



Owner's Manual

Automatic Transfer Switch

100 Amp Non-Service Entrance with 16 Circuit Load Center

Register your Generac product at:
WWW.REGISTER.GENERAC.COM
1-888-9ACTIVATE
(1-888-922-8482)

SAVE THIS MANUAL FOR FUTURE REFERENCE

Model:	
Serial:	
Date Purchased:	

Model Number

G0099470

A0009102580*

*A0009102580 - Assembly number when bundled with a generator

**CALIFORNIA WARNING**

This product can expose you to chemicals including cadmium, a carcinogen and reproductive toxicant, which are known to the State of California to cause cancer and birth defects or other reproductive harm.

For more information, go to:
www.p65warnings.ca.gov

(P000810)

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Section 1: Introduction and Safety

Introduction

Thank you for purchasing a Generac Power Systems Inc. product. This unit has been designed to provide high performance, efficient operation, and years of use when maintained properly. This transfer switch is listed with ETL under the UL 67 and CSA C22.2 no. 29 standards.

Read This Manual Thoroughly



Consult Manual. Read and understand manual completely before using product. Failure to completely understand manual and product could result in death or serious injury. (W000100)

If any section of this manual is not understood, contact the nearest Independent Authorized Service Dealer (IASD) or Generac Customer Service at 1-888-436-3722 (1-888-GENERAC), or visit www.generac.com for starting, operating, and servicing procedures. The owner is responsible for proper maintenance and safe use of the unit.

SAVE THESE INSTRUCTIONS for future reference. This manual contains important instructions that must be followed during placement, operation, and maintenance of the unit and its components. Always supply this manual to any individual that will use this unit, and instruct them on how to correctly start, operate, and stop the unit in case of emergency.

The information in this manual is accurate based on products produced at the time of publication. The manufacturer reserves the right to make technical updates, corrections, and product revisions at any time without notice.

Safety Rules

The manufacturer cannot anticipate every possible circumstance that might involve a hazard. The alerts in this manual, and on tags and decals affixed to the unit, are not all inclusive. If using a procedure, work method, or operating technique that the manufacturer does not specifically recommend, verify that it is safe for others and does not render the equipment unsafe.

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



Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

(D000001)



Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

(W000002)



Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

(C000003)

NOTE: Notes contain additional information important to a procedure and will be found within the regular text of this manual.

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

Electrical Hazards



⚠ DANGER

Electrocution. High voltage is present at transfer switch and terminals. Contact with live terminals will result in death or serious injury.

(D000129)



⚠ DANGER

Electrocution. Water contact with a power source, if not avoided, will result in death or serious injury.

(D000104)



⚠ DANGER

Electrocution. In the event of electrical accident, immediately shut power OFF. Use non-conductive implements to free victim from live conductor. Apply first aid and get medical help. Failure to do so will result in death or serious injury.

(D000145)



⚠ DANGER

Electrical backfeed. Use only approved switchgear to isolate generator from the normal power source. Failure to do so will result in death, serious injury, and equipment damage.

(D000237)



⚠ DANGER

Electrocution, equipment and property damage. Handle transfer switches carefully when installing. Never install a damaged transfer switch. Doing so could result in death or serious injury, equipment and property damage.

(D000195)



⚠ DANGER

Electrocution. Turn utility supply OFF before working on utility connections of the transfer switch. Failure to do so will result in death or serious injury.

(D000123)



⚠ DANGER

Electrocution. Do not disable or modify the connection box door safety switch. Doing so will result in death or serious injury.

(D000157)

⚠ DANGER

Automatic start-up. Disconnect utility power and render unit inoperable before working on unit. Failure to do so will result in death or serious injury.

(D000191)

⚠ DANGER

Equipment Malfunction. Installing a dirty or damaged transfer switch will cause equipment malfunction and will result in death or serious injury.

(D000119)

⚠ WARNING

Electric Shock. Only a trained and licensed electrician should perform wiring and connections to unit. Failure to follow proper installation requirements could result in death, serious injury, and equipment or property damage.

(W000155)



⚠ WARNING

Electrocution. Refer to NFPA 70E for PPE and safety equipment before work.

(W000221)

⚠ CAUTION

Equipment damage. Verify all conductors are tightened to the factory specified torque value. Failure to do so could result in damage to the switch base.

(C000120)

⚠ CAUTION

Equipment damage. Perform functional tests in the exact order they are presented in the manual. Failure to do so could result in equipment damage.

(C000121)

⚠ CAUTION

Equipment damage. Verify that voltage and current are within specification before energizing this equipment. Exceeding rated voltage and current will damage the auxiliary contacts.

(C000134)

General Hazards



⚠ DANGER

Electrical backfeed. Use only approved switchgear to isolate generator from the normal power source. Failure to do so will result in death, serious injury, and equipment damage.

(D000237)



⚠ DANGER

Electrocution. High voltage is present at transfer switch and terminals. Contact with live terminals will result in death or serious injury.

(D000129)



⚠ DANGER

Electrocution. Turn utility supply OFF before working on utility connections of the transfer switch. Failure to do so will result in death or serious injury.

(D000123)



⚠ DANGER

Electrocution. Water contact with a power source, if not avoided, will result in death or serious injury.

(D000104)



⚠ DANGER

Electrocution. Do not wear jewelry while working on this equipment. Doing so will result in death or serious injury.

(D000188)



⚠ DANGER

Electrocution. Only authorized personnel should access transfer switch interior. Transfer switch doors should be kept closed and locked. Failure to do so will result in death or serious injury.

(D000213)

⚠ DANGER

Automatic start-up. Disconnect utility power and render unit inoperable before working on unit. Failure to do so will result in death or serious injury.

(D000191)



⚠ WARNING

Loss of life. This product is not intended to be used in a critical life support application. Failure to adhere to this warning could result in death or serious injury.

(W000209)



⚠ WARNING

Hearing loss. Hearing protection is recommended when transferring load. Failure to wear hearing protection could result in permanent hearing loss.

