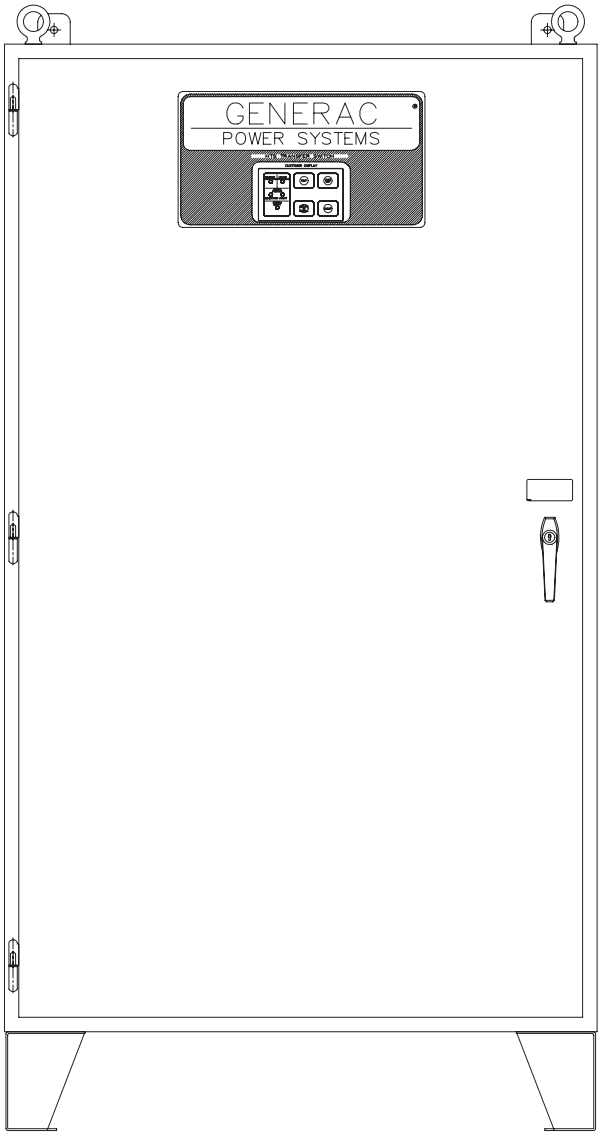
GENERAC®

Owner's Manual

HTS "Wn" Type

Automatic Transfer Switch

600 through 2600 Amp, 600 Volts



This manual should remain with the unit.



IMPORTANT SAFETY INSTRUCTIONS

Read the following information carefully before attempting to install, operate or service this equipment. Also read the instructions and information on tags, decals, and labels that may be affixed to the transfer switch. Replace any decal or label that is no longer legible.

DANGER! Connection of a generator to an electrical system normally supplied by an electric utility shall be by means of suitable transfer equipment so as to isolate the electric system from utility distribution system when the generator is operating (Article 701 Legally Required Standby Systems or Article 702 Optional Standby Systems, as applicable). Failure to isolate electric system by these means may result in damage to generator and may result in injury or death to utility workers due to backfeed of electrical energy.

Generac cannot anticipate every possible circumstance that might involve a hazard. The warnings in this manual, and on tags and decals affixed to the unit are, therefore, not all-inclusive. If using a procedure, work method or operating technique the manufacturer does not specifically recommend, ensure that it is safe for others. Also make sure the procedure, work method or operating technique utilized does not render the transfer switch unsafe.

Throughout this publication, and on tags and decals affixed to the generator, 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. Their definitions are as follows:

DANGER

After this heading, read instructions that, if not strictly complied with, will result in serious personal injury, including death, or property damage.

WARNING

After this heading, read instructions that, if not strictly complied with, may result in personal injury or property damage.

CAUTION

After this heading, read instructions that, if not strictly complied with, could result in damage to equipment and/or property.

NOTE:

After this heading, read explanatory statements that require special emphasis.

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

Four commonly used safety symbols accompany the DANGER, WARNING and CAUTION blocks. The type of information each indicates follows:

This symbol points out important safety information that, if not followed, could endanger personal safety and/or property of others.

This symbol points out potential explosion hazard.

This symbol points out potential fire hazard.

This symbol points out potential electrical shock hazard.

GENERAL HAZARDS

- Any AC generator that is used for backup power if a NORMAL (UTILITY) power source failure occurs, must be isolated from the NORMAL (UTILITY) power source by means of an approved transfer switch. Failure to properly isolate the NORMAL and STANDBY power sources from each other may result in injury or death to electric utility workers, due to backfeed of electrical energy.
- Improper or unauthorized installation, operation, service or repair of the equipment is extremely dangerous and may result in death, serious personal injury, or damage to equipment and/or personal property.
- Extremely high and dangerous power voltages are present inside an installed transfer switch. Any contact with high voltage terminals, contacts or wires will result in extremely hazardous, and possibly LETHAL, electric shock. DO NOT WORK ON THE TRANSFER SWITCH UNTIL ALL POWER VOLTAGE SUPPLIES TO THE SWITCH HAVE BEEN POSITIVELY TURNED OFF.
- 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 the National Electrical Code (NEC), CSA Standard; C22.1 Canadian Electric Code and Occupational Safety and Health Administration (OSHA) have established.

- Never handle any kind of electrical device while standing in water, while barefoot, or while hands or feet are wet. DANGEROUS ELECTRICAL SHOCK MAY RESULT.
- Because jewelry conducts electricity, wearing it may cause dangerous electrical shock. Remove all jewelry (such as rings, watches, bracelets, etc.) before working on this equipment.
- If work must be done 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.
- Keep the transfer switch enclosure door closed and bolted at all times. Only qualified personnel should be permitted access to the switch interior.
- In case of an accident caused by electric shock, immediately shut down the source of electrical power. If this is not possible, attempt to free the victim from the live conductor but AVOID DIRECT CONTACT WITH THE VICTIM. Use a nonconducting implement, such as a rope or board, to free the victim from the live conductor. If the victim is unconscious, apply first aid and get immediate medical help.
- When an automatic transfer switch is installed for a standby generator set, the generator engine may crank and start at any time without warning. To avoid possible injury that might be caused by such sudden start-ups, the system's automatic start circuit must be disabled before working on or around the generator or transfer switch. For that purpose, a SAFETY DISCONNECT is provided inside the transfer switch. Always set that switch to its MANUAL position before working on the equipment. Then place a "DO NOT OPERATE" tag on the transfer switch and on the generator.

Safety Rules ..... Inside Front Cover

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1.1 INTRODUCTION

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 the 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 reserves the right to change, alter or otherwise improve the product at any time without prior notice.

1.2 EQUIPMENT DESCRIPTION

The commercial transfer switch range (HTS) is designed to operate in conjunction with the Power Manager Gxxx and Hxxx series of Generator controllers. The transfer switch has a simple 2-wire communications link to the Generator controller and can thus be mounted remote from the Generator.

Utility voltage is monitored by the HTS and fed back to the engine generator control panel for comparison against setpoints, used to determine if the Utility voltage is "good".

Operation of the switch is instigated by the generator control panel, however, all aspects of TDN timing or inphase transfer are handled locally at the HTS. The HTS monitors a single phase of the Generator voltage in order to perform inphase transfers.

All timers and voltage setpoints are programmable in the G/H control panel. Some of the decisions are made by the HTS itself so the appropriate parameters are passed to the HTS via the communication link. If the communication link were to break, the HTS will still function. It will monitor the Utility and Generator voltages and make the transfer determination itself, rather than being commanded by the generator control panel. It will either use the last parameters sent, or, if no parameters were ever sent (communications were never established), it will take its settings from onboard DIP Switches and a set of resident parameters.

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

1.3 TRANSIENT VOLTAGE SURGE SUPPRESSION

The Transient Voltage Surge Suppression (TVSS) is provided to protect the load from electrical surges and/or transient voltage spikes. This device is physically located on the side wall of the enclosure. It is electrically connected to the load side of the transfer switch. A 30 amp circuit breaker is provided to disconnect the TVSS from the transfer switch for maintenance or replacement.

The TVSS is made up of multiple solid state Metal Oxide Varistors (MOV) connected in parallel for each mode of protection. These devices are equipped with integrated short circuit and individual component level fusing. They are self-resetting and fully automatic.

◆ 1.3.1 MODES OF PROTECTION

The TVSS provides protection on all modes:

- Single-phase (6) - L-L, L-N, L-N, L-G, L-G and N-G.
- Three-phase (10) - L-L, L-L, L-L, L-N, L-N, L-N, L-G, L-G, L-G and N-G.

◆ 1.3.2 RATINGS

- Surge Capacity: 88 kA per mode.

◆ 1.3.3 CERTIFICATION

The TVSS is UL recognized to the requirements of UL 1449 2nd edition.

◆ 1.3.4 TVSS DISCONNECT

Each TVSS is provided with a disconnect. The disconnect is a 30 amp circuit breaker, 2-pole for single-phase and 3-pole for three-phase. This is to allow replacement of the TVSS module without interruption of the electrical supply to the load.

DANGER

REPLACEMENT OF THE TVSS MODULE WHILE THE ATS IS ENERGIZED SHOULD ONLY BE PERFORMED BY A QUALIFIED ELECTRICIAN.

CAUTION

BE SURE TO TURN ON TVSS DISCONNECT CIRCUIT BREAKER WHEN THE PROCEDURE IS COMPLETE. IF THE CIRCUIT BREAKER IS NOT TURNED ON THE TVSS MODULE WILL NOT PROVIDE ANY SURGE PROTECTION FOR THE CUSTOMER LOAD.

◆ 1.3.5 STATUS INDICATORS

Each TVSS module has comprehensive, solid state, continual visual status monitoring of each protection mode present. There are two LED's provided, located on the cover of the module. The GREEN LED (left side) is used to indicate that the TVSS module is energized and in working order. The RED LED (right side) will turn on in the event the suppressor capability is exceeded or if there is an internal safety component activating.

When the power is first applied, the unit does a brief internal diagnostic test. During this test, the RED LED will illuminate briefly, go off and then the GREEN LED will illuminate.

For the power source to be available, the associated service disconnect circuit breaker must be ON, the associated TVSS disconnect circuit breaker must be ON and the associated source must be present.

The LED status indicators can be viewed directly on the TVSS module with the enclosure door open.

◆ 1.3.6 REMOTE ALARM CONTACTS

Each TVSS module is equipped with a set of alarm contacts to indicate the TVSS module protection status, to a external alarm. This is available as a full set of dry relay contacts (C, NO, NC). The contact ratings are; 3A, 250Vdc or 230Vac maximum. The contacts are wired to a three position terminal strip for customer connection.

If the contacts change state, it indicates either a power failure to the TVSS module or a failure of the TVSS module.

1.4 COMMUNICATIONS

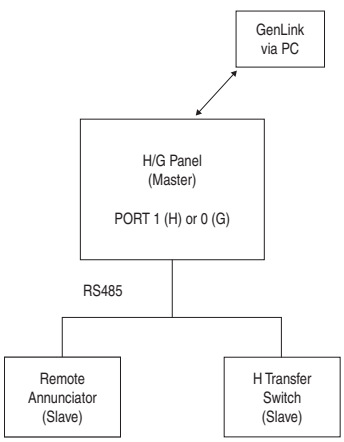
The HTS acts as a Modbus slave on the communications network. For the "H" series of generator controllers, Port 1 should be used for a connection. On the "G" series of controllers, Port 0 should be used. The base Modbus address for the transfer switch is set at 240 but can be modified using dip switches DIP1 - switches 7 and 8. Unless there are two transfer switches on the network, these switches can be left in the OFF position.

Communications parameters on the Power Manager should be set to:

- Modbus Master Port
- 4800 Baud
- No parity, 2 stop bits

The Network uses Modbus RTU protocol. Communications are sent at a one second rate. If no Good messages are received within 20 seconds, the communications link is determined to be bad and the switch controller will revert to local control. If the link re-establishes itself the remote control from the H-panel restarts (Figure 1.1).

Figure 1.1 - Typical Communication Network



1.5 OPERATION WITH LOSS OF COMMUNICATIONS

Local control means that if the generator is running and there is no utility, the switch will then transfer to the generator. If utility returns, the switch will transfer back to utility. The generator will not start or stop automatically as it cannot communicate with the switch and does not know utility is missing. It will have to be manually started and stopped (with the keyswitch set in the manual position).

1.6 TRANSFER SWITCH DATA LABEL

A Data LABEL is permanently affixed to the transfer switch enclosure. Use this transfer switch only with the specific limits shown on the DATA LABEL 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 LABEL.

Record the Model and Serial numbers in the space provided for future reference.

MODEL #	
SERIAL #	

1.7 TRANSFER SWITCH ENCLOSURE

The standard switch enclosure is a National Electrical Manufacturer's Association (NEMA) 12 type. NEMA 12 type enclosures primarily provide protection against contact with the enclosed equipment and provide a degree of protection against dust, falling dirt, and dripping non-corrosive liquids. NEMA 12 type enclosures are for indoor use only.

1.8 SAFE USE OF TRANSFER SWITCH

Before installing, operating or servicing this equipment, read the SAFETY RULES (inside front cover) 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 publications that outline the safe use of transfer switches are the following:

- NFPA 70; National Electrical Code
- NFPA 70E; 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.

2.1 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 communication circuit.
- Setting DIP switches on ATS controller.
- Programming Gxxx or Hxxx control on engine generator.
- Installing/connecting any options and accessories.
- Testing functions.

2.2 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.

Attach any lifting device to the transfer switch mounting holes or brackets only. DO NOT LIFT THE SWITCH AT ANY OTHER POINT.

2.3 MOUNTING

Mounting dimensions for the transfer switch enclosure are in this manual. Enclosures are typically floor standing and mounted to the wall. Components are generally mounted in a standard NEMA 12-type enclosure. A NEMA 3R, is also available. See TRANSFER SWITCH OPTIONS section.

⚠ CAUTION ⚠

⚠ Handle transfer switches carefully when installing. Do not drop the switch. Protect the switch against impact at all times, and against construction grit and metal chips. Never install a transfer switch that has been damaged.

Install the transfer switch as close as possible to the electrical loads that are to be connected to it. Stand the enclosure on a flat surface. If the surface is not flat, it will be necessary to add shims to make the enclosure level. Mount to a wall or support structure for vertical stability. To prevent switch distortion, level all mounting points. If necessary, use washers behind mounting holes to level the unit.

2.4 CONNECTING POWER SOURCE AND LOAD LINES

⚠ DANGER ⚠

⚠ Make sure to turn OFF both the NORMAL (UTILITY) and STANDBY (EMERGENCY) power supplies before trying to connect power source and load lines to the transfer switch. Supply voltages are extremely high and dangerous. Contact with such high voltage power supply lines causes extremely hazardous, possibly lethal, electrical shock.

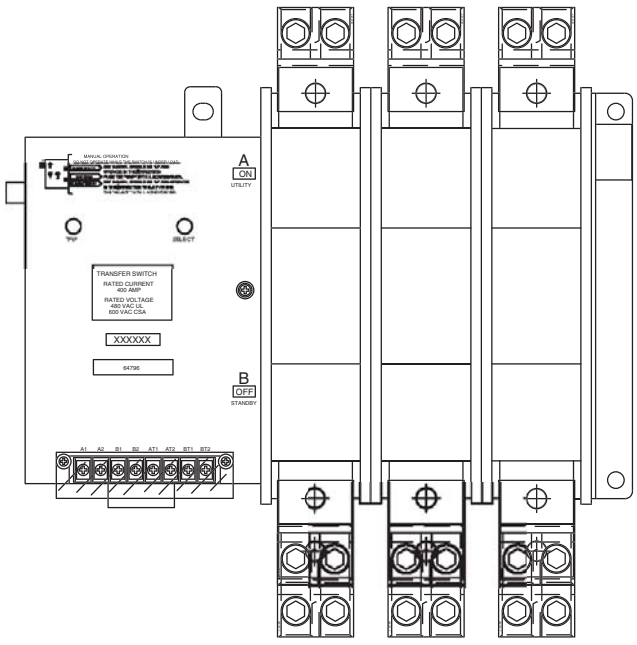
Wiring diagrams and electrical schematics are provided in this manual. Power source and load connections are made at a transfer mechanism, inside the switch enclosure.

◆ 2.4.1 TRANSFER MECHANISMS

The transfer mechanism may be either a 2-pole, 3-pole, or 4-pole type (Figure 2.1). The switch enclosure may include a NEUTRAL BLOCK for connection of the NEUTRAL line. Connect power source and load leads to transfer mechanism terminal lugs as follows:

- LOAD Leads: Connect to terminals T1, T2, T3, etc.
- NORMAL (UTILITY) Source Leads: To terminals N1, N2, N3, etc.
- STANDBY (EMERGENCY) Source Leads: Connect to transfer mechanism terminal lugs E1, E2, E3, etc.

Figure 2.1 — Transfer Mechanism





NOTE:

Unless otherwise specified, a NEUTRAL block is not supplied with the transfer switch on single phase, 3-pole units where the NEUTRAL line is to be switched during transfer action. Similarly, a NEUTRAL block is not supplied on 3-phase, 4-pole units where the NEUTRAL line is to be switched during transfer.

Solderless, screw-type terminal lugs are standard. Conductor sizes must be adequate to handle the maximum current to which they will be subjected. 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 wire brush. If ALUMINUM conductors are used, apply joint compound. Tighten terminal lugs to the torque values in the following chart.

SWITCH RATING	WIRE SIZE	TORQUE RATING
600 AMP	500MCM-1/0	375 INCH-LBS
800/1000 AMP	500MCM-1/0	375 INCH-LBS
1200/2600 AMP	750MCM-1/0	500 INCH-LBS

All power cables should enter the switch next to transfer mechanism terminals. Standard terminal lugs on the transfer mechanism are solderless, screw-type.

Be sure to maintain proper electrical clearance between live metal parts and grounded metal. Allow at least one inch for circuits over 400 amps.

2.5 CONNECTING CONTROLLER COMMUNICATION WIRES

Use shielded 2-wire communications cable (such as Belden #9460) to make the communications line connection from the HTS transfer switch to the engine generator connection panel. This cable is to be routed in a separate conduit between the HTS transfer switch and the engine generator. The cable is to be connected as follows:

HTS transfer switch - 4 position terminal block, in the bottom of the transfer switch enclosure (labeled "comm. Ports").

Engine generator - terminal strip in connection panel that houses the circuit breaker. Do not connect the shield at this end.

2.6 SETTING DIP SWITCHES

The dip switches, in the HTS, **are read once, only at power up**. If the communications to the Power Manager or the engine controller are working, it will overwrite the dip switch settings. In this way there are no conflicts and also the transfer switch will use the latest settings even if the communications fail.

◆ 2.6.1 DIP SWITCH 1

Voltage Codes

THREE PHASE DIP SWITCH SELECTED

Code	Dip1_3 2 1
0 = 480 Vac	0 0 0
1 = 600 Vac	0 0 1
2 = 415 Vac	0 1 0
3 = 240 Vac	0 1 1
4 = 220 Vac	1 0 0
5 = 208 Vac	1 0 1
6 = 480 Vac (spare)	1 1 0
7 = 480 Vac (spare)	1 1 1

All voltages listed, are Line - Line and all three phases are checked.

SINGLE PHASE DIP SWITCH SELECTED

Code	Dip1 3 2 1
0 = xxx vac	0 0 0
1 = xxx vac	0 0 1
2 = xxx vac	0 1 0
3 = 240 vac	0 1 1
4 = 220 vac	1 0 0 (usually 50Hz)
5 = xxx vac	1 0 1
6 = xxx vac	1 1 0
7 = xxx vac	1 1 1

All voltages are expressed as line - line, but checked as line - neutral, line - neutral and line - line.

As of the V1.8 software release, there will only be one PCB for all voltage codes.

- TDN/INPHASE - Dip1- switch 4: Set this switch to ON to select TDN type transfers.
- CTTS/OTTS - Dip1 - switch 5: Set this switch to OFF for a OTTS type transfer switch.
- THREE PHASE - Dip1 - switch 6: Set this switch to ON for 3 phase wiring. Set this switch to OFF for single-phase wiring.
- MODBUS ADDRESS - Dip1- switches 7,8: The base Modbus address for the transfer switch is set at 240. The transfer switch will NOT respond to the universal address 250. By changing the address dip switches, the full range of available addresses for transfer switches is:

Modbus address	Dip1 - 8 7	GenLink DCP Switch Number
240	0 0	1
241	0 1	2
242	1 0	3
243	1 1	4

◆ 2.6.2 DIP SWITCH 2

- 60/50 Hz - Dip2 - switch 1: Set this switch to ON for a 60Hz system. This setting is only used if the communications fail. Normally it will be overridden by the target frequency setting in the G/H panel. The Generator and Utility must be within 1Hz of this nominal frequency for an inphase transfer to take place.

◆ 2.6.3 SWITCHES 2 TO 6

These switches no longer have any function.

◆ 2.6.4 SWITCHES 7 AND 8

These switches select the communications baud rate, they are for future development and should currently both be set to off (4800 baud).

Baud Rate	Dip 8 7
4800	0 0
9600	0 1
38400	1 0 (V1.8)
57600	1 1 (V1.8)

◆ 2.6.5 SYNCHRONIZATION LIMITS

Synch requirements are:

- Generator frequency within 1Hz of nominal
- Voltage within User Programmed limits
- Absolute Voltage difference within +/- 6V
- Generator/Utility Frequency difference within + 0.2/- 0.0 Hz
- Phase difference within - 7 / +0 degrees

(i.e. Generator voltage is earlier than Utility and catching up, this gives some compensation for the transfer switch closing delay).

◆ 2.6.6 VOLTAGE LIMITS

Determination of good Utility is done by the H or G controller against user programmable limits. If the communication link to the transfer switch breaks down, the following criteria are used for a local determination.

