

INSTALLATION AND OPERATING INSTRUCTIONS

Warning: Gen/Tran transfer switches should be installed by a professional electrician familiar with electrical wiring and codes, and experienced in working with generators. Gen/Tran accepts no responsibility for accidents, damages or personal injury caused by incorrect installation. These transfer switches are intended for surface or flush mounting **INDOORS only**.

Caution: If using the generator and transfer switch for larger appliances, such as electric water heaters, clothes dryers, electric ranges and air conditioners, verify the appliances to be sure they do **NOT** exceed the amperage rating of the generator. No one appliance can have an amperage rating that exceeds the transfer switch "GENERATOR MAIN" rating.

Note: This transfer switch will not operate properly with neutral-bonded generators unless the generator neutral-bonding feature is disabled or the optional Gen/Tran Switched Neutral Kit (Model: SNK) is installed. Consult your generator manufacturer for directions to disable the neutral-bonding feature.

Note to Installer: Please leave this manual with the consumer for future reference.

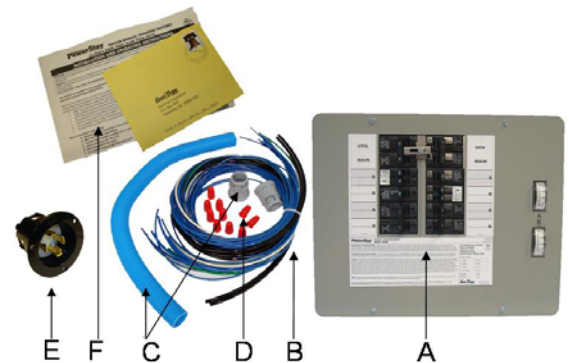
Una versión en español de este manual está disponible para descargar en nuestra página web www.gen-tran.com/support/installation

Thank you for purchasing the most versatile manual transfer switch available today. Gen/Tran's PowerStay[®] Manual Transfer Switches are designed to safely connect generators and renewable energy sources to load centers in homes and light commercial buildings (single phase only) for backup power applications. Features include:

- **NEW:** This switch accommodates AFCI and GFCI circuit breakers (optional, available from Gen/Tran)
- **NEW:** Sufficient ground and neutral termination positions for all branch circuits
- **NEW:** Expand beyond 16 circuits using sub-feed lugs and adding a sub-panel
- **NEW:** Accommodates neutral-bonded generators when SNK option is installed
- Generator Main and Utility Main are mechanically interlocked preventing utility or generator back feed
- Full branch circuit protection with Siemens[®] circuit breakers
- Dual wattmeters help monitor and balance generator load, prolonging generator life
- Pre-assembled wire harness for easy connection to the load center

What is included in this carton:

- A:** Manual transfer switch for 6, 10 or 12 circuits
- B:** Wire harness, pre-assembled
- C:** Flexible non-metallic conduit (21.5") and fittings (2)
- D:** Wire connectors (6, 10 or 12)
- E:** Male Flanged Power Inlet
- F:** Installation manual and Warranty Card



Tools Needed for Installation:

- 1/4" nut driver, 2-1/8" hole saw (if flush mounting)
- Screwdrivers, straight blade and Phillips
- Electric drill, drill bits, wallboard saw
- Wire cutter/stripper
- Safety eye goggles

Compatible Circuit Breaker Types:

- Siemens QP, QT, QPH, HQP, QPF (GFCI), QPHF, QPF, QE, QEH, QAF (Arc Fault), QP (Surge Protector)
- Cutler-Hammer Series BD, BR, BQ, GFC
- Challenger Type A, C, HAGF
- Square D Series HOM
- GE Series THQL

Other Items Needed for Installation:

- New 2-pole, 240V Breaker to mount in main load center – amperage to match utility breaker (see specifications Table I for Utility Main Breaker size – should be manufactured by same as Main load center).
- Anchors and screws to mount switch to wall

Optional Items for Installation:

- Arc-fault, GFCI or Surge protection circuit breakers. If AFCI, GFCI or Surge protection circuit breakers are used as the branch circuit protector in the main load center, they **MUST** be used in the manual transfer switch. You may be able to re-use your existing AFCI, GFCI and Surge protection circuit breakers in the manual transfer switch. See above for compatible breakers. (Available through Gen/Tran).
- Power Inlet Box – for "hard-wired" installations. See TABLE 1. (Available through Gen/Tran).
- Wire, fittings and conduit to connect the Power Inlet Box to the transfer switch
- Power Cord to connect generator to transfer switch or Power Inlet Box. (Available through Gen/Tran).
- White, green, black and red THHN or MTW wire, 6 or 10 AWG, 300V rated (if breaker configuration is modified or expanded)
- Switched Neutral Kit (Model SNK) to accommodate neutral-bonded generators and local codes requiring neutral switching during generator use