(W000766)

- Competent, qualified personnel should install, operate and service this equipment. Adhere strictly to local, state and national electrical and building codes. When using this equipment, comply with regulations established by the National Electrical Code (NEC), CSA Standard; the Occupational Safety and Health Administration (OSHA), or the local agency for workplace health and safety.
- If working on this equipment while standing on metal or concrete, place insulative mats over a dry wood platform. Work on this equipment only while standing on such insulative mats.
- Never work on this equipment while physically or mentally fatigued.
- Any voltage measurements should be performed with a meter that meets UL3111 safety standards, and meets or exceeds overvoltage class CAT III.

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Section 2: General Information

Introduction

Thank you for purchasing a Generac transfer switch. This manual has been prepared especially for the purpose of familiarizing personnel with the design, application, installation, operation and servicing of the applicable equipment. Read this manual carefully and comply with all instructions. This will help to prevent accidents or damage to equipment that might otherwise be caused by carelessness, incorrect application, or improper procedures.

Every effort has been expended to make sure that the contents of this manual are both accurate and current. The manufacturer, however, reserves the right to change, alter or otherwise improve the product or manual at any time without prior notice.

Unpacking

Carefully unpack the transfer switch. Inspect closely for any damage that might have occurred during shipment. The purchaser must file with the carrier any claims for loss or damage incurred while in transit.

Check that all packing material is completely removed from the switch prior to installation.

Contents in Loose Parts Bag

- Owner's manual
- Warranty statement
- Manual operating handle
- Fault current label
- Clear decal for fault current label
- Enclosure Mounting Cleat

Equipment Description

The automatic transfer switch is used for transferring electrical load from a utility (normal) power source to a generator (standby) power source. Such a transfer of electrical loads occurs automatically when the utility power source has failed or is substantially reduced and the generator source voltage and frequency have reached an acceptable level. The transfer switch prevents electrical feedback between two different power sources (such as the utility and generator sources) and, for that reason, codes require it in all standby electric system installations.

The transfer switch consists of a transfer mechanism and a fused control module (FCM). The integrated FCM incorporates the transfer relay, sensing-battery charge fuses, and connection points for the start circuit wires.

Transfer Switch Mechanism

See [Figure 2-1](#). These switches are used with a single-phase system when the single-phase NEUTRAL line is to be connected to a neutral lug and is not to be switched.

Solderless, screw-type terminal lugs are standard.

The conductor size range is as follows:

Switch Rating	Wire Range	Conductor Tightening Torque	Lug Temp. Rating
100A	#14-1/0 AWG (Cu/Al)	50 in-lbs (5.6 Nm)	167°F (75°C)

This transfer switch is suitable for control of motors, electric discharge lamps, tungsten filament and electric heating equipment where the sum of motor full load ampere ratings and the ampere ratings of other loads do not exceed the ampere rating of the switch and the tungsten load does not exceed 30 percent of the switch rating.

This ETL listed transfer switch is for use in optional standby systems only (NEC article 702).

This transfer switch is suitable for use on a circuit capable of 10,000 (100A) RMS symmetrical amperes, 240 VAC maximum.

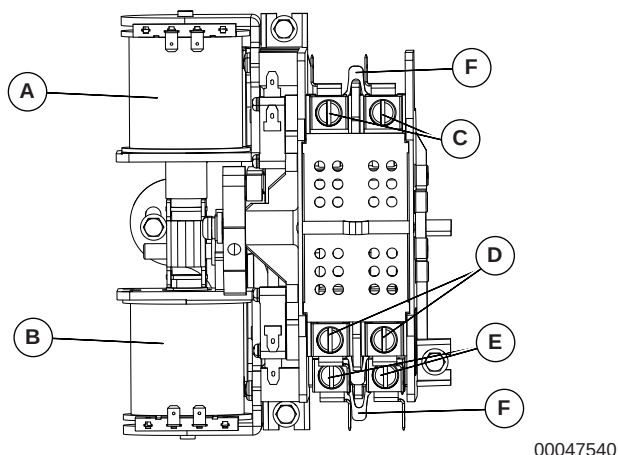


Figure 2-1. Typical Single-Phase ATS Transfer Mechanism

A	Utility Closing Coil
B	Generator Closing Coil
C	Utility Lugs (N1 & N2)
D	Generator Lugs (E1 & E2)
E	Load Lugs (T1 & T2)
F	Retention Clips

Branch Circuit Breaker (not supplied)

This switch is listed for use with the following one inch breakers:

- Siemens*
- Murray*
- Eaton
- Square D

*Including GFCI, AFCI and tandem breakers up to 50 amps.

NOTE: For branch circuits over 50 amps, only listed Siemens or Murray circuit breakers shall be used.

Transfer Switch Data Decal

A data decal is permanently affixed to the transfer switch enclosure. Use this transfer switch only with the specific limits shown on the data decal and on other decals and labels that may be affixed to the switch. This will prevent damage to equipment and property.

When requesting information or ordering parts for this equipment, make sure to include all information from the data decal.

For future reference, record the Model and Serial numbers in the space provided on the inside front cover of this manual.

Transfer Switch Enclosure

The standard switch enclosure is a National Electrical Manufacturers Association (NEMA) and UL 3R type. UL and NEMA 3R (indoor/outdoor rated) type enclosures primarily provide a degree of protection against falling rain and sleet; are undamaged by the formation of ice on the enclosure.

Load Management Options

Optional load management systems are designed to work with the automatic transfer switch to prevent a generator from being overloaded by large appliance loads. Contact the nearest IASD for more information to determine if a load management device is required for the system configuration.

Safe Use of Transfer Switch



⚠ WARNING

Consult Manual. Read and understand manual completely before using product. Failure to completely understand manual and product could result in death or serious injury. (W000100)

Before installing, operating or servicing this equipment, read the [Safety Rules](#) carefully. Comply strictly with all [Safety Rules](#) to prevent accidents and/or damage to the equipment. The manufacturer recommends that a copy of the [Safety Rules](#) be posted near the transfer switch. Also, be sure to read all instructions and information found on tags, labels and decals affixed to the equipment.

