



Owner's Manual

For

RTS Automatic Transfer Switch

600-800 Amp, Non-Service Entrance

Model Number

RTSN600*

RTSN800*

RTSZ600*

RTSZ800*

MODEL NUMBER: _____

SERIAL NUMBER: _____

DATE PURCHASED: _____

Register your Generac product at:

WWW.GENERAC.COM

1-888-GENERAC
(888-436-3722)



Para español, visita: <http://www.generac.com/service-support/product-support-lookup>

Pour le français, visiter : <http://www.generac.com/service-support/product-support-lookup>

SAVE THIS MANUAL FOR FUTURE REFERENCE



WARNING

CANCER AND REPRODUCTIVE HARM

www.P65Warnings.ca.gov

(000393a)

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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.

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. (000100a)

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:

WARNING

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

(000002)

CAUTION

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

(000003)

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.

DANGER

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

(000001)

Electrical Hazards

**⚠ DANGER**

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

(000129)

**⚠ DANGER**

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

(000104)

**⚠ 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.

(000145)

⚠ 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.

(000237)

**⚠ 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.

(000195)

**⚠ 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.

(000123)

**⚠ DANGER**

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

(000157)

⚠ 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.

(000191)

⚠ DANGER

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

(000119)

⚠ 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.

(000155a)

⚠ 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.

(000120)

⚠ 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.

(000121)

⚠ CAUTION

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

(000134a)

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.

(000237)



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.

(000209b)



DANGER

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

(000129)

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.

(000247a)



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.

(000123)

WARNING

Risk of injury. Do not operate or service this machine if not fully alert. Fatigue can impair the ability to operate or service this equipment and could result in death or serious injury.

(000215a)



DANGER

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

(000104)



DANGER

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

(000188)



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.

(000213)

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.

(000191)



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.

(000145)

- 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; C22.1 Canadian Electric Code, 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 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. Verify that all parts are included.

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

Contents in Loose Parts Bag

- Owner's manual
- Warranty statement

Equipment Description

The automatic transfer switch is used for transferring critical electrical loads from a UTILITY (NORMAL) power source to an GENERATOR (EMERGENCY) power source.

The transfer switch prevents electrical feedback between the UTILITY and EMERGENCY sources. For that reason, electrical codes require a transfer switch in all standby electric system installations.

When the transfer switch is connected to the engine generator control panel, the control panel constantly monitors the UTILITY voltage and controls the operation of the transfer switch.

Should the UTILITY voltage drop below a preset value, and remain at this low voltage for a preset amount of time, the generator cranks and starts. After the generator starts, the transfer switch transfers the load circuits to the generator, the generator then supplies the loads. When UTILITY returns above a preset level the load is transferred back to the UTILITY and the generator shuts down.

This manual is for RTS models:

- RTSN600A3 600A - 120/240V, 1-phase
- RTSN600G3 600A - 120/208V, 3-phase
- RTSN600J3 600A - 120/240V, 3-phase
- RTSN600K3 600A - 277/480V, 3-phase
- RTSN800A3 800A - 120/240V, 1-phase
- RTSN800G3 800A - 120/208V, 3-phase
- RTSN800J3 800A - 120/240V, 3-phase
- RTSN800K3 800A - 277/480V, 3-phase
- RTSN600A3S 600A - 120/240V, 1-phase
- RTSN600G3S 600A - 120/208V, 3-phase
- RTSN600J3S 600A - 120/240V, 3-phase
- RTSN600K3S 600A - 277/480V, 3-phase
- RTSN600A3S 800A - 120/240V, 1-phase
- RTSN600G3S 800A - 120/208V, 3-phase
- RTSN600J3S 800A - 120/240V, 3-phase
- RTSN600K3S 800A - 277/480V, 3-phase

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 serial number in the space provided on the front cover of this manual.

Transfer Switch Enclosure

The standard switch enclosure is a National Electrical Manufacturer's Association (NEMA) 3R type. 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.

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. (000100a)

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.