TABLE 1 - SPECIFICATIONS:

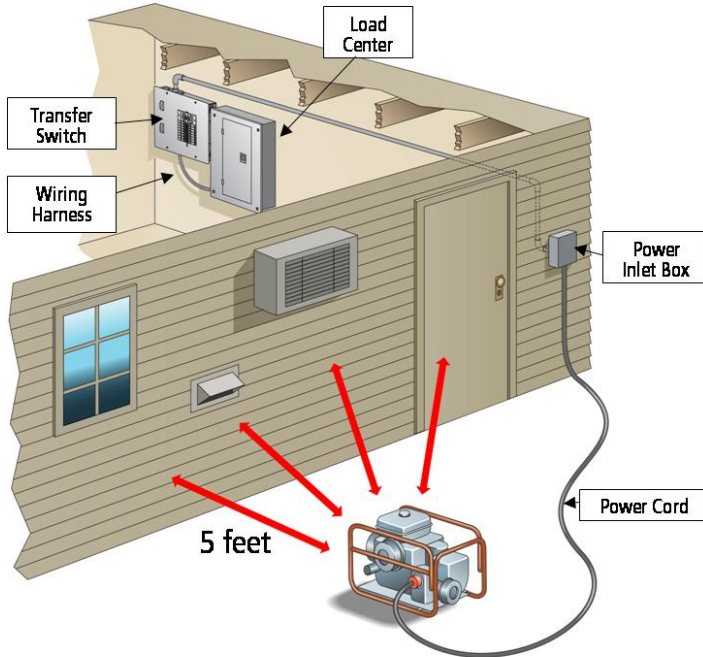
MODEL #	200660	300660**	301660	301060	501210
# Circuits Provided	6	6	6	10	12
UTILITY MAIN circuit breaker	60 Amp	60 Amp	60 Amp	60 Amp	100 Amp
GEN MAIN circuit breaker	20 Amp	20 Amp	30 Amp	30 Amp	60 Amp
Max Load per Circuit	As marked	As marked	As marked	As marked	As marked
Max Load Combined	20 Amp	30 Amp	30 Amp	30 Amp	60 Amp
Max Watts @ 240 Volt	5000	N/A	7500	7500	15,000
Max Watts @ 120 Volt	5000	3750	7500	7500	15,000
Max 1-pole Circuits *	16	16	16	16	16
Max 2-pole Circuits *	8	0	8	8	8
Power Inlet Kit (included)	FI-1420	FI-530	FI-1430	FI-1430	FI-6365
Power Inlet Box (optional)	14202/14203/1420V	53002/53003/530V	14302/14303/1430V	14302/14303/1430V	63652/63653/6365V
Min. gauge Cord Size	12/4 AWG	10/3 AWG	10/4 AWG	10/4 AWG	6/4 AWG

***Note:** Arc Fault Circuit Interrupter (AFCI) or Ground Fault Circuit Interrupter (GFCI) circuit breakers can take up more than one space; the maximum number of circuits may be reduced from the number shown. If you relocate an AFCI or GFCI protected circuit from the panelboard to the transfer switch, the AFCI or GFCI **MUST** be relocated to the transfer switch; install the AFCI or GFCI in the right side of the transfer switch, next to the neutral bar. Connect the panelboard neutral (pigtail) wire to the transfer switch neutral bar. Connect the load neutral in the panelboard to a -6 ft-12AWG piece of white wire, run through the conduit to the transfer switch and connect to the "LOAD NEUTRAL" terminal on the AFCI or GFCI. See [AFCI and GFCI Installation in a GenTran Manual Transfer Switch](#) at www.gen-tran.com for complete AFCI and GFCI installation instructions.

****Note on 300660:** This unit is rated for 120 VAC loads only; single pole circuit breakers should be used in this unit. Total load must not exceed 3750 watts.


