	500	250
Drill, 3/8"	600	350
Drill, 1/2"	800	600
Grinder 1/2 hp	1500	1200
Hammer, Demolition	2000	1800
Hammer, HD Rotary	1500	1200
Paint Sprayer (Airless)	400	240
Polisher, Orbit	500	360
Power Paint Roller	120	90
Power Plane	600	450
Router	900	700
Saw, Circular 6-1/2"	2200	1000
Saw, Circular 7-1/4"	2500	1200
Saw, Table 10"	4000	1500
Saw, Sabre (Worm Drive)	2500	1200
Sander, Belt	1500	600
Sander, Finishing	900	360
Screwdriver, Power	1000	530
Shear, 12 Gauge	1800	720
Soldering Gun	—	250
Vacuum Cleaner, Wet/Dry	1500	1260
Wrench, Impact 1/2"	2000	840

NOTE

Motor driven equipment generally takes 2 to 3 times the listed running amperage or wattage to start the motor. Always check the appliance or motor nameplate to be sure.

	Motor Starting Watts	Running Watts
Kitchen Appliances		
Blender	800	600
Broiler	—	1350
Electric Range (per element)	—	1000-1500
Freezer, Food	600-1500	300-600
Microwave Oven (Small)	—	750
Mixer	400	235
Pan, Frying	—	1200
Popcorn Maker	—	1500
Purcolator, Coffee	—	650
Refrigerator/Freezer (typical)	1200	600
Slow Cooker	—	300
Toaster	—	750-1200
Household Appliances/Equipment		
Air Conditioner (7000 Btu)	2000	1200
Curling Iron	—	40
Dishwasher	2000	1200
Electric Blanket	—	50-250
Fan, Air Circulating	50-200	25-100
Fan, Furnace 1/4 hp	1000	400
Fan, Window	400	200
Hair Dryer	—	850-1200
Hair Setter	—	400
Heater, Space	—	750-1500
Heater, Water	—	1500
Light Bulb	—	(As indicated)
Sump Pump 1/3 hp (loaded)	1500	600
Washing Machine	950	375
Water Pump (small)	875-1500	350-500
Well Pump (loaded)	4000+	2000-3000
Motor Requirements		
HP		
1/8	600	300
1/4	750	350
1/3	1000	400
1/2	1500	600
3/4	2000	750
1	3300	1100
2	4000	2000
3	5000	3000

Table 1-1. Appliance Average Wattage Ratings

***NOTE**

Use Table 1-2 for future reference in figuring wattage demands when using emergency power. Record the lighting loads for various rooms and appliance loads. Use a calculator to total the load demand as lights and appliances are turned on to avoid overloading your generator set.

The indicated appliances will turn on automatically. Operate them only as needed (unplug if necessary, to ensure non-operation), or turn off enough other lights and appliances to allow those indicated to turn on automatically. Remember that electric motors require several times more wattage at startup than during normal running. Central air conditioning should be turned "off."

[illegible]

Table 1-2. Appliance Wattage Requirement Reference

Transferring to Standby Power

When commercial-utility power outage occurs, take the following steps in transferring to standby power. After your standby system has been installed, hold an "emergency drill" to acquaint family members and others concerned with system use.

1. Reduce household's wattage demands by turning off of unplugging as many lights and appliances as possible, leaving "on" only those most needed.
2. Consult generator set Owner's Manual for all necessary information prior to start-up and then start generator set.
3. Plug pronged end of power cord into large round receptacle on generator end panel and turn clockwise to lock. See Figure 1-5.

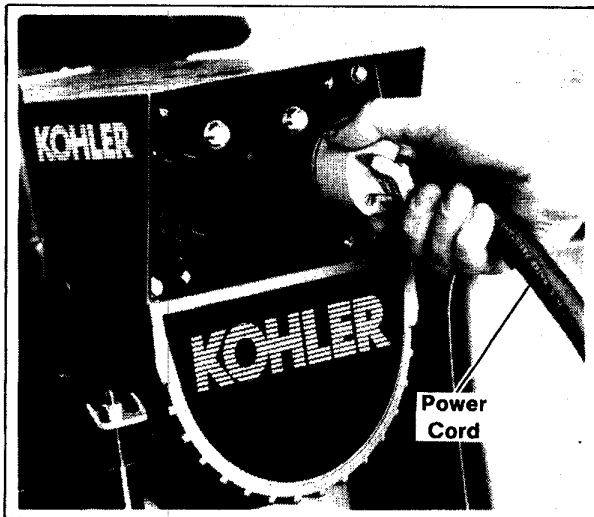


Figure 1-5. Plug into Generator

4. Plug receptacle end of power cord into connection box with red stripes aligned as shown in Figure 1-6, and turn clockwise to lock.
- 5a. **100 Amp. Transfer Switch:** Push NORMAL circuit breaker to OFF position. Move lower portion of interlock to the left and push EMERGENCY circuit breaker to ON position. The generator is now connected to your house circuits. See Figure 1-7.

WARNING

HIGH VOLTAGE! INTERLOCK must not be removed. Damage to equipment or personal injury may result.

NOTE

This transfer switch incorporates the use of circuit breakers for switching purposes. Should an overload or short circuit occur, the circuit breaker/transfer switch will trip to protect the transfer switch.