The following publications outline the safe use of transfer switches:

- NFPA 70: Standard for Electrical Safety In The Workplace
- UL 1008: Standard for Safety—Automatic Transfer Switches

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

Section 3: Installation

Introduction to Installation

This equipment has been wired and tested at the factory. 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

⚠ DANGER

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

(000119)

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 3R enclosure. It can be mounted outside or inside 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 that are to be connected to it. Mount the switch vertically to a rigid supporting structure. To prevent switch distortion, level all mounting points. If necessary, use washers behind mounting holes to level the unit.

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. (000116)

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.

Proper conductor tightening torque values are on the decal inside the enclosure door.

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

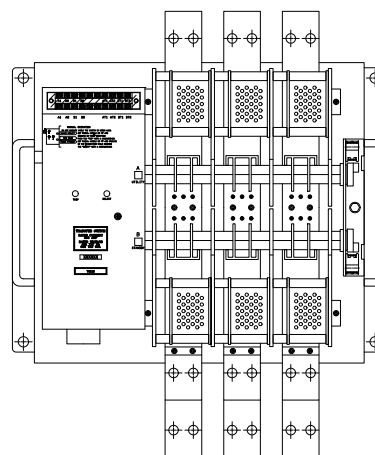
1. Connect UTILITY (NORMAL) power source cables to switch terminals N1, N2, (N3).
2. Connect EMERGENCY (STANDBY) source power cables to transfer switch terminals E1, E2, (E3).
3. Connect customer LOAD leads to switch terminals T1, T2, (T3).
4. Connect neutral conductors of UTILITY, EMERGENCY and customer LOAD to the neutral block.

Conductors must be properly supported, of approved insulative qualities, protected by approved conduit, and of the correct wire gauge size in accordance with applicable codes.

Maintain proper electrical clearance between live metal parts and grounded metal. Allow at least 1/2 in. through air or one in. over surface.

3-Pole Mechanism

See [Figure 3-1](#). These switches are used with a three phase system, when the three phase NEUTRAL line is to be connected to a NEUTRAL lug and is not to be switched.



014426

Figure 3-1. Typical 3-Pole Transfer Mechanism (800 Amp Shown)

Solderless, screw-type terminal lugs are standard.
The conductor size range is as follows:

Switch Rating	Wire Range
600A	2 x 1/0-500 MCM per pole
800A	4 x 4/0-500 MCM per pole

Conductor sizes must be adequate to handle the maximum current to which they will be subjected, based on the 75°C column of tables, charts, etc. used to size conductors. The installation must comply fully with all applicable codes, standards and regulations.

Before connecting wiring cables to terminals, remove any surface oxides from the cable ends with a wire brush. All power cables should enter the switch next to transfer mechanism terminals.

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.

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.

(000120)

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

Exception: Conductors of AC and DC circuits, rated 1000 volts nominal, or less, shall be permitted to occupy the same equipment, cable, or conduit. All conductors shall have an insulation rating equal to at least the maximum circuit voltage applied to any conductor within the equipment, cable, or conduit. See NEC 300.3(C)(1).

Auxiliary Contacts

CAUTION

Equipment damage. Exceeding rated voltage and current will damage the auxiliary contacts. Verify that voltage and current are within specification before energizing this equipment. (000134a)

See [Figure 3-2](#). Auxiliary contacts on the transfer switch are available to operate customer accessories, remote advisory lights, or remote annunciator devices. A suitable power source must be connected to the common terminal (D).

Contact operation is shown in the following chart:

	Switch Position	
	Utility	Standby
Common to Normally Open	Open	Closed
Common to Normally Closed	Closed	Open

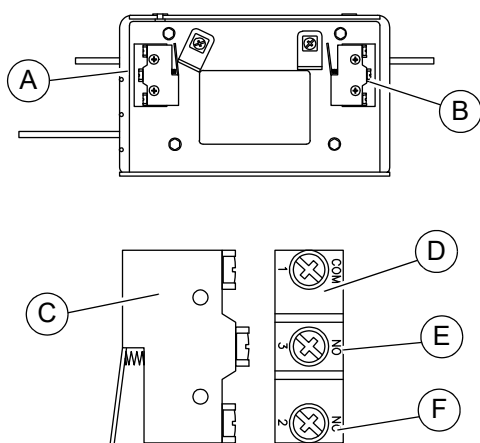
NOTE: Auxiliary Contacts are rated 10 amps at 125 or 250 volts AC.