Three publications that outline the safe use of transfer switches are the following:

- NFPA 70 – National Electrical Code
- UL 1008 – STANDARD FOR SAFETY-AUTOMATIC TRANSFER SWITCHES
- UL 67 – Panelboards Marking and Application Guide

NOTE: It is essential to use the latest version of any standard to ensure correct and current information.

Section 3: Installation

Introduction to Installation

Though this equipment has been wired and tested at the factory, the installer should verify all wiring connections are proper. Installing the switch includes the following procedures:

- Mounting the enclosure.
- Installing the circuit breakers.
- Connecting power source and load leads.
- Connecting the generator control wiring.
- Connecting branch circuit wiring.
- Testing functions.

Mounting



Equipment Malfunction. Installing a dirty or damaged transfer switch will cause equipment malfunction and will result in death or serious injury.

(D000119)



Equipment Damage. Mount transfer switch to a strong, stable surface. Never mount to drywall, plaster, or other non-structural wall treatments. Failure to mount transfer switch to a strong, stable surface could result in equipment or property damage.

(C000814)

Mounting dimensions for the transfer switch enclosure are in this manual. Enclosures are typically wall-mounted. See [Drawings and Diagrams](#).

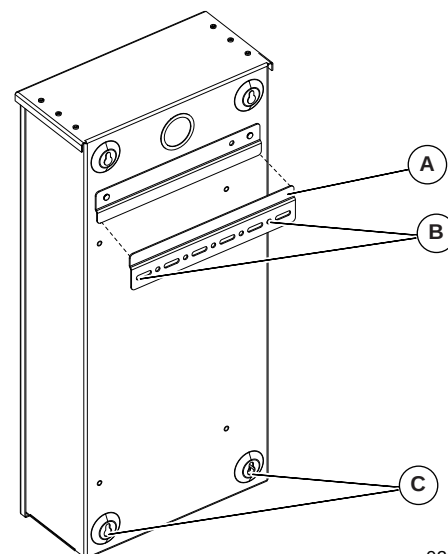
This transfer switch is mounted in a NEMA and UL type 3R enclosure, which can be mounted outdoors or indoors and should be installed in a location based on the layout of the site, convenience, and proximity to the utility supply and load center.

- Install the transfer switch as close as possible to the electrical loads which will be connected to it.
- Transfer switch must be mounted upright on a vertical rigid supporting structure to maintain NEMA and UL type 3R rating.

If local Authority Having Jurisdiction (AHJ) requires a Remote Generator Emergency Shutdown switch, a kit is available from Generac to add this feature.

Mounting with Mounting Bracket Cleat

See [Figure 3-1](#). Secure mounting bracket cleat (A) to supporting structure through mounting holes (B).



020082

Figure 3-1. Mounting Bracket Cleat

Fasteners must adequately secure the 35 lbs (15.9 kg) transfer switch weight to the supporting structure.

- Fasteners must be suitable for the mounting surface of supporting structure.
- Fasteners must engage at least two studs or other structural members on the supporting structure.
- Mounting bracket has clearance holes for 1/4" fasteners with slots to accommodate different stud spacings.
- Hang transfer switch onto mounting bracket after mounting bracket has been secured to supporting structure.
- See [Figure 3-1](#). Secure bottom of transfer switch to the supporting structure with two fasteners through mounting holes (C). Holes are spaced 10.5" (266.7mm) from each other. Use appropriate anchors or blocking as needed.

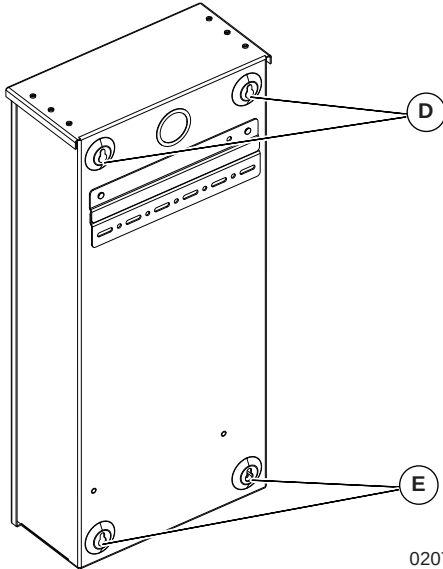
Mounting without Mounting Bracket Cleat

NOTE: Mounting bracket cleat cannot be removed from transfer switch.

Fasteners must adequately secure the 35 lbs (15.9 kg) transfer switch weight to the supporting structure.

- Fasteners must be suitable for the mounting surface of supporting structure.
- See [Figure 3-2](#). Remove top mounting key-holes (D).
- Press edge of a flat-head screwdriver against the pre-punched outline.

- Hit or tap the end of the screwdriver to remove or dislodge the knockout.
- See [Figure 3-2](#). Fasten transfer switch to supporting structure through mounting holes (D) and (E). Holes are spaced 10.5" (266.7mm) from each other. Use appropriate anchors or blocking as needed.

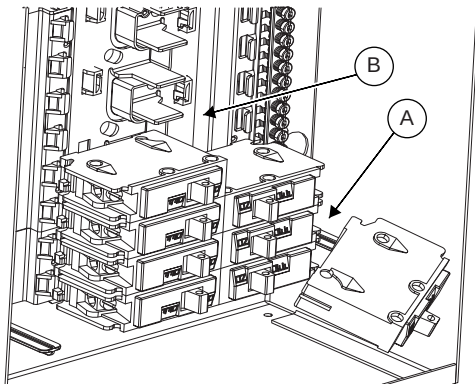


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Figure 3-2. Mounting Transfer Switch without Utilizing Mounting Cleat

Installing Breakers

See [Figure 3-3](#). Insert the tab on the breaker (A) into the hook on the bus (B). Push the breaker into the bus until it snaps into place.



