



Owner's Manual

Automatic Transfer Switch

100 - 400 Amp, Service Entrance, Canadian Listed

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

G0099490 – 100A Service Entrance, Canadian Listed

G0099500 – 200A Service Entrance, Canadian Listed

G0099380 – 400A Service Entrance, Canadian Listed

**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 UL1008 and CSA C22.2 no. 178.1 standards.

Read This Manual Thoroughly



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)

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.

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:

DANGER

Indicates a hazardous situation which, if not avoided, will result in death or serious injury. (D000001)

WARNING

Indicates a hazardous situation which, if not avoided, could result in death or serious injury. (W000002)

CAUTION

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

Equipment damage. This unit is not intended for use as a prime power source. It is intended for use as an intermediate power supply in the event of temporary power outage only. Doing so could result in death, serious injury, and equipment damage.

(W000247)



⚠ 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

NOTE: G0099490 and G0099500 loose parts kits contain an enclosure mounting cleat. G0099380 does not include an enclosure mounting cleat.

Equipment Description

This automatic transfer switch is used for transferring electrical load from a utility (normal) power source to a generator (standby) power source. 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, utility service disconnect circuit breaker, and a fused

control module (FCM), which incorporates fuses and terminal blocks for transfer switch connections.

This ETL listed transfer switch has locking provisions for the utility entry cabinet. In addition, it has a lockout/tagout provision for the service entrance circuit breaker.

Transfer Switch Mechanism

See [Figure 2-1](#), [Figure 2-2](#), and [Figure 2-3](#). This switch is 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
100A	#14-1/0 AWG (Cu/Al)	50 in-lbs (5.6 Nm)
200A	#6-250 MCM (Cu/Al)	275 in-lbs (31 Nm)
400A	(1) #4-600 MCM (Cu/Al) or (2) 1/0-250 MCM (Cu/Al)	375 in-lbs (42.4 Nm)

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.

The 100A rated switch is suitable for use on circuits capable of delivering not more than 10,000 RMS symmetrical amperes, 240 VAC maximum.

The 200A and 400A rated switches are suitable for use in a circuit capable of 22,000 RMS symmetrical amperes, and 240 VAC maximum.

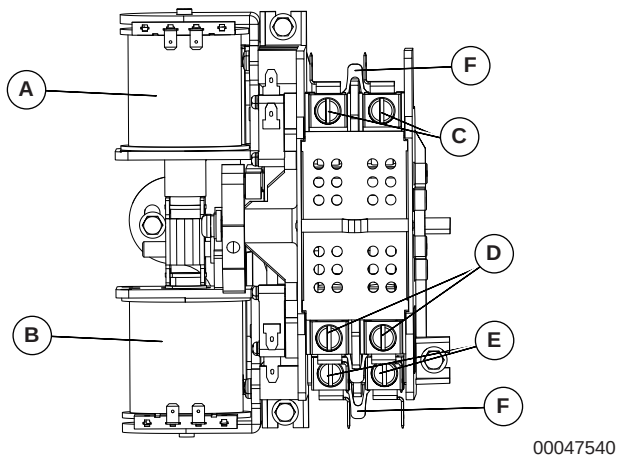


Figure 2-1. Typical Single-Phase ATS Transfer Mechanism (100A)

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 (100A only)

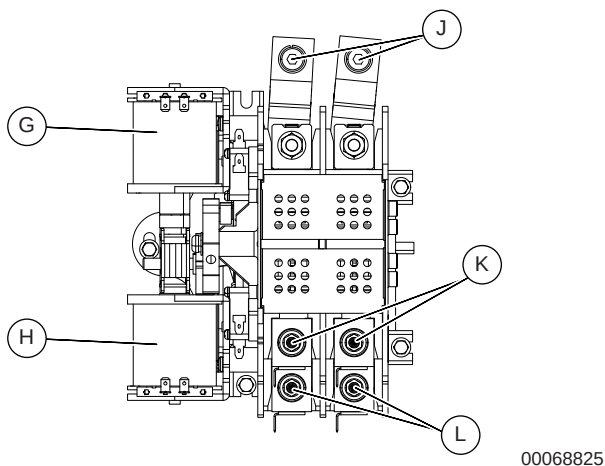


Figure 2-2. Typical Single-Phase ATS Transfer Mechanism (200A)

G	Utility Closing Coil
H	Generator Closing Coil
J	Bus Bar to Circuit Breaker (N1 & N2)
K	Generator Lugs (E1 & E2)
L	Load Lugs (T1 & T2)

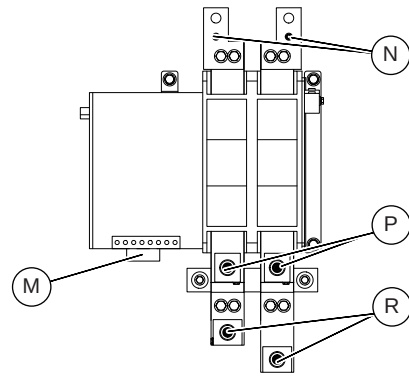


Figure 2-3. Typical Single-Phase ATS Transfer Mechanism (400A)

M	Utility and Generator Closing Coil
N	Bus Bar to Circuit Breaker (N1 & N2)
P	Generator Lugs (E1 & E2)
R	Load Lugs (T1 & T2)

Utility Service Circuit Breaker

The utility service and generator disconnect circuit breakers for 100 amp models are:

- Type BQ, 2-pole
- 10,000 AIC
- 120/240VAC, 100A
- 50/60 Hertz
- Wire range: #1 - #8 AWG (Cu/Al)
- The conductor tightening torque is 50 **in-lbs** (5.6 Nm)

The utility service circuit breakers for 200 amp models are:

- Type 225AF, 2-pole
- 22,000 AIC
- 120/240VAC, 200A
- 50/60 Hertz
- Wire range:
 - Line: 350 MCM - 6 AWG (Cu/Al)
- Conductor tightening torque (refer to decal on circuit breaker)

The utility service circuit breakers for 400 amp models are:

- 120/240VAC, 400A
- 50/60 Hertz
- Wire range: (1) #4-600 MCM or (2) 1/0-250 MCM (Cu/Al)

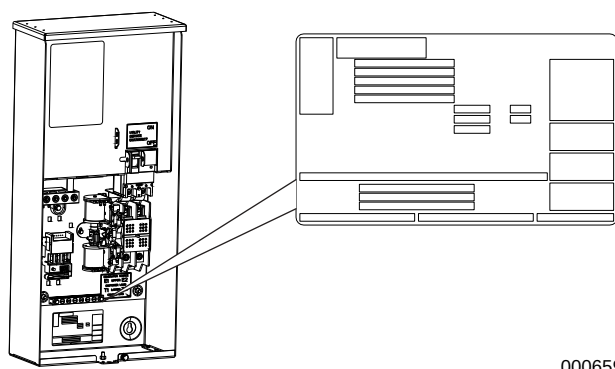
- See Circuit Breaker markings and decal on inside of the door for torque specifications.

Transfer Switch Data Decal

See [Figure 2-4](#). 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 front cover of this manual.



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Figure 2-4. Data Decal Location (200A Transfer Switch Shown)

Transfer Switch Enclosure

The standard switch enclosure is a National Electrical Manufacturers Association (NEMA and UL type) 3R. NEMA and UL type 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.

Safe Use of Transfer Switch



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.

Two publications which outline the safe use of transfer switches are the following:

- Canadian Electrical Code – CSA C22.1
- NFPA 70E – Standard for Electrical Safety In The Workplace

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

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.

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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.
- Connecting power source and load leads.
- Connecting the generator start and sensing circuit.
- Connecting any auxiliary contact (if needed).
- 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 based on the layout of installation, 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.

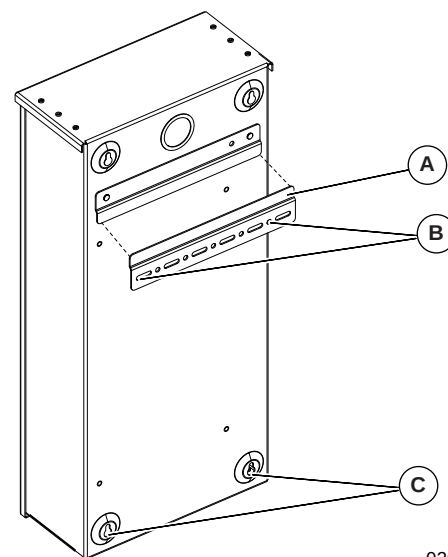
Generac Service Rated Transfer Switches (SE) are listed and labeled as "Suitable for use as service equipment." Generac SE rated Transfer Switches can be installed either as service equipment or not as service equipment.