Dropout — any phase outside - 70 to +130 % of nominal (not the average voltage)

Pickup — all phases > +75 % of nominal

2.7 PROGRAMMING

The HTS transfer switch is controlled by the G/H control panel on the engine generator. The timer, voltage pickup, dropout and exercise settings are programmed into the G/H control panel. Please refer to the G/H control panel manual for details on programming the HTS transfer switch controls.

2.8 AUXILIARY CONTACTS

It is possible to add Auxiliary Contacts on the transfer switch to operate customer accessories, remote advisory lights, or remote annunciator devices. It is necessary to change the single pole limit switch to a double pole device. Reconnect 0A, 147 and 148 to like terminals on the double limit switch. A suitable power source must be connected to the COMMON (C) terminal (Figure 2.3).

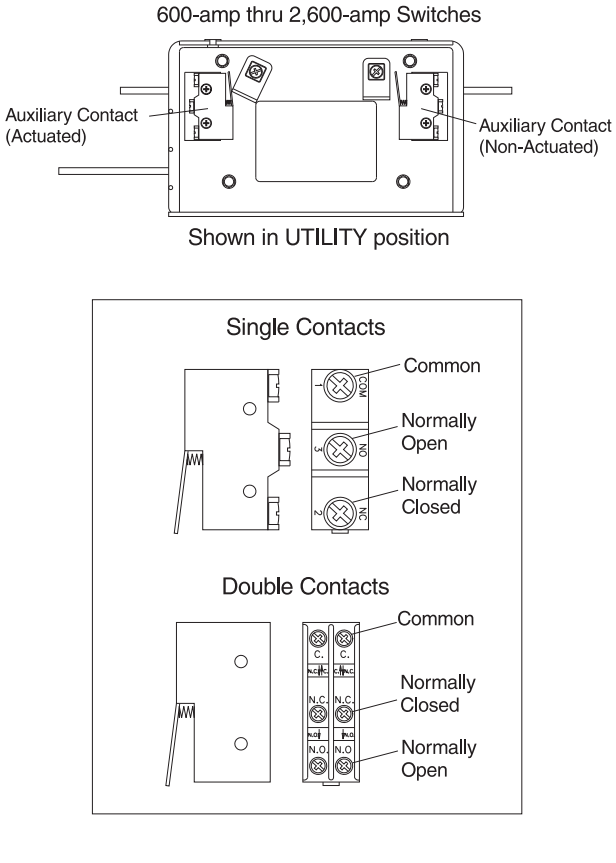
Contact operation is shown in the following chart:

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

NOTE:

Auxiliary Contacts are rated 10 amps at 125 or 250 volts AC. DO NOT EXCEED THE RATED VOLTAGE AND CURRENT OF THE CONTACTS.

Figure 2.3 — Auxiliary Contact Diagram



3.1 FUNCTIONAL TESTS AND ADJUSTMENTS

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. Perform functional tests in the exact order presented in this manual, or the switch could be damaged.

IMPORTANT: Before proceeding with functional tests, read and make sure all instructions and information in this section are 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.

3.2 MANUAL OPERATION

⚠ DANGER ⚠

⚠ **Do NOT manually transfer under load. Disconnect transfer switch from all power sources by approved means, such as a main circuit breaker(s).**

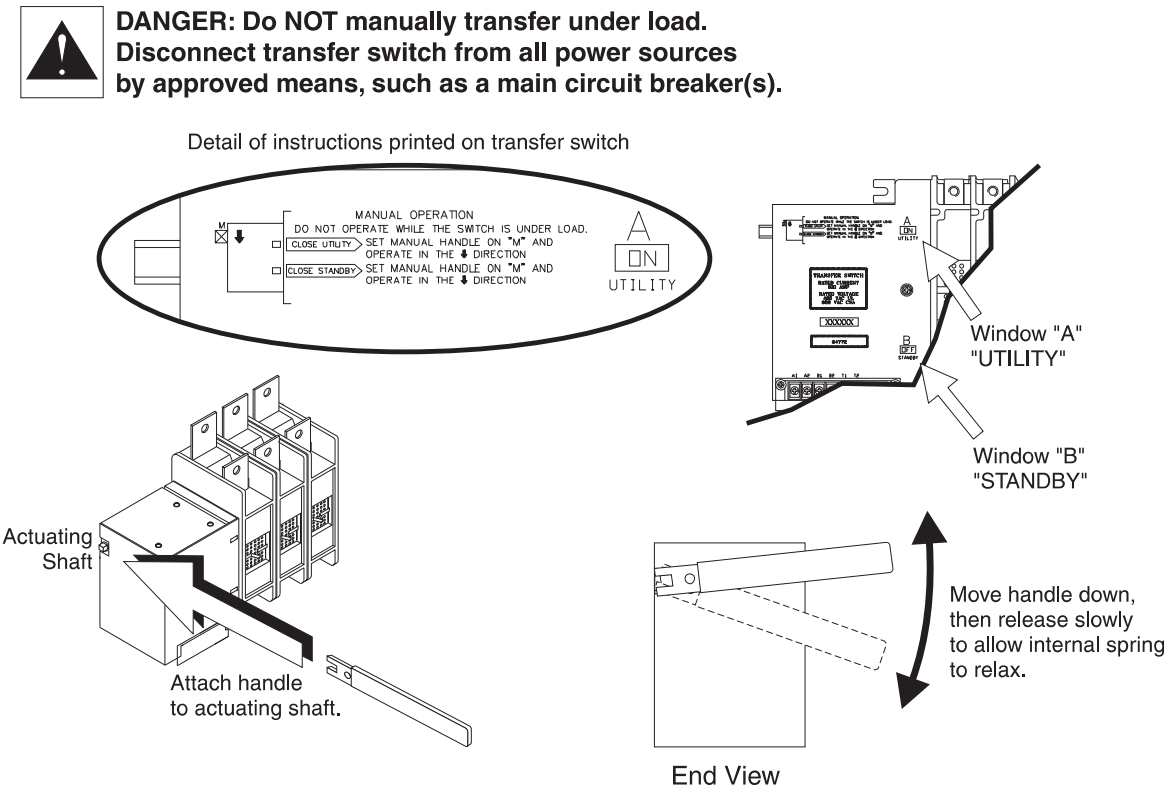
A manual HANDLE is shipped with the transfer switch. Manual operation must be checked BEFORE the transfer switch is operated electrically. To check manual operation, proceed as follows:

1. In the transfer switch enclosure, set the Maintenance Disconnect switch to MANUAL. This prevents the generator from starting automatically as soon as the UTILITY power source is turn OFF.
2. If so equipped, turn the generator's AUTO/OFF/ MANUAL switch to OFF.
3. Turn OFF both NORMAL and STANDBY power supplies to the transfer switch, with whatever means provided (such as the main line circuit breaker(s)).
4. Note position of transfer mechanism main contacts by observing display windows in "A" and "B" in Figure 3.1 as follows:
   - Window "A" ON, Window "B" OFF - LOAD terminals (T1, T2, T3) are connected to NORMAL terminals (N1, N2, N3).
   - Window "A" OFF, Window "B" ON - LOAD terminals (T1, T2, T3) are connected to STANDBY terminals (E1, E2, E3).

⚠ CAUTION ⚠

⚠ **Do not use excessive force when operating the transfer switch manually or the manual handle could be damaged.**

Figure 3.1 — Actuating Transfer Switch



NOTE: Return handle to storage position in enclosure when finished with manual transfer

◆ 3.2.1 CLOSE TO NORMAL SOURCE SIDE

Before proceeding, verify the position of the switch by observing window "A" in Figure 3.1. If window "A" reads "ON", proceed with Step 1, and if it reads "OFF", proceed with Step 2.

- Step 1: With the handle attached to the actuating shaft, 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. "OFF" now appears in Window "A" and "ON" appears in Window "B". (Proceed with Step 2).
- Step 2: With the handle attached to the actuating shaft, 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". (Proceed with B: Close to STANDBY Source Side).

◆ 3.2.2 CLOSE TO STANDBY SOURCE SIDE

Before proceeding, ensure that the previous 3.2.1, "Step 2" Close to NORMAL Source Side is completed. See Figure 3.1. This will ensure that Window "B" on the switch reads "OFF". With the handle attached to the actuating shaft, 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".

◆ 3.2.3 RETURN TO NORMAL SOURCE SIDE

Manually actuate switch to return Window "A" to the "ON" position.

3.3 VOLTAGE CHECKS

⚠ DANGER ⚠

⚠ Disconnect all loads from the transfer switch until all voltage checks and phase rotation checks have been completed to prevent possible injury to personnel and, or damage to equipment.

⚠ For safety, set the Maintenance Disconnect switch (inside transfer switch enclosure) to its MANUAL position before proceeding with voltage checks.

⚠ Before proceeding, check the transfer switch data label for switch rated voltage. Make sure the data label voltage is compatible with NORMAL and STANDBY power source voltages.

⚠ Proceed with caution. Do not touch electrically hot terminals, wires, etc. During the voltage checks, the transfer switch is electrically energized.

Perform voltage checks as follows:

1. Inside the transfer switch enclosure, set the Maintenance Disconnect switch to MANUAL.
2. If generator is so equipped, set the AUTO-OFF-MANUAL switch to OFF.
3. Check that the word "ON" is visible in Window "A", the word "OFF" in Window "B". See MANUAL OPERATION for location of "A" and "B" windows.

IMPORTANT: DO NOT PROCEED UNTIL STEPS 1, 2, AND 3 HAVE BEEN COMPLETED.

⚠ CAUTION ⚠

⚠ Before proceeding to voltage checks, manually connect the load to NORMAL power supply. Window "A" must indicate ON, Window "B" must indicate OFF before proceeding.

4. Locate the battery disconnect connector on the outside of the transfer switch controller. Plug the two connectors together.

NOTE:

If BOTH UTILITY and GENERATOR sources are unavailable for more than 24 hours, disconnect battery by unplugging battery disconnect leads.

5. Turn ON the NORMAL (UTILITY) power supply to the transfer switch, with whatever means provided (such as the main line circuit breaker).

⚠ DANGER ⚠

⚠ The transfer switch is now electrically hot. Proceed with caution.

6. With UTILITY voltage available to the transfer switch, check that the SWITCH - POSITION UTILITY LED on the enclosure door is ON. If the SWITCH - POSITION UTILITY LED is OFF, turn off the utility power supply to the transfer switch by whatever means provided (such as the main line circuit breaker), then proceed back to Step 1 of "VOLTAGE CHECKS".
7. On the enclosure door, check that the UTILITY AVAILABLE LED is ON.
8. With an accurate AC voltmeter, check the phase-to-phase (line-to-line) and phase-to-neutral (line-to-neutral) voltages present at transfer mechanism terminals N1, N2, N3 and neutral. SUPPLIED VOLTAGES MUST BE FULLY COMPATIBLE WITH TRANSFER SWITCH RATED VOLTAGE.

⚠ DANGER ⚠

⚠ Ensure that the phase rotation of NORMAL (UTILITY) power lines and transfer switch load power lines are compatible.

9. Refer to the standby generator instruction manual. Make sure the generator engine has been properly serviced and prepared for use, as outlined in that manual. Then start the generator engine manually. Let the engine stabilize and warm up for a few minutes.

10. Turn ON the STANDBY (EMERGENCY) power supply to the transfer switch by whatever means provided (such as the main line circuit breaker).
11. With the generator running, check that the STANDBY - OPERATING LED on the switch enclosure door is ON.
12. With an accurate AC voltmeter, check phase-to phase (line-to-line) and phase-to neutral (line-to neutral) voltages present at transfer mechanism terminals E1, E2 and E3. Also check AC frequency at those terminals. Generator AC output voltage and frequency must be compatible with transfer switch rated voltage and frequency.

⚠ DANGER ⚠

⚠ Ensure that the phase rotation of STANDBY (GENERATOR) power lines and transfer switch NORMAL (UTILITY) and load power lines are compatible.

13. If supplied voltage or frequency is incorrect, refer to standby generator Owner's Manual. If AC frequency is incorrect, adjust engine governed speed. If voltage is incorrect, adjust generator's voltage regulator or correct the problem.
14. When supplied voltage and frequency is correct, shut down the engine manually.

⚠ DANGER ⚠

⚠ Supplied voltages from both NORMAL (UTILITY) and STANDBY (EMERGENCY) power sources must be compatible with transfer switch rated voltage before proceeding.

15. Connect the transfer switch load to the transfer switch when "voltage checks" section has been completed. Connect the load to the transfer switch by whatever means provided (such as circuit breaker(s)), then proceed with the "ELECTRICAL OPERATION" section.

3.4 ELECTRICAL OPERATION

Test transfer system electrical operation as follows:

1. On the enclosure door, check that the UTILITY AVAILABLE LED is ON.
2. On the enclosure door, check that the SWITCH POSITION-UTILITY LED is ON.

⚠ CAUTION ⚠

⚠ The UTILITY AVAILABLE LED and the SWITCH POSITION-UTILITY LED (on enclosure door) must both be ON before proceeding to Step 3.

3. Refer to the appropriate owner's manual. Be sure the standby generator is prepared for automatic operation.
4. In the switch enclosure, set the Maintenance Disconnect switch to AUTOMATIC.
5. Press the "TEST" button on the enclosure door. Generator startup and transfer to the STANDBY power source should occur. Refer to the "Sequence of Operation" section.
6. Press the "TEST" button again to initiate the retransfer sequence. The customer LOAD will be transferred back to the UTILITY power source, using the preset times. The generator will shut down once the engine cool down timer has expired.

3.5 TRANSFER MECHANISM

The transfer mechanism houses the main, current carrying contacts, along with other mechanical and electrical components, required for operating the switch. The main contacts are electrically operated and mechanically latched in place.

Power for the closing, selective and trip coil is taken from the source of supply that the Customer Load is being transferred to. Therefore, transfer to any power source cannot occur unless that power source is available to the switch.

Customer Load contacts are bolted to an insulated plastic pole piece and are stationary. The UTILITY (NORMAL) and GENERATOR (EMERGENCY) contacts are moveable.

3.6 TRANSFER MECHANISM OPERATION

There are three (3) coils inside a "WN" switch that are used in transferring power to the respective load;

- Closing Coil - When energized, closes the main contacts on Utility or Generator side, depending on if the select coil is energized or not.
- Select Coil - When energized, the mechanism is configured to close the Generator supply contacts when the closing coil is energized.
- Trip Coil - When energized, the main contact latch is released and the contacts move to the open position by spring tension.

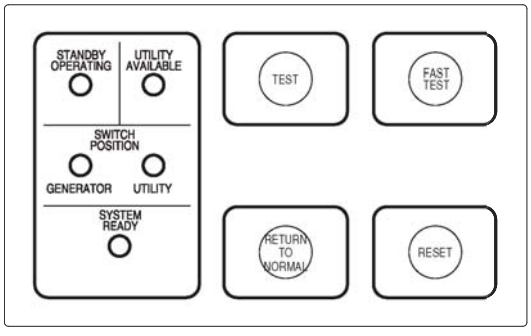
All 3 solenoids are only energized momentarily.

Refer to the diagnostic repair manual 079247, section 9.6 for complete operational analysis.

3.7 SWITCHES AND INDICATORS

This section will familiarize the reader with switches and indicators on the membrane switch panel mounted on the enclosure door, as well as the Maintenance Disconnect switch inside the switch enclosure. See Figure 3.2.

Figure 3.2 — OTTS Switch



◆ 3.7.1 SYSTEM READY LED

The "System Ready LED" is lit if the Gxxx or Hxxx panel is in Auto, there are no transfer errors (excluding comm's error or fail to synch), and the Maintenance Disconnect Switch is in AUTO. If the comm's are bad then the system ready light will flash but the system will still function with local control. Under all circumstances, if the Generator is not in the AUTO position, the switch controller will locally close the switch to Utility power if it is available.

◆ 3.7.2 STANDBY OPERATING LED

This LED will light when the Generator is running. This is determined by the Generator frequency being between 20 and 80 Hz. This LED will flash along with the Utility Available LED to indicate a "fail to sync" condition.

◆ 3.7.3 SWITCH POSITION LED'S

The transfer switch position is monitored by two auxiliary contacts mounted on the transfer switch mechanism. These LED's display the position of the main contacts.

If there is a transfer switch error (fail to close or open) the appropriate Led will flash. In the case of an OTTS switch, both LED's will flash.

◆ 3.7.4 UTILITY AVAILABLE LED

This LED indicates that Utility voltage is present but does not indicate that it is within the tolerances set by the H panel (as this is determined in the H panel). It does indicate that Utility voltage is within 70-130% of nominal.

This led will flash along with the standby operating led to indicate a "fail to sync" condition.

◆ 3.7.5 TEST SWITCH AND CURTAILMENT INPUT

The Test switch will only operate if the communications link is active, also the generator must be stopped, i.e., not in minimum run or cooldown.

Pressing the switch will cause the generator controller to command a transfer to standby using all the pre-programmed timers and settings. The unit will transfer back to utility after the switch is pressed again and the "return to utility" timer expires. Pressing the "return to normal" switch will force this timer to expire and the unit to return to the utility position. The switch can also be "mimicked" via a digital input on (J1-17) for curtailment. The pin needs to be cycled to start the test and also cycled to stop the test.

◆ 3.7.6 FAST TEST BUTTON

The Fast Test button will only operate if the communications link is active. Pressing the button will cause the Generator controller to command a transfer to STANDBY using all the standard settings but with reduced time delays. Specifically the following timers are reduced to 1 second:

- Line Interrupt Delay timer
- Engine Warmup timer
- Engine Minimum Run timer
- Engine Cooldown timer
- Return to Utility timer

NOT affected are:

- Signal Before Transfer timer
- Time Delay Neutral timer

The unit will initiate a transfer back to Utility after 5 seconds of the transfer mechanism in the Standby position.

◆ 3.7.7 RETURN TO NORMAL SWITCH

This switch will abort the Return to Utility timer and cause the system to return to Utility operation (assuming the Utility source is good). It will not operate if the Communications link is bad.

◆ 3.7.8 MAINTENANCE DISCONNECT SWITCH (AUTO/MANUAL)

In the Manual position, the transfer switch is physically isolated from the signals that tell it to operate, the transfer mechanism will not change state in the Manual position. This position should be used when manually operating the transfer switch mechanism. In the Auto position, the transfer switch is operated by the switch controller. For automatic operation the switch should be left in the Auto position.

3.8 SEQUENCE OF OPERATION

When acceptable Utility source voltage is available, the Maintenance Disconnect switch is in AUTO and the communication link to the generator is good, observe the following:

- Utility Available LED, on front of door, is ON.
- Utility Switch Position LED, on front of door, is ON.
- System Ready LED, on front of door, is ON.

◆ 3.8.1 SEQUENCE 1 - UTILITY VOLTAGE DROPOUT

- Utility Voltage goes outside of the value set in the generator control panel (range is 5-25 Vrms of nominal voltage, factory default setting is +/- 25 Vrms). If the communication link is not good the ATS controller will take control and the range is 70 to 130% of the nominal voltage selected with a 5 second utility loss timer and a 30 second utility return timer.
- Voltage dropout triggers sequence 2.

◆ 3.8.2 SEQUENCE 2 - LINE INTERRUPT DELAY

- Line interrupt Delay can be set between 0 and 60 seconds. Factory default setting is 2 seconds.
- If voltage dropout lasts longer than the Line Interrupt Delay setting, the generator start sequence will start.
- Once the Generator voltage reaches Load Accept Voltage and Load Accept Frequency this will trigger Sequence 3.

◆ 3.8.3 SEQUENCE 3 - ENGINE MINIMUM RUN AND ENGINE WARMUP TIMERS

- Engine Minimum Run timer starts. The Engine Minimum Run timer can be set from 5 to 30 minutes. Factory default setting is 5 minutes.
- Engine Warmup timer starts. The Engine Warmup timer can be set from 0 to 1,200 seconds. Factory default setting varies depending on the engine used.
- Standby Operating LED, on front of door, is ON.
- The expiration of the Engine Warmup timer triggers sequence 4.

◆ 3.8.4 SEQUENCE 4 - SIGNAL BEFORE TRANSFER

- Signal Before Transfer timer does not operate in a Utility Fail sequence.
- Sequence 5 starts immediately.

◆ 3.8.5 SEQUENCE 5 - ATS TRANSFER TO GENERATOR POSITION

- ATS transfer mechanism operates to connect the Customer Load to the Generator supply. Customer Load will be supplied from the Generator until sequence 6 is initiated.
- Generator Switch Position LED, on front of door, is ON.

◆ 3.8.6 SEQUENCE 6 - UTILITY VOLTAGE PICKUP

- The ATS controller continues to monitor the Utility source voltage. When the Utility voltage is above the voltage dropout setting plus the hysteresis value, sequence 7 will be initiated.

◆ 3.8.7 SEQUENCE 7 - RETURN TO UTILITY TIMER

- Return to Utility timer starts. The Utility source voltage must stay above the pickup level. If the Utility voltage falls below the pickup value, the Return to Utility timer is reset. The Return to Utility timer can be set from 1 to 30 minutes. Factory default setting is 1 minute.
- The expiration of the Return to Utility timer triggers sequence 8.

◆ 3.8.8 SEQUENCE 8 - SIGNAL BEFORE TRANSFER

- Signal Before Transfer timer starts. The Signal Before Transfer relay is energized for the duration of the timer. The Signal Before Transfer timer can be set from 0 to 30 seconds. Factory default setting is 2 seconds.
- The expiration of the Signal Before Transfer timer triggers sequence 9.

◆ 3.8.9 SEQUENCE 9 - ATS TRANSFER TO UTILITY POSITION

- ATS transfer mechanism operates to connect the Customer Load to the Utility supply. Customer Load will be supplied from the Utility.
- The connection of the Customer Load to the Utility source triggers sequence 10.
- Utility Switch Position LED, on front of door, is ON.