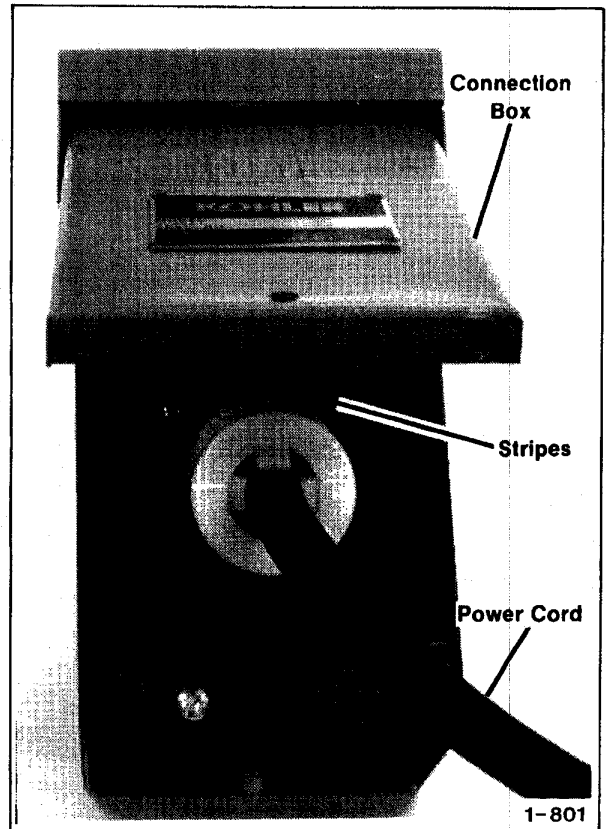


Figure 1-6. Plug into Connection Box

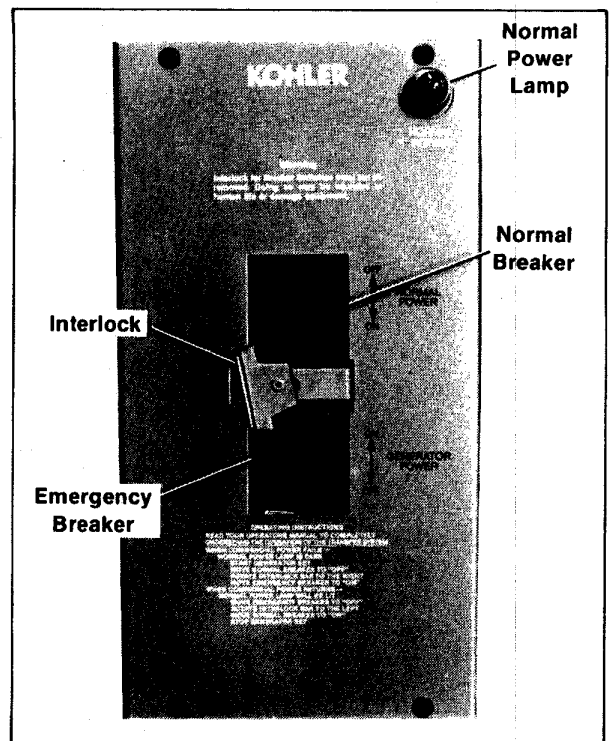


Figure 1-7. 100/60 Amp. Transfer Switch

- 5b. **200 Amp. Transfer Switch:** Remove padlock (if used) from switch lever and pull lever down to GENERATOR POWER ON position. The generator is now connected to your house circuits. See Figure 1-8.



Figure 1-8. 200/100 Amp. Transfer Switch

NOTE

This transfer switch does not contain an internal circuit breaker to protect the transfer switch in the event of an overload or short circuit. Should this protection be desired, circuit breakers should be placed between utility power line and transfer switch, and between generator set and transfer switch if not already installed or available.

6. Selectively turn on lights and appliances, noting the wattage required for their operation. See "Wattage Requirements." If wattage demands include electric motors or heating appliances (for example: furnace fan motor, electric heating, electric water heater, well pump, sump pump, freezer, washer-dryer, dishwasher, stove, large power tools, large quantities of lights, etc.) turn on appliances one-at-a-time, starting with the largest motor, to keep requirements within your generator's capacity.

NOTE

When using large appliances such as furnace or stove for short periods, first turn off a necessary number of other appliances to keep demands within your generator's capacity. Refer to "Wattage Requirements."

NOTE

When connecting or turning on motors, allow motor to start and reach normal operating speed before connecting or turning on other appliance loads as motor will require more wattage at start-up than during operation (example: a 1/2 hp motor may draw 1500 watts at start-up, and only 600 watts while running).

Should any signs of overload be noted when using your generator set, refer to "Overload Remedies," in the generator set Owner's Manual.

Transferring to Normal Power

When normal (utility) power returns, the normal power lamp on your transfer switch will light.

1. Turn off lights and appliances.
2. Allow a cooling off period by running the set for a few minutes without load.
- 3a. **100 Amp. Transfer Switch:** Push EMERGENCY circuit breaker to OFF position. Move upper portion of interlock to the left and push NORMAL circuit breaker to ON position. Normal (utility) power is now connected to your house circuits. See Figure 1-9.