Connecting Start Circuit Wires

See [Figure 3-1](#). Control system interconnections consist of UTILITY 1, UTILITY 2, and leads 23 and 194. Control system interconnection leads must be run in a conduit that is separate from the AC power lead. Recommended wire gauge sizes for this wiring depends on the length of the wire, as recommended below:

Recommended Wire Size	Maximum Wire Length
	(One transfer switch and load shed 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)

The generator control wiring is a Class 1 signaling circuit. 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).



000140

Figure 3-2. Auxiliary Contacts

A	Auxiliary Contact (Actuated)
B	Auxiliary Contact (Non-Actuated)
C	Single Contact (Utility Position)
D	Common Terminal
E	Normally Open Terminal
F	Normally Closed Terminal

Optional Accessories

Note any optional accessories that may be installed on the transfer switch or are to be installed in the standby electric system in conjunction with the switch. Complete the necessary connections for these accessories.

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Section 4: Operation

Functional Tests and Adjustments

⚠ 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.

(000121)

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.

NOTE: Before proceeding with functional tests, read and verify 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.

(000132)

⚠ CAUTION

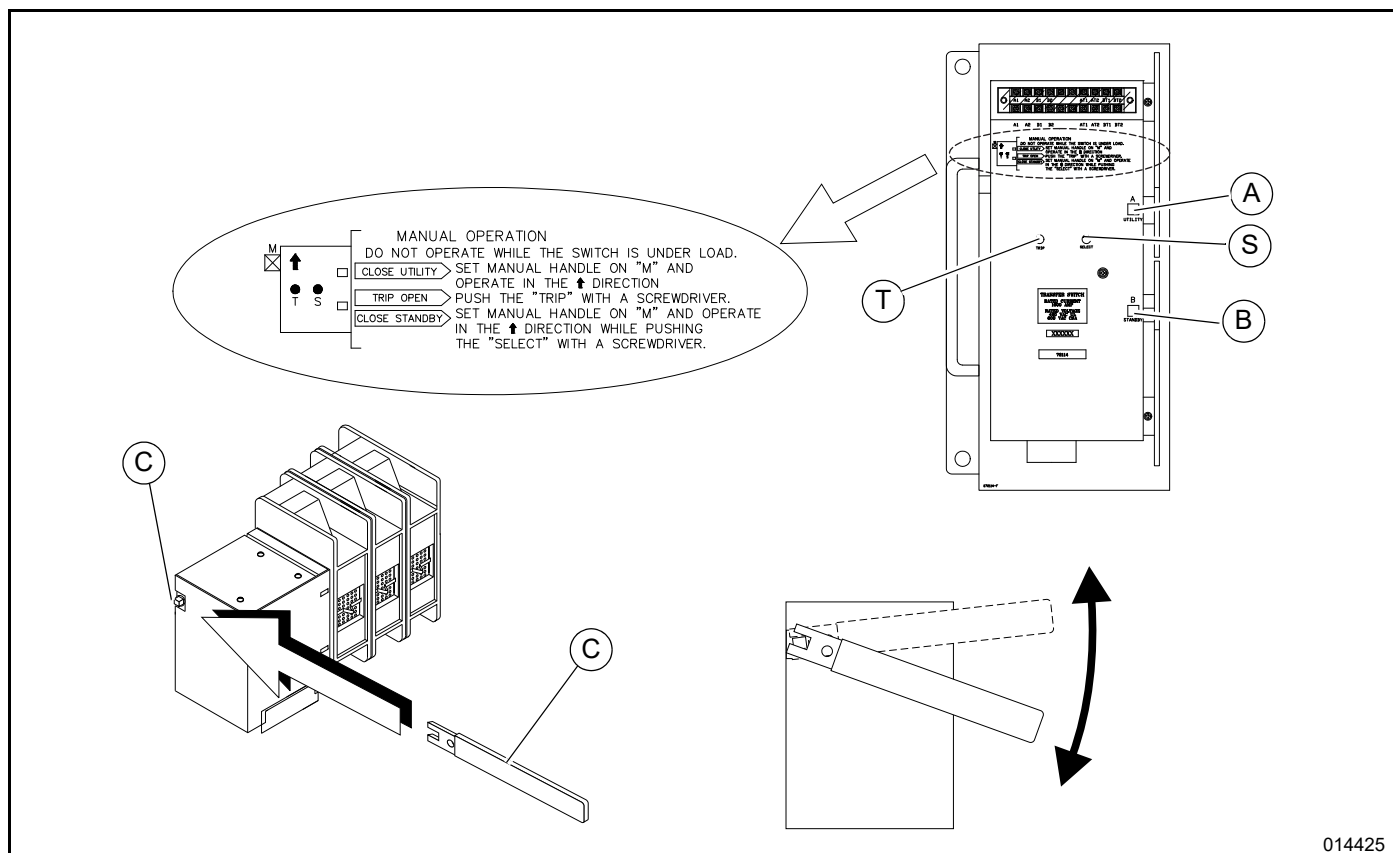
Equipment damage. Do not use excessive force while manually operating the transfer switch. Doing so could result in equipment damage.