TYPICAL INSTALLATION AND PROPER GENERATOR LOCATION:

DANGER NEVER run portable generators indoors or in garages, basements, or sheds. While operating, portable generators should always be used at least 5 feet away from windows, doors, vents, or any other opening. Carbon Monoxide (CO) from a generator is deadly and can kill you in minutes.




⚠ DANGER

Using a generator indoors **CAN KILL YOU IN MINUTES.**
Generator exhaust contains carbon monoxide. This is a poison you cannot see or smell.



NEVER use inside a home or garage, **EVEN IF** doors and windows are open.



Only use **OUTSIDE** and far away from windows, doors, and vents.

STEP 1: PLANNING YOUR INSTALLATION

1. Determine the appliances, circuits or equipment you want to operate with generator power during a power outage, such as:
 - Furnace ,
 - Garage Door Opener
 - Sump Pump
 - TV / Radio
 - Microwave Oven
 - Computer, Fax and Printer
 - Refrigerator
 - Water Heater
 - Lighting
 - Cordless Telephone
 - Well Pump
 - Range
 - Freezer
 - Security System
2. Determine the amps required for each appliance using the CB rating in the load center. No appliance should have an amperage rating that exceeds the "GENERATOR MAIN" rating in the transfer switch. The total amperage of all circuits can exceed the generator rating, but not all circuits will be able to be used concurrently.
3. Assign the circuit # in the load center to a circuit (A1, B1, A2, B2, etc.) in the manual transfer switch, matching the size of the circuit breaker in the load center to the circuit breaker in the transfer switch. Complete TABLE 2; you are ready to begin installing the manual transfer switch. NOTE: the transfer switch can be expanded beyond 16 circuits by connecting a subpanel to the sub-feed lugs located at the bottom of the bus. See Fig 2.

TABLE 2 – CIRCUIT WORKSHEET

Circuit	Model 200660	Model 300660	Model 301660	Model 301060	Model 501210	Appliance(s)
A1	NA	NA	NA	NA	50A	
B1	NA	NA	NA	NA	50A	
A2	NA	NA	NA	30A	30A	
B2	NA	NA	NA	30A	30A	
A3	NA	NA	NA	NA	20A	
B3	NA	NA	NA	NA	20A	
A4	15A	15A	15A	15A	20A	
B4	20A	20A	20A	20A	15A	
A5	20A	20A	20A	15A	20A	
B5	15A	15A	15A	20A	20A	
A6	20A	15A	20A	20A	15A	
B6	20A	20A	20A	15A	15A	
A7	NA	NA	NA	20A	NA	
B7	NA	NA	NA	20A	NA	

STEP 2: INSTALLATION PROCEDURE:

CAUTION PLEASE READ THIS MANUAL IN ITS ENTIRETY BEFORE ATTEMPTING TO UNPACK, ASSEMBLE, INSTALL, OPERATE OR MAINTAIN THIS EQUIPMENT. HAZARDOUS VOLTAGES ARE PRESENT INSIDE TRANSFER SWITCH ENCLOSURES THAT CAN CAUSE DEATH OR SEVERE PERSONAL INJURY. FOLLOW PROPER INSTALLATION, OPERATION AND MAINTENANCE PROCEDURES TO AVOID THESE VOLTAGES. **TURN OFF THE MAIN CIRCUIT BREAKER IN THE LOAD CENTER BEFORE BEGINNING INSTALLATION.**