000362

Figure 3-3. Installing Breakers

Connecting Power Source and Load Lines



⚠ DANGER

Electrocution. Turn utility and emergency power supplies to OFF before connecting power source and load lines. Failure to do so will result in death or serious injury.

(D000116)

⚠ CAUTION

Equipment damage. Verify all conductors are tightened to the factory specified torque value. Failure to do so could result in damage to the switch base.

(C000120)

Installation and interconnection diagrams are provided in this manual. See [Drawings and Diagrams](#).

NOTE: All installations must comply with national, state and local codes. It is the responsibility of the installer to perform an installation that will pass the final electrical inspection.

The utility supply, generator, and customer load connections are made at the transfer switch mechanism, inside the switch enclosure.

All conductors must have the ampacity and size needed to supply the loads being served. The terminal ratings for these transfer switches permit the ampacity and size of suitable conductors to be based on 75° C in accordance with NEC standards.

All power cables can enter the enclosure through the knockouts provided. If not using the knockouts, conduit entry into the enclosure above the level of uninsulated live parts shall use fittings listed for use in wet locations to maintain the Type 3R rating.

NOTE: If aluminum conductors are used, apply corrosion inhibitor to conductors. After tightening terminal lugs, carefully wipe away any excess corrosion inhibitor.

Tighten terminal lugs to the torque values as noted on the decal located on the inside of the door. After tightening terminal lugs, carefully wipe away any excess corrosion inhibitor.

Connect power source and load conductors to clearly marked terminal lugs on transfer mechanism as follows:

1. Install a 2-pole, 100 Amp breaker in the main distribution panel. This will be the utility (normal) power source for transfer switch.
2. Install a conduit between the main distribution panel and transfer switch enclosures. Properly sized power cables can also be installed without the use of conduit if needed.
3. Run the conductors from 2-pole, 100 Amp breaker through conduit, or install power cable.
4. Connect utility (normal) power source cables to N1 and N2 terminals on the transfer switch mechanism.
5. Connect the generator (standby) source power cables to transfer switch terminals E1, E2.
6. Connect utility (normal) and generator ground cables to ground connection and neutral cables to the neutral bar.
7. Connect customer LOAD leads.

8. Neutral and Ground Bars Accept #4-#14 AWG Cu/Al cable. If a larger Neutral or Ground Cable is required for the Generator Connection, Please utilize Lug Kit Siemens ECLK2 or Generac part number 10000006293 which accepts #4-2/0 Cu/Al cable.

NOTE: Conduits must be properly supported. Cables can also be installed. Cables and conductors must be of approved insulative qualities and of the correct wire gauge size in accordance with applicable codes. Torque all lugs to the indicated torque settings with a calibrated torque wrench or screwdriver.

Generator Control Wiring and Connections

See [Figure 3-4](#). Control system interconnections consist of 0, 194, 23, 00, T1, N1, and N2.

NOTE: Power and Control Tray Cable, Type TC-ER-JP, is permitted to be installed in accordance with the NEC. Some TC-ER-JP cable manufacturers produce cables which are color-coded to Generac's standards.

The generator control circuit wiring is classified in the 2026 NEC as "Non-Power-Limited Remote-Control and Signaling Circuits." All generator control circuit conductors and installation must comply with the applicable sections of the NEC.

NOTE: ALL conductors for Main AC and Control circuit wiring must be rated for 300V (minimum).

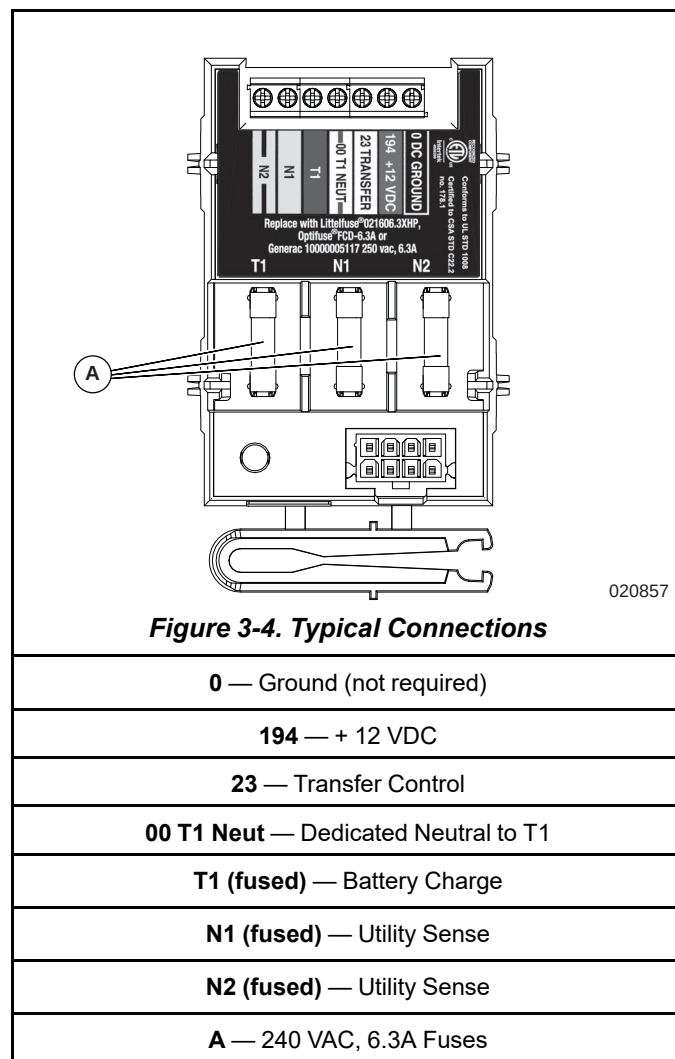
Reference instruction manual of specific engine generator for wiring connection details. Screw heads are straight bladed and cross-bladed, and should be tightened to 3.5 in-lb (0.4 Nm).