Summary of Parameters

Parameter	Range	Default value
Utility voltage deviation	0 - 25 Vrms	+/- 25 Vrms
Line Interrupt delay	0 - 60 seconds	2 seconds
Minimum Run timer	5 - 30 minutes	5 minutes
Engine warmup timer	0 - 1,200 seconds	Engine dependent
Load Accept Voltage	85 - 95% of nominal	90% of nominal
Load Accept Frequency	85 - 95% of nominal	95% of nominal
Signal Before Transfer timer	0 - 30 seconds	2 seconds
Time Delay Neutral timer	0 - 10 seconds	2 seconds
Utility Voltage Hysteresis	2 - 25 Vrms	10 Vrms
Return to Utility timer	1 - 30 minutes	1 minute
Engine Cooldown timer	0 - 1,200 seconds	Engine dependent

◆ 3.8.10 SEQUENCE 10 - ENGINE COOLDOWN TIMER

- Engine Cooldown timer starts The Engine Cooldown timer can be set from 0 to 1,200 seconds. Factory default setting varies depending on the engine used.
- The engine generator will shutdown when the Engine Cooldown timer and the Engine Minimum Run timer expires.

NOTE:

At the conclusion of sequence 10 the system is armed and ready for the next Utility failure or exercise sequence.

3.9 TRANSFER SWITCH OPTIONS

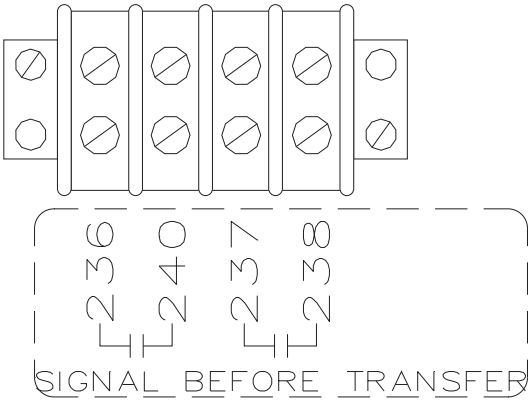
The transfer switch may be equipped with one or more of the following options:

- Instrument Package, 3.11.2
- Signal Before Transfer, 3.11.1
- NEMA 3R, 4, 4X or 12 enclosure

◆ 3.9.1 SIGNAL BEFORE TRANSFER

The Signal Before Transfer option includes a signal relay, customer connection terminal strip and the associated wiring. See Figure 3.3.

Figure 3.3 — Signal Before Transfer



The logic for this option is a part of the G/H-panel controller. The delay time is adjustable from 0 to 30 seconds. Set the timer to "0" when this option is not desired.

The basic operation of the option is to delay (for the period of time set) the transfer of the GTS mechanism while a signal relay (SR) is energized. When the relay is energized, two sets of the dry contacts (wires 236 and 240, and 237 and 238) are closed. These dry contacts can be connected to, via a terminal strip located on the bottom of the subplate. Reference wiring diagram 0F5520 or 0F5036 for further details. The customer connections are made on terminal strip TB3-1.

NOTE:

This delay is not active on a Normal source failure. Transfer during Normal source failure is immediate.

NOTE:

The "Signal Before Transfer" feature provides a time delay that allows elevators to continue operating before transfer to another power supply occurs.

◆ 3.9.2 INSTRUMENT PACKAGE

This option is used to measure the Utility source current that is coming to the transfer switch. The instrument package includes a terminal strip used to connect the current transformers and associated wiring. The HTS controller takes in the current signals and passes them on to the Hxxx or Gxxx panel for display on a PC through GenLink-DCP.

Route the Utility Supply cables through the center of the current transformers. Connect the signal wires of the current transformers to terminal strip (TB1-1). See Figure 3.8 for three-phase connection details. See Figure 3.9 for single-phase connection details.

Figure 3.8 — Connect Signal Wires (Three-phase)

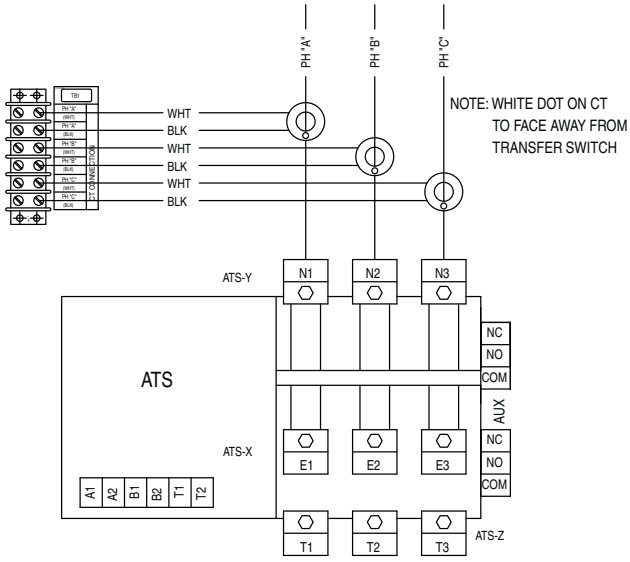


Figure 3.9 — Connect Signal Wires (Single-phase)

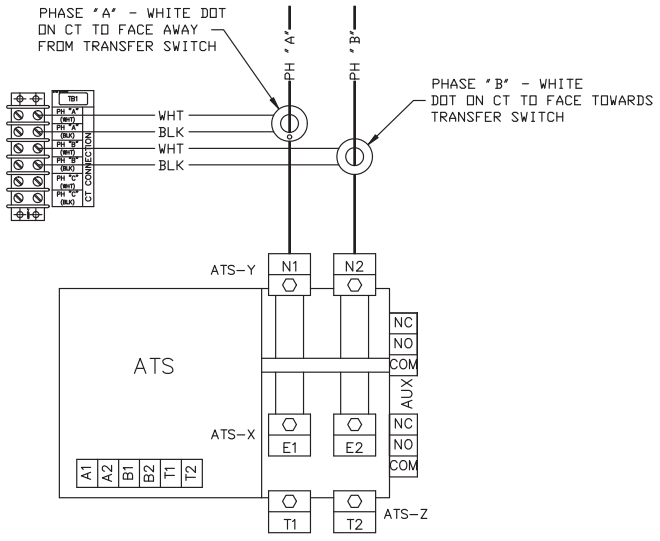


FIGURE 3.9 - CONNECT SIGNAL WIRES (SINGLE-PHASE)

4.1 OPERATE TRANSFER SWITCH

Operate the transfer switch at least once each month. This can be done by performing a NORMAL TEST of the system. Because the System Test switch only simulates failure of the UTILITY power source, service is interrupted only during the actual transfer of the load.

4.2 CLEAN AND INSPECT TRANSFER SWITCH

Protect the transfer switch against construction grit, metal chips, excessive moisture and other harmful dirt at all times. At least once each year, turn OFF all power supplies to the switch, then brush and vacuum away dust and dirt that has accumulated inside the enclosure. After cleaning, inspect the transfer switch carefully. Look for evidence of arcing, burning, hot spots, charring and other damage. If any of these are found, have the switch assembly checked by an authorized service technician.

4.3 LUBRICATION

Operating parts inside the transfer mechanism have been properly lubricated at the time of assembly. Under normal conditions, no additional lubrication should be required. The service technician should lubricate all recommended points whenever major transfer mechanism components are replaced.

⚠ CAUTION ⚠

⚠ Use only specified greases to lubricate contactor parts. DO NOT USE ANY SUBSTITUTES.

Use the following lubricants for the:

1. Main Contacts (Between movable contact and busbars).
   - Dow Corning (Molykote) BR2 Plus (Mfg. by Dow Corning Co., USA)
   - Liqui-Moly (Mfg. by DAI TO Co., Ltd., Japan)
2. Operating Mechanism (Used on the actuator and other parts of the contactors. Excluding the movable contacts).
   - Mobilgrease 28 (Mfg. by Mobil Oil Co.)
   - Mobiltemp SHC 32 (Mfg. by Mobil Oil Co.)
   - Polo Moly Complex Grease #NLG12 (Mfg. by Polo Lubricants, USA)
   - Rheolube 363 (Mfg. by Nye Lubricants Inc., USA)

4.4 MAIN CURRENT CARRYING CONTACTS

At least once annually, have an Authorized Service Technician check the main current-carrying contacts in the transfer mechanism. They will repair or replace major components that have been found defective.

4.5 BATTERIES

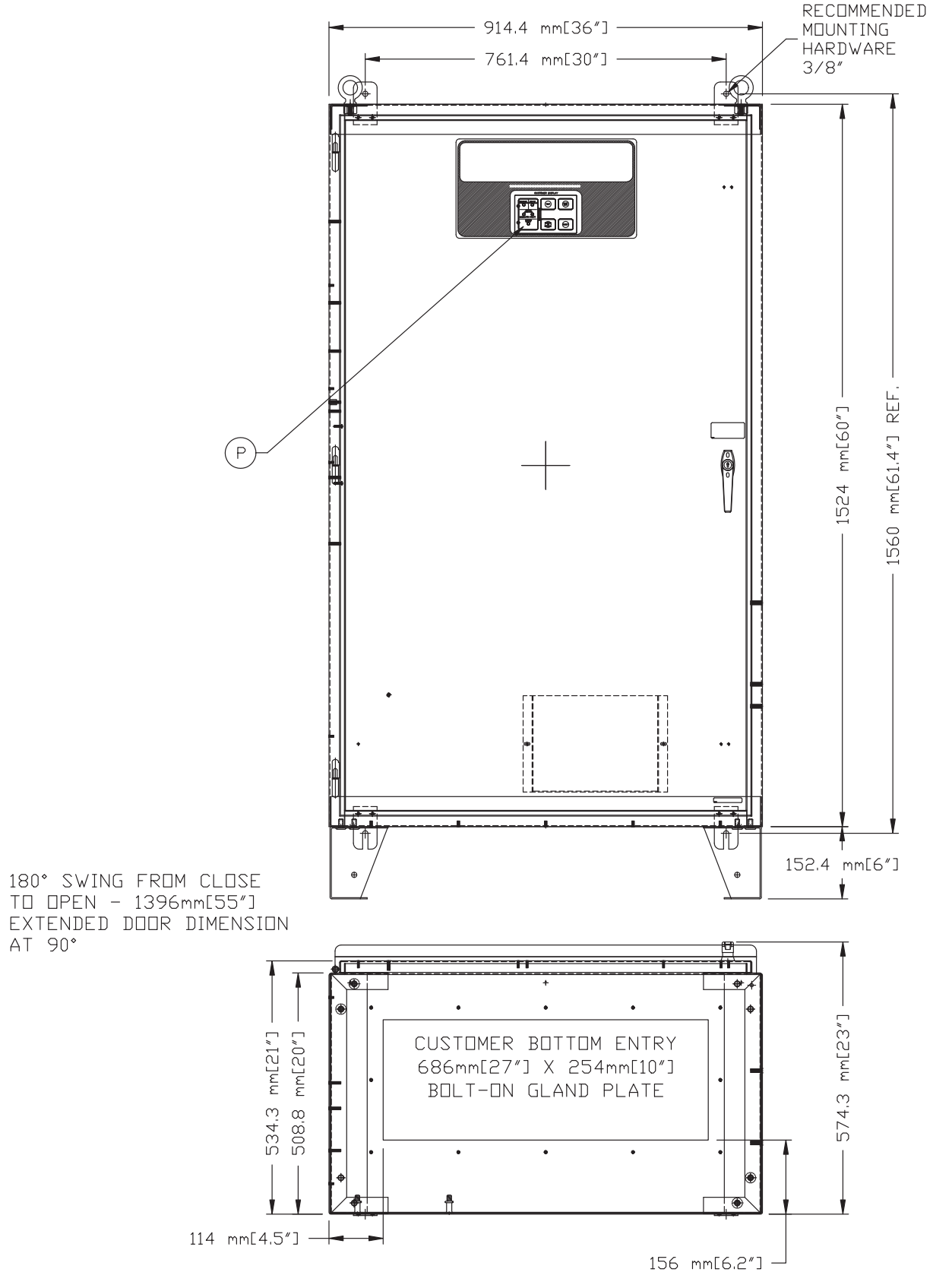
The batteries in the transfer switch controller are of the nickel metal hydride type. The batteries are rechargeable. Replace with Panasonic catalog no. HHR75AAA or equivalent every three (3) years.

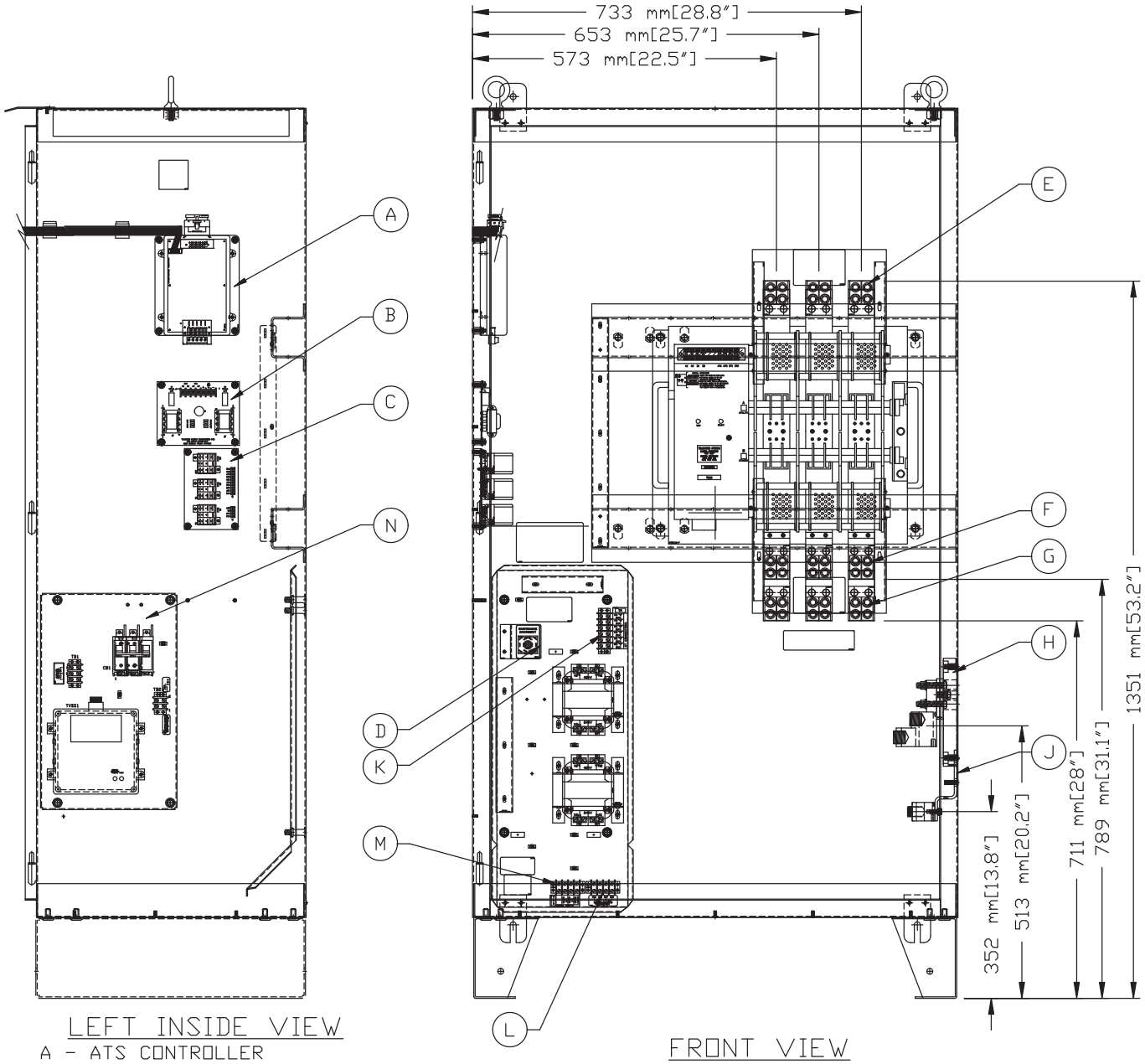
NOTES

NOTES

Section 6 — Mounting Dimensions (600 - 1000A, NEMA 12)

Drawing No. 0F6963-D





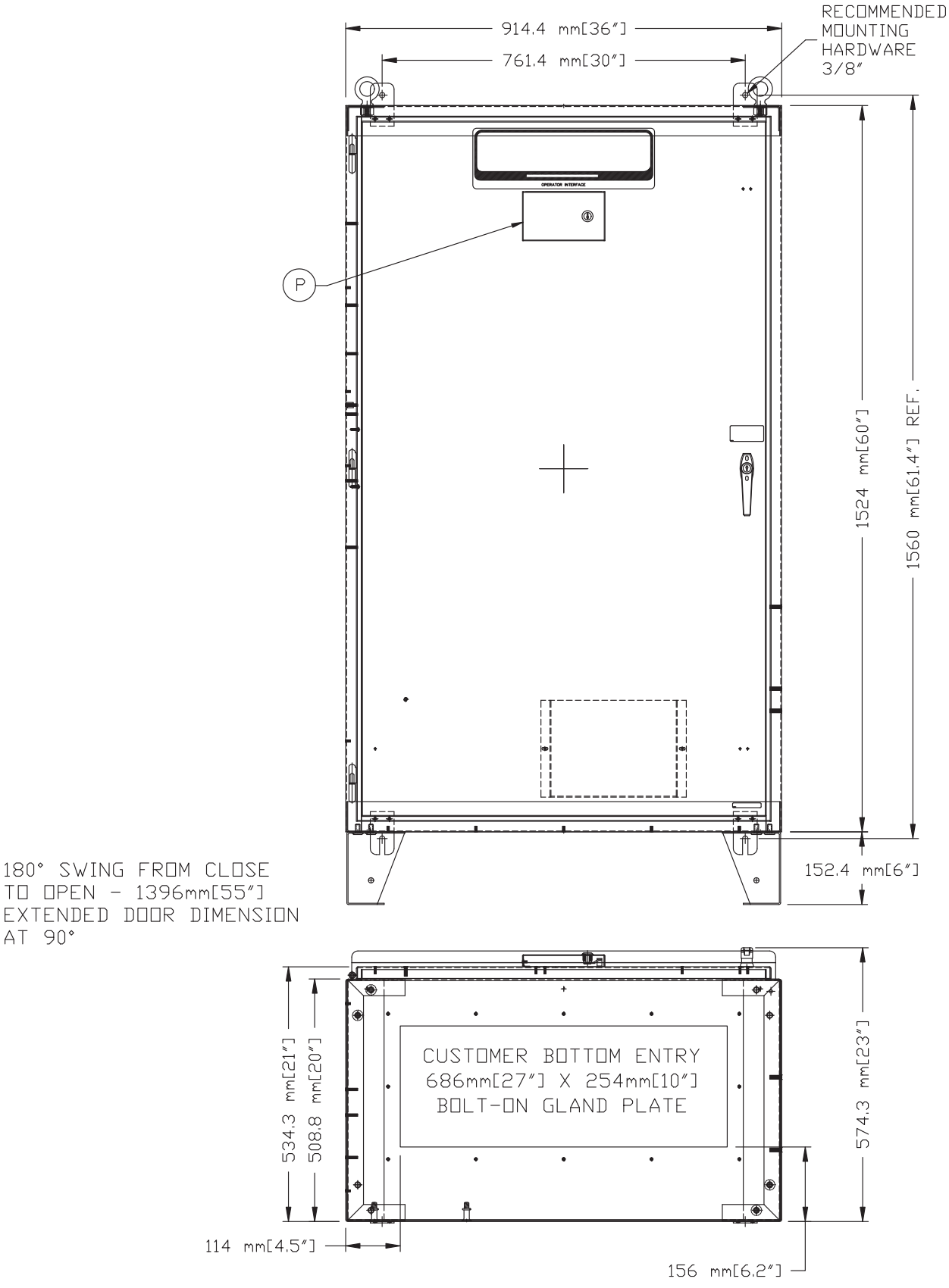
LEFT INSIDE VIEW

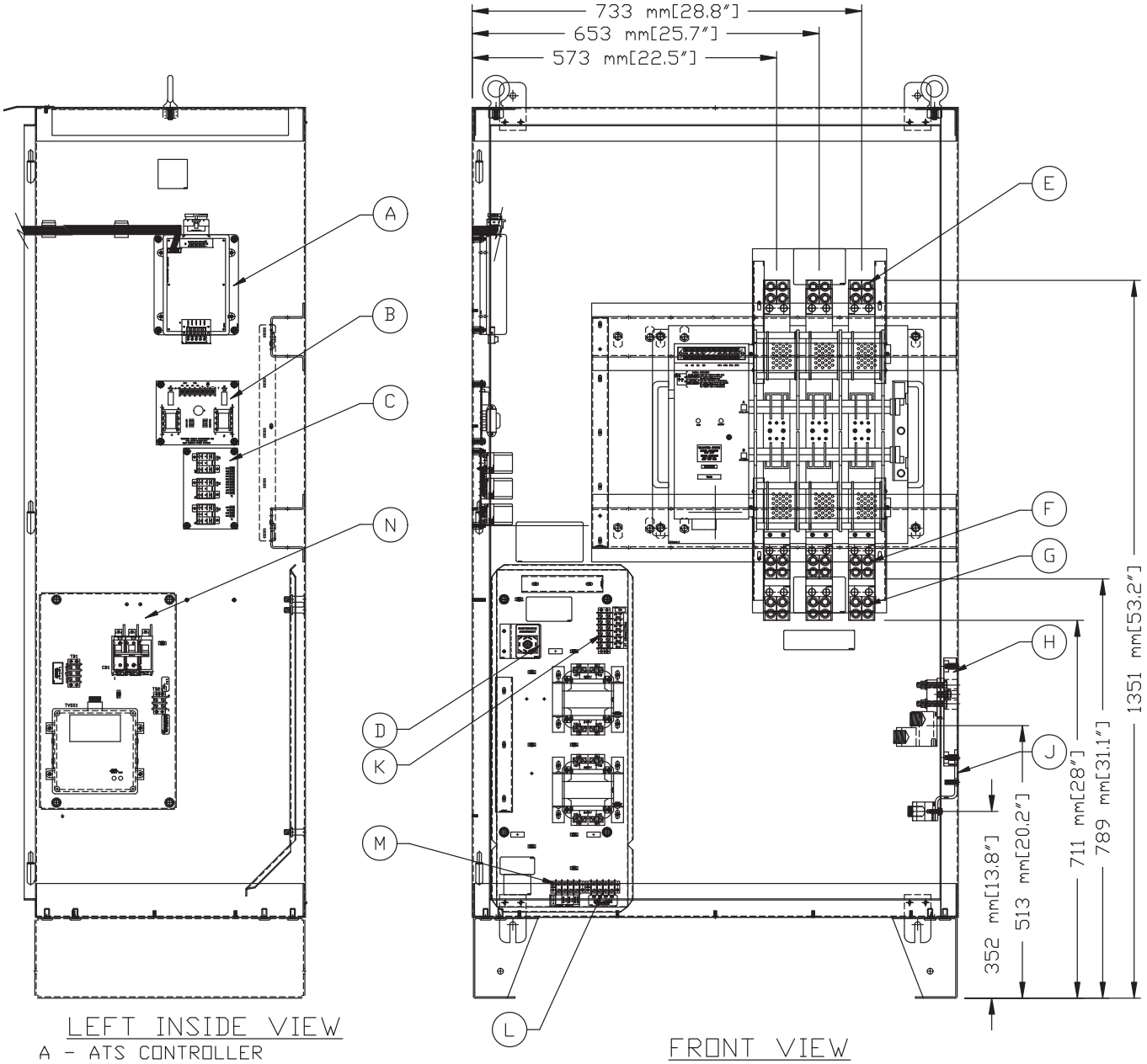
FRONT VIEW

A - ATS CONTROLLER
B - SENSING TRANSFORMER ASSY
C - CONTROL RELAYS (2-WIRE START CONNECTION)
D - MAINTENANCE DISCONNECT SWITCH
E - UTILITY UN-GROUNDED CONDUCTOR CONNECTION
(WIRE RANGE 600A: 2x1/0-500MCM - 800-1000A: 4x4/0-500MCM)
F - GENERATOR UN-GROUNDED CONDUCTOR CONNECTION
(WIRE RANGE 600A: 2x1/0-500MCM - 800-1000A: 4x4/0-500MCM)
G - LOAD UN-GROUNDED CONDUCTOR CONNECTION
(WIRE RANGE 600A: 2x1/0-500MCM - 800-1000A: 4x4/0-500MCM)
H - NEUTRAL SUPPLY CONNECTIONS (WIRE RANGE: 12x1/0-750MCM)
J - GROUND TERMINAL (WIRE RANGE: 3x(1) #4-600MCM OR (6) 1/0-250MCM)
K - CURRENT TRANSFORMER CONNECTIONS (OPTIONAL)
L - SIGNAL BEFORE TRANSFER CONNECTIONS (OPTIONAL)
M - RS485 CONNECTIONS
N - TVSS (OPTIONAL)
P - OPERATOR INTERFACE