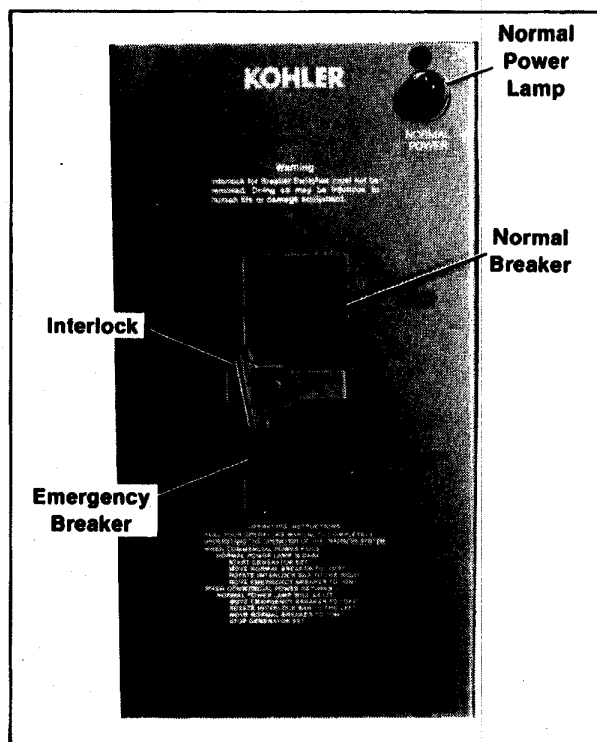


Figure 1-9. 100/60 Amp. Transfer Switch



WARNING

HIGH VOLTAGE! INTERLOCK must not be removed. Damage to equipment or personal injury may result.

NOTE

This transfer switch incorporates the use of circuit breakers for switching purposes. Should an overload or short circuit occur, the circuit breaker/transfer switch will trip to protect the transfer switch.

- 3b. **200 Amp. Transfer Switch:** Remove padlock (if used) from switch lever and push lever up to NORMAL POWER ON position. Normal (utility) power is now connected to your house circuits. See Figure 1-10.

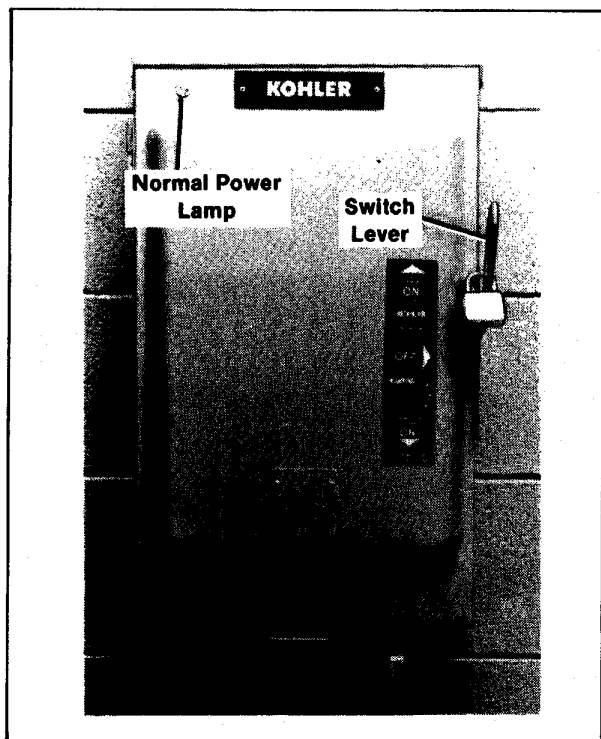


Figure 1-10. 200/100 Amp. Transfer Switch

NOTE

This transfer switch does not contain an internal circuit breaker to protect the transfer switch in the event of an overload or short circuit. Should this protection be desired, circuit breakers should be placed between utility power line and transfer switch, and between generator set and transfer switch if not already installed or available.

4. STOP generator set. Consult generator set Owner's Manual. Turn plug end of power cord counterclockwise and unplug from generator set.
5. Turn receptacle end of power cord counterclockwise and unplug from connection box. Close connection box cover. See Figure 1-11.
6. Store power cord along with generator set. Use generator set Owner's Manual for generator set storage procedure.

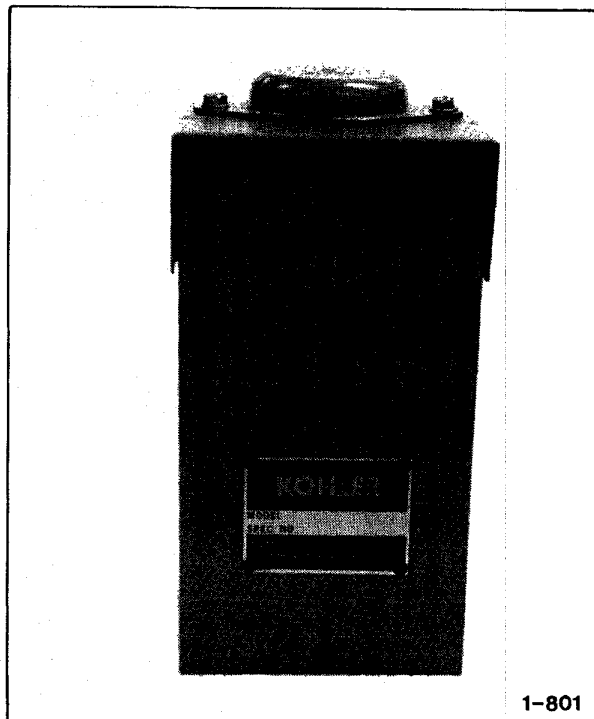


Figure 1-11. Connection Box

INSTALLATION

The following is provided SPECIFICALLY and SOLELY as a guide for certified electricians and electrical contractors in installing the connection, wiring, and transfer switch for Kohler Home Standby systems in conformance with NEC (National Electrical Code) and local regulations. INSTALLATION IS NOT TO BE DONE BY THE HOMEOWNER!

NOTE

The following procedure may be in variance with regard to some local codes and regulations. Consult appropriate codes and regulations regarding installation of EMERGENCY SYSTEMS and generator set before proceeding with installation.

NOTE

Notify local electrical utility of your intent to install EMERGENCY SYSTEM and generator set, as utility's "prior written consent may be necessary" to perform installation.