Installation must comply with the applicable requirements in CEC/NEC.

- Where a Generac service-rated ATS is installed downstream of the utility metering equipment that does not contain a service disconnecting means, the ATS shall be installed as the service equipment in accordance with the requirements in CEC/NEC.
- Where a Generac service-rated ATS is not being installed as service equipment, the factory installed main bonding jumper shall be removed, and the ATS shall be installed not as service equipment and must comply with all applicable requirements of CEC/NEC.

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.

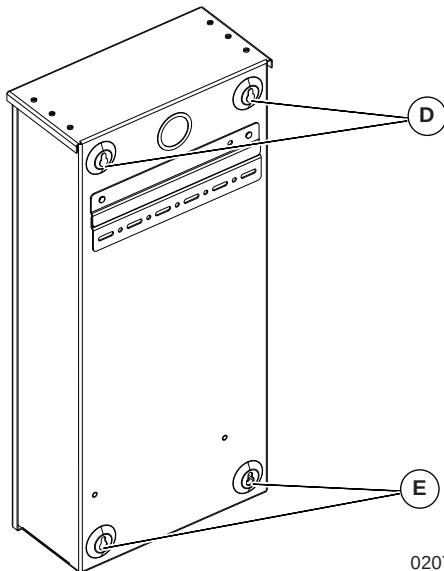
- See [Figure 3-1](#). Secure bottom of transfer switch to the supporting structure with two fasteners through mounting holes (C). Holes are spaced 10.5" (266.7mm) from each other. Use appropriate anchors or blocking as needed.

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

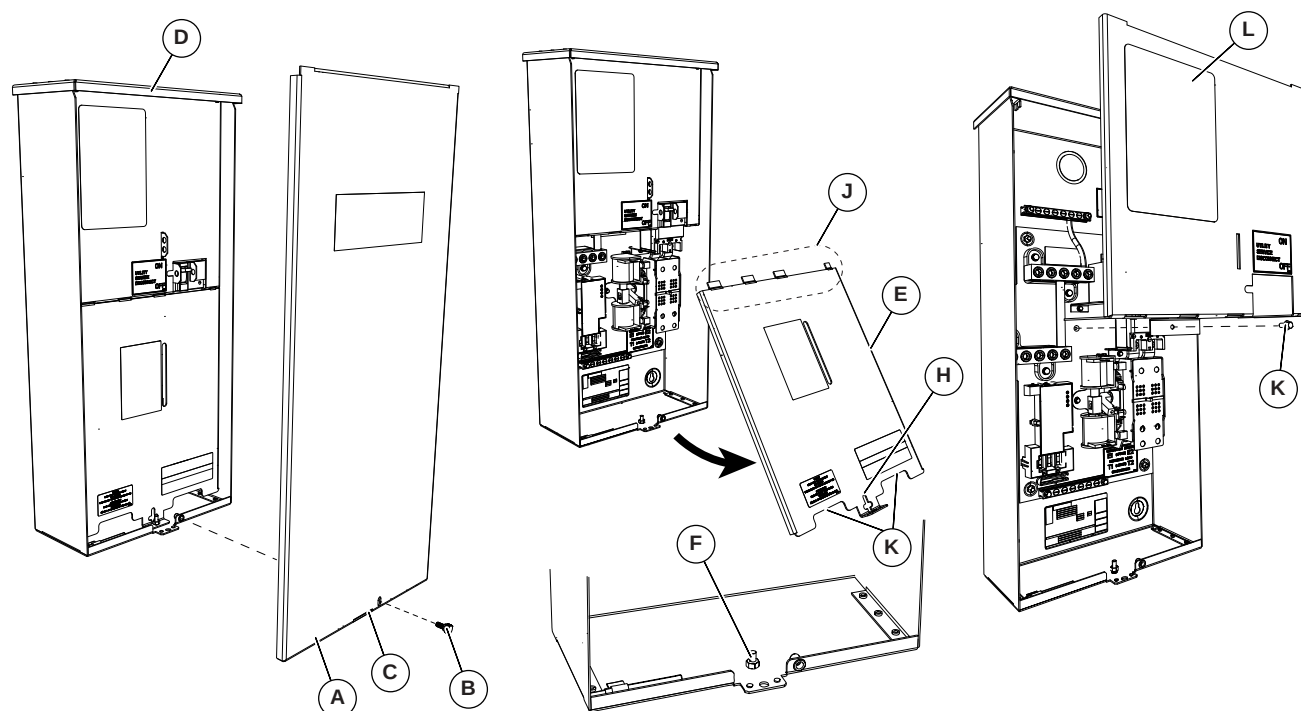
Open Enclosure

See [Figure 3-3](#) for the 200A, and [Figure 3-4](#) for the 400A. Remove outer cover (A):

1. Remove thumb screw (B).
2. Slide slot (C) over retention tab.
3. Lower outer cover until clear of top flange (D), and pull away from enclosure.

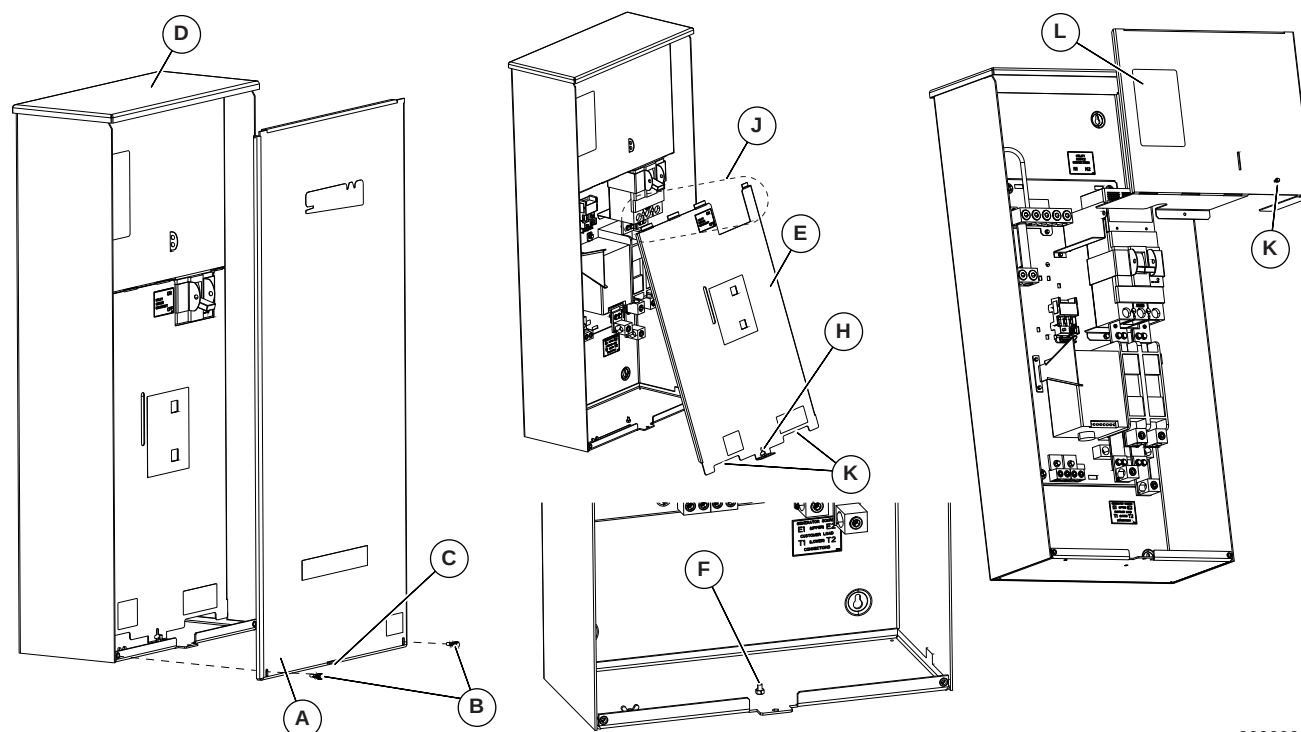
Remove inner panel (E):

1. Loosen nut (F) until it clears t-slot (H) in inner panel.
2. Grasp inner panel at two cutouts (G — left and right). Tilt inner panel as shown, passing nut through t-slot.
3. Lower inner panel until tabs (J) clear upper panel, and pull away from enclosure.
4. Remove screw (K). Lower upper panel (L) until clear of two retention slots in top flange, and pull away from enclosure.