Section 6 — Mounting Dimensions (600 - 1000A, NEMA 3R)

Drawing No. 0F7314-D





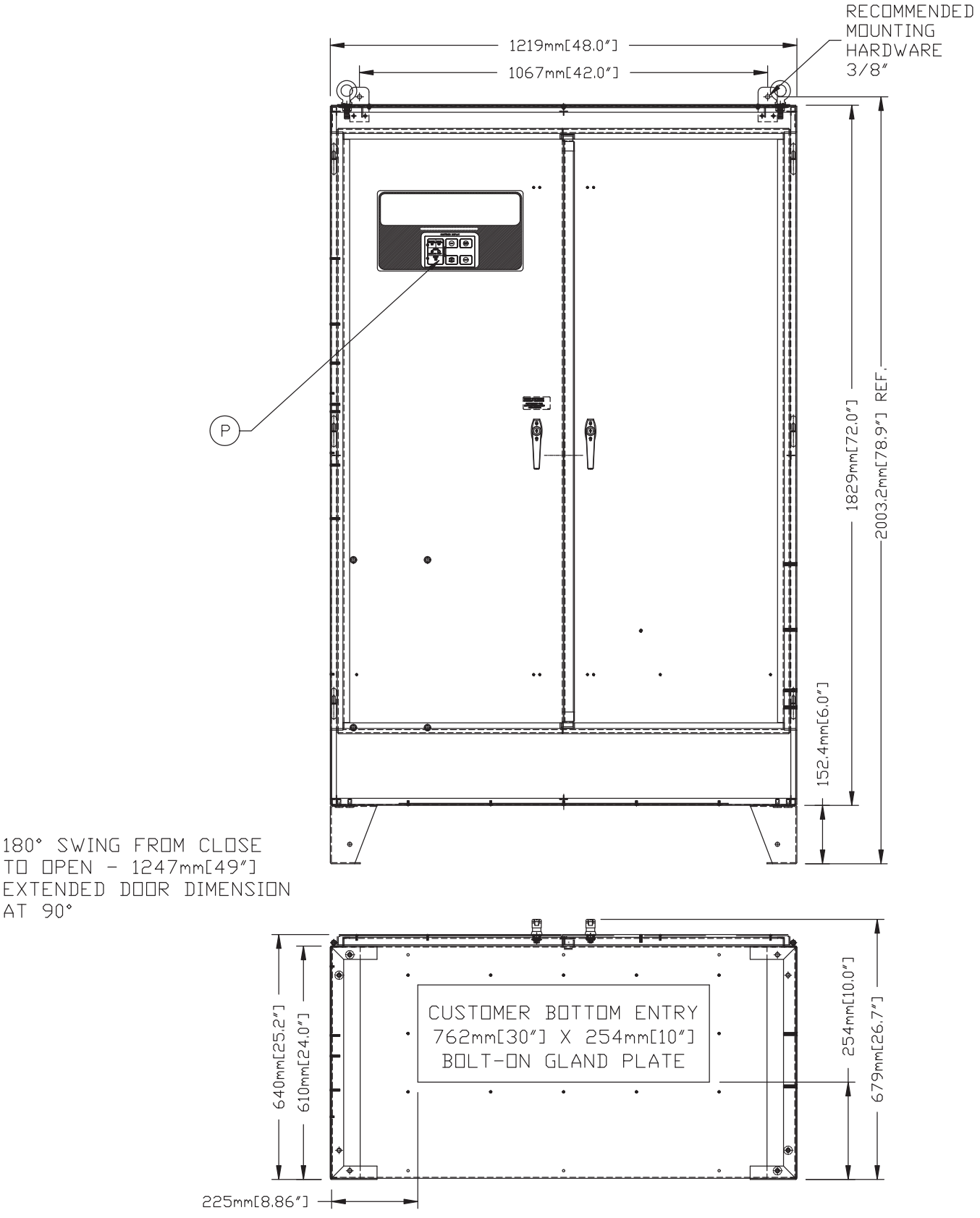
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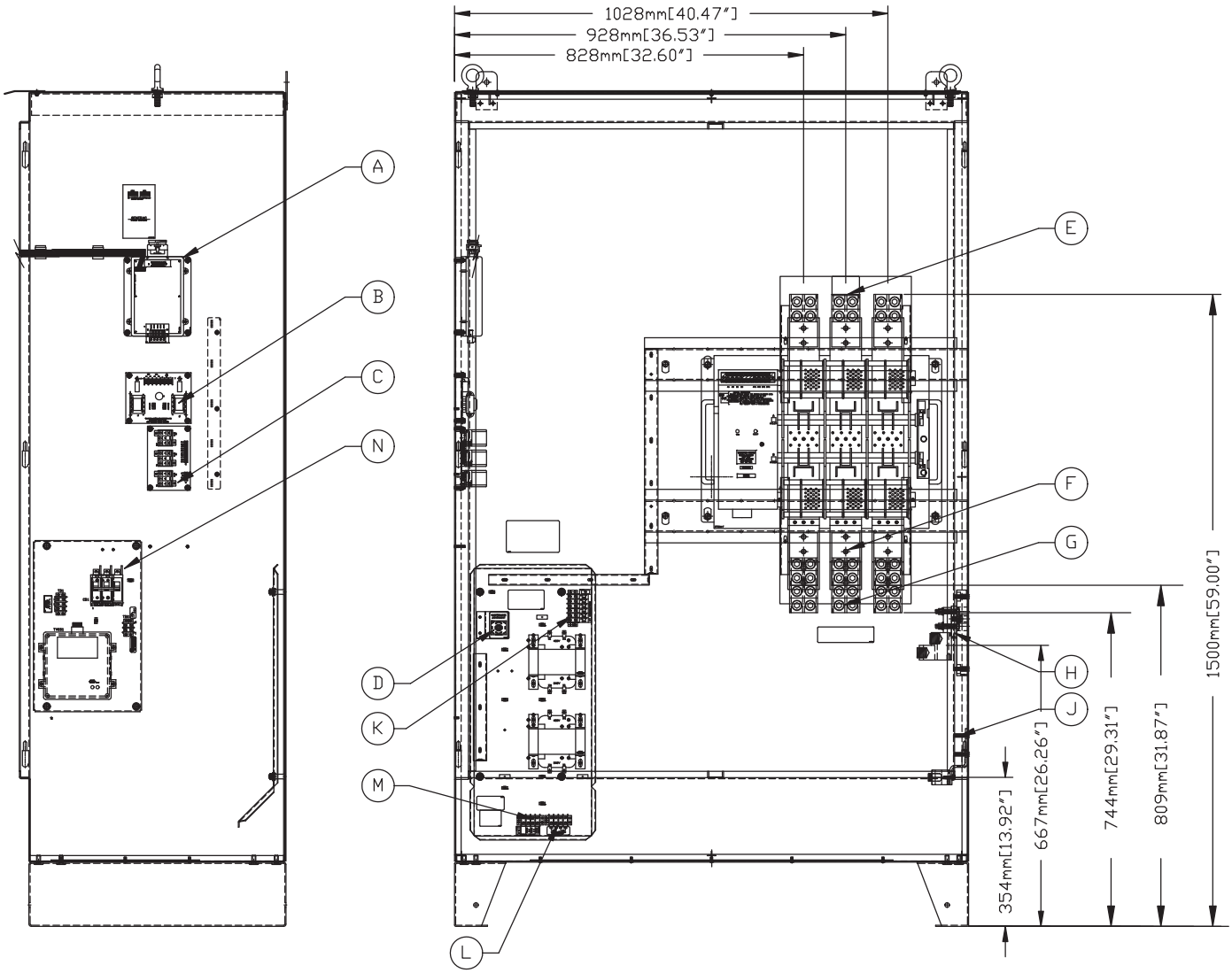
FRONT VIEW

A - ATS CONTROLLER
B - SENSING TRANSFORMER ASSY
C - CONTROL RELAYS (2-WIRE START CONNECTION)
D - MAINTENANCE DISCONNECT SWITCH
E - UTILITY UN-GROUNDED CONDUCTOR CONNECTION
(WIRE RANGE 600A: 2x1/0-500MCM - 800-1000A: 4x4/0-500MCM)
F - GENERATOR UN-GROUNDED CONDUCTOR CONNECTION
(WIRE RANGE 600A: 2x1/0-500MCM - 800-1000A: 4x4/0-500MCM)
G - LOAD UN-GROUNDED CONDUCTOR CONNECTION
(WIRE RANGE 600A: 2x1/0-500MCM - 800-1000A: 4x4/0-500MCM)
H - NEUTRAL SUPPLY CONNECTIONS (WIRE RANGE: 12x1/0-750MCM)
J - GROUND TERMINAL (WIRE RANGE: 3x(1) #4-600MCM OR (6) 1/0-250MCM)
K - CURRENT TRANSFORMER CONNECTIONS (OPTIONAL)
L - SIGNAL BEFORE TRANSFER CONNECTIONS (OPTIONAL)
M - RS485 CONNECTIONS
N - TVSS (OPTIONAL)
P - OPERATOR INTERFACE

Section 6 — Mounting Dimensions (1200 - 1600A, NEMA 12)

Drawing No. 0F7520-C





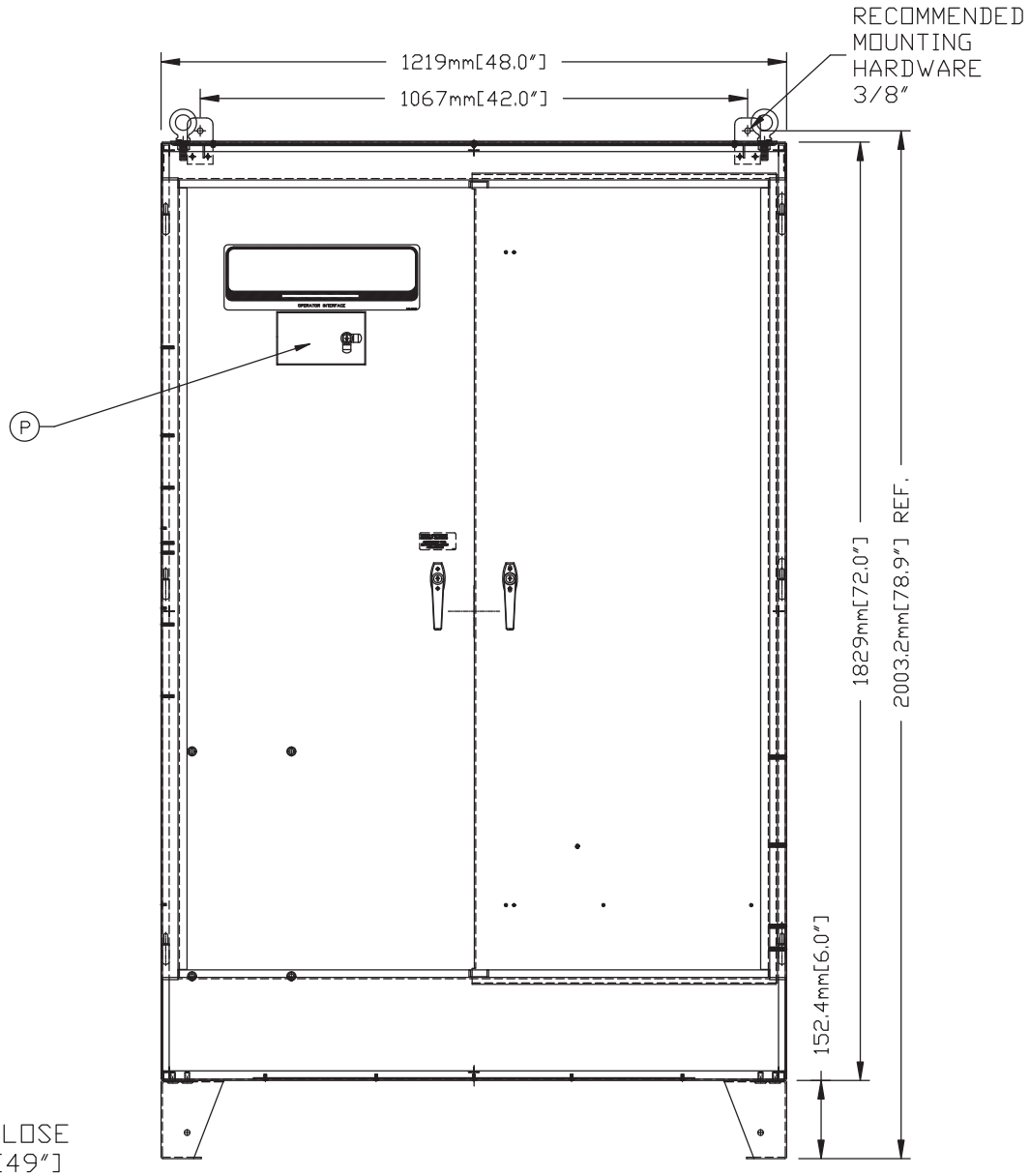
LEFT INSIDE VIEW

FRONT VIEW

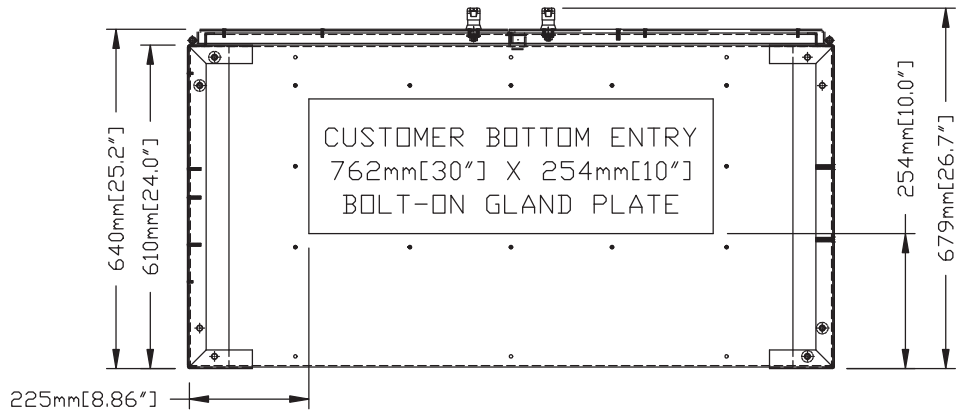
A - ATS CONTROLLER
B - SENSING TRANSFORMER ASSY
C - CONTROL RELAYS
D - MAINTENANCE DISCONNECT SWITCH
E - UTILITY UN-GROUNDED CONDUCTOR CONNECTION
(WIRE RANGE 1200-1600A: 4x1/0-750MCM)
F - GENERATOR UN-GROUNDED CONDUCTOR CONNECTION
(WIRE RANGE 1200-1600A: 4x1/0-750MCM)
G - LOAD UN-GROUNDED CONDUCTOR CONNECTION
(WIRE RANGE 1200-1600A: 4x1/0-750MCM)
H - NEUTRAL SUPPLY CONNECTIONS (WIRE RANGE: 12x1/0-750MCM)
J - GROUND TERMINAL (WIRE RANGE: 3x(1) #4-600MCM OR (6) 1/0-250MCM)
K - CURRENT TRANSFORMER CONNECTIONS (OPTIONAL)
L - SIGNAL BEFORE TRANSFER CONNECTIONS (OPTIONAL)
M - RS485 CONNECTIONS
N - TVSS (OPTIONAL)
P - OPERATOR INTERFACE

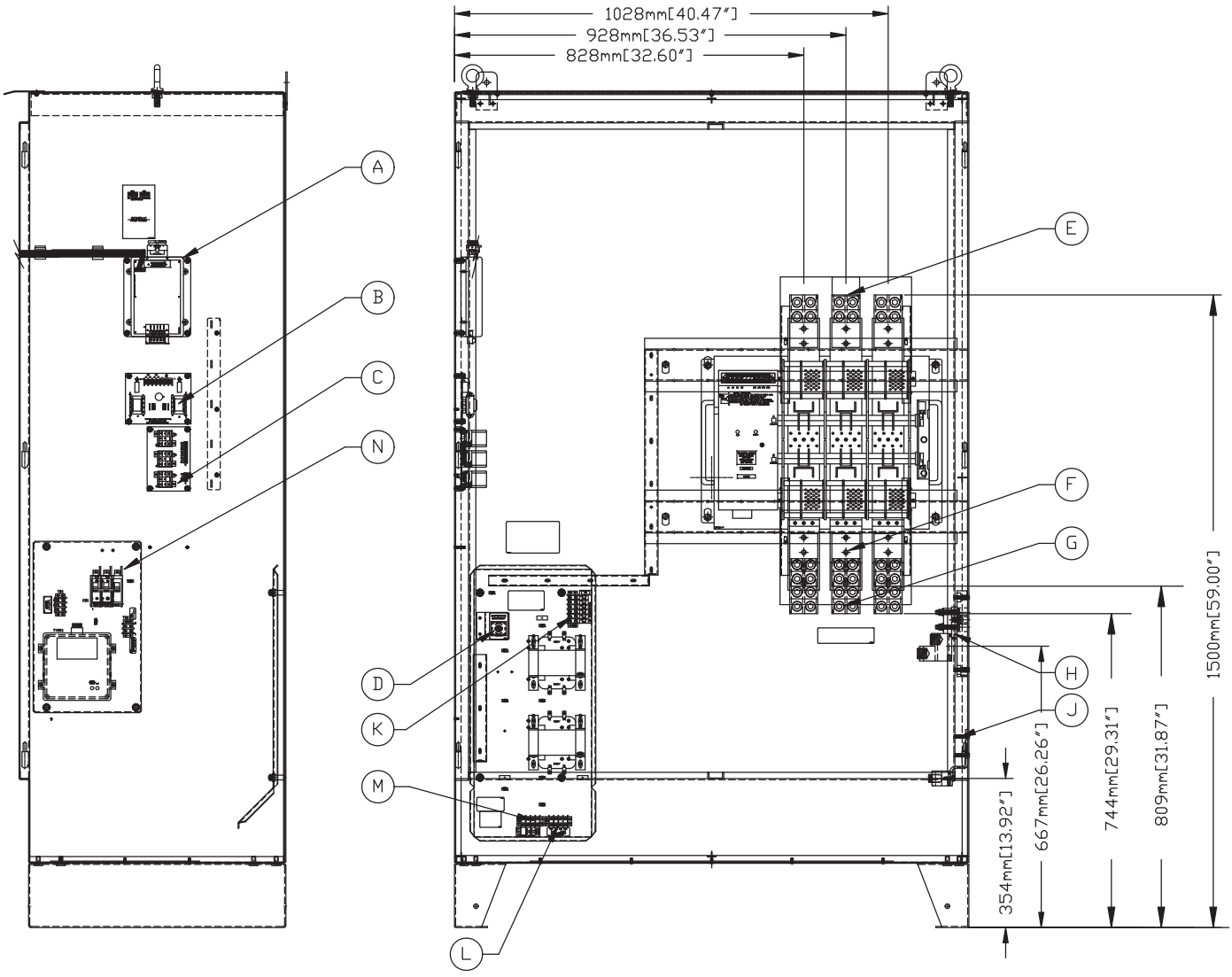
Section 6 — Mounting Dimensions (1200 - 1600A, NEMA 3R)