WARNING

HIGH VOLTAGE! Arrange for electrical utility personnel to remove and replace watt-hour meter as necessary to perform EMERGENCY SYSTEM installation! Unauthorized tampering with watt-hour meter is unlawful and can result in electrocution.

WARNING

ELECTROCUTION! Your generator set MUST NOT be used to "back feed" by connecting it to your household circuits. Doing so may injure utility personnel working to repair a power outage, and may also injure persons in your household. Your generator set may also be damaged. A transfer switch must be installed when using a generator set for "home standby" purposes.

Connection Box

Connection box is drip-proof and suitable for outdoor locations. See Figure 2-1. Mount box in a sheltered area (such as a covered, open porch) to allow safe operation of the generator set in severe weather. Center of connection box should be mounted 4-feet (1.2 m) above floor. See Figure 2-2 for mounting dimensions.

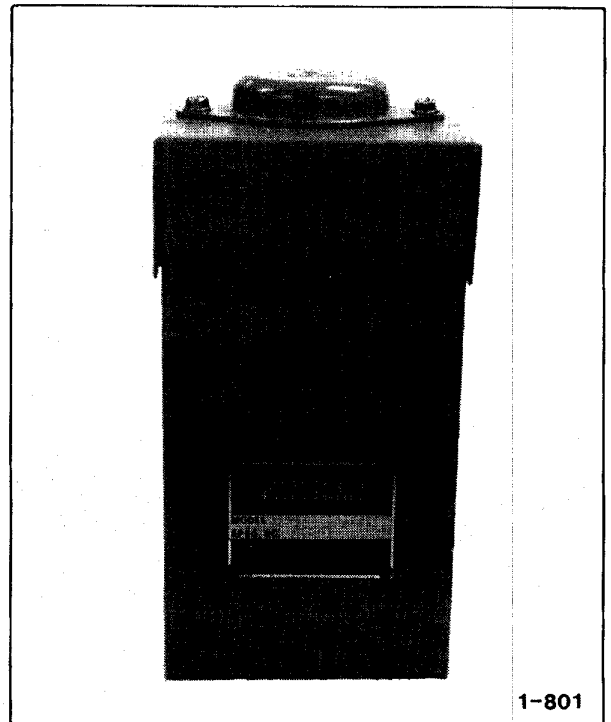


Figure 2-1. Connection Box

1. Run 10/3-G cable, or an approved raceway with #10 conductors (with insulation and shielding appropriate for location) from connection box location to point near service panel where transfer switch will mount.
2. Remove top cover and install proper hub or cut hole in rear of connection box cabinet.
3. Pull cable through and secure with connector. Mount cabinet to wall.
4. Make continuity checks on neutral, ground, and phase wires. Connect white neutral wire to cabinet neutral bar and ground wire to cabinet ground. Connect phase wires to X and Y receptacle terminals. See Figure 2-3. Assemble receptacle plate to cabinet.