(000122)

See **Figure 4-1**. A manual handle (C) 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 NORMAL and STANDBY power supplies to the transfer switch, with whatever means provided (such as the main line circuit breakers).



014425

Figure 4-1. Actuating Transfer Switch

- See [Figure 4-1](#). Note position of transfer mechanism main contacts (A, B) 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).

Trip to Neutral Position

See [Figure 4-1](#). Remove handle from shaft (B) at the upper left corner of the switch. Insert a screwdriver into the “T” hole and push inward. The main contact should trip to the neutral position, and “OFF” should appear in both windows “A” and “B.”

Close to Emergency Source Side

See [Figure 4-1](#). Before proceeding, verify the position of the switch by observing Window “B.” If Window “B” displays ON, the ATS is closed in the STANDBY position, with the load connected to the STANDBY source; no further action is required.

If Window “B” reads OFF and Window “A” reads ON, it will be necessary to trip the ATS to the neutral position. See [Trip to Neutral Position](#).

To close to EMERGENCY source, proceed as follows:

- Attach manual handle to shaft “D.”
- Insert screwdriver into hole “S” and push inward.
- Actuate handle upward while pushing screwdriver inward.
- Verify closure to EMERGENCY source by observing display windows “A” and “B.” Windows should read as follows: Window “A” OFF, Window “B” ON.
- Detach the manual handle.

Close to Normal Source Side

See [Figure 4-1](#). Before proceeding, verify the position of the switch by observing window “A.” If window “A” reads ON the ATS is closed in the UTILITY position, with the load connected to the NORMAL source; no further action is required.

If Window “A” reads OFF, it will be necessary to trip the ATS to the neutral position. See [Trip to Neutral Position](#).

To close to NORMAL source, proceed as follows:

- Attach manual handle to shaft “D.”
- Actuate handle upward until stopped.

- Verify closure to EMERGENCY source by observing display windows in “A” and “B.” Windows should read as follows: Window “A” ON, Window “B” OFF.
- Detach the manual handle.

Return to Normal Source Side

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

Voltage Checks



⚠ DANGER

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

(000129)

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

- Turn ON the UTILITY power supply to the transfer switch with whatever means provided (such as the UTILITY main line circuit breaker).
- With an accurate AC voltmeter, check for correct voltage.
 - Single-phase utility supply:
 - Measure across ATS terminal lugs N1 and N2; N1 to NEUTRAL and N2 to NEUTRAL.
 - Three-phase utility supply:
 - Measure across ATS terminal lugs N1 to N2, N2 to N3, and N1 to N3.
 - Measure across ATS terminal lugs N1 to NEUTRAL, N2 to NEUTRAL, and N3 to NEUTRAL.
- Three-phase only. Locate the 3 phase power monitor relay. Verify the following:
 - LED Green and ON (For an explanation of all of the LED functions, see the decal on the side of the power monitor.)
 - The factory setting is 80% of nominal voltage (208 Vac systems = 166 Vac dropout)
- If the LED indicator is Red or not ON, then it will be necessary to adjust the power monitor relay setting. Rotate the adjustment potentiometer in a counter-clockwise direction until the LED turns ON. At this point the 3 phase power monitor relay is the most sensitive to irregular power line conditions.