Drawing No. 0F7521-C



180° SWING FROM CLOSE
TO OPEN - 1247mm[49″]
EXTENDED DOOR DIMENSION
AT 90°





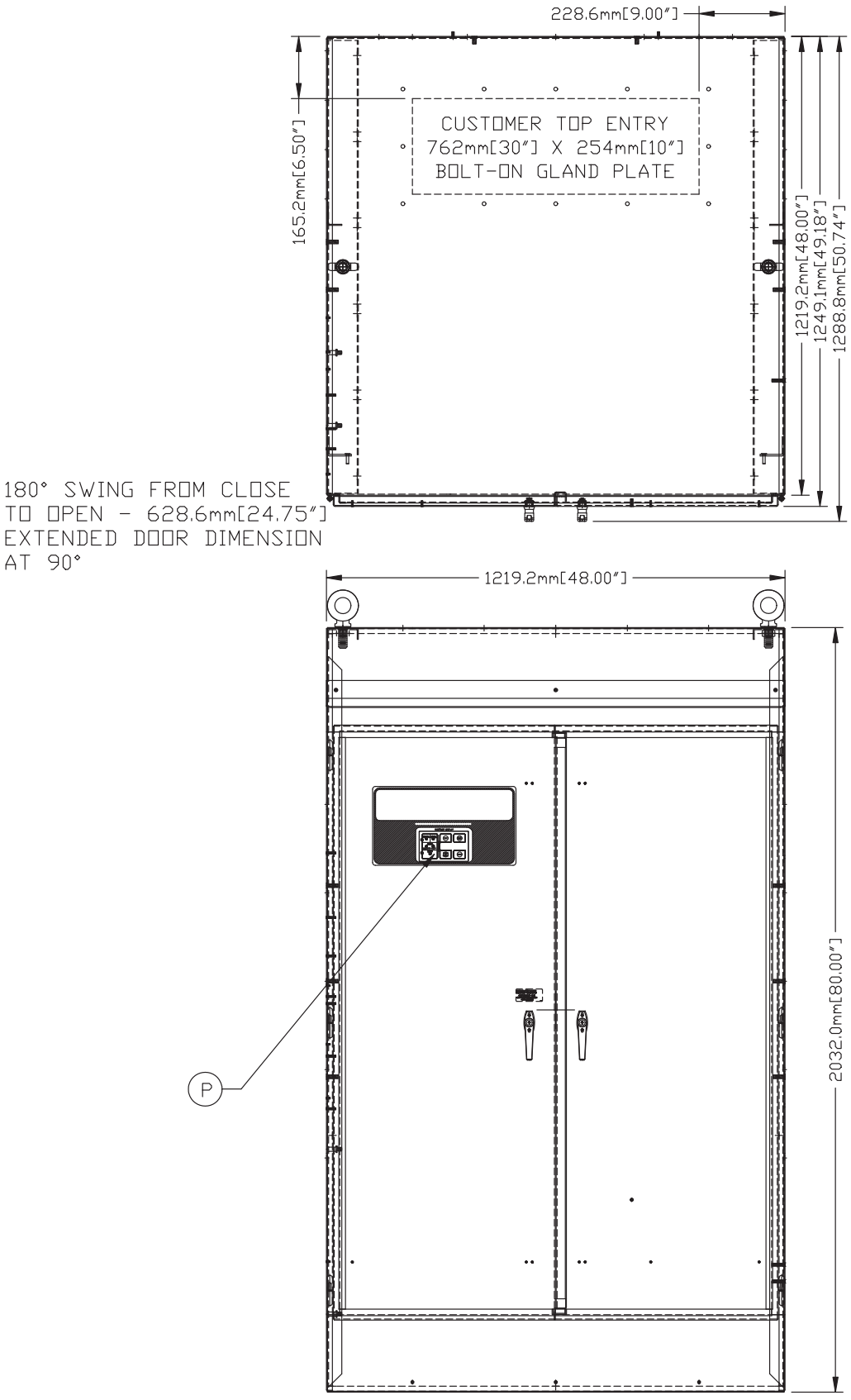
LEFT INSIDE VIEW

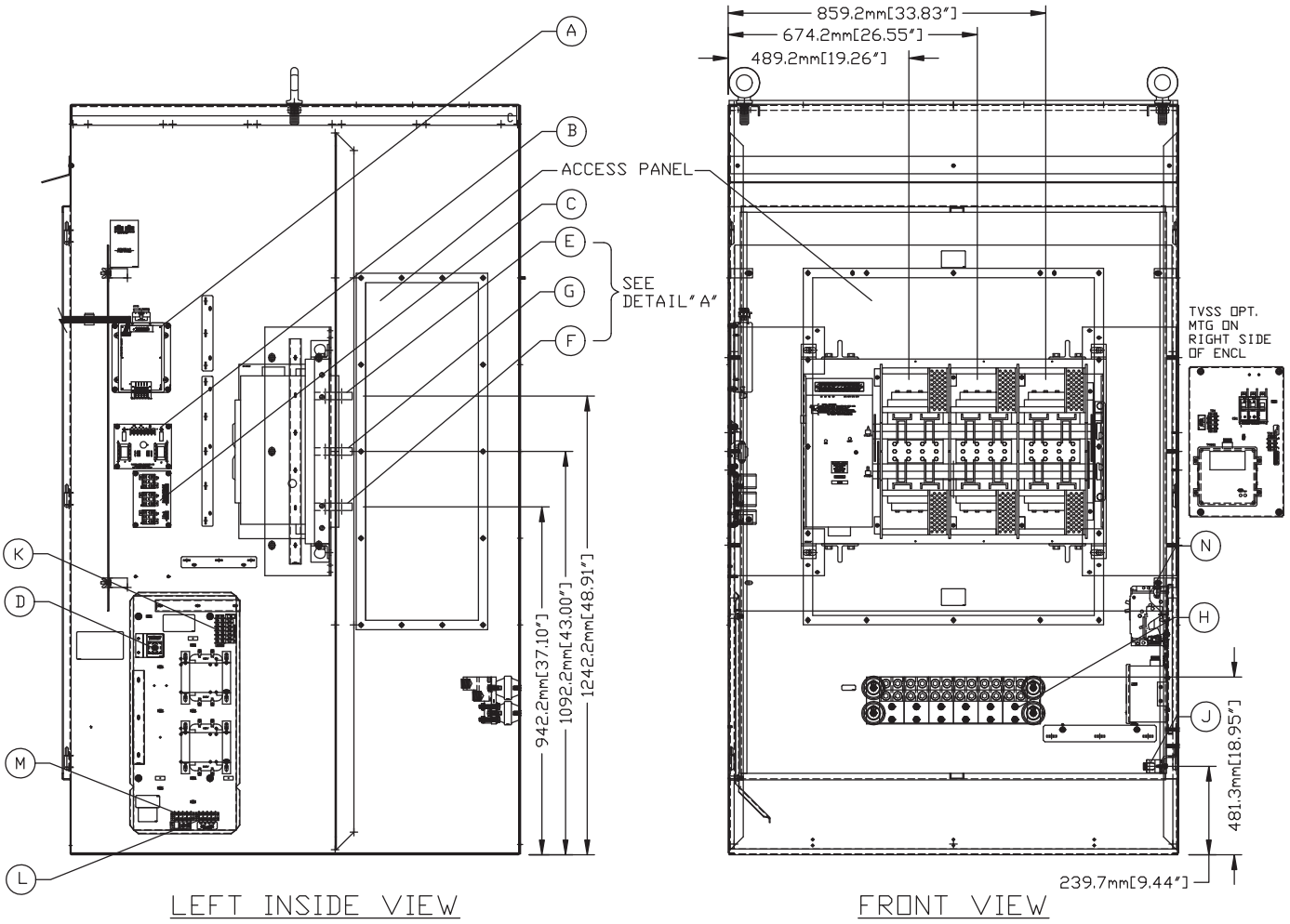
FRONT VIEW

A - ATS CONTROLLER
B - SENSING TRANSFORMER ASSY
C - CONTROL RELAYS
D - MAINTENANCE DISCONNECT SWITCH
E - UTILITY UN-GROUNDED CONDUCTOR CONNECTION
(WIRE RANGE 1200-1600A: 4x1/0-750MCM)
F - GENERATOR UN-GROUNDED CONDUCTOR CONNECTION
(WIRE RANGE 1200-1600A: 4x1/0-750MCM)
G - LOAD UN-GROUNDED CONDUCTOR CONNECTION
(WIRE RANGE 1200-1600A: 4x1/0-750MCM)
H - NEUTRAL SUPPLY CONNECTIONS (WIRE RANGE: 12x1/0-750MCM)
J - GROUND TERMINAL (WIRE RANGE: 3x(1) #4-600MCM OR (6) 1/0-250MCM)
K - CURRENT TRANSFORMER CONNECTIONS (OPTIONAL)
L - SIGNAL BEFORE TRANSFER CONNECTIONS (OPTIONAL)
M - RS485 CONNECTIONS
N - TVSS (OPTIONAL)
P - ACCESS PANEL - OPERATOR INTERFACE

Section 6 — Mounting Dimensions (2000 - 2600A, NEMA 12)

Drawing No. 0F8944-C

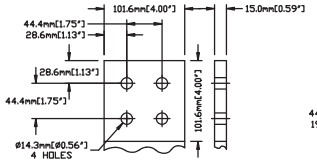




LEFT INSIDE VIEW

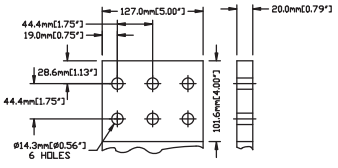
FRONT VIEW

A - ATS CONTROLLER
B - SENSING TRANSFORMER ASSY
C - CONTROL RELAYS
D - MAINTENANCE DISCONNECT SWITCH
E - UTILITY UN-GROUNDED CONDUCTOR CONNECTION
F - GENERATOR UN-GROUNDED CONDUCTOR CONNECTION
G - LOAD UN-GROUNDED CONDUCTOR CONNECTION
H - NEUTRAL SUPPLY CONNECTIONS (WIRE RANGE: 24x1/0-750MCM)
J - GROUND TERMINAL (WIRE RANGE: 3x(1) #4-600MCM OR (6) 1/0-250MCM)
K - CURRENT TRANSFORMER CONNECTIONS (OPTIONAL)
L - SIGNAL BEFORE TRANSFER CONNECTIONS (OPTIONAL)
M - RS485 CONNECTIONS
N - TVSS (OPTIONAL)
P - OPERATOR INTERFACE



2000 AMP

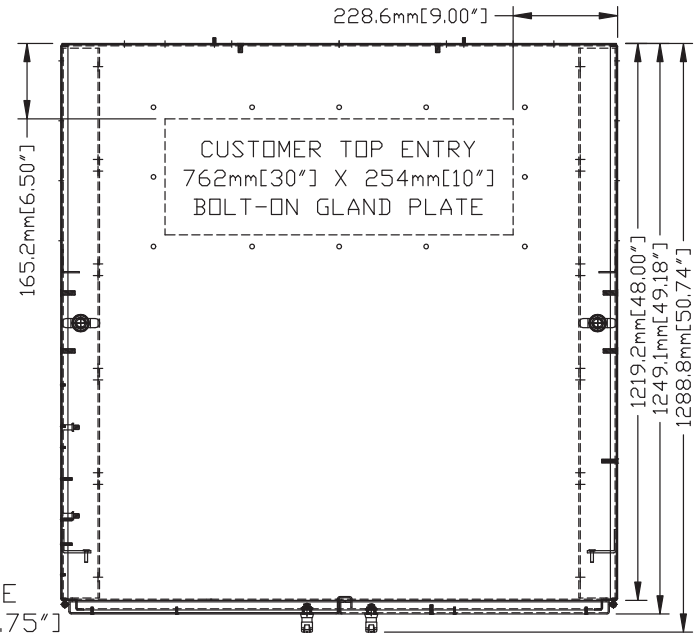
DETAIL "A"
SCALE 2X



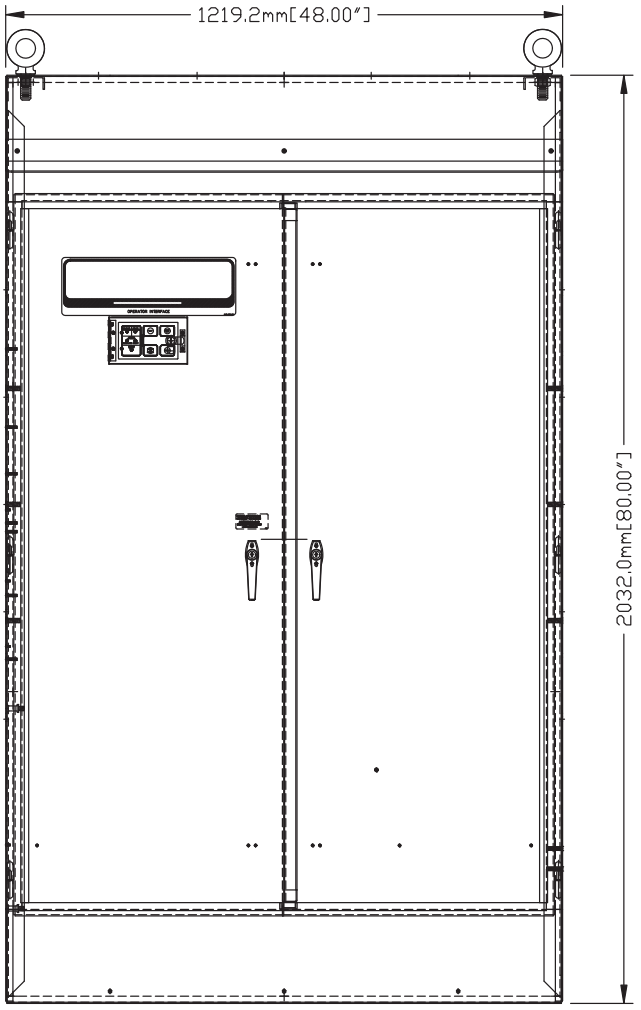
2600 AMP

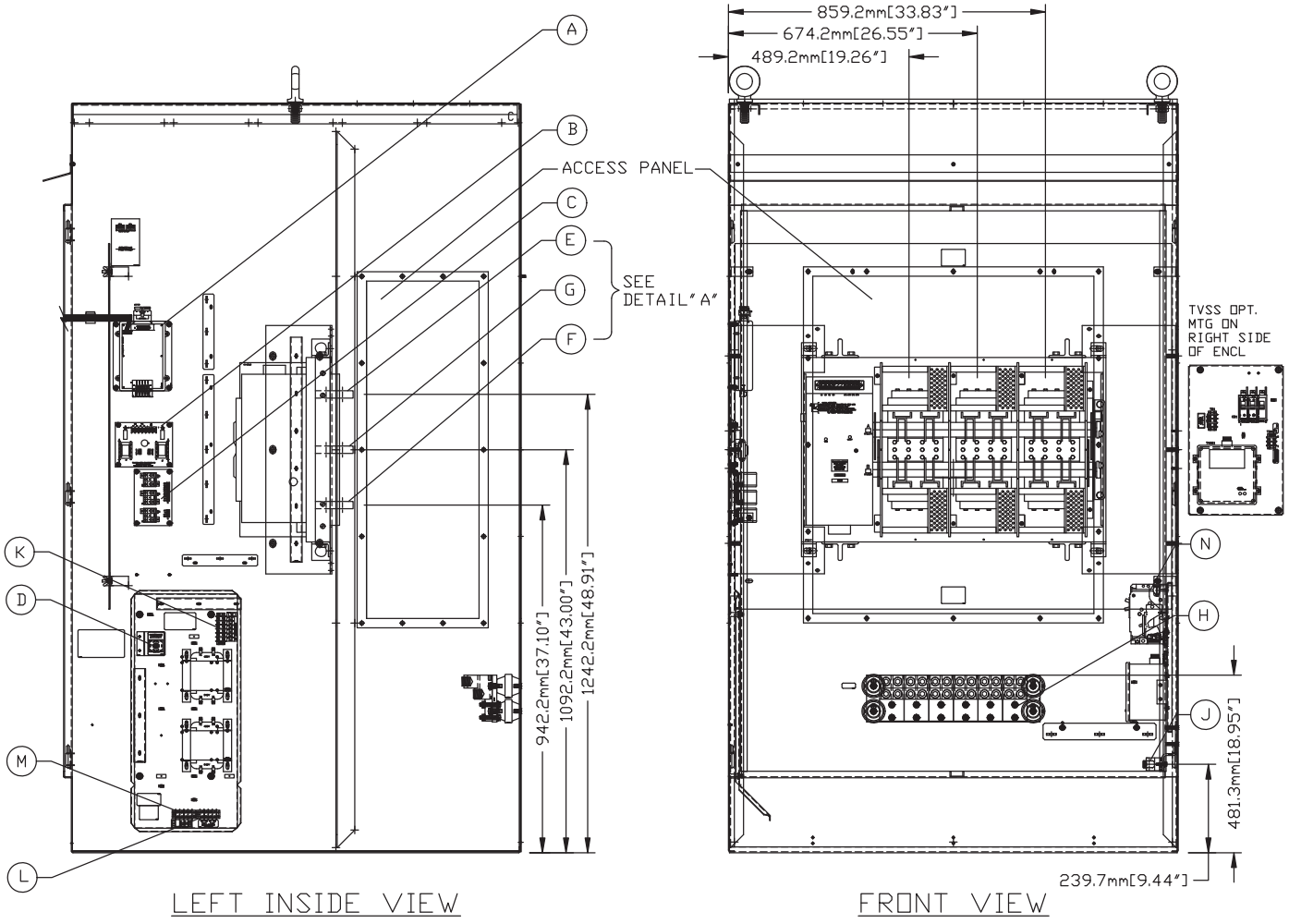
Section 6 — Mounting Dimensions (2000 - 2600A, NEMA 3R)

Drawing No. 0F8945-C



180° SWING FROM CLOSE
TO OPEN - 628.6mm[24.75"]
EXTENDED DOOR DIMENSION
AT 90°

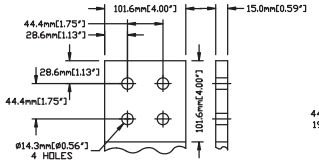




LEFT INSIDE VIEW

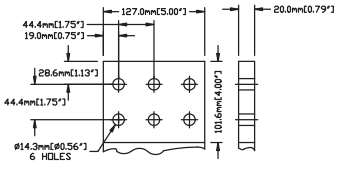
FRONT VIEW

A - ATS CONTROLLER
B - SENSING TRANSFORMER ASSY
C - CONTROL RELAYS
D - MAINTENANCE DISCONNECT SWITCH
E - UTILITY UN-GROUNDED CONDUCTOR CONNECTION
F - GENERATOR UN-GROUNDED CONDUCTOR CONNECTION
G - LOAD UN-GROUNDED CONDUCTOR CONNECTION
H - NEUTRAL SUPPLY CONNECTIONS (WIRE RANGE: 24x1/0-750MCM)
J - GROUND TERMINAL (WIRE RANGE: 3x(1) #4-600MCM OR (6) 1/0-250MCM)
K - CURRENT TRANSFORMER CONNECTIONS (OPTIONAL)
L - SIGNAL BEFORE TRANSFER CONNECTIONS (OPTIONAL)
M - RS485 CONNECTIONS
N - TVSS (OPTIONAL)
P - OPERATOR INTERFACE