006146

Figure 3-3. Open Enclosure (200A Shown)



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Figure 3-4. Open Enclosure (400A Shown)

Connecting Power Source and Generator Power Supply



⚠ 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.

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.

1. See [Table 3-1](#), [Table 3-2](#), and [Table 3-3](#). Connect utility supply at the utility service disconnect circuit breaker terminals N1 and N2. Follow torque specifications listed on the circuit breaker.
2. See [Figure 3-5](#), [Figure 3-6](#), and [Figure 3-7](#). Connect utility neutral and ground to the Upper Neutral and Ground terminals. Neutral and Ground terminals are bonded to each other with a jumper wire (A).
3. Connect generator to the generator terminals (E1 and E2) on the transfer mechanism.
4. Connect the generator neutral wire to the lower neutral lug.

IMPORTANT NOTE: A jumper wire (B) bonds the upper and lower Neutral lugs. NEVER remove this wire.

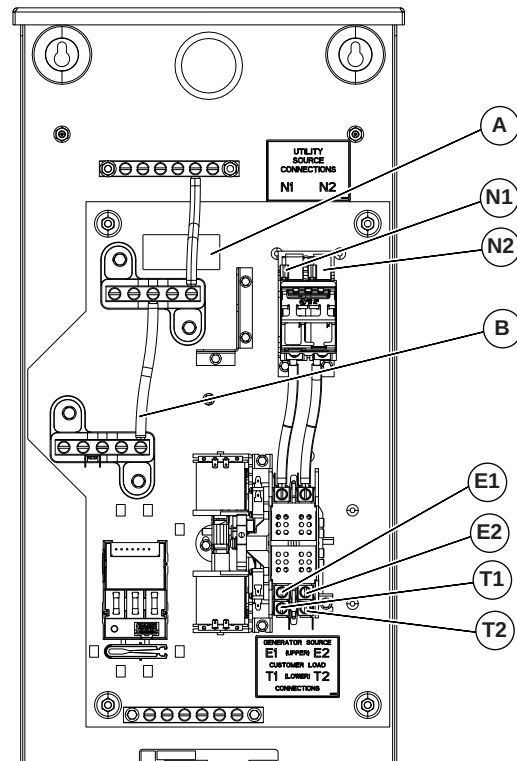
5. Connect a subpanel supply to lower T1 and T2 Terminals. Connect subpanel Neutral and Ground to lower Neutral and Ground bars.

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 CEC/NEC standards.

Knockouts into the transfer switch can be made in the field as needed for entry of power cables and conduit. Conduit entry shall maintain the proper wire bending spaces required by CSA C22.1. A barrier provides separation between the Utility and Generator supply conductors inside the enclosure.

NOTE: The upper panel has a provision for a utility lock or tag after installation is complete. The service entrance circuit breaker also has a provision for a locking device.

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



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Figure 3-5. Wiring Connections (100A Shown)

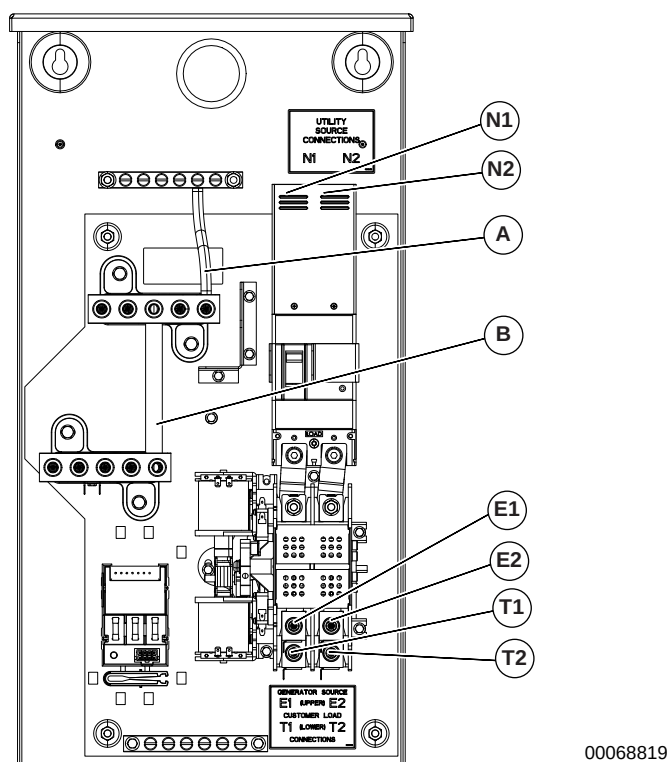


Figure 3-6. Wiring Connections (200A Shown)

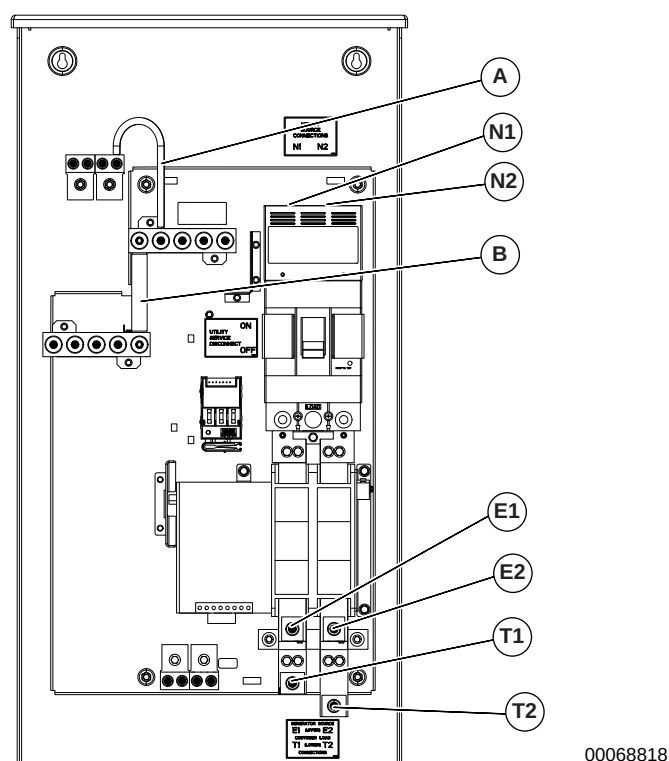


Figure 3-7. Wiring Connections (400A Shown)

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.

Table 3-1. Conductor Tightening Torque 100 Amp

Terminal	Wire Size	Torque
Utility Connection	See Circuit Breaker Markings	
Generator, Customer Load Connection	#12-2/0 cu, #6-2/0 al	50 in-lbs
Neutral	2/0-#3	50 in-lbs
	#4-6	45 in-lbs
Ground	2/0-#3	50 in-lbs
	#4-6	45 in-lbs
	#8	40 in-lbs
	#10-14	35 in-lbs
Control Wiring		11 in-lbs

Table 3-2. Conductor Tightening Torque 150-200 Amp

Terminal	Wire Size	Torque
Utility Connection	See Circuit Breaker Markings	
Generator, Customer Load Connection	#6-250 mcm	275 in-lbs
Neutral	#6-250 mcm	275 in-lbs
Ground	2/0-#3	50 in-lbs
	#4-6	45 in-lbs
	#8	40 in-lbs
	#10-14	35 in-lbs
Control Wiring		11 in-lbs

Table 3-3. Conductor Tightening Torque 400 Amp

Terminal	Wire Size	Torque
Utility Connection	See Circuit Breaker Markings	
Generator, Customer Load Connection	(1) #4-600 MCM (Cu/Al) or (2) 1/0-250 MCM (Cu/Al)	375 in-lbs
Neutral	#4-600 mcm (2) 1/0 - 250 mcm	375 in-lbs
Ground	#6-250 mcm	275 in-lbs
Control Wiring		11 in-lbs

Generator Control Wiring and Connections

See [Figure 3-8](#). 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.