I. FOR SURFACE MOUNT INSTALLATIONS:

A. "Hard-wired" Generator Connection using a Power Inlet Box:

1. The transfer switch can be installed on either the left or right side of the main load center as it is provided with 21.5" of flexible ENT conduit tubing. Remove the dead front cover of the main load center and the transfer switch, save the screws. Measure and cut ENT conduit to a length and snap provided fittings on ends. After attaching the flexible ENT conduit to both enclosures through one of the bottom or side KOs, hold the transfer switch in position against the wall on which it is to be mounted, mark the holes on the wall for the anchoring screws and anchor to wall (anchors not provided). Be sure NOT to stress the flexible ENT conduit, as it may break. [NOTE: The Electrical Non-Metallic Tubing (ENT) is UL Listed and acceptable for use by the National Electrical Code (NEC). However, some local codes and inspectors may prohibit its use in buildings that exceed (3) floors above grade. If this situation arises, call 888-GEN-TRAN to request a length of flexible metal conduit (FMC) to use instead.]
2. Fish the provided pre-assembled wire harness through the ENT conduit. Strip each wire in the wire harness 5/8" and insert and tighten the wires to the correspondingly marked circuit breakers in the transfer switch. As you attach each marked wire to the circuit breaker, write the appliance name on the label on the transfer switch cover per the TABLE 2 CIRCUIT WORKSHEET completed in Step 1. The unmarked BLACK wires in the harness are inserted into the UTIL MAIN 2-pole breaker in the transfer switch. Attach the WHITE wire to the neutral bar located on the right side and attach the GREEN wire to the ground bar located on the left side of the transfer switch.
3. Install appropriately sized conduit, fittings and wire between the Power Inlet Box (PIB) and transfer switch. Remove one of the KOs on the right top or side of the transfer switch, pull wire into transfer switch enclosure and secure wire with fitting. Install the green ground wire into the ground bar on the left, and install the white neutral wire into neutral bar on the right. Using provided wiring connectors, connect black wire from PIB to black wiring going to Meter "A". Repeat for red wire from PIB to Meter "B".
Note: Model 501210 uses current transformers (CTs) connected to the meters; insert the black wire from the PIB through the hole in the CT connected to the "A" meter and loop the wire around the CT once and through the CT hole again before connecting to the "GEN MAIN A" circuit breaker. Repeat for the red wire from the PIB before connecting to the "GEN MAIN B" circuit breaker. See FIGURE 2 WIRING DIAGRAM. Reinstall the dead front cover to the transfer switch.
4. In the main load center, remove the wires from the breakers for the loads that will be relocated to the transfer switch. Cut each harness wire to a convenient length, strip off 5/8" insulation and connect to the wires removed from the breakers per TABLE 2 with the provided wire connectors. Remove two adjacent single pole breakers from which the load wires were removed and install the NEW 60A or 100A 2-pole circuit breaker (as required in the Other Items Needed section) in their place. Insert the unmarked BLACK wires from the harness into the new circuit breaker. Terminate the WHITE and GREEN wire in the harness in an open position in the Neutral and Ground bars respectively. If there is no separate ground bar, insert the GREEN wire into an open position in the NEUTRAL bar, and tighten.
5. Reinstall the main load center cover, and turn ON the MAIN breaker in the main load center. Turn ON all branch circuit breakers in both panels. Turn ON the UTIL MAIN in the transfer switch. Check that power is restored to all appliances.

B. "Plug-in" Generator Connection using a Power Cord:

1. Remove the 3 screws that secure the 3 1/8" round cover plate to the top of the transfer switch. Retain screws, discard plate. Locate the Power Inlet Kit, connect to the W (white) terminal of the Power Inlet Kit a 10" piece of white 10 AWG THHN or MTW wire and to the G (green) terminal attach a 24" piece of green 10 AWG THHN or MTW wire, strip 5/8" insulation off of unconnected end. NOTE: for Model 501210, use 6 AWG wire.
2. Insert Power inlet into hole from which the cover plate was removed. Remove and discard wire connectors from the black and red wires attached to the meters. Strip 5/8" insulation off of both wires, insert and tighten the black wire into X terminal of the Power Inlet Kit, the red wire into the Y terminal. Align the 3 holes in the Power Inlet Kit flange to the 3 holes in the enclosure, secure with the 3 screws retained in step 1. Terminate the loose end of the green wire attached in step 1 to the ground bar, the white wire to the neutral bar. Torque all terminations to specifications on product label. See FIGURE 2 WIRING DIAGRAM. **Note: Model 501210** uses current transformers (CTs) connected to the meters; cut and strip 5/8" (both ends) from two 12" pieces of 6AWG THHN or MTW wire (one black, one red), connect the black wire to X terminal on the Power Inlet Kit, the red to the Y terminal, insert the black wire from the X terminal through the hole in the CT connected to the "A" meter and loop the wire around the CT once and through the CT hole again before connecting to the "GEN MAIN A" circuit breaker. Repeat for the red wire from the Y terminal before connecting to the "GEN MAIN B" circuit breaker. See FIGURE 2 WIRING DIAGRAM.
3. Proceed to Section I.A above, skipping Step 3.