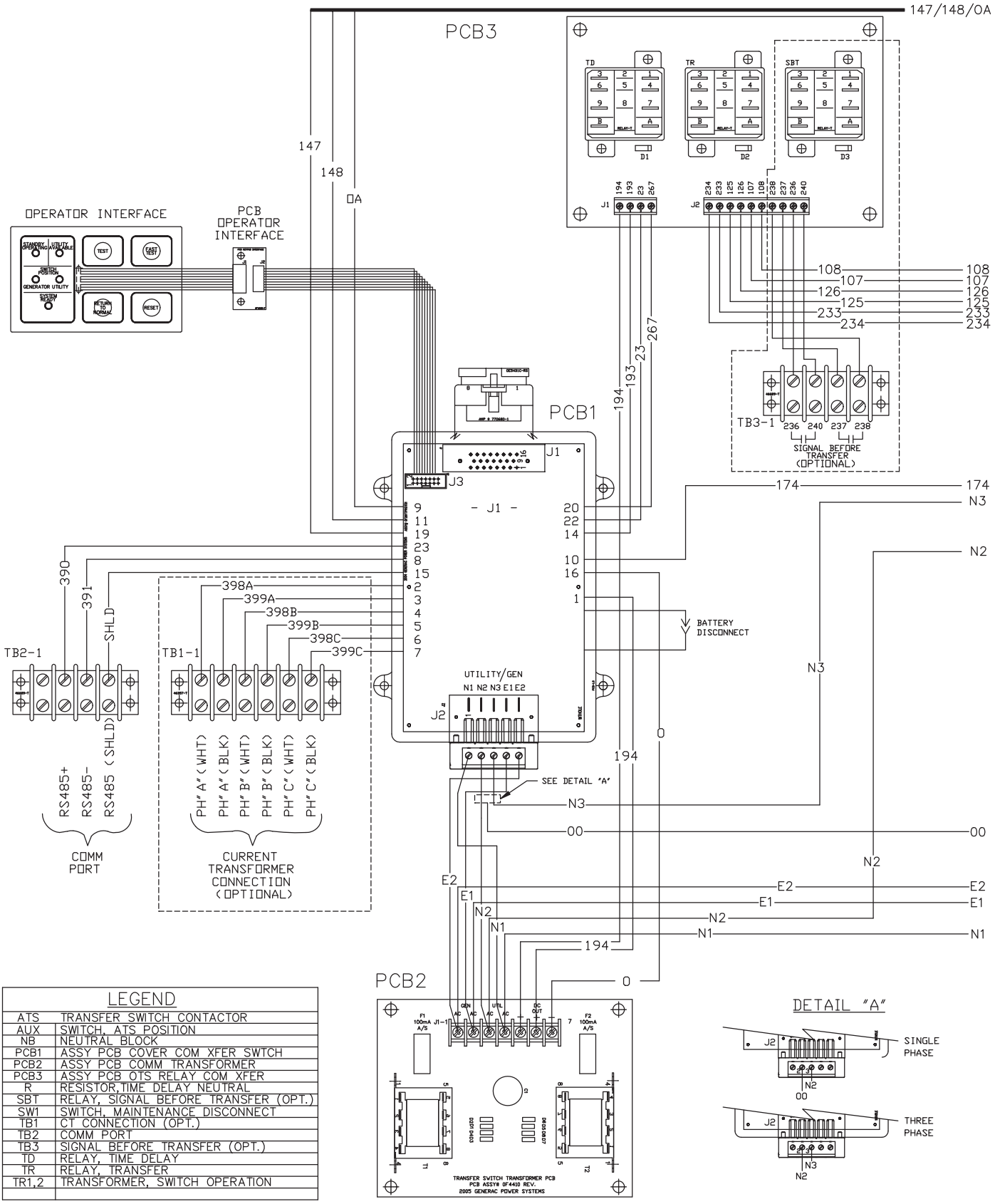
2000 AMP

DETAIL "A"
SCALE 2X



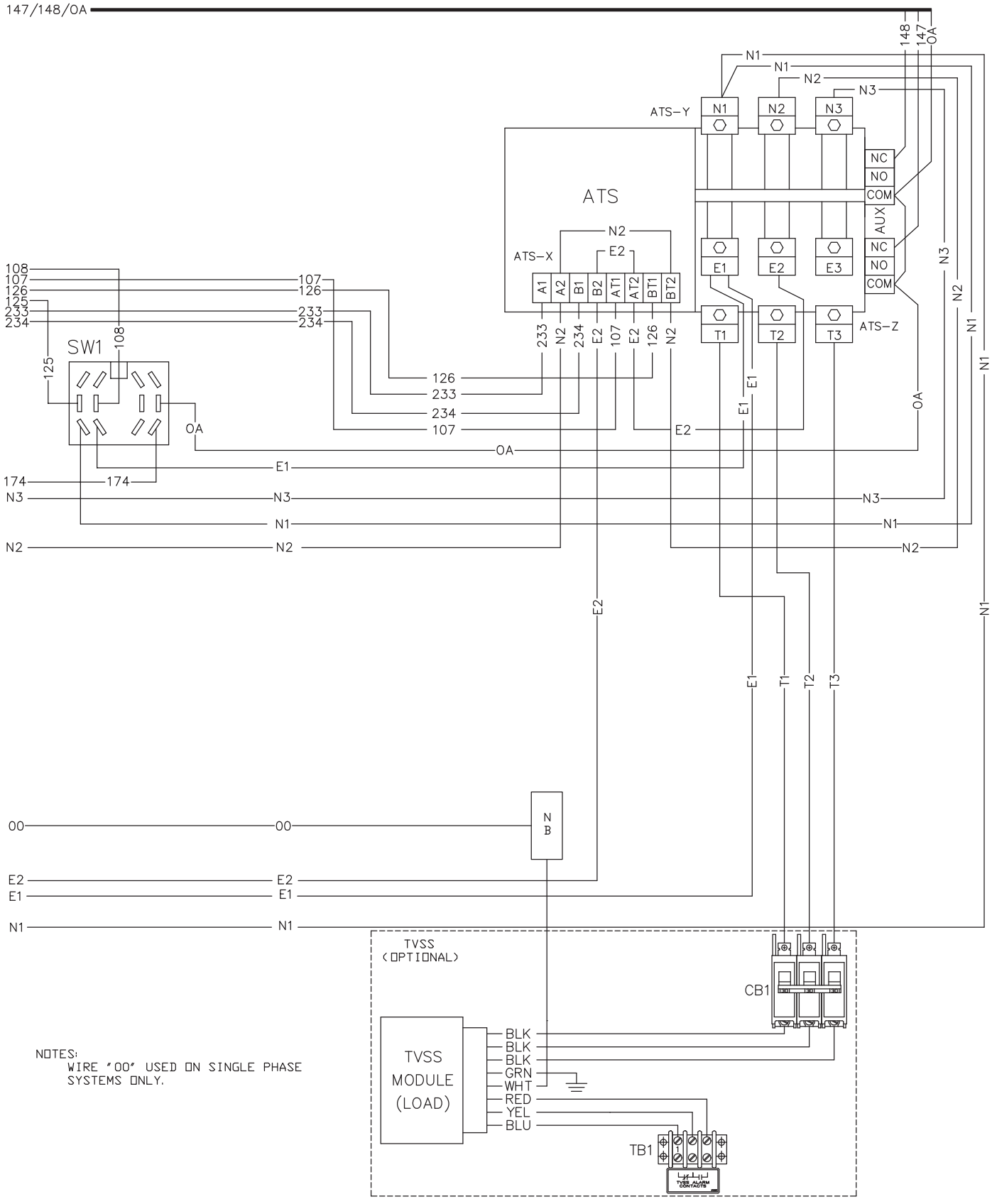
2600 AMP

Wiring Diagram - 208/240V — Drawing No. 0F7043-B



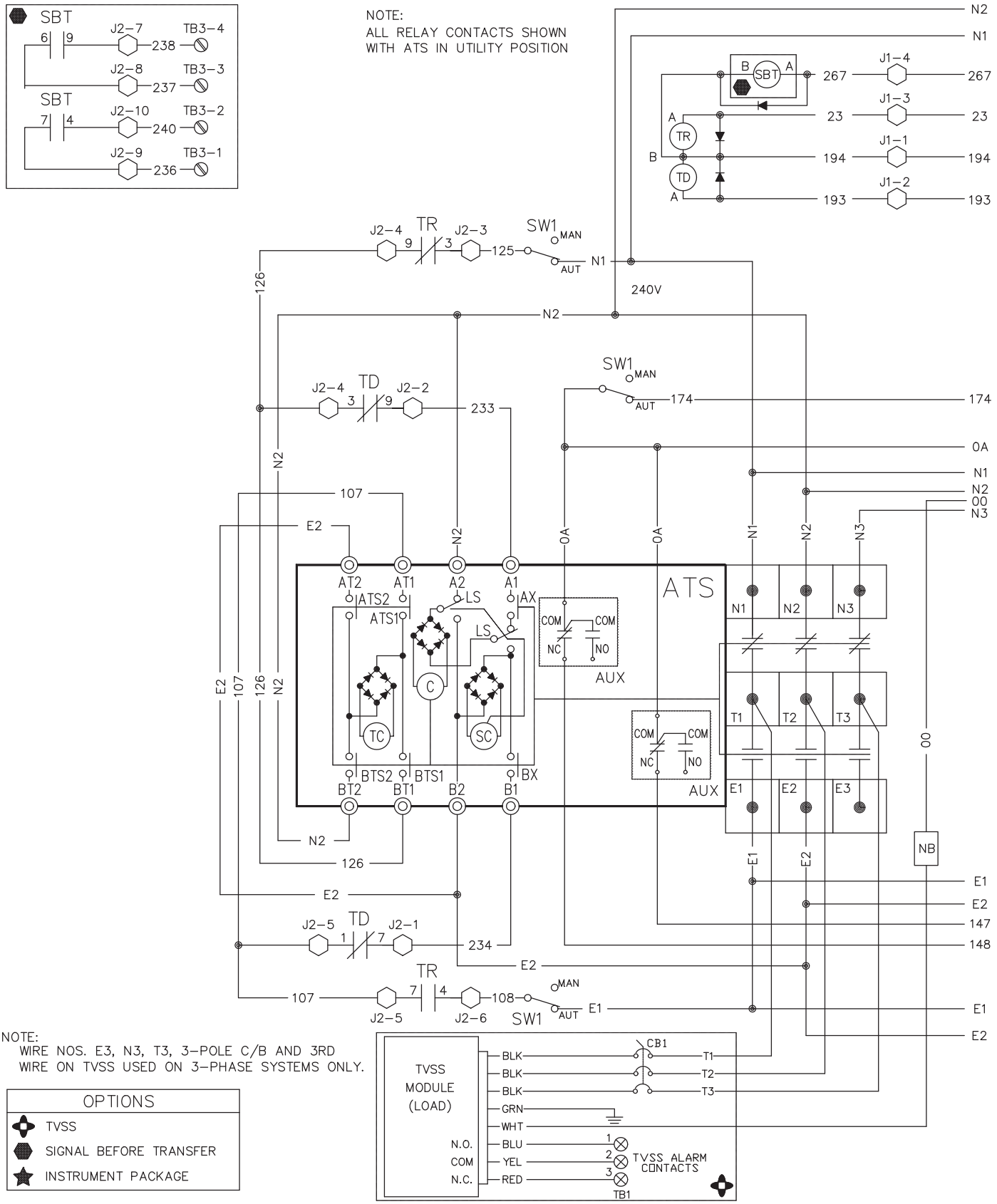
LEGEND	
ATS	TRANSFER SWITCH CONTACTOR
AUX	SWITCH, ATS POSITION
NB	NEUTRAL BLOCK
PCB1	ASSY PCB COVER COM XFER SWTCH
PCB2	ASSY PCB COMM TRANSFORMER
PCB3	ASSY PCB OTS RELAY COM XFER
R	RESISTOR,TIME DELAY NEUTRAL
SBT	RELAY, SIGNAL BEFORE TRANSFER (OPT.)
SW1	SWITCH, MAINTENANCE DISCONNECT
TB1	CT CONNECTION (OPT.)
TB2	COMM PORT
TB3	SIGNAL BEFORE TRANSFER (OPT.)
TD	RELAY, TIME DELAY
TR	RELAY, TRANSFER
TR1,2	TRANSFORMER, SWITCH OPERATION

Wiring Diagram - 208/240V — Drawing No. 0F7043-B

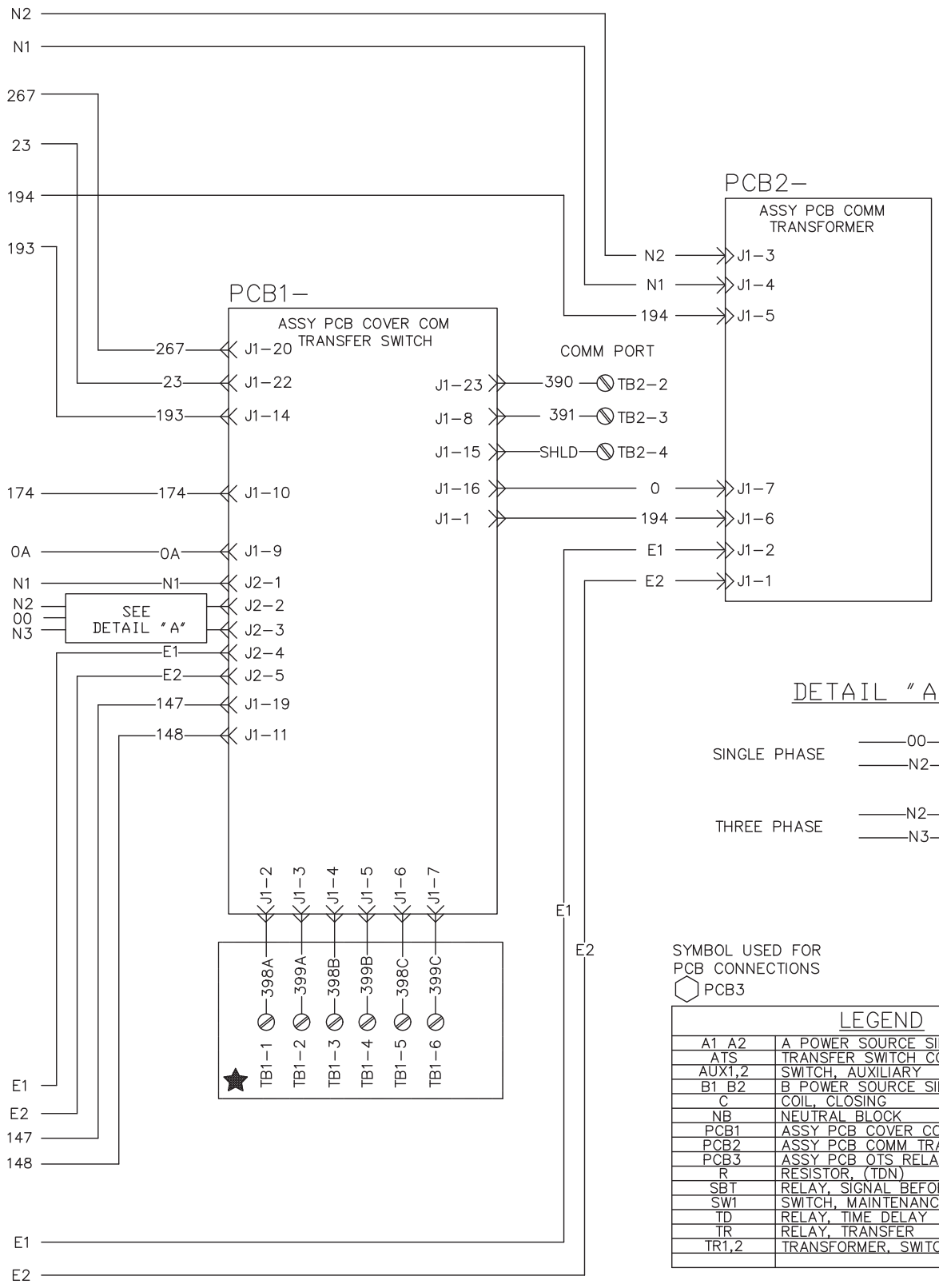


NOTES:
WIRE "00" USED ON SINGLE PHASE SYSTEMS ONLY.

Electrical Schematic - 208/240V — Drawing No. 0F7042-B



Electrical Schematic - 208/240V — Drawing No. 0F7042-B



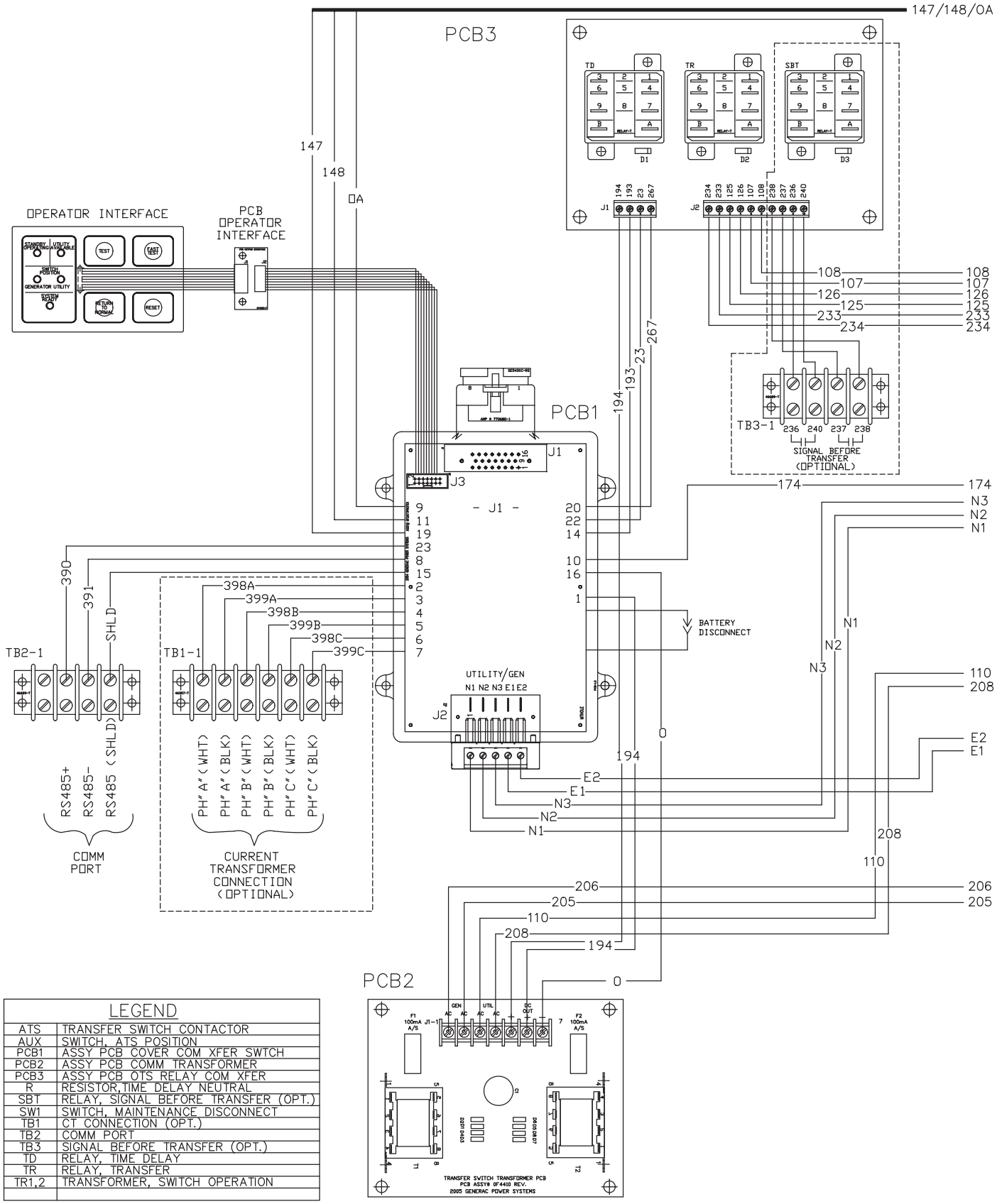
DETAIL "A"

SYMBOL USED FOR
PCB CONNECTIONS
⬡ PCB3

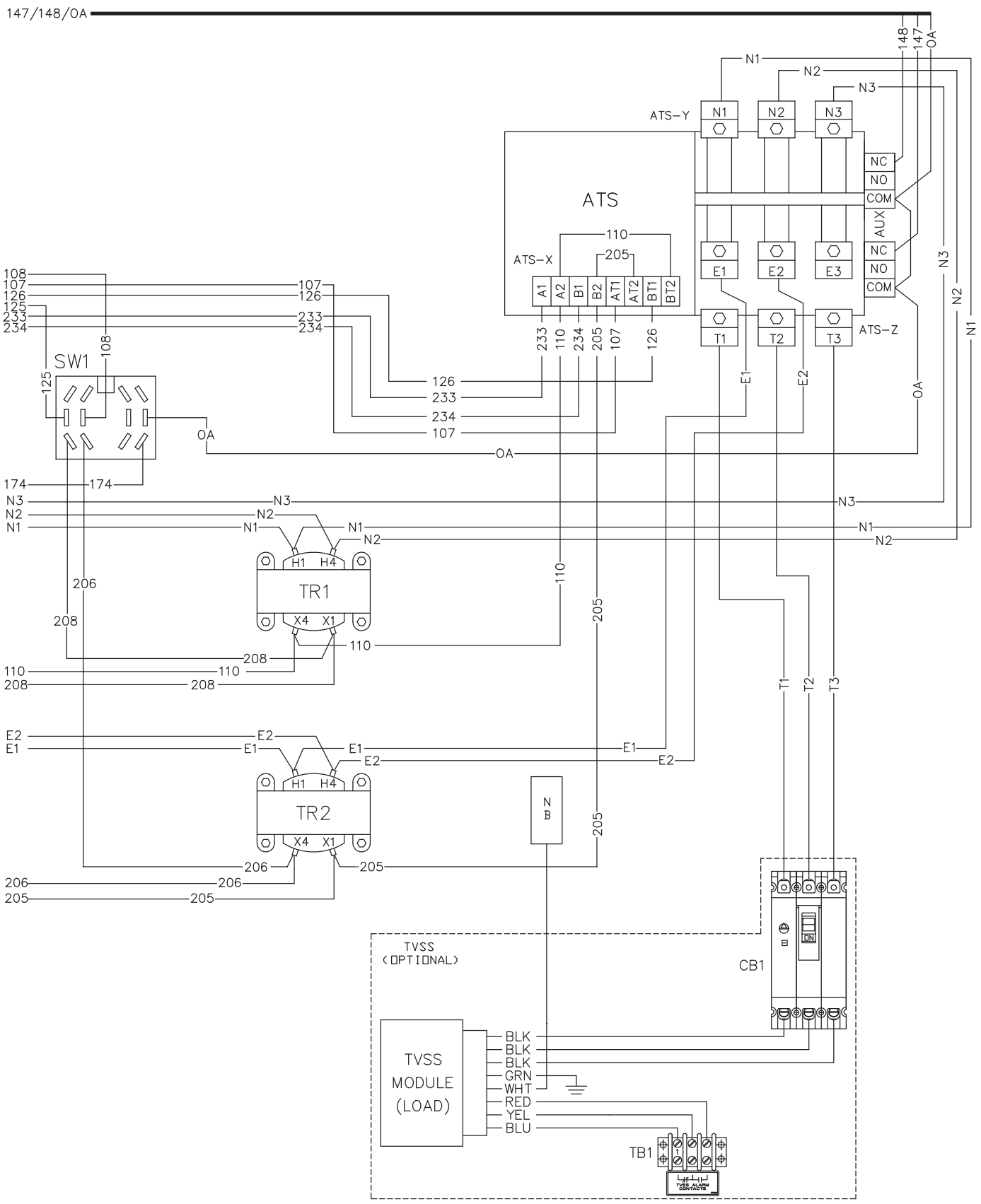
LEGEND	
A1 A2	A POWER SOURCE SIDE (ON)
ATS	TRANSFER SWITCH CONTACTOR
AUX1,2	SWITCH, AUXILIARY
B1 B2	B POWER SOURCE SIDE (ON)
C	COIL, CLOSING
NB	NEUTRAL BLOCK
PCB1	ASSY PCB COVER COM XFER SWTCH
PCB2	ASSY PCB COMM TRANSFORMER
PCB3	ASSY PCB OTS RELAY COM XFER
R	RESISTOR, (TDN)
SBT	RELAY, SIGNAL BEFORE TRANSFER (OPT)
SW1	SWITCH, MAINTENANCE DISCONNECT
TD	RELAY, TIME DELAY
TR	RELAY, TRANSFER
TR1,2	TRANSFORMER, SWITCH OPERATION

NOTE:
WIRE "00" USED ON SINGLE PHASE
SYSTEMS ONLY.