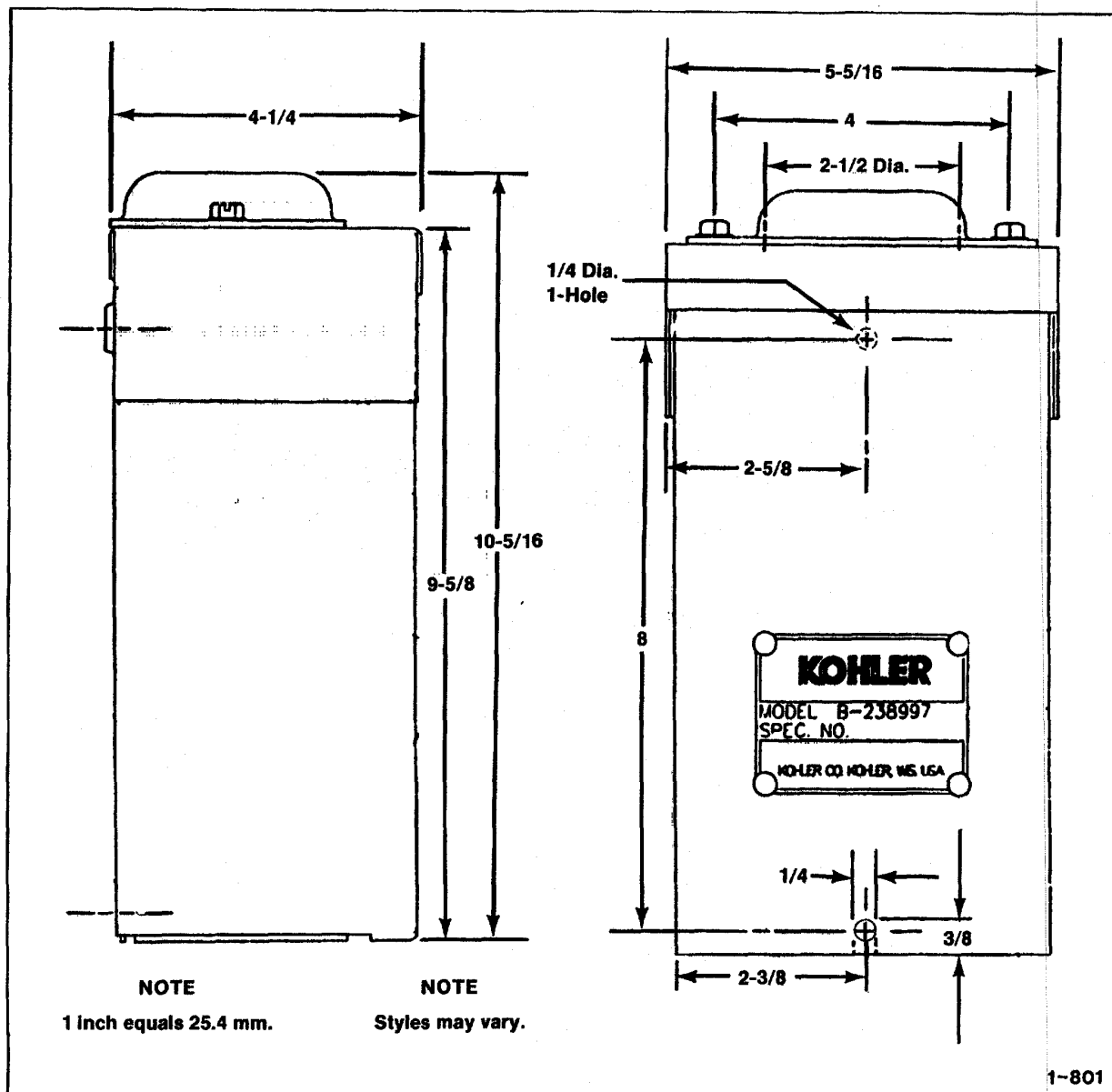


Figure 2-2. Connection Box Mounting and Overall Dimensions

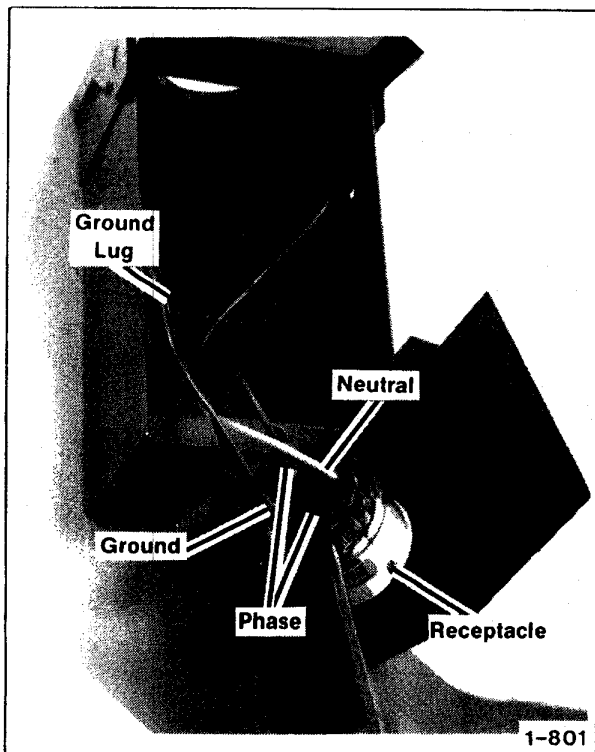


Figure 2-3. Receptacle and Box

Transfer Switches

Kohler Co. offers two types of transfer switches for use in home standby systems. See Figure 2-4. Transfer switch (Normal Power) Amp. rating must be equal to or greater than circuit breaker distribution panel maximum Amp. rating. The 100/60 Amp. transfer switch is to be mounted indoors and used with up to 100-Amp. service and interrupting current of 10,000 Amps. The 200/100 Amp. transfer switch must be installed indoors and used with services up to 200-Amp. and interrupting current of 200,000 Amps. when used with Class "J" or "R" fuses.

CAUTION

Amount of interrupting current will depend in part upon length and impedance of incoming cable. Check with local utility!

NOTE

New lead from meter socket to transfer switch and from transfer switch to main service panel must be of the same type, size, and temperature rating as those originally used between meter socket and main service panel.