See table below for control circuit wire size and length recommendations. Terminals are listed for copper conductors only.

Recommended Wire Size	Maximum Wire Length
	(One transfer switch and fuse control module)
No. 18 AWG	1–115 ft (0.3–35 m)
No. 16 AWG	116–185 ft (36–56 m)
No. 14 AWG	186–295 ft (57–89 m)
No. 12 AWG	296–460 ft (90–140 m)

Exception: Non-power-limited remote-control and signaling circuit conductors rated 1000 volts AC, 1500 volts DC, nominal or less, and power-supply circuits are permitted to occupy the same cable, enclosure, or raceway without a barrier if all conductors have an insulation rating equal to at least the maximum circuit voltage applied to any conductor within the enclosure,

cable, or raceway, and the equipment powered is functionally associated.



Customer Wiring Connections Integrated Fused Control Module (FCM)	
Terminal Numbering Decal	Wire Numbers
BLACK	0—DC (-) Not required
RED	194—DC (+) 12 VDC for transfer controls
WHITE	23—Transfer control signal wire
WHITE AND BLACK	00—Dedicated T1 Neutral
BLUE*	T1—Fused 120 VAC for battery charger
YELLOW	N1—Fused 240 VAC Sensing for utility dropout and pickup
YELLOW WITH BLACK STRIPE	N2—Fused 240 VAC Sensing for utility dropout and pickup
* Required to supply utility or generator voltage to the generator battery charger.	

Installing Branch Circuit Conductors – USA Installations

1. Select which branch circuits will be protected by the generator in the normal power panel board.
2. Turn the circuit breaker in the normal power panel board to the off position.
3. Remove the ungrounded (hot) conductor from the circuit breaker and neutral conductor from the neutral terminal bar in the normal power panel board.

NOTE: If the circuit to be protected is part of a multi-wire branch circuit, the entire multi-wire branch circuit has to be relocated to the transfer switch panel board. (See NEC 210.4) The branch circuit wiring can be removed from the normal power panel board and installed in the transfer switch panel board, or spliced onto new branch circuit wiring originating from the transfer switch panel board.

4. If the normal power panel board is being used as a junction box for the protected branch circuit conductors, install an NEC approved conduit (s), raceway (s), or other approved wiring method between the transfer switch panel board and normal power panel board.
5. Install properly sized branch circuit conductors between the transfer switch panel board to the branch circuit conductors to be protected by the transfer switch.

6. Use listed wire nuts or any other approved termination device to connect the branch circuit conductors.
7. Install the provided label on the existing panel board that indicates the location of the disconnecting means for the pass through conductors.
8. If the generator protected branch circuit conductors are being re-installed into the transfer switch panel board, punch the required sized hole (s) for the cable, conduit, or raceway.
9. Route the branch circuit conductors into the transfer switch and terminate the equipment ground conductor on the equipment ground terminal bar, the neutral on the neutral terminal bar, and the ungrounded (hot) on the circuit breaker terminal.
10. Size all conductors, raceways, conduits, and junction boxes, if required, to the applicable NEC code articles and follow the NEC installation requirements for the wiring method(s) selected.

NOTE: For outdoor installations, any entry into the transfer switch enclosure that is above the level of uninsulated live parts shall use fittings listed for use for wet locations to maintain the NEMA 3R rating of the enclosure. The wiring methods installed shall be listed for use in wet locations.

Installing Branch Circuit Conductors – Canadian Installations

1. Select which branch circuits will be protected by the generator in the normal power panel board. Turn the circuit breaker in the normal power panel board to the off position.
2. Remove the ungrounded (hot) conductor from the circuit breaker and neutral conductor from the neutral terminal bar in the normal power panel board.

NOTE: If the circuit to be protected is part of a multi-wire branch circuit, the entire multi-wire branch circuit has to be relocated to the transfer switch panel board.

3. The Canadian Electric Code prohibits the use of the normal power panel board as a junction box, the generator protected branch circuit wiring will have to be relocated to a properly sized junction box, or reinstalled into the transfer switch panel board.
4. Punch the required sized hole (s) for the cable, conduit, or raceway.
5. Route the branch circuit conductors into the transfer switch and terminate the equipment ground conductor on the equipment ground terminal bar, the neutral on the neutral terminal bar,

and the ungrounded (hot) on the circuit breaker terminal.

6. Size all conductors, raceways, conduits, and junction boxes, if required, to the applicable CEC code articles and follow the CEC installation requirements for the wiring method(s) selected.

NOTE: For outdoor installations, any entry into the transfer switch enclosure that is above the level of uninsulated live parts shall use fittings listed for use for wet locations to maintain the NEMA 3R rating of the enclosure. The wiring methods installed shall be listed for use in wet locations.

Auxiliary Contact



Equipment damage. Verify that voltage and current are within specification before energizing this equipment. Exceeding rated voltage and current will damage the auxiliary contacts.

(C000134)

An optional, purchased separately, auxiliary contact kit G005621 is designed to work with the automatic transfer switch to lock out a single large electrical load from generator operation. If home is equipped with electrical heat or multiple central air conditioning units, this device allows the automatic transfer switch to interrupt the control wire, breaking the signal needed for appliance to turn on.

Fault Current Label

See [Figure 3-5](#). A Fault Current Identification Label is provided in the bag containing the unit Owner's Manual and transfer switch manual operating handle. NEC requires that the short-circuit current rating of the transfer equipment, based on the type of overcurrent protective device protecting the transfer equipment, be field marked on the exterior of the transfer equipment. For NEC compliance, verify the required short-circuit current rating of the transfer switch before installation. The completed label provides the local AHJ (Authority Having Jurisdiction) with the information he or she may require during inspection.

Apply the label to the exterior of the transfer switch enclosure. Use a pen to fill in the required information, and then cover the label with the clear protective decal.

004496

Figure 3-5. Fault Current Label

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Section 4: Operation

Functional Tests and Adjustments



⚠ WARNING

Electrocution. Refer to NFPA 70E for PPE and safety equipment before work.