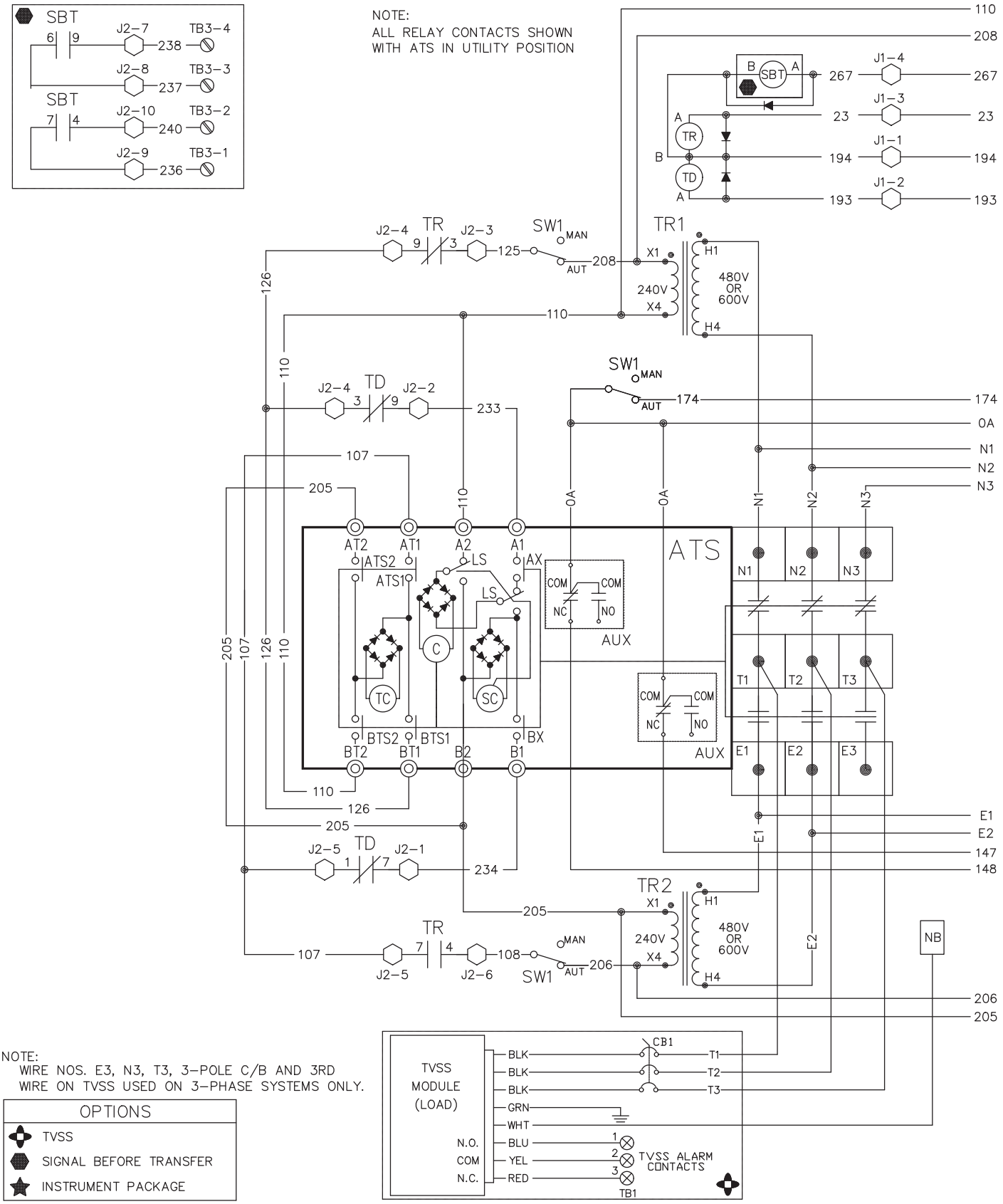
Wiring Diagram - 480/600V — Drawing No. 0F7045-B

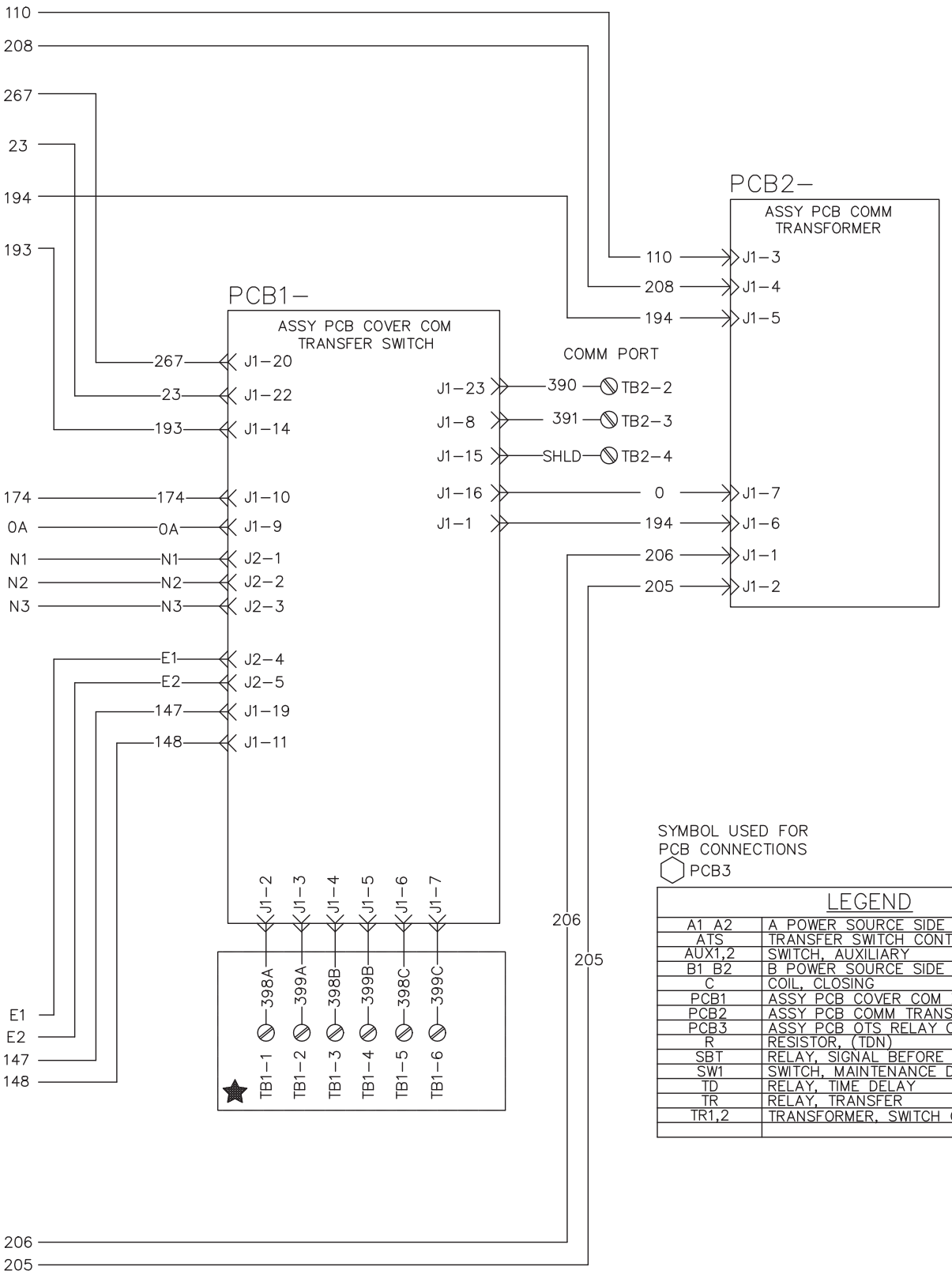


LEGEND	
ATS	TRANSFER SWITCH CONTACTOR
AUX	SWITCH, ATS POSITION
PCB1	ASSY PCB COVER COM XFER SWTCH
PCB2	ASSY PCB COMM TRANSFORMER
PCB3	ASSY PCB OTS RELAY COM XFER
R	RESISTOR,TIME DELAY NEUTRAL
SBT	RELAY, SIGNAL BEFORE TRANSFER (OPT.)
SW1	SWITCH, MAINTENANCE DISCONNECT
TB1	CT CONNECTION (OPT.)
TB2	COMM PORT
TB3	SIGNAL BEFORE TRANSFER (OPT.)
TD	RELAY, TIME DELAY
TR	RELAY, TRANSFER
TR1,2	TRANSFORMER, SWITCH OPERATION


147/148/OA
148
147
OA
N1
N2
N3
ATS-Y
N1
N2
N3
NC
NO
COM
AUX
ATS
110
ATS-X
205
A1
A2
B1
B2
AT1
AT2
BT1
BT2
E1
E2
E3
NC
NO
COM
T1
T2
T3
ATS-Z
108
107
126
125
233
234
SW1
108
125
126
233
234
107
OA
OA
174
174
N3
N2
N1
H1
H4
TR1
X4
X1
206
208
110
208
110
208
E2
E1
H1
H4
TR2
X4
X1
206
205
206
205
N
B
TVSS
(OPTIONAL)
TVSS
MODULE
(LOAD)
BLK
BLK
BLK
GRN
WHT
RED
YEL
BLU
TB1
CB1
ON

Electrical Schematic - 480/600V — Drawing No. 0F7044-B

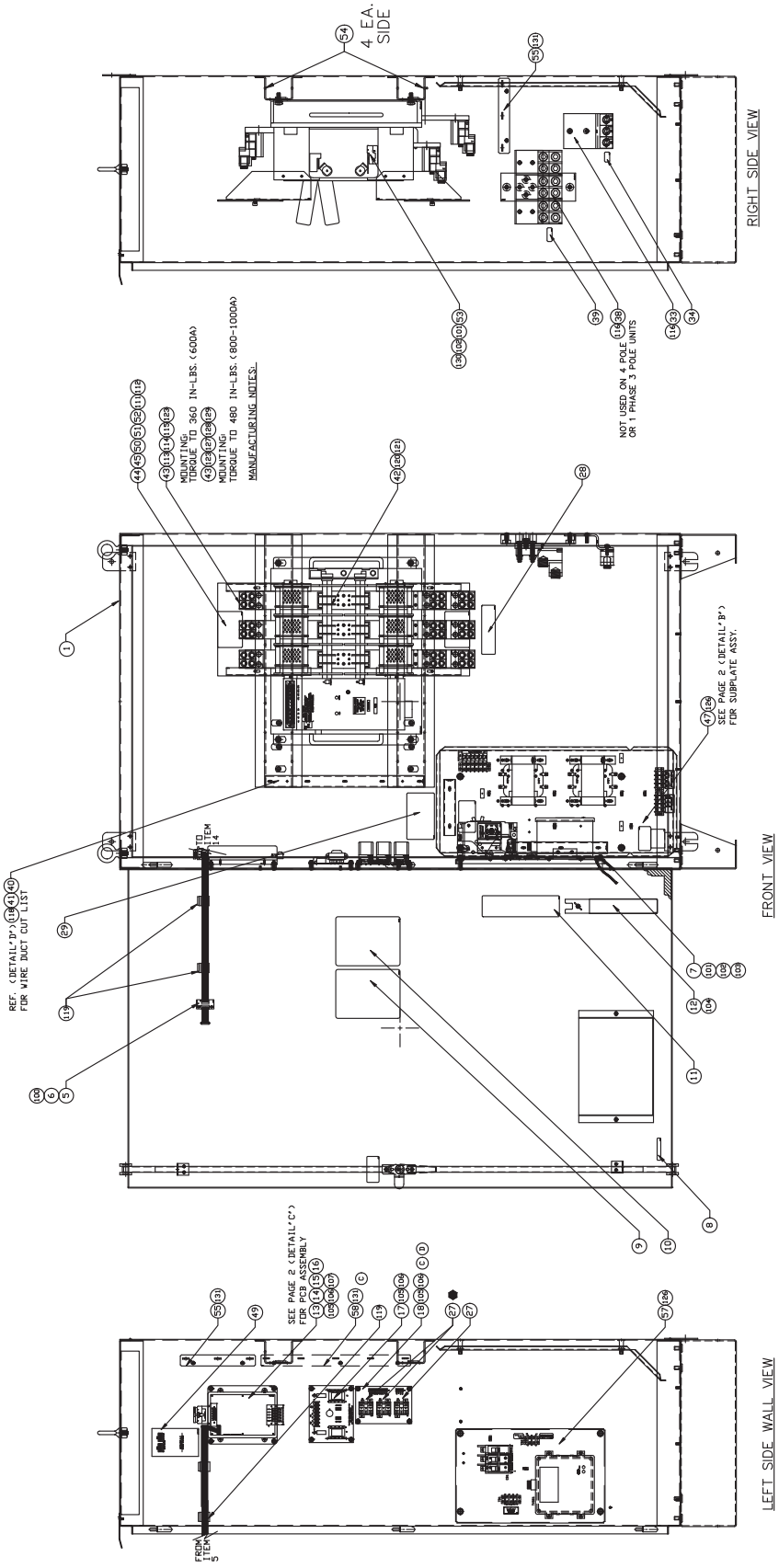




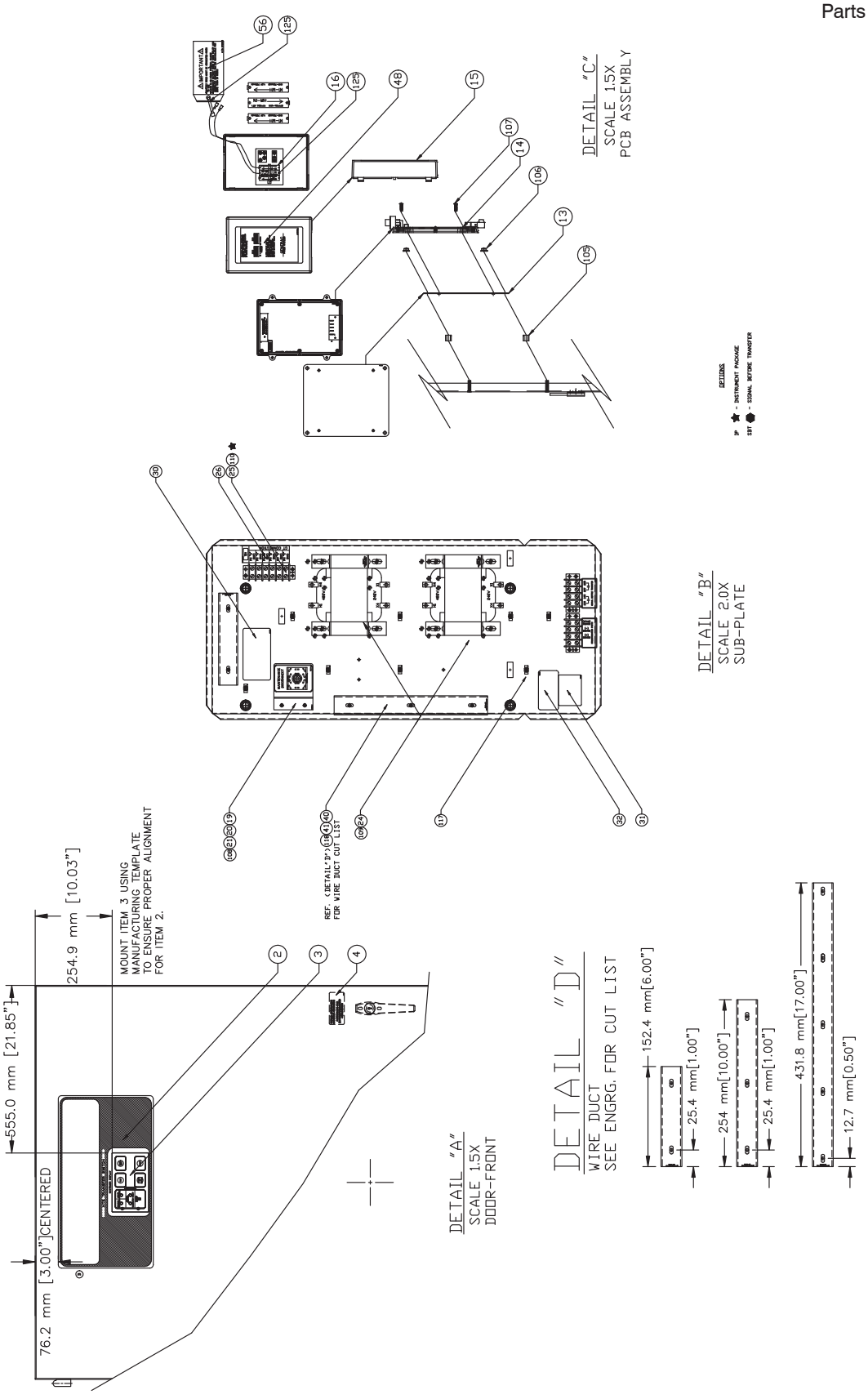
SYMBOL USED FOR PCB CONNECTIONS
⬡ PCB3

LEGEND	
A1 A2	A POWER SOURCE SIDE (ON)
ATS	TRANSFER SWITCH CONTACTOR
AUX1,2	SWITCH, AUXILIARY
B1 B2	B POWER SOURCE SIDE (ON)
C	COIL, CLOSING
PCB1	ASSY PCB COVER COM XFER SWTCH
PCB2	ASSY PCB COMM TRANSFORMER
PCB3	ASSY PCB OTS RELAY COM XFER
R	RESISTOR, (TDN)
SBT	RELAY, SIGNAL BEFORE TRANSFER (OPT)
SW1	SWITCH, MAINTENANCE DISCONNECT
TD	RELAY, TIME DELAY
TR	RELAY, TRANSFER
TR1,2	TRANSFORMER, SWITCH OPERATION

Parts List on page 38.



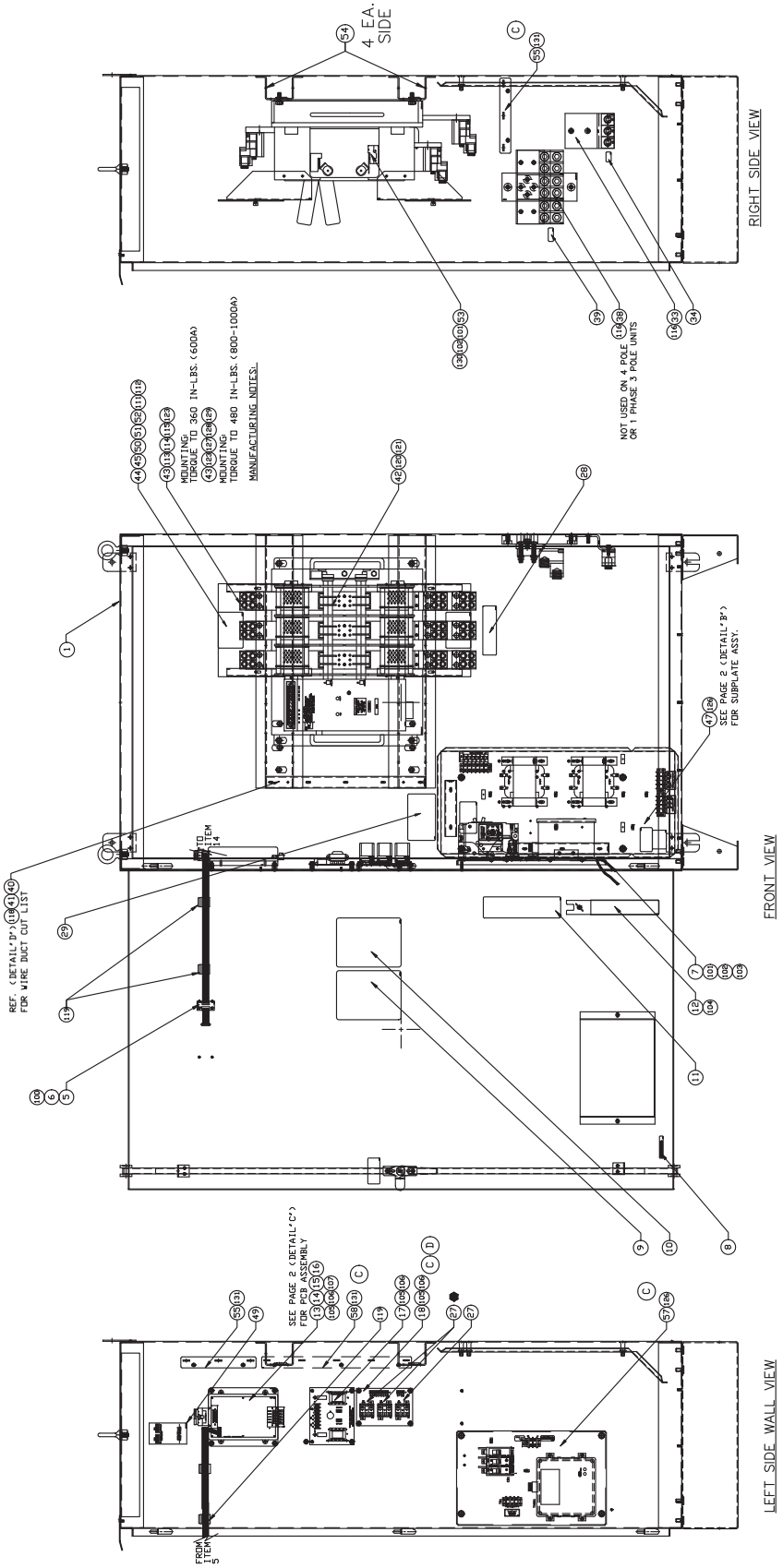
Parts List on page 38.