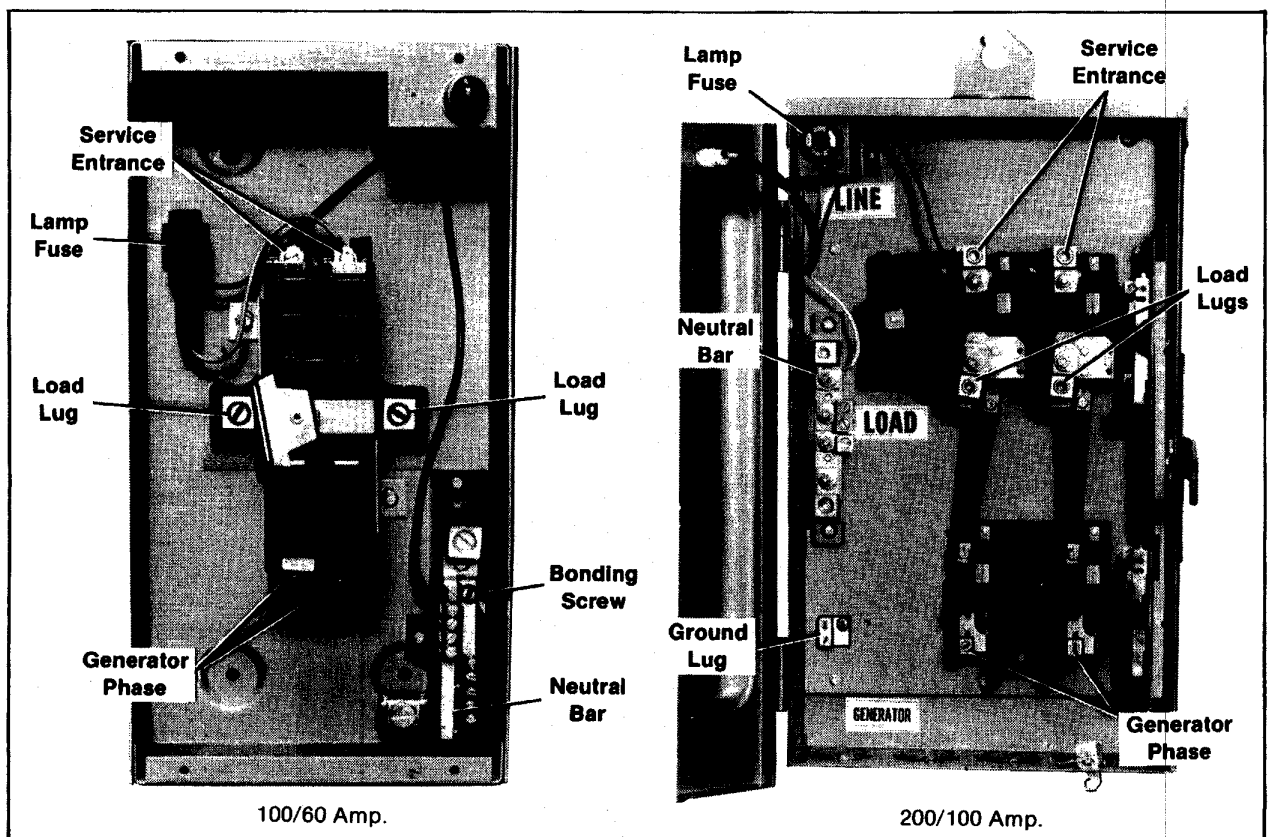


Figure 2-4. Transfer Switches

100/60 Amp. Transfer Switch

This transfer switch incorporates the use of circuit breakers for switching purposes. Should an overload or short circuit occur, the circuit breaker/transfer switch will trip to protect the transfer switch. Use the following procedure to mount transfer switch.

1. Have utility personnel remove watt-hour meter from meter socket.
2. Mount transfer switch box to place center of box not more than 6-1/2 feet (2 m) above floor. Use nipple and

insulating bonding bushing between transfer switch box and main service panel. Bond metallic nipple to ground. See Figure 2-5 for mounting dimensions.

3. Remove service entrance leads from meter socket and main breaker; connect new leads from meter socket to lugs of 100-Amp. NORMAL transfer switch breaker. New leads should be same type, size, and temperature rating as those removed.

NOTE

If using aluminum cable, coat connections with corrosion inhibitor.