(W000221)

⚠ CAUTION

Equipment damage. Perform functional tests in the exact order they are presented in the manual. Failure to do so could result in equipment damage.

(C000121)

Following transfer switch installation and interconnection, inspect the entire installation carefully. A competent, qualified electrician should inspect it. The installation should comply strictly with all applicable codes, standards, and regulations. When absolutely certain the installation is proper and correct, complete a functional test of the system.

IMPORTANT NOTE: Before proceeding with functional tests, read and make sure all instructions and information in this section is understood. Also read the information and instructions of labels and decals affixed to the switch. Note any options or accessories that might be installed and review their operation.

Manual Operation



⚠ DANGER

Electrocution. Do not manually transfer under load. Disconnect transfer switch from all power sources prior to manual transfer. Failure to do so will result in death or serious injury, and equipment damage.

(D000132)

⚠ CAUTION

Equipment damage. Do not use excessive force while manually operating the transfer switch. Doing so could result in equipment damage.

(C000122)

See [Figure 4-1](#). A manual handle (C) is shipped with the transfer switch's loose parts kit in the event that automatic operation of the system has failed. Manual operation must be checked BEFORE the transfer switch is operated electrically.

NOTE: Each site or structure has unique electrical system configurations and associated requirements. It's important to understand each specific configuration for personal and electrical safety through the following procedures.

To check manual operation, proceed as follows:

1. Verify the generator's main circuit breaker is in the OFF position (OFF mode).
 - a. Set generator's main line circuit breaker (MLCB) to the OFF (open) position.

NOTE: Refer to generator's owner's manual for MLCB location.

2. Turn OFF circuit breaker in electrical panel supplying power to transfer switch.
 - a. Turn OFF (Open) utility (main) service disconnect; or,
 - b. Turn OFF circuit breaker (open associated disconnect) to upstream (source) panel which supplies power to transfer switch (if applicable).
3. See [Figure 4-1](#). Note position of transfer mechanism main contacts (B) by observing the manual operation rocker.
 - a. Manual operation handle in the UP position - LOAD terminals (T1, T2) are connected to utility terminals (N1, N2). Transfer switch is now connected to utility (grid) power.
 - b. Manual operation handle in the DOWN position - LOAD terminals (T1, T2) are connected to EMERGENCY terminals (E1, E2). Transfer switch is now connected to generator (emergency) power.

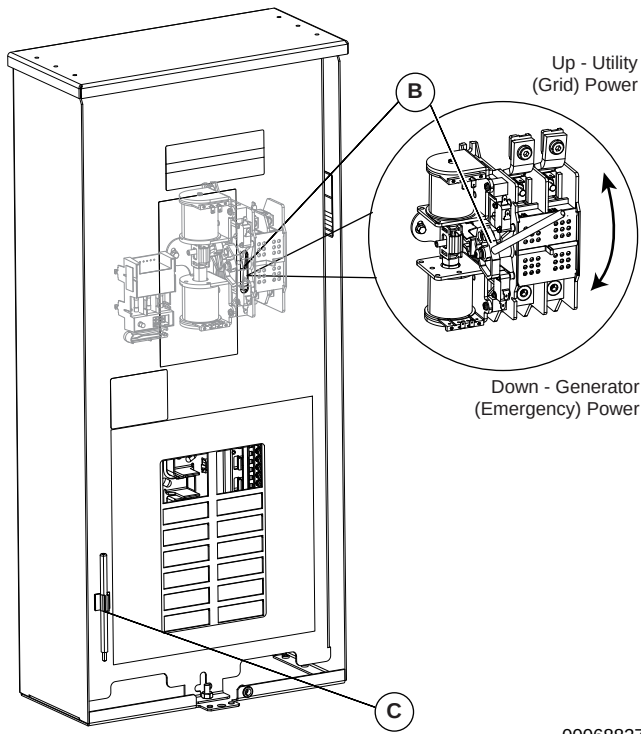


Figure 4-1. Manual Operation

In the case of automatic operation not occurring, contact a local Independent Authorized Service Dealer (IASD) to investigate, diagnose, and service the system to identify why automatic operation did not occur.

Manual Transfer to Utility Source Side

Proceed with the following steps in the event that utility (grid) power has returned, but the transfer switch has not supplied the available utility power to the residence.

Verify the position of the switch by observing the position of manual operation handle in the transfer mechanism. If the handle is UP, the contacts are closed in the utility (normal) position, no further action is required. If the handle is DOWN, proceed with Step 1.

1. With the handle inserted into the yellow movable contact carrier rocker, move handle UP. Hold on to the handle as it will move quickly after passing the center of travel.
2. Remove manual operating handle from movable contact carrier rocker. Return handle to storage bracket in the transfer switch for future use.
3. Turn ON utility service disconnect service breaker.

NOTE: Refer to site's electrical configuration for utility power disconnect.

4. Turn ON generator main circuit breaker.

Manual Transfer to Generator Source Side

Before proceeding, verify the position of the switch by observing the position of the manual operation handle in

the transfer mechanism. If the handle is DOWN, the contacts are closed in the generator (standby) position. No further action is required. If the handle is UP, proceed with Step 1.

1. With the handle inserted into the yellow movable contact carrier rocker, move the handle DOWN. Hold on to the handle as it will move quickly after passing the center of travel.
2. Remove manual operating handle from movable contact carrier rocker. Return handle to storage bracket in the transfer switch for future use.
3. Turn ON utility service disconnect service breaker.

NOTE: Refer to site's electrical configuration for utility power disconnect.

4. Turn ON generator main circuit breaker.

Voltage Checks

NOTE: Use the Digital Multimeter (DMM) LowZ low input impedance setting to collect accurate voltage measurements. LowZ eliminates the possibility of inaccurate ghost voltage readings, also known as phantom voltage or stray voltage readings. See DMM manufacturer's literature for additional information.