NOTE: If the power monitor does not operate properly, check that all three voltages are present, and are of the correct voltage level and phase rotation. To change phase rotation, turn off the utility supply, interchange 2 of the utility power phases.

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.

(000129)

1. On the generator panel, select MANUAL mode. The generator will crank and start.
2. Allow generator to stabilize and warm up at no-load for at least five minutes.
3. Set generator main circuit breaker (CB1) to ON (CLOSED).
4. With an accurate AC voltmeter and frequency meter, check the no-load, voltage and frequency.
 - Single-phase generator supply:
 - 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

- Three-phase generator supply:
 - Measure across ATS terminal lugs E1 to E2, E2 to E3 and E1 to E3.
 - Measure across ATS terminal lugs E1 to NEUTRAL, E2 to NEUTRAL and E3 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

NOTE: Verify that the phase rotation of the utility matches the phase rotation of the generator. Use a phase rotation indicator to complete check,

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

NOTE: 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 (OPEN).
2. Set the utility service disconnect circuit breaker of the transfer switch to OFF (OPEN), and turn OFF (OPEN) all load circuit breakers.
3. Manually actuate the transfer switch main contacts to the emergency (STANDYBY) position. See [Manual Operation](#).
4. Select MANUAL mode to start generator. Allow engine to stabilize for a few minutes, and close lid (if applicable).
5. Set the generator main circuit breaker to ON (CLOSED). The generator now powers all LOAD circuits. Check generator operation under load as follows:
 - Turn on electrical loads to the full rated wattage/ amperage 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 gas pressure remains within acceptable parameters (see the generator installation manual).
 - Allow the generator to run under rated load for at least 30 minutes. Observe for unusual noises, vibration, or overheating that might indicate a problem.
6. Set generator main circuit breaker to OFF (OPEN) when checkout under load is complete.
7. Allow generator to run at no-load for several minutes. Then shut down by selecting OFF.
8. Move main switch contacts to utility position.

NOTE: See [Manual Operation](#). Handle and operating lever of transfer switch should be DOWN.

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. Set the generator's AUTO/OFF/MANUAL switch to its AUTO position.

The system is now set for fully automatic operation.

Checking Automatic Operation

Proceed as follows to check system for proper automatic operation:

1. Verify generator is OFF.
2. Set transfer switch utility service disconnect circuit breaker to OFF (OPEN).
3. Verify switch is de-energized.
4. Install front cover of the transfer switch.
5. Set generator main circuit breaker to ON.
6. Select AUTO on generator panel. The system is now ready for automatic operation.

With the generator ready for automatic operation, the engine will crank and start when the utility source power is turned OFF after a five second delay (factory default setting). After starting, the transfer switch will connect load circuits to the standby side after a five second warm-up delay. Allow system to 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 transfer switch utility service disconnect circuit breaker to ON (CLOSED). The following will occur:

- The switch will transfer loads back to the utility power source after approximately 15 seconds.
- The generator will shut down approximately one minute after transfer.

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 proper operation, maintenance, and service call procedures.

Shutting Generator Down While Under Load

IMPORTANT NOTE: To avoid equipment damage, follow these steps, in order, when shutting the generator down during utility outages. Shutdowns may be required during outages to perform routine maintenance or to conserve fuel.

To turn the generator OFF (while running in AUTO and online):

1. Turn the main utility disconnect off.
2. Turn the generator MLCB (generator disconnect) to OFF (OPEN).
3. Run the generator for approximately one minute for proper cooling.
4. Turn the generator OFF.