Recommended wire gauge sizes depend on wire length as specified in the following chart:

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)

Consult factory if you are operating more than one transfer switch and FCM.

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.

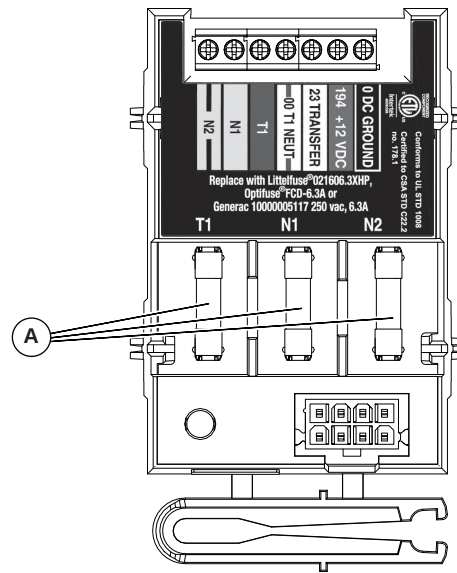


Figure 3-8. FCM Connections

NOTE: 0 - Ground (black) is not required. If a ground wire is included in the tray cable, wire can be connected for later use.

Customer Wiring Connections Integrated Fused Control Module (FCM)	
Terminal Numbering Decal	Wire Numbers
BLACK	0—DC (-) Optional
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.	

Typical Fuse Control Module (FCM) Connections

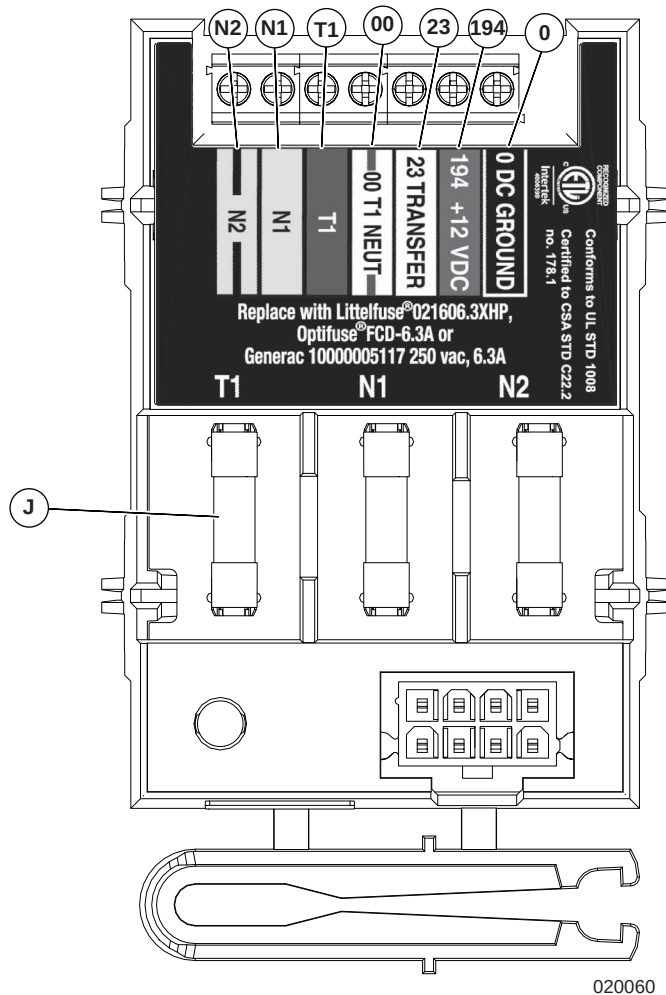


Figure 3-9. Typical Fuse Control Module Connections

0 DC
Ground

194
+ 12 VDC

23
Transfer Control

00
Dedicated T1 Neutral

T1 (fused)
Battery Charge

N1 (fused)
Utility Sense

N2 (fused)
Utility Sense

J
240 VAC, 6.3A Fuses

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 G0056210 (for 100A to 200A switches), and G0099860 (for 300A to 800A switches) 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 3-10](#). A Fault Current Identification Label is provided in the bag containing the unit Owner’s Manual and transfer switch manual operating handle. The 2017 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.

FAULT CURRENT RATING

AVAILABLE FAULT CURRENT

DATE

004496

Figure 3-10. Fault Current Label

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 (100A-200A)



⚠ 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

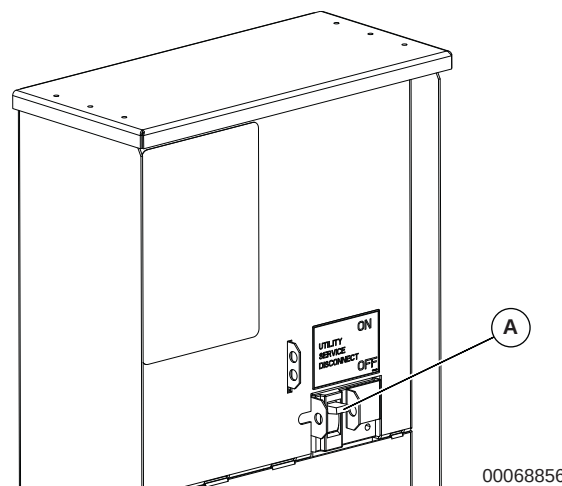
Equipment damage. Do not use excessive force while manually operating the transfer switch. Doing so could result in equipment damage.

(C000122)

See [Figure 4-2](#). 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. To check manual operation, proceed as follows:

1. Verify the generator's main circuit breaker is in the OFF (open) position.
2. See [Figure 4-1](#). Turn OFF both utility (service disconnect circuit breaker) (A) and emergency (generator main line circuit breaker) power supplies to the transfer switch.

NOTE: Refer to generator's owner's manual for generator main line circuit breaker location.



00068856

Figure 4-1. Utility Service Disconnect (Service Entrance Rated Transfer Switches, 200A Shown)

3. See [Figure 4-2](#). Note position of transfer mechanism main contacts (B) by observing the movable contact carrier arm.

NOTE: The transfer mechanism is located behind the interior cover. The transfer mechanism can be accessed through the interior cover's narrow slot. Transfer switch position can be observed through the narrow slot of the interior cover. The front of the movable transfer mechanism is yellow and can be easily identified.

- 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.

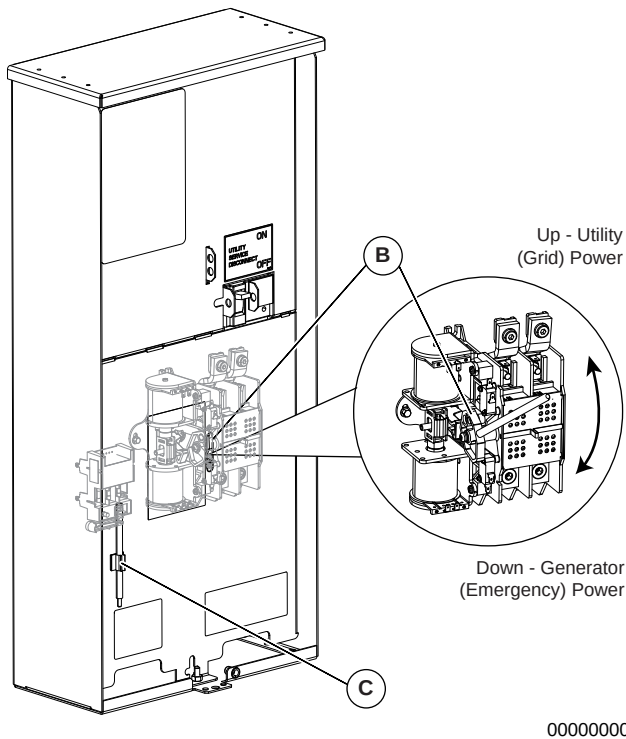


Figure 4-2. Manual Operation

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. See [Figure 4-2](#). Turn ON utility service disconnect breaker.
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. See [Figure 4-2](#). Turn ON utility service disconnect breaker.
4. Turn ON generator main circuit breaker.