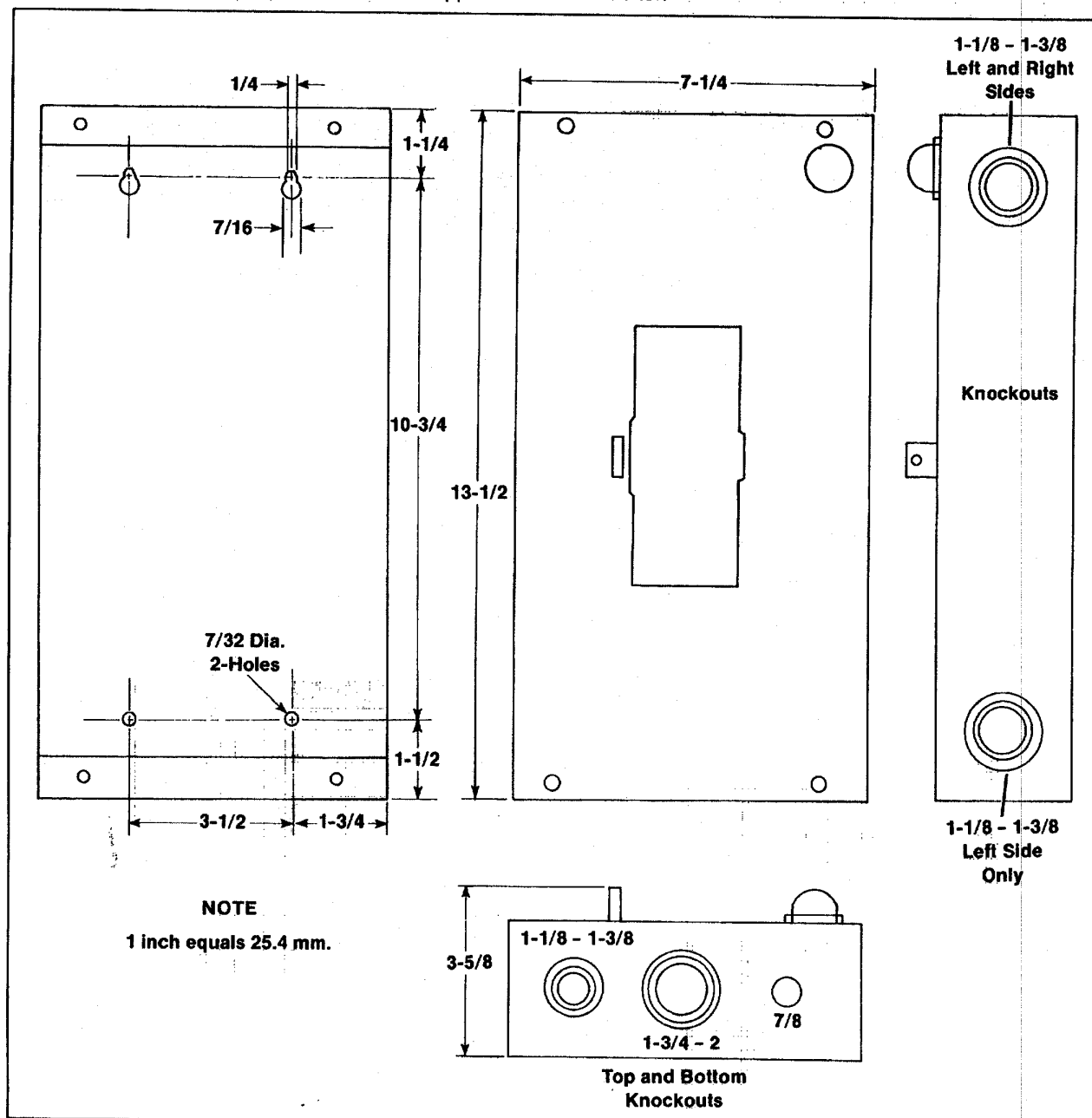


Figure 2-5. 100/60 Amp. Transfer Switch Mounting and Overall Dimensions

4. Connect neutral lead (white taped) from transfer switch neutral bar to main service panel neutral bar. See Figure 2-6.
5. Connect leads from load lugs of transfer switch (two outer) to service panel main breakers as shown in Figure 2-6.
6. Punch entrance knockout in transfer switch box, install connector, and route cable or wires and conduit from connection box into transfer switch box. Connect wires as follows:
 - a. Connect white and ground wires to neutral bar.
 - b. Bond neutral bar to cabinet using supplied bonding screw.

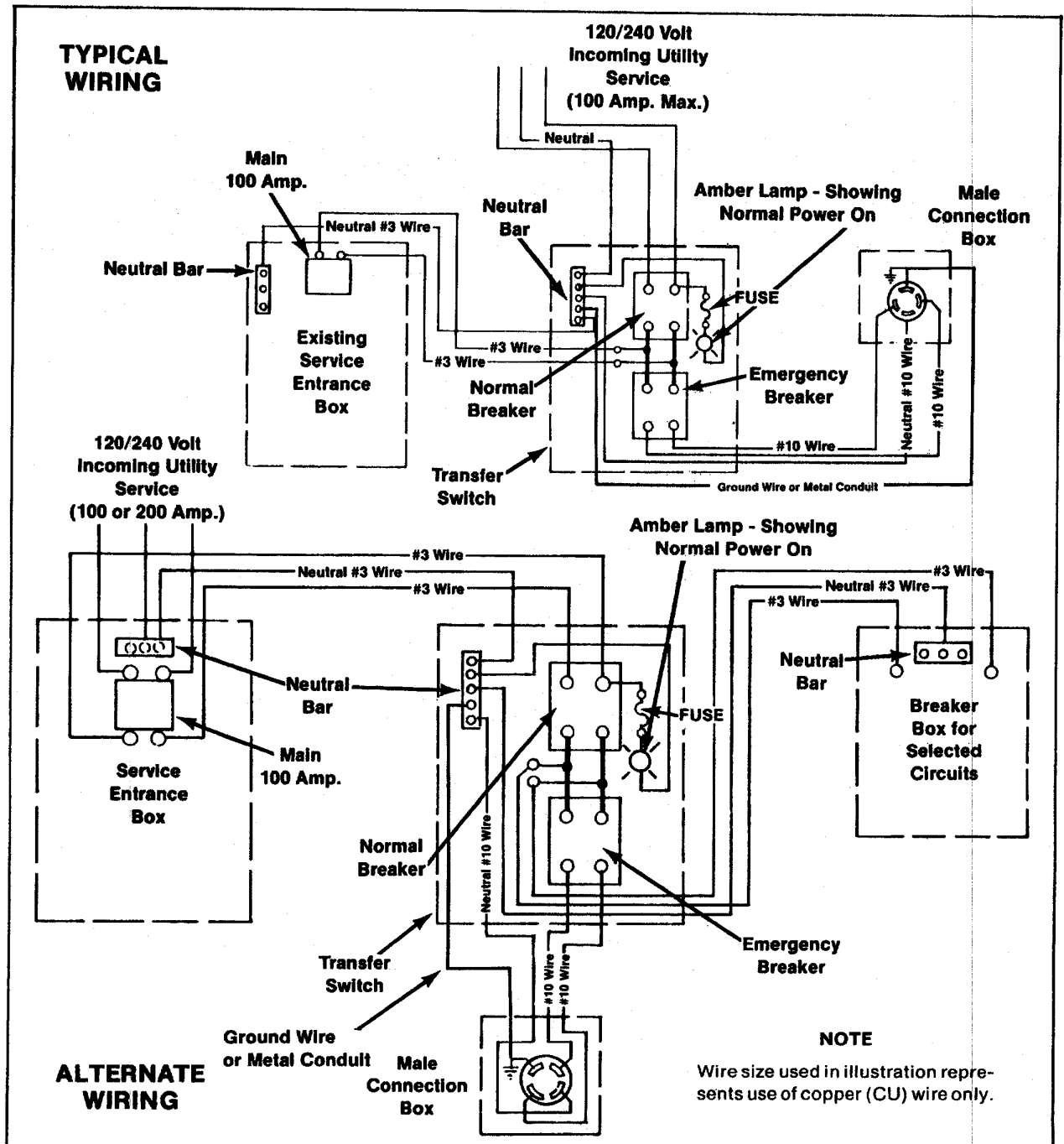


Figure 2-6. Switch Connection — 100/60 Amp.