To turn the generator back ON:

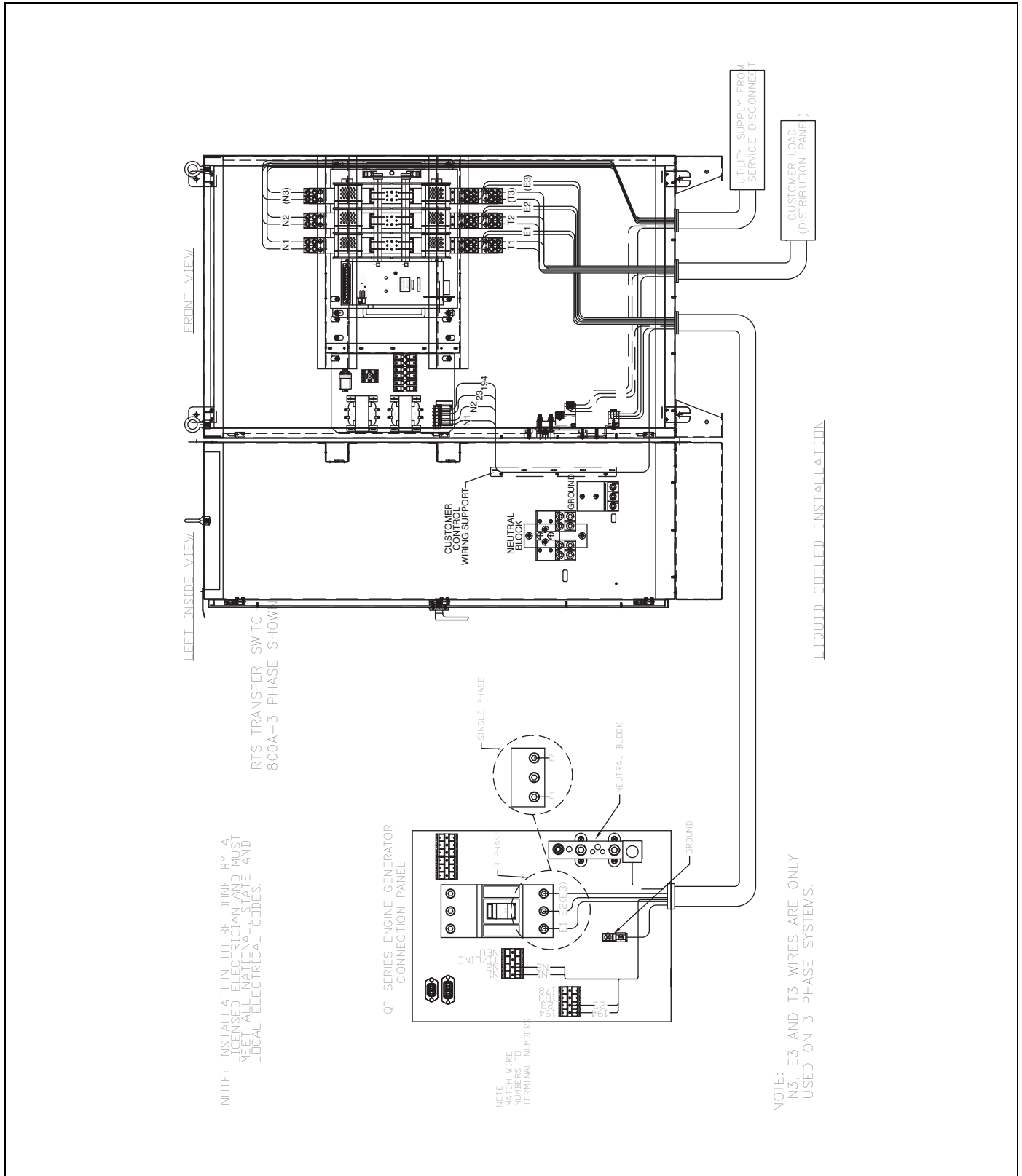
1. Put the generator into AUTO. Start generator and warm-up for a few minutes.
2. Set the MLCB (generator disconnect) to ON (CLOSED).

The system now operates in automatic mode. The main utility disconnect can be turned ON (CLOSED). To shut the unit off, repeat this complete process.