Manual Operation (400A)



⚠ 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

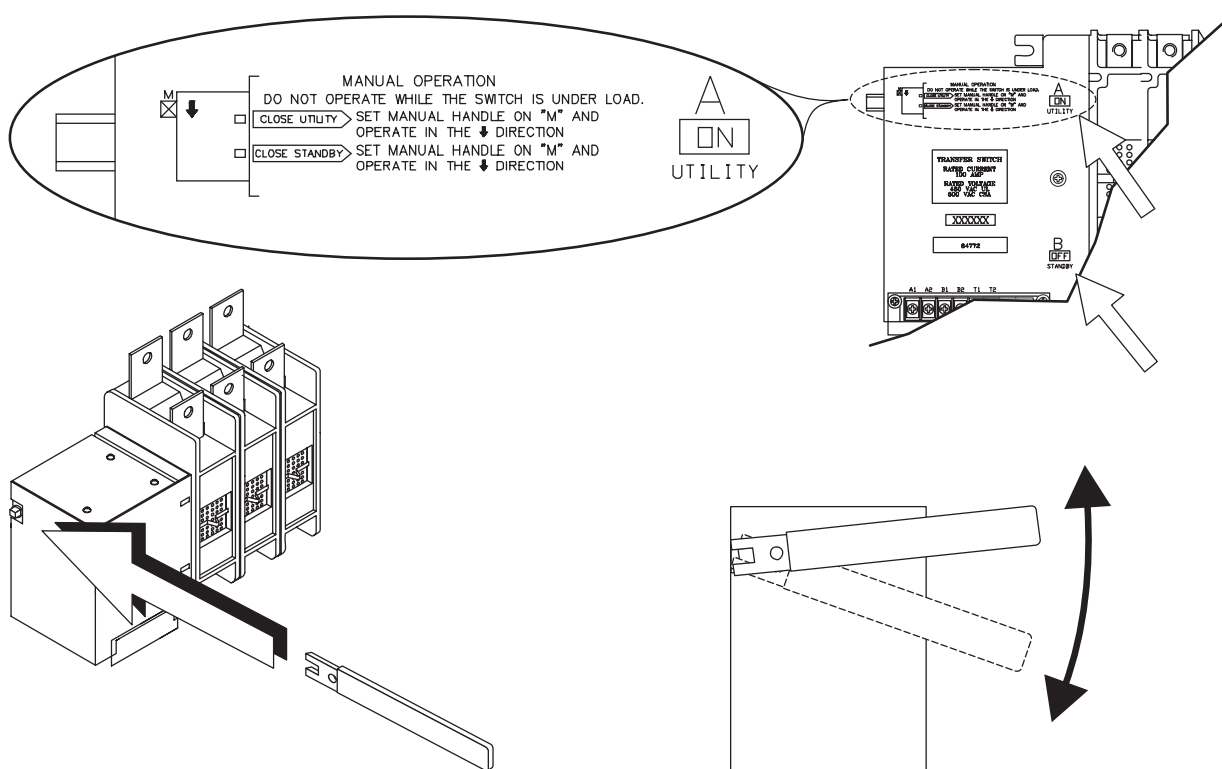
Equipment damage. Do not use excessive force while manually operating the transfer switch. Doing so could result in equipment damage.

(C000122)

See [Figure 4-3](#). A manual handle (A) is shipped with the transfer switch. Manual operation must be checked BEFORE the transfer switch is operated electrically.

Proceed as follows to check manual operation:

1. Verify generator is OFF.
2. Turn OFF (OPEN) both utility and emergency power supplies to the transfer switch, with whatever means provided (such as the main line circuit breakers).
3. See [Figure 4-3](#). Note position of transfer mechanism main contacts (C, D) by observing display windows in "A" and "B" as follows:
 - Window "A" ON, Window "B" OFF — LOAD terminals (T1, T2) are connected to utility terminals (N1, N2).
 - Window "A" OFF, Window "B" ON — LOAD terminals (T1, T2) are connected to emergency terminals (E1, E2).



000141

Figure 4-3. Actuating Transfer Switch

Close to Normal Source Side

See [Figure 4-3](#). Before proceeding, verify the position of the switch by observing Window “A.” If Window “A” reads “ON,” the contacts are closed in the normal position; no further action is required. If it reads “OFF,” proceed as follows:

- Attach handle (A) to actuating shaft (B). Move handle in the direction of the arrow on the switch cover until it stops — DO NOT FORCE. Release handle slowly to allow the spring in the switch box to relax. “ON” now appears in Window “A” and “OFF” appears in Window “B.”

Close to Standby Source Side

See [Figure 4-3](#). Before proceeding, verify the position of the switch by observing Window “B.” If Window “B” reads “ON,” the contacts are closed in the EMERGENCY (STANDBY) position; no further action is required. If it reads “OFF,” proceed as follows:

- Attach handle (A) to actuating shaft (B). Move the handle in the direction of the arrow on the switch cover until it stops — DO NOT FORCE. Release handle slowly to allow the spring in the switch box to relax. “OFF” now appears in Window “A” and “ON” appears in Window “B.”

Return to Normal Source Side

Manually actuate switch to return Window “A” to the “ON” position.

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 of the transfer switch to OFF or OPEN, and turn OFF or OPEN all load circuit breakers.
3. See [Figure 4-3](#). 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, and close lid (if applicable).
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:
 - a. Turn on electrical loads to the full rated wattage/ampere capacity of the generator. **DO NOT OVERLOAD.**
 - b. 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.
 - c. Verify that the gas pressure remains within acceptable parameters (see the generator Installation manual).
 - d. Let the generator run under rated load for at least 30 minutes. With unit running, watch for unusual noises, vibration, or overheating 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:** See [Figure 4-3](#). Handle and operating lever of transfer switch should be in down position.
9. Set the utility service disconnect circuit breaker of the transfer switch to ON or CLOSED.
10. Set the main line circuit breaker on the generator to ON or CLOSED.
11. 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: To avoid equipment damage, follow these steps, in order, during utility outages. Shutdowns may be required during utility outages to perform routine maintenance or to conserve fuel.

1. To turn generator OFF:
 - a. Set utility main line circuit breaker (MLCB) to OFF (OPEN).
 - b. Set generator MLCB (generator disconnect) to OFF (OPEN).
 - c. Allow generator to run for cool-down for approximately one minute.
 - d. Set generator to OFF at the controller.
 - e. Remove 7.5A fuse from controller.
2. To turn generator back ON:
 - a. Install 7.5A fuse in controller.
 - b. Verify generator MLCB (generator disconnect) is OFF (OPEN).
 - c. Set generator to AUTO mode at the controller.
 - d. Generator will start and run. Allow generator to run and warm up for a few minutes.
 - e. Set generator MLCB (generator disconnect) to ON (CLOSED).
 - f. Set utility MLCB to ON (CLOSED).

The system now operates in automatic mode.

Preparing for Maintenance



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)

1. To turn the generator OFF:
 - a. At the controller, turn the generator OFF.
 - b. Set the MLCB (generator disconnect) on the generator to OFF (OPEN).
 - c. Turn the main utility disconnect OFF (OPEN).
 - d. Remove 7.5A fuse from the controller.
 - e. Follow maintenance procedure(s).
2. To turn the generator back ON:

- a. Turn the main utility disconnect ON (CLOSED).
- b. Install 7.5A fuse in controller.
- c. Put the generator into AUTO mode.
- d. Set the MLCB (generator disconnect) on the generator to ON (CLOSED).

The system is now in automatic mode.

Testing a Load Manager

Refer to the Load Manager Owner's or Installation Manual for the proper testing procedure.