II. FOR FLUSH MOUNT INSTALLATIONS:

A. "Hard-wired" Generator Connection (new construction or unfinished walls) using a Power Inlet Box:

1. Install the transfer switch at the same time as the main load center, in adjacent wall stud openings (the transfer switch enclosure is 14.25" wide and will fit in standard 16" wall framing). Remove the transfer switch dead front cover, save the screws. Knock out the appropriate mounting slots on the sides of the enclosure and secure to framing with nails or screws; be sure the front edge of the enclosure extends forward to be flush with the thickness of the finished wallboard.
2. Mark and drill a 2 1/8" diameter hole in the stud between the main load center and the transfer switch, lining up with the lowest side KO in the load center and near the bottom center KO in the transfer switch. Remove the KO's, cut the provided ENT conduit to length, snap on the provided fittings to the ENT conduit, push the ENT conduit through the drilled hole and install the ENT conduit assembly to the KO openings in the main load center and transfer switch.
3. Complete Section IA3 above. Cut a piece of cardboard to 14.5" x 12.5", using the 4 screws removed in step IIA1, attach the cardboard to the front of the transfer switch.
4. After the walls have been finished and painted, remove the cardboard cover and complete the installation as described in Sections IA2, 4 and 5. NOTE: To simplify installation, all conductors for the branch circuits can be terminated directly into the transfer switch instead of the main load center, eliminating the need to install the harness wires between the main load center and transfer switch for each circuit.

B. "Hard-wired" Generator Connection (retrofit with finished walls) using a Power Inlet Box:

1. Remove the dead front cover from the main load center and the transfer switch, save the screws.
2. Determine where to install the transfer switch (keep in mind the length and flexibility of the ENT conduit provided and where the generator wires will enter), Verify that there are no wires going thru the side of the main load center into the space where you want to mount the transfer switch. Use a "stud finder" to determine if you have at least 14.25" between the studs to mount the transfer switch. Hold the transfer switch enclosure in the desired position on the wall and mark the exact dimensions of the box. Set the enclosure aside and cut the hole in the wallboard.
3. Remove a 1" or 1-1/4" KO in the lower side (towards the hole cut in Step 2) of the load center. From the inside of the main load center, drill a 1/4" pilot hole through the stud in the center of the KO removed. Reach down inside the hole cut in Step 2 and drill a 2 1/8" diameter hole in the stud using the pilot hole as a guide. Remove the bottom center KO in the transfer switch, snap the fittings on the ENT conduit, and attach the ENT conduit assembly to the transfer switch.
4. Remove one of the KO's on the top of the transfer switch enclosure and install an appropriately sized fitting for the incoming wires from the Power Inlet Box. Knock out the appropriate mounting slots on the sides of the transfer switch enclosure.
5. Insert the transfer switch enclosure into the hole in the wallboard, inserting conduit fitting on attached ENT conduit assembly into the KO removed in Step 3. Fasten conduit fitting to main load center with locknut. Secure transfer switch enclosure to framing with nails or screws; be sure the front edge of the enclosure extends forward to be flush with the finished wallboard.
6. Complete Section IA2 thru 5 above.

Step 3: USING YOUR TRANSFER SWITCH:

A. Transferring from Utility Power to Generator Power:

1. Move generator outdoors. Then connect the male plug of the Power Cord into the correct outlet on the generator and turn ON the circuit breaker (on generator) for the outlet plugged into.
2. Plug in the female connector of the Power Cord to the Power Inlet Box or the power inlet on the top of the PowerStay Manual Transfer Switch. Turn all circuit breakers in the transfer switch to their OFF position.
3. Start the generator outdoors, following the procedures described in the generator's owner's manual furnished by the manufacturer.
4. Turn ON the GENERATOR MAIN circuit breaker in the transfer switch. Turn ON circuit breakers in the manual transfer switch one at a time alternating from phase "A" and phase "B". Watch the meters as you turn on successive circuits so that the meters do not continuously exceed the maximum wattage of the generator. It may be necessary to alternate the use of larger loads (furnace motors, well pumps, freezers, etc.) to avoid overloading the generator. To promote generator life, loads should be balanced on Phase

"A" and "B" so that the wattage reading on each meter is within about 1000 watts of the other.