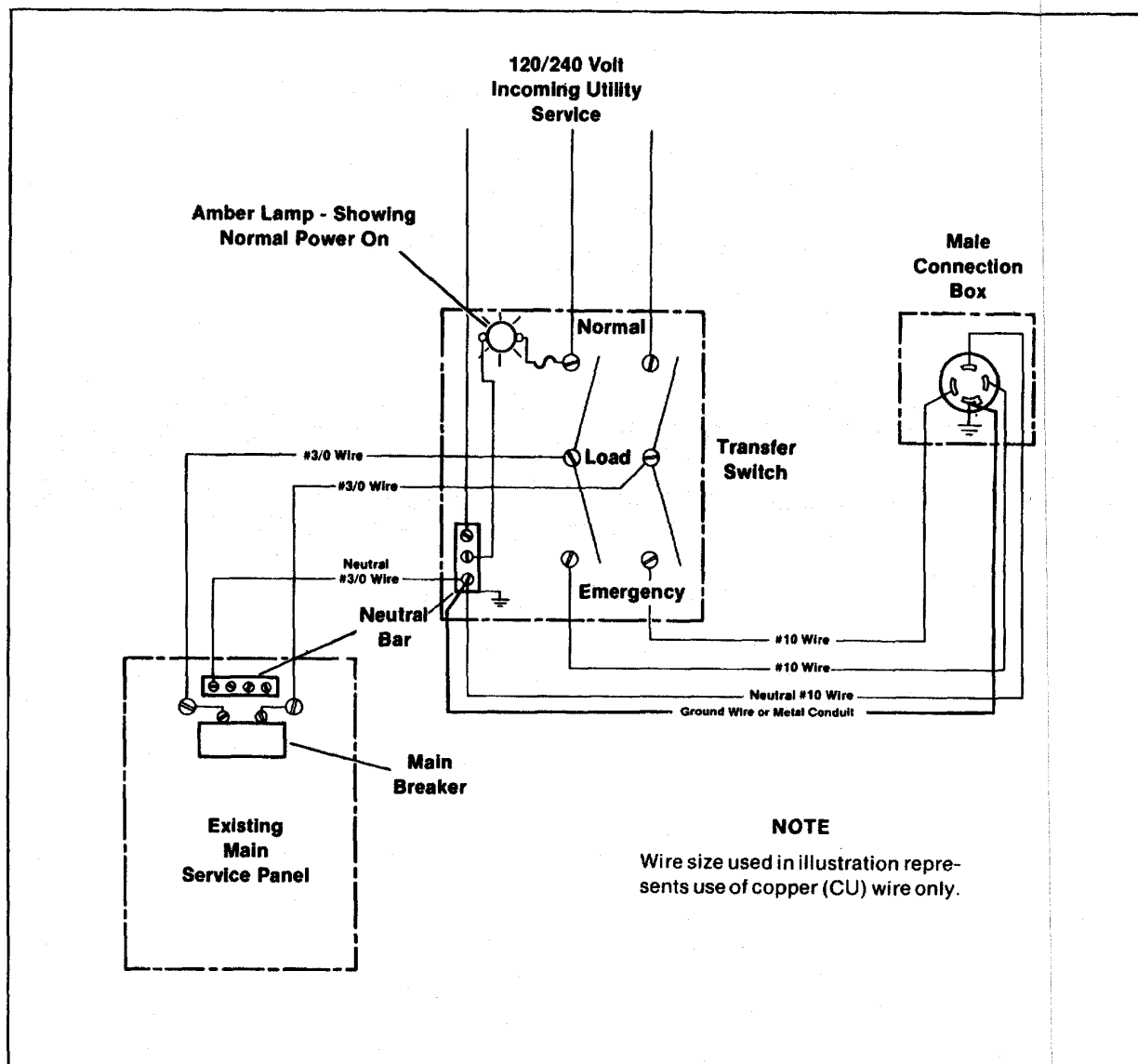


Figure 2-8. 200/100 Amp. Switch Connection

NOTE

If using aluminum cable, coat connections with corrosion inhibitor.

5. Connect neutral lead (white taped) from transfer switch neutral bar to main service panel neutral bar. See Figure 2-8.
6. Connect leads from LOAD bus lugs of transfer switch to service panel main breakers as shown in Figure 2-8.
7. Punch entrance knockout in transfer switch box, install connector, and route cable or wires and conduit from connection box into transfer switch box. Connect wires as follows (see Figure 2-8).

NOTE

Wire size used in illustration represents use of copper (CU) wire only.

- a. Connect white neutral and ground wires to switch box neutral bar. Bonding neutral to ground.
- b. Connect red and black phase wires to lugs at GENERATOR bus.
8. Check for proper bonding and grounding between transfer switch cabinet and neutral bar of main service panel.
9. Have utility personnel reconnect watt-hour meter. Check for proper voltage across lugs of LINE bus of transfer switch. NORMAL POWER lamp should be "on."

10. Close door of transfer switch to allow switch operation and secure with lock (locks not supplied). Push operator lever to UTILITY POWER ON. Check for proper voltage across main breaker lugs of main service panel.
11. Start generator set using generator set Owner's Manual and operate transfer switch following instructions given in "System Operation" of this manual.
12. Check voltage across main breaker lugs of main service panel. Stop generator set. Replace cover to main service panel. Return transfer switch to UTILITY POWER ON. Lock transfer switch in UTILITY POWER ON position, if necessary.

Major Parts Listing

Service Parts Listing

Description	Qty.	Part No.
Fuse, 2 Amp.	1	239049
Holder, Fuse	1	239050
Lamp, #B2A (100 Amp.)	1	239121
Lamp, #NE51 (200 Amp.)	1	239067
Socket, Lamp (100 Amp.)	1	239116
Socket, Lamp (200 Amp.)	1	239068

TT-658 1/88
PRINTED IN U.S.A.

KOHLER
GENERATORS

KOHLER CO. KOHLER, WISCONSIN 53044