FCM Fuse Service



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)

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

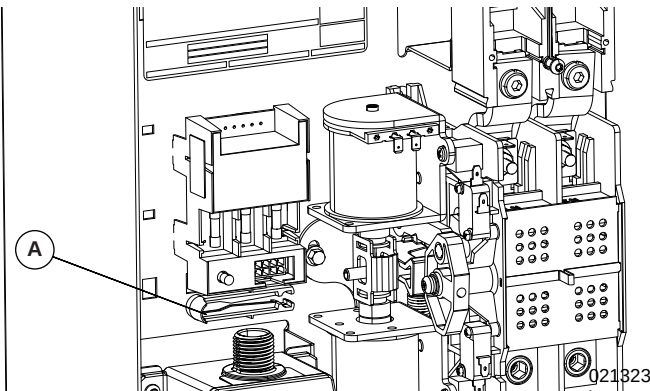


Figure 4-4. Fuse Removal and Installation Tool

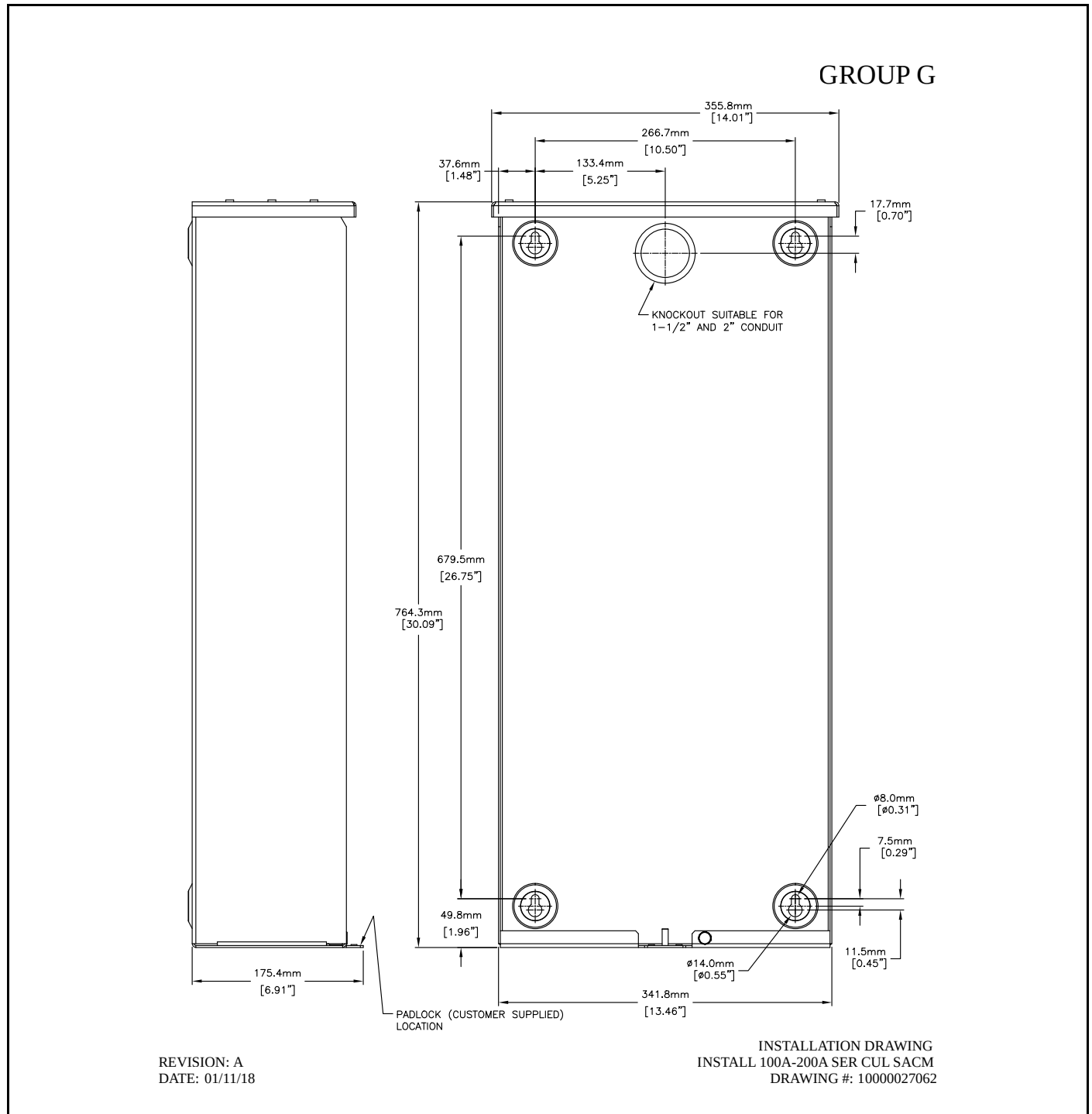
If a fuse requires replacement, snap the tool free with an appropriate, electrically insulated tool, such as diagonal pliers, and use it to replace the fuse. Do NOT touch any part of the fuse with anything other than the included fuse removal and installation tool until the fuse is completely removed from the FCM. The tool can be stored in the FCM 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.

Section 5: Diagrams and Drawings

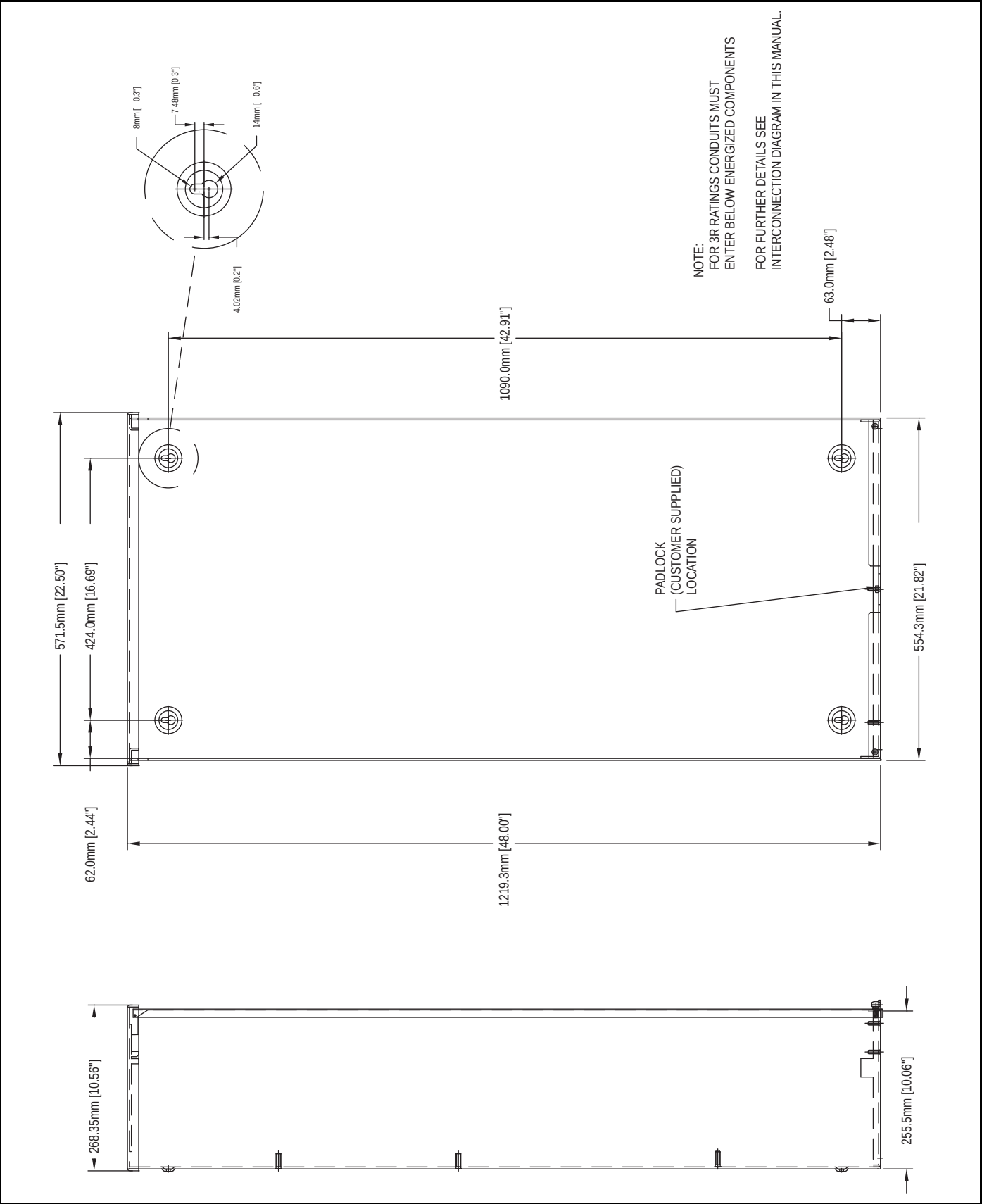
Installation Drawing—G0099490 and G0099500