Section 5: Drawings and Diagrams

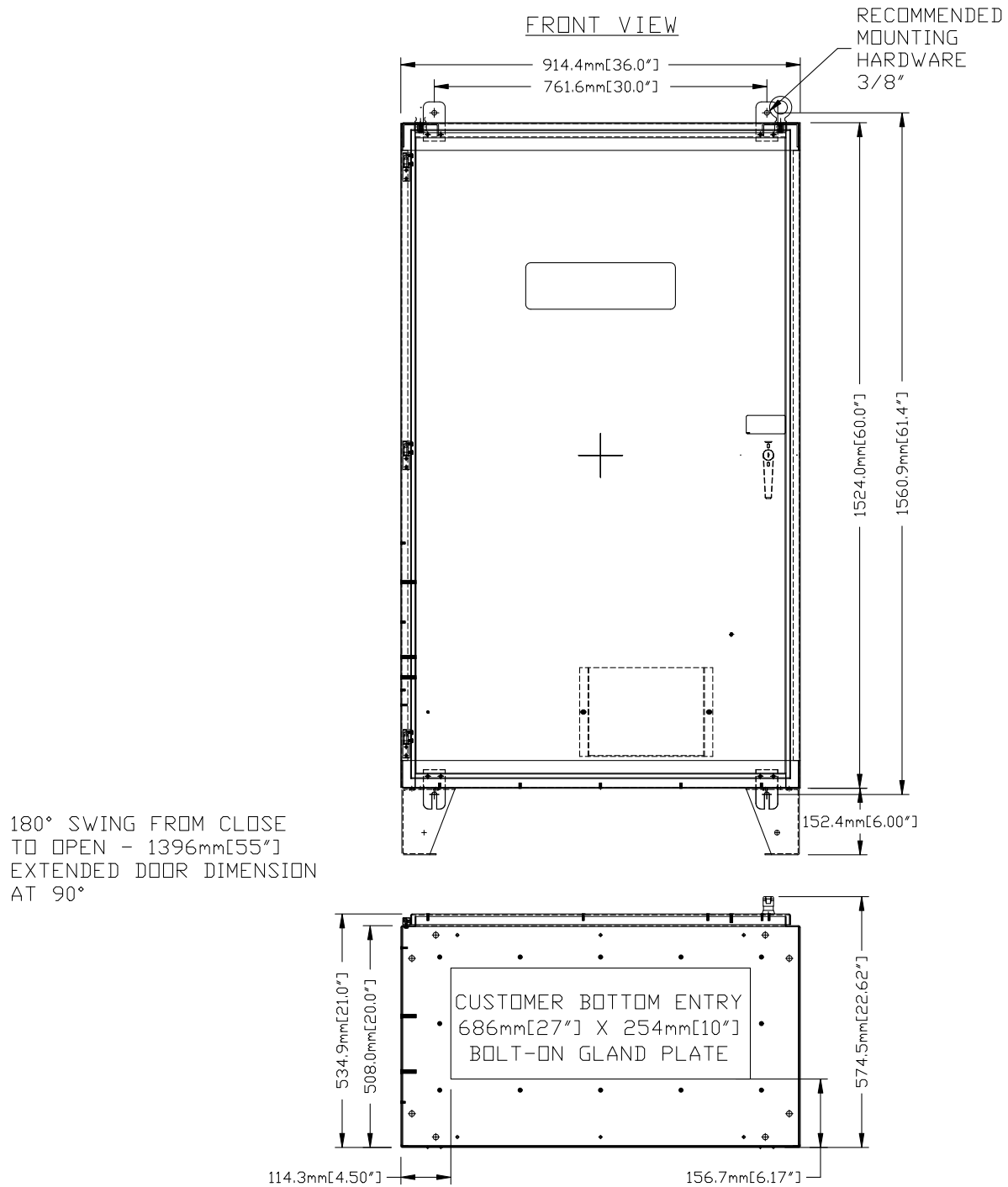
Interconnection Diagram

No. 0J0911-C



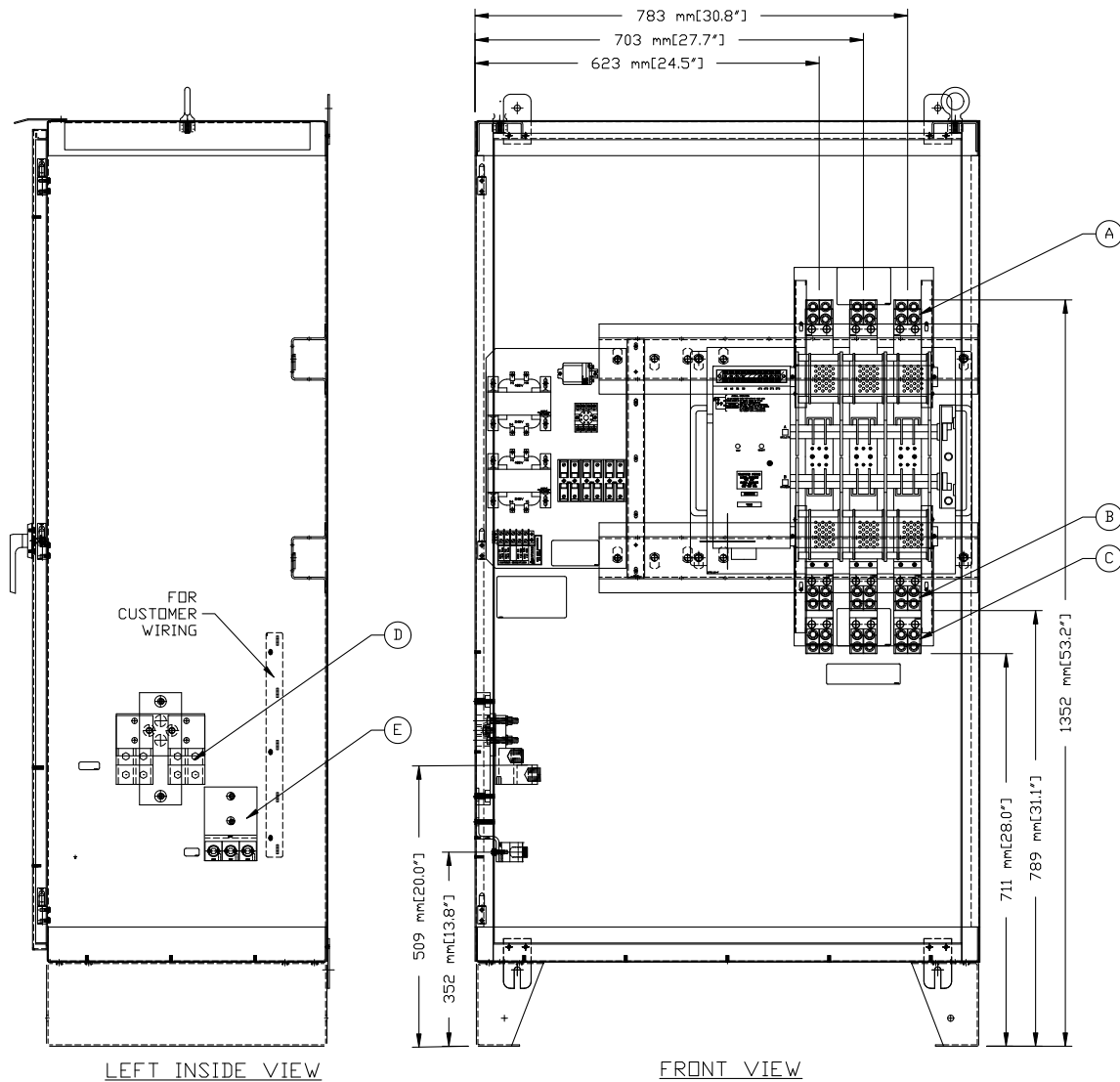
Installation Drawing

No. 0J0915-A (Part 1 of 2)



Installation Drawing

No. 0J0915-A (Part 2 of 2)



- A - UTILITY UN-GROUNDED CONDUCTOR CONNECTION
(WIRE RANGE 600A: 2x1/0-500MCM - 800-1000A: 4x4/0-500MCM PER POLE)
- B - GENERATOR UN-GROUNDED CONDUCTOR CONNECTION
(WIRE RANGE 600A: 2x1/0-500MCM - 800-1000A: 4x4/0-500MCM PER POLE)
- C - LOAD UN-GROUNDED CONDUCTOR CONNECTION
(WIRE RANGE 600A: 2x1/0-500MCM - 800-1000A: 4x4/0-500MCM PER POLE)
- D - NEUTRAL SUPPLY CONNECTIONS (WIRE RANGE: 8x1/0-750MCM)
- E - GROUND TERMINAL (WIRE RANGE: 3x(1) #4-600MCM OR (6) 1/0-250MCM)

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