Utility Voltage Checks



⚠ DANGER

Electrocution. High voltage is present at transfer switch and terminals. Contact with live terminals will result in death or serious injury.

(D000129)



⚠ WARNING

Electrocution. Refer to NFPA 70E for PPE and safety equipment before work.

(W000221)

1. Turn ON the utility power supply to the transfer switch using the utility service disconnect circuit breaker.
2. With an accurate AC voltmeter, check for correct voltage. Measure across ATS terminal lugs N1 and N2; N1 to NEUTRAL and N2 to NEUTRAL.

Generator Voltage Checks



⚠ DANGER

Electrocution. High voltage is present at transfer switch and terminals. Contact with live terminals will result in death or serious injury.

(D000129)


WARNING

Electrocution. Refer to NFPA 70E for PPE and safety equipment before work.

(W000221)

1. On the generator panel, select the MANUAL mode of operation. The generator should crank and start.
2. Let the generator stabilize and warm up at no-load for at least five minutes.
3. Set the generator's main circuit breaker (CB1) to its ON or CLOSED position.
4. With an accurate AC voltmeter and frequency meter, check the no-load, voltage and frequency. Measure across ATS terminal lugs E1 to E2; E1 to NEUTRAL and E2 to NEUTRAL.

Frequency	60–62 Hz
Terminals E1 to E2	240–246 VAC
Terminals E1 to NEUTRAL	120–123 VAC
Terminals E2 to NEUTRAL	120–123 VAC

5. When certain that generator supply voltage is correct and compatible with transfer switch ratings, turn OFF the generator supply to the transfer switch.
6. Set the generator main circuit breaker (CB1) to OFF or OPEN.
7. On the generator panel, select the OFF mode to shut down the generator.

Do NOT proceed until generator AC output voltage and frequency are correct and within stated limits. If the no-load voltage is correct but no-load frequency is incorrect, the engine governed speed may require adjustment. If no-load frequency is correct but voltage is not, the voltage regulator may require adjustment.

Generator Tests Under Load

1. Set the generator main circuit breaker to OFF or OPEN.
2. Set the utility service disconnect circuit breaker to OFF or OPEN.
3. Manually actuate the transfer switch main contacts to the emergency (Standby) position.
4. To start the generator, select the MANUAL mode of operation. When engine starts, let it stabilize for a few minutes.
5. Set the generator main circuit breaker to ON or CLOSED. The generator now powers all LOAD circuits. Check generator operation under load as follows:

- Turn on electrical loads to the full rated wattage/ampere capacity of the generator. **DO NOT OVERLOAD.**
 - With maximum rated load applied, check voltage and frequency across transfer switch terminals E1 and E2. Voltage should be greater than 230 VAC (240 VAC system); frequency should be greater than 59 Hz.
 - Verify that the gas pressure remains within acceptable parameters (see the generator Installation Guidelines manual).
 - Let the generator run under rated load for at least 30 minutes. With unit running, listen for unusual noises, vibration, overheating, etc., that might indicate a problem.
6. When checkout under load is complete, set main circuit breaker of the generator to the OFF or OPEN position.
 7. Let the generator run at no-load for several minutes. Then, shut down by selecting the OFF mode.
 8. Move the main switch contacts back to the utility position.
- NOTE:** Handle and operating lever of transfer switch should be UP.
9. Turn on the utility power supply to transfer switch, using whatever means provided (such as a utility main line circuit breaker). The utility power source now powers the loads.
 10. The system is now set for fully automatic operation.

Checking Automatic Operation

NOTE: If automatic operation does not occur, contact a local Independent Authorized Service Dealer (IASD) to investigate, diagnose, and service the system to identify why automatic operation did not occur.

To check the system for proper automatic operation, proceed as follows:

1. Verify generator is OFF.
2. Set the utility service disconnect circuit breaker of the transfer switch to OFF or OPEN.
3. Verify switch is de-energized.
4. Install front cover of the transfer switch.
5. Set the utility service disconnect circuit breaker of the transfer switch to ON or CLOSED.
6. Set the generator main circuit breaker to ON.
7. On the generator panel, select AUTO. The system is now ready for automatic operation.
8. Set the utility service disconnect circuit breaker of the transfer switch to OFF or OPEN.

With the generator ready for automatic operation, the engine should crank and start when the utility source power is turned OFF after a five second delay (factory default setting). After starting, the transfer switch should connect load circuits to the standby side after a five (5) second warm-up delay. Let the system operate through its entire automatic sequence of operation.

NOTE: Timer durations may differ between generators and settings.

With the generator running and loads powered by generator AC output, set the utility service disconnect circuit breaker supplying the transfer switch to ON or CLOSED. The following should occur:

- After approximately 15 seconds, the switch should transfer loads back to the utility power source.
- Approximately one minute after re-transfer, the generator should shut down.

With the generator in the AUTOMATIC mode, the system is now set for fully automatic operation.

Installation Summary

1. Verify the installation has been properly performed as outlined by the manufacturer and that it meets all applicable laws and codes.
2. Verify proper operation of the system as outlined in the appropriate installation and owner's manuals.
3. Educate the end-user on the proper operation, maintenance and service call procedures.

NOTE: The Utility Power Circuit Breaker in the transfer switch must be turned OFF to simulate a utility outage. Shutting off the main disconnect in a subpanel connected to the transfer switch will NOT simulate an outage.

Shutting Generator Down While Under Load or During a Utility Outage



Automatic start-up. Disconnect utility power and render unit inoperable before working on unit. Failure to do so will result in death or serious injury. (D000191)

IMPORTANT NOTE: Follow these steps, in order, during utility outages to avoid equipment damage. Shutdowns may be required during utility outages to perform routine maintenance or to conserve fuel.

To turn generator OFF:

1. Unlock and open lid.
2. Set utility MLCB to OFF (OPEN).
3. Set generator MLCB (generator disconnect) to OFF (OPEN).
4. Allow generator to run for cool-down for approximately one minute.