No. 10000027062—A



Installation Drawing—G0099380

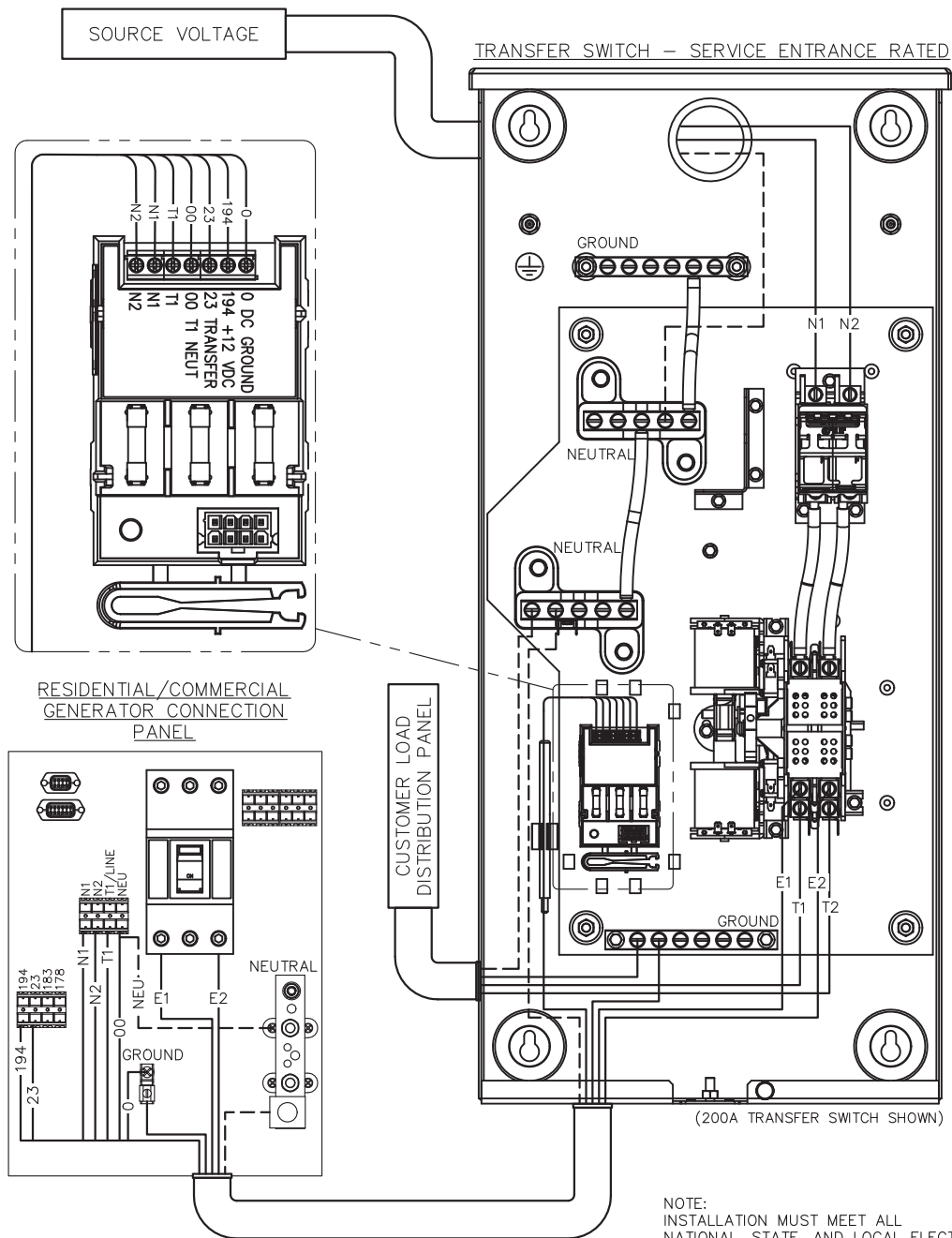
No. 0K2438–A



Interconnection Drawing—100/200 Amp, Liquid Cooled Generator

No. A0011147796–A (Part 1 of 2)