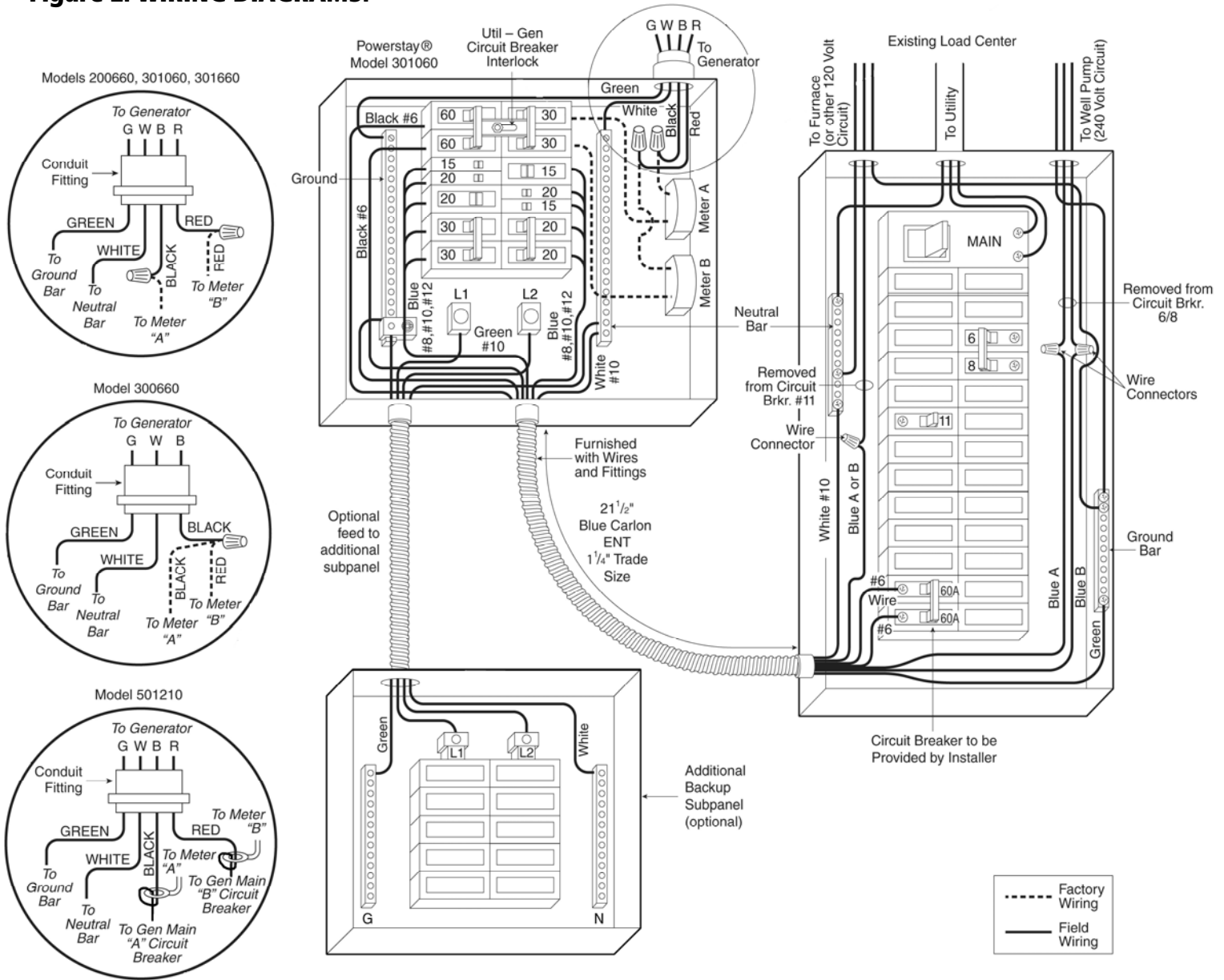
5. Test your circuits by using the wattmeters or determine wattage from that shown on each appliance. Make a note of any excessive loads which must be removed from a given circuit during generator operation in an emergency.

B. Transferring from Generator Power to Utility Power:

1. On the transfer switch, turn the GENERATOR MAIN breaker OFF and the UTILITY MAIN breaker ON. Then turn ON any branch circuit breakers in the transfer switch that are OFF.
2. Shut down the generator, following the procedures in the generator Owner's Manual.
3. Unplug the power cord from the generator and the power inlet.
4. Cool off the generator and store in a dry, secured location.

To ensure that your generator will work properly when you need it, it is important to start and run your generator under load regularly and keep the tank filled with fresh fuel. Perform the above steps at least ONCE A MONTH to keep the generator properly "exercised." It is not necessary to turn off any circuits in the MAIN load center when operating the transfer switch.

Figure 2: WIRING DIAGRAMS:



Gen/Tran Corporation

Toll Free 1-888-GEN-TRAN Fax: 770-552-7756 www.gen-tran.com
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