5. Set generator to OFF at generator controller.
6. Remove 7.5A fuse from generator controller.

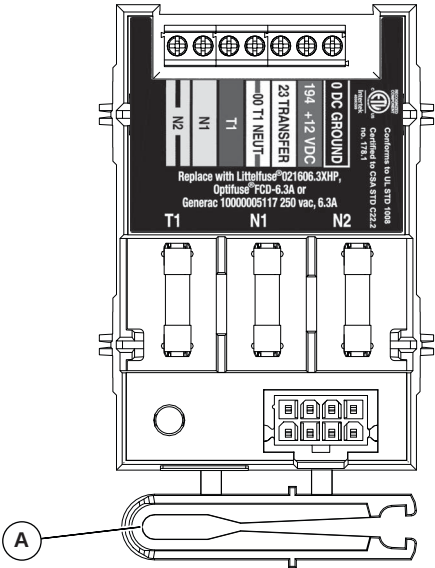
To turn generator back ON:

1. Install 7.5A fuse in controller.
2. Verify generator MLCB (generator disconnect) is OFF (OPEN).
3. Set generator to AUTO mode at generator controller.
4. Generator will start and run. Allow generator to run and warm up for a few minutes.
5. Set generator MLCB (generator disconnect) to ON (CLOSED).
6. Set utility MLCB to ON (CLOSED).
7. Close and lock lid.

The system now operates in automatic mode.

Fuse Removal and Installation

See [Figure 4-2](#). A fuse removal and installation tool (A) is included in the control housing.



00065661

Figure 4-2. Fuse Removal and Installation Tool

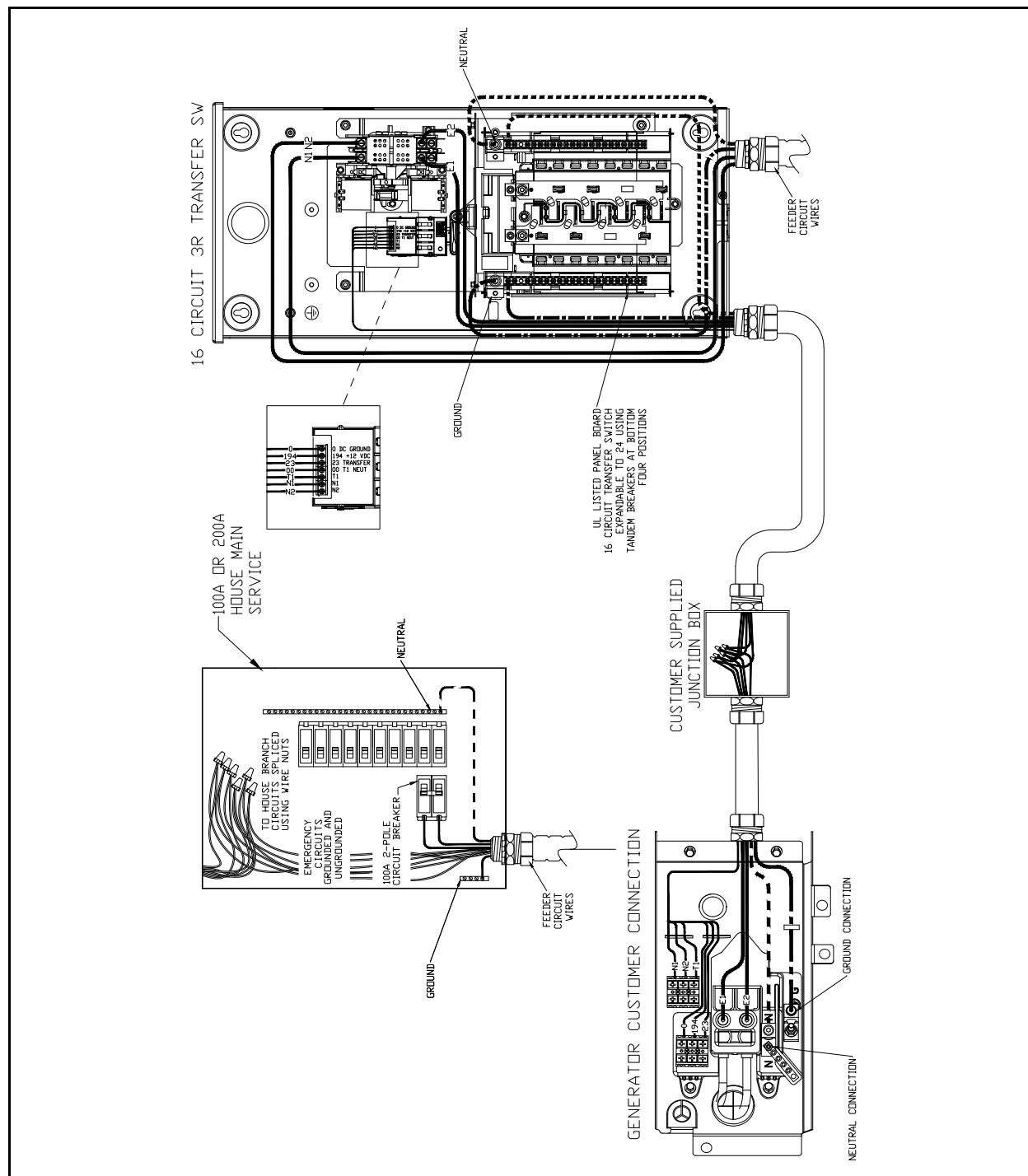
If a fuse requires replacement, snap the tool free with an appropriate tool such as diagonal pliers, and use it to replace the fuse. The tool can be stored in the control housing retainer directly above the fuses, with the large thumb tab facing out.

Use only Generac replacement fuses — part number 10000005117, rated 240 VAC, 6.3 Amps, 10,000 AIC.

Alternative fuses are Littelfuse® 021606.3MXHP or Optifuse® FCD-6.3.

Interconnection Drawing

No. A0011147795 -A



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