GROUP G

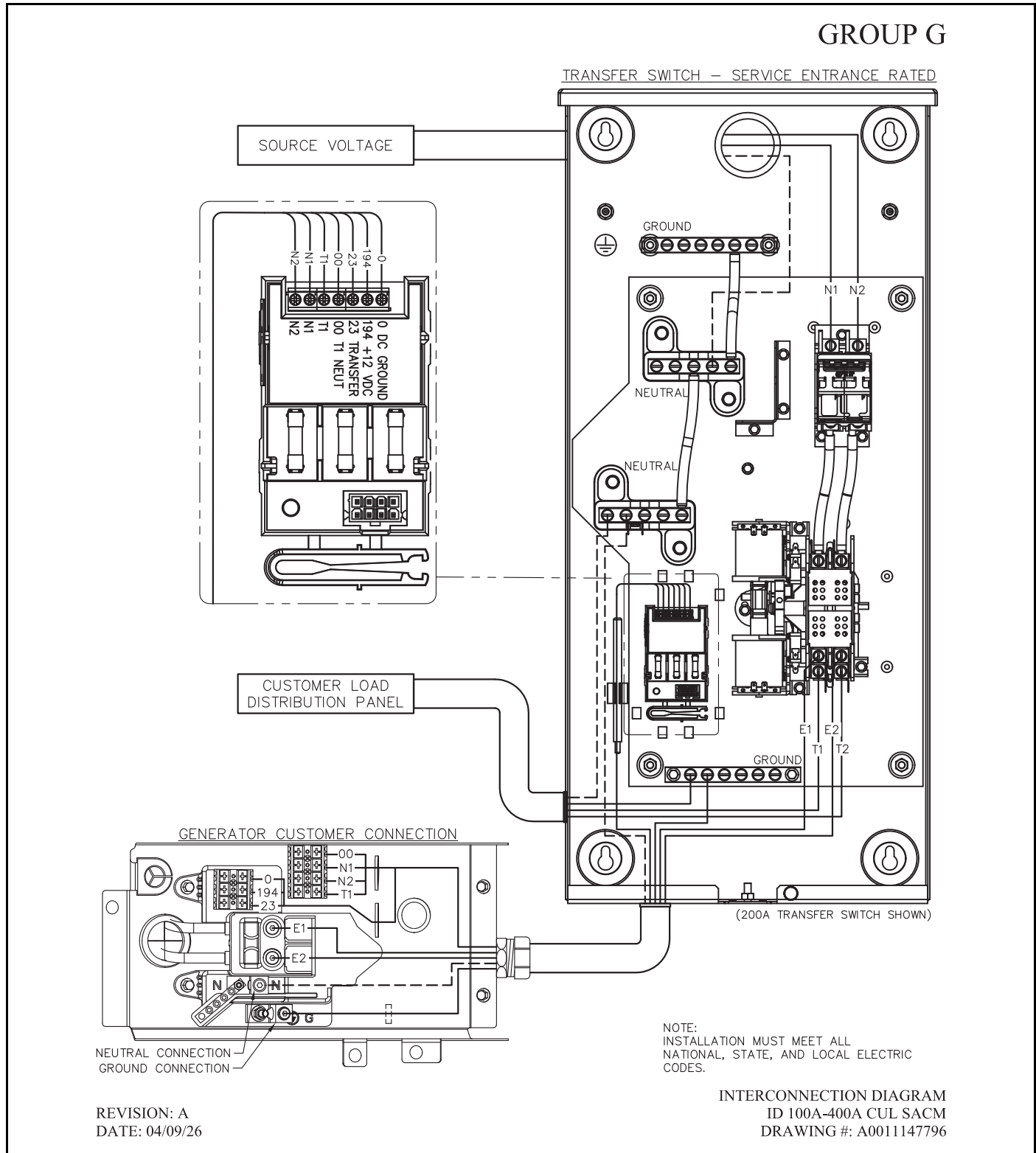


REVISION: A
DATE: 04/09/26

INTERCONNECTION DIAGRAM
ID 100-400A CUL SACM
DRAWING #: A0011147796

Interconnection Drawing—100/200 Amp, Liquid Cooled Generator

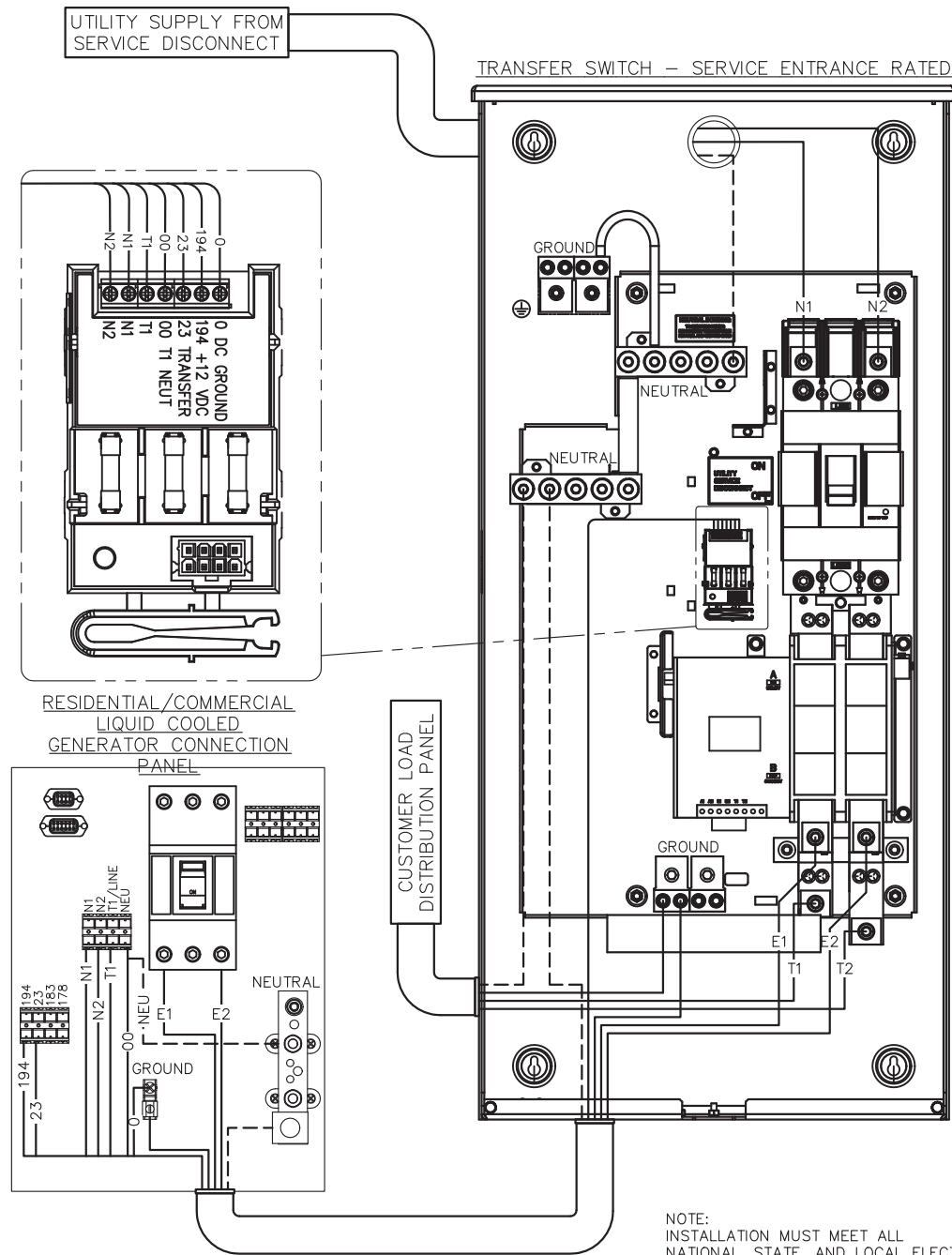
No. A0011147796–A (Part 2 of 2)



Interconnection Drawing—400 Amp, Liquid Cooled Generator

No. A0011582451-A (Part 1 of 2)

GROUP G

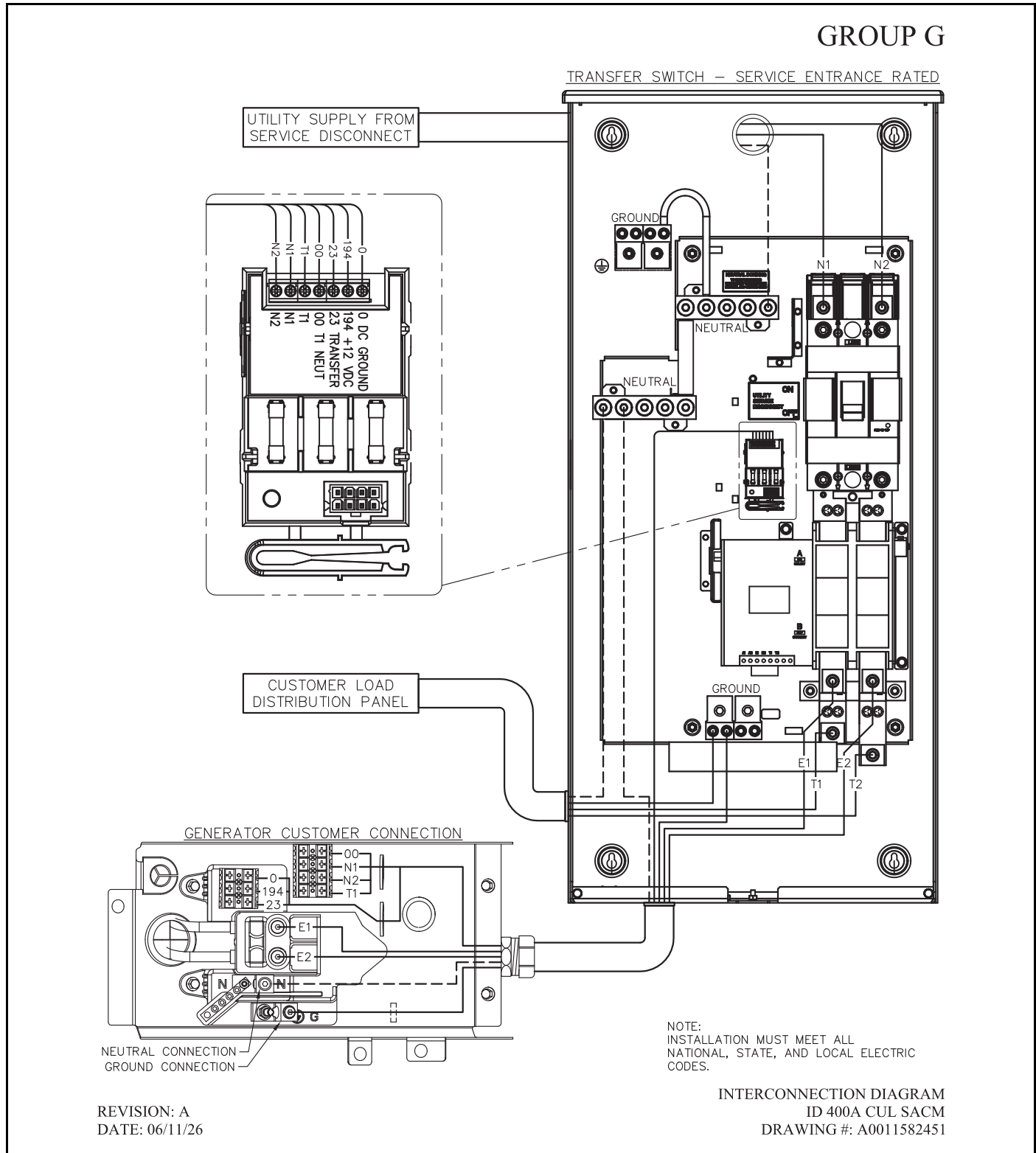


REVISION: A
DATE: 06/11/26

INTERCONNECTION DIAGRAM
ID 400A CUL SACM
DRAWING #: A0011584251

Interconnection Drawing—400 Amp, Liquid Cooled Generator

No. A0011582451-A (Part 2 of 2)



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