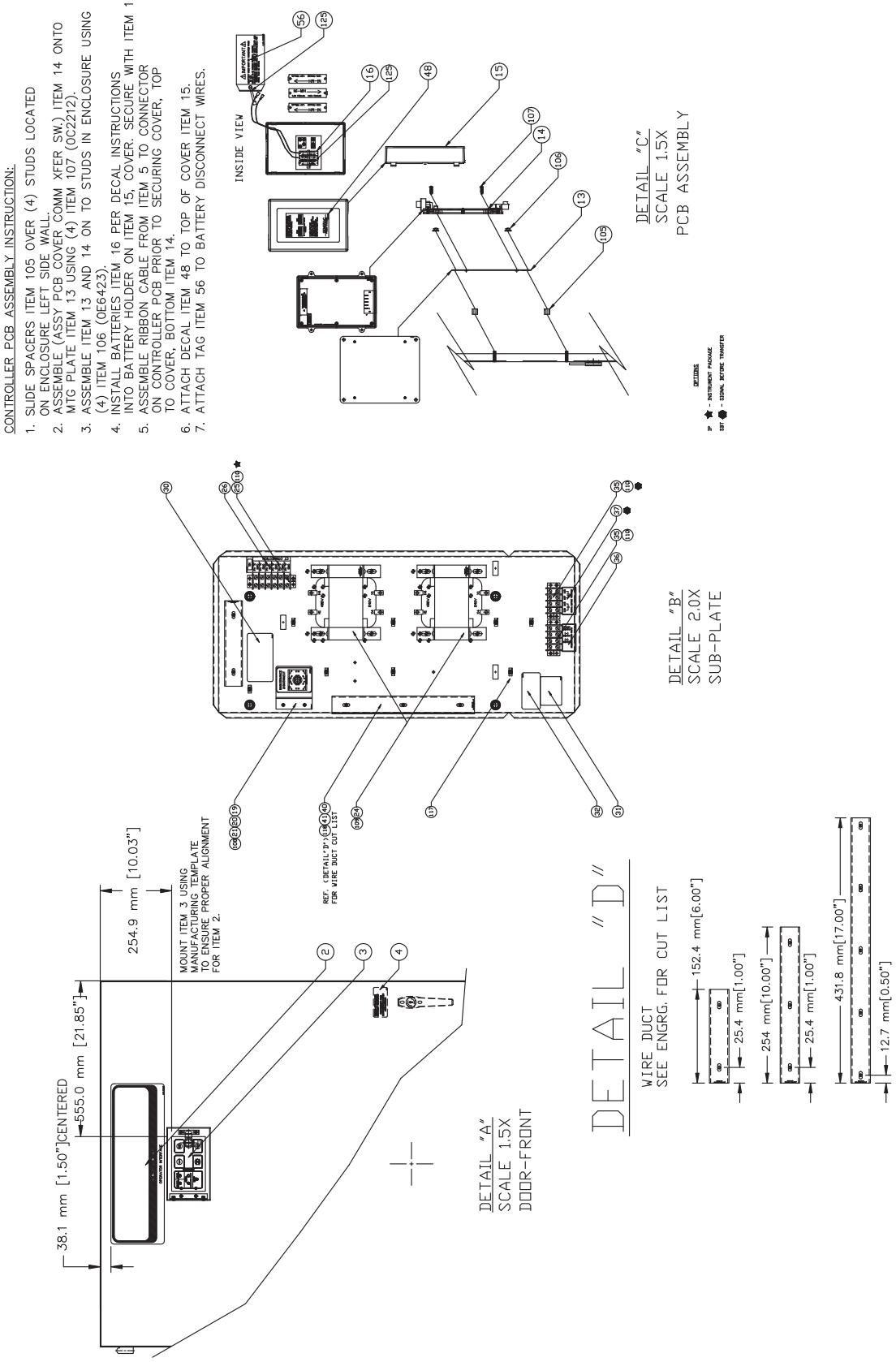
ITEM	PART NO.	QTY.	DESCRIPTION
1	0F6610	1	ENCL NEMA 12 36X60X20
2	0F5083	1	DECAL HTS TRANSFER SWITCH
	0G3009	1	DECAL HTS T/S
	0G3009A	1	DECAL HTS T/S
	0G2749	1	DECAL, HTS T/S
3	0F4284	1	KEYPAD COMM XFER SW IN-PHASE
4	095282	1	DECAL-LIVE CIRCUIT
5	0F4302A	1	ASSY, KEYPAD INTERFACE 48" HTS
6	0F4460	2	SPACER M4/#8 X 5/16 X 1/4 NYL
7	0536210193	1	ASSY WIRE #0 12.00" (GROUND WIRE)
8	077228	1	DECAL-ENCLOSURE NOTE
9	0F5508F	1	DECAL HTS TEST SEQUENCE 600A
	0F5508G	1	DECAL HTS TEST SEQUENCE 800A
	0F5508H		DECAL HTS TEST SEQUENCE 1000A
10	0F5503	1	DECAL SWITCH INFO
11	0D4545	1	DECAL MANUAL OPERATION
12	072164	1	MNL HNDL 6-1600A WN
13	0F4801	1	PLATE MOUNTING PCB ASSEMBLY
14	0F5926	1	ASSY COVER PCB COM XFER SWTCH
15	0F5901	1	ASSY COVER COMM XFER SWITCH
16	0F5180	3	BATTERY AAA
17 *	0F4410	1	ASSY PCB COMM TRANSFORMER
18 *	0G5641A	1	ASSY PCB OTS RELAY-COMM XFERSW
19	0F4802	1	BRACKET TOGGLE SWITCH
20	0D3610	1	DECAL MAINTENANCE DISCONNECT
21 *	055868	1	SWITCH TOGGLE 4PDT 15A SPADE
24	074652	2	TRANSFRM 600V TO 240V 250VA
	064932	2	TRANSFRM 480/240V 250VA
25 *	046357	REF.	BLOCK TERM 20A 6 X 6 X 1100V
26	0F5039	1	LABEL CPL (CT) TB1
27 *	027911	REF.	RELAY PNL 12VDC DPDT 10A@240VA
28	064510	1	DECAL-TERMINAL NOTE
29	063578	1	PLATE DATA - GTS
30	054199	1	DECAL DANGER HIGH VOLTAGE
31	062209	1	DECAL UL LABEL E84929-GTS
32	083736	1	DECAL-CSA GTS
33	0D6584	1	ASSY GRD.TERM.1600-2600A
34	067210A	1	DECAL GROUND LUG
35 *	046689	REF	BLOCK TERM 20A 4 X 6 X 1100V
36	0F5040	1	LABEL CPL (RS485) TB2
37	075355	1	DECAL SIGNAL BEFORE XFER
38	0D8700	1	ASSY NEUTRAL BLK 600-1000A ATS
39	0A9457	1	DECAL NEUTRAL
40	091472	1	DUCT WIRING 1 X 1.5 (33"LG)
41	091472A	1	COVER WIRE DUCT 1 IN (33"LG)
42	072111	1	XFRSW 600A 3P WN600V
	072117	1	XFRSW 600A 4P WN600V
	072112	1	XFRSW 800A 3P WN600V
	072118	1	XFRSW 800A 4P WN600V
	072113	1	XFRSW1000A 3P WN600V
	072119	1	XFRSW1000A 4P WN600V
43	080433	REF	LUG SLDLSS 500-#1X13/32 AL/CU
	063925	REF	LUG SLDLSS 500-4/0X17/32 AL/CU
44	074349A	2	SW CVR WN 600A 3P
	074349B	2	SW CVR WN 600A 4P
	074349C	2	SW CVR WN 800/1000A 3P
	074349D	2	SW CVR WN 800/1000A 4P
45	0C8308	2	DECAL TERMINAL SHOCK HAZARD
46 *	0F6962$	1	WIRE HARNESS HTS (NOT SHOWN)
47	0F6888	1	SUB-PLATE HTS 600-2600A
48	0F6776A	1	DECAL, DIP SWITCH CONFIG
49	0F6776B	1	DECAL, DIP SWITCH CONFIG
50	063986	4	KNOB,COVER HOLD-DOWN
51	074351	2	CVR BRKT 600-1600A RH
52	074351A	2	CVR BRKT 600-1600A LH
53	074604	1	AUX CONTACT N-TYP SPDT
54	0F6685	8	TIE-WRAP MOUNT(FIR TREE SYTLE)
55	0C7942	2	HARN STRIP 8"
56	0F9340	1	TAG BATTERY DISCONNECT
57	0G7015	1	TVSS ASSEMBLY 600-2600A
58	0C8095	1	WIRE HARN. STRIP 16"
100	0C6748	2	NUT HEX LOCK M4-0.7 SS NYL INS
101	038150	3	WASHER FLAT #8 ZINC
102	022264	3	WASHER LOCK #8-M4
103	051715	2	NUT HEX M4-0.7 G8 YEL CHR
104	087680	1	NUT WING M6-1.0
105	0D6511	12	SPACER .20 X .375 X .375 PL
106	0E6423	12	NUT HEX FL WHIZ M5-0.8 BOX
107	0C2212	4	SCREW PHTT M4-0.7 X 16 ZYC
108	0A2111	2	SCREW SWAGE #10-32 X 5/16 ZYC
109	0C2267	8	SCREW HHTT M5-0.8 X 12 BP
110	0A1661	REF.	RIVET POP .156 X .675 AL
111	022152	8	WASHER LOCK #10
112	024469	8	SCREW HHTT #10-32 X 3/8 CZ
113	022302	REF	WASHER LOCK 7/16
114	026209	REF.	SCREW HHC 7/16-14 X 1-3/4 G5
115	022509	REF	NUT HEX 7/16-14 STEEL
116	067989	REF.	NUT HEX FL WHIZ M8-1.25
117	063378	8	HOLDER CABLE TIE
118	091477	7	RIVET WIRE DUCT MNT
119	0F5272	5	CLAMP CABLE FLAT
120	042911	3	SCREW HHC M10-1.5 X 30 G8.8
121	046526	3	WASHER LOCK M10
123	026902	7	SCREW HHTT #8-32 X 1/4 CZ
125	029333A	2	TIE WRAP UL 7.4" X .19" BLK
126	064101	REF	NUT HEX FL WHIZ 3/8-16
127	022195	REF	WASHER LOCK 1/2
128	022196	REF	NUT HEX 1/2-13 STEEL
129	023316	REF	SCREW HHC 1/2-13 X 4 G5
130	092980	1	SCREW PPHM M4-0.7 X 25
131	0F7806	7	NUT HEX FL WHIZ M4-0.7

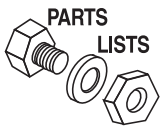
* DESIGNATES ITEMS STRUCTURED IN WIRE HARNESS (NOT SHOWN)

Parts List on page 41.



Parts List on page 41.

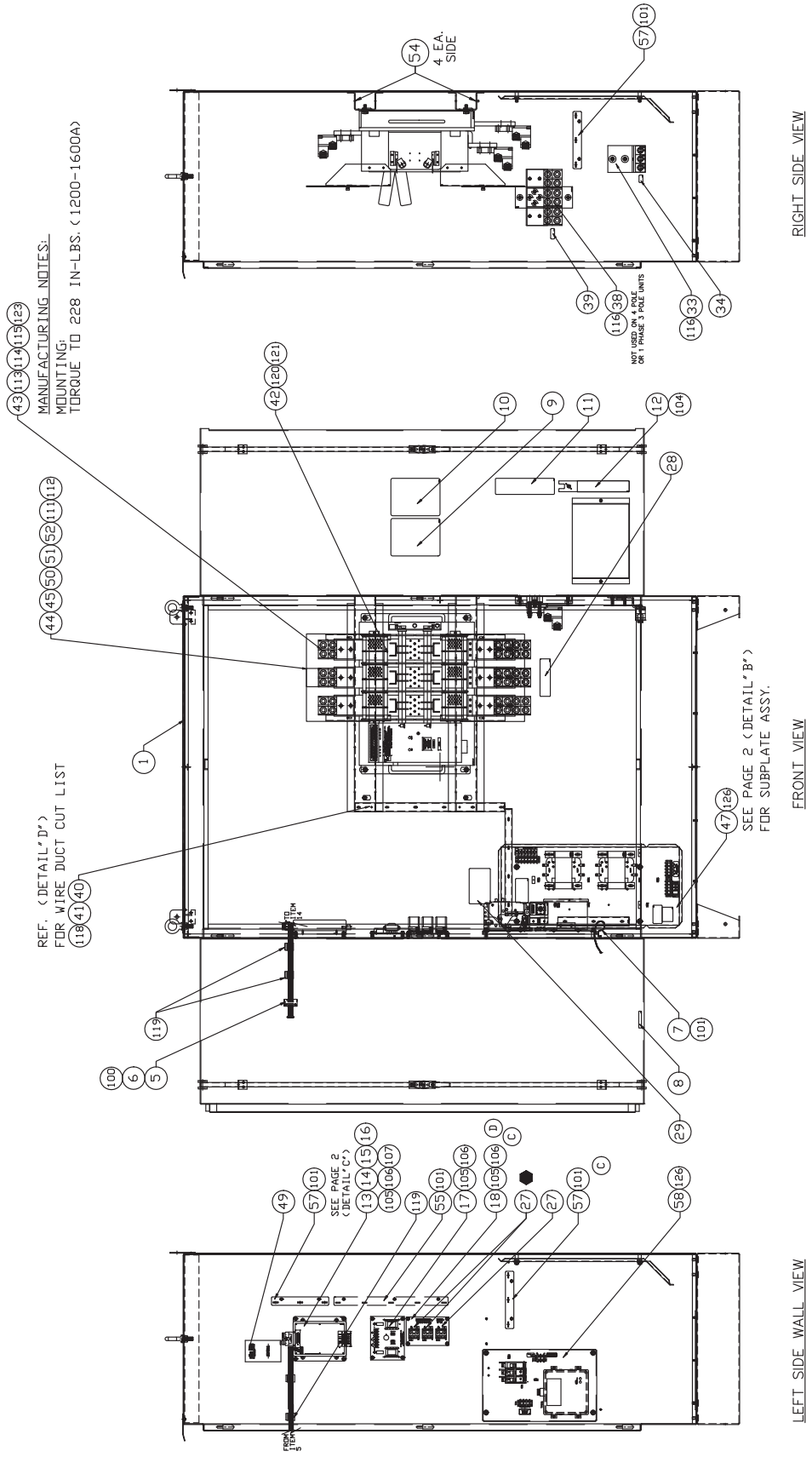




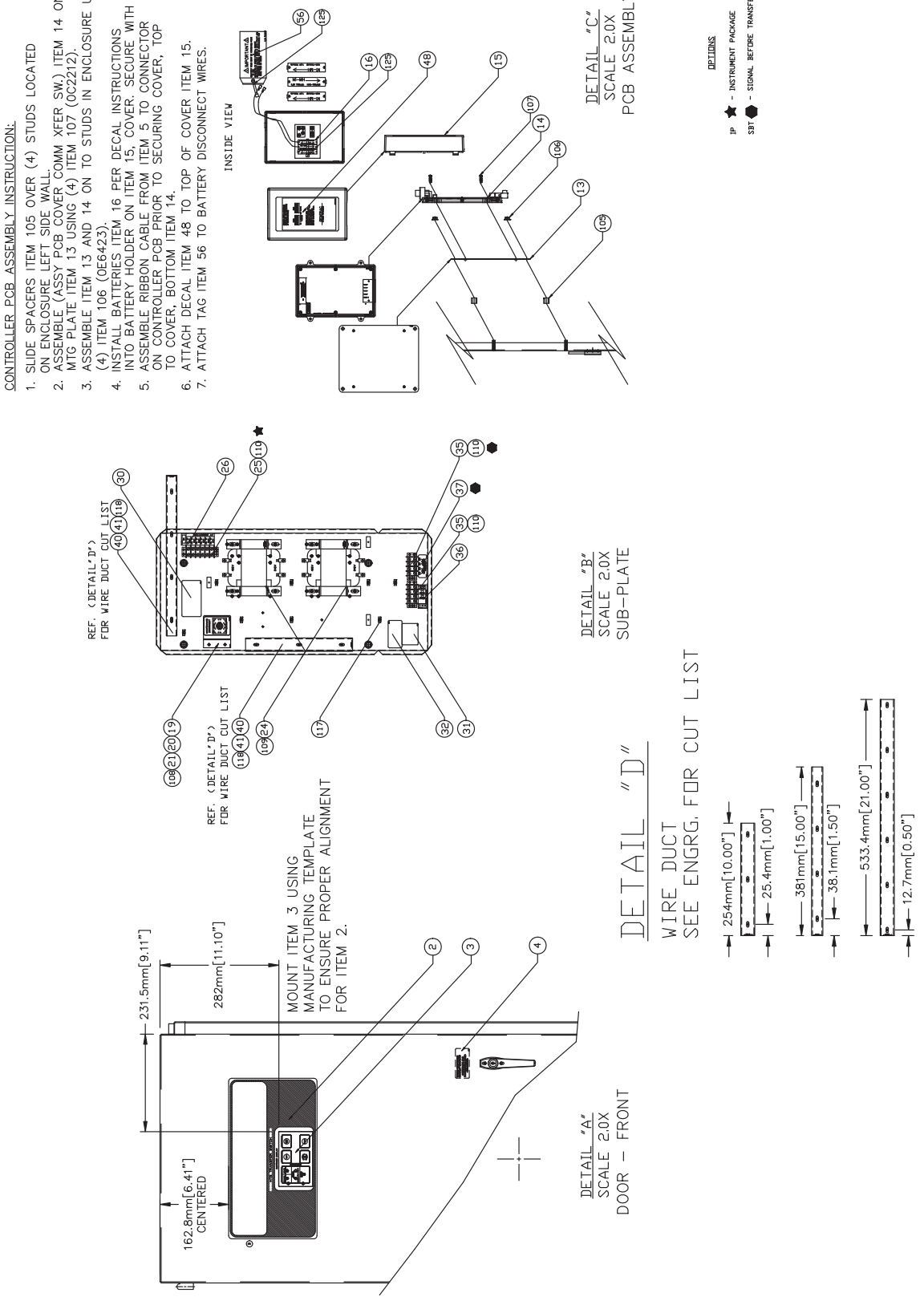
ITEM	PART NO.	QTY.	DESCRIPTION
1	0F7312	1	ENCL NEMA 3R 36 X 66 X 20
2	0F7145	1	DECAL HTS TRANSFER SW NEMA 3R
	0G3010	1	DECAL HTS T/S N3R
	0G3010A	1	DECAL HTS T/S N3R
	0G2774	1	DECAL HTS (XR)TRANS SW NEMA 3R
3	0F4284	1	KEYPAD COMM XFER SW IN-PHASE
4	095282	1	DECAL-LIVE CIRCUIT
5	0F4302A	1	ASSY, KEYPAD INTERFACE 48" HTS
6	0F4460	2	SPACER M4/#8 X 5/16 X 1/4 NYL
7	0536210193	1	ASSY WIRE #0 12.00" (GROUND WIRE)
8	0E8594	1	DECAL ENCL NOTE NEMA 3R
9	0F5508F	1	DECAL HTS TEST SEQUENCE 600A
	0F5508G	1	DECAL HTS TEST SEQUENCE 800A
	0F5508H		DECAL HTS TEST SEQUENCE 1000A
10	0F5503	1	DECAL SWITCH INFO
11	0D4545	1	DECAL MANUAL OPERATION
12	072164	1	MNL HNDL 6-1600A WN
13	0F4801	1	PLATE MOUNTING PCB ASSEMBLY
14	0F5926	1	ASSY COVER PCB COM XFER SWTCH
15	0F5901	1	ASSY COVER COMM XFER SWITCH
16	0F5180	3	BATTERY AAA
17 *	0F4410	1	ASSY PCB COMM TRANSFORMER
18 *	0F5641A	1	ASSY PCB OTS RELAY-COMM XFERSW
19	0F4802	1	BRACKET TOGGLE SWITCH
20	0D3610	1	DECAL MAINTENANCE DISCONNECT
21 *	055868	1	SWITCH TOGGLE 4PDT 15A SPADE
24	074652	2	TRANSFRM 600V TO 240V 250VA
	064932	2	TRANSFRM 480/240V 250VA
25 *	046357	REF.	BLOCK TERM 20A 6 X 6 X 1100V
26	0F5039	1	LABEL CPL (CT) TB1
27 *	027911	REF.	RELAY PNL 12VDC DPDT 10A@240VA
28	064510	1	DECAL-TERMINAL NOTE
29	063578	1	PLATE DATA - GTS
30	054199	1	DECAL DANGER HIGH VOLTAGE
31	062209	1	DECAL UL LABEL E84929-GTS
32	083736	1	DECAL-CSA GTS
33	0D6584	1	ASSY GRD.TERM.1600-2600A
34	067210A	1	DECAL GROUND LUG
35 *	046689	REF	BLOCK TERM 20A 4 X 6 X 1100V
36	0F5040	1	LABEL CPL (RS485) TB2
37	075355	1	DECAL SIGNAL BEFORE XFER
38	0D8700	1	ASSY NEUTRAL BLK 600-1000A ATS
39	0A9457	1	DECAL NEUTRAL
40	091472	1	DUCT WIRING 1 X 1.5 (33”LG)
41	091472A	1	COVER WIRE DUCT 1 IN (33”LG)
42	072111	1	XFRSW 600A 3P WN600V
	072117	1	XFRSW 600A 4P WN600V
	072112	1	XFRSW 800A 3P WN600V
	072118	1	XFRSW 800A 4P WN600V
	072113	1	XFRSW1000A 3P WN600V
	072119	1	XFRSW1000A 4P WN600V
43	080433	REF	LUG SLDLSS 500-#1X13/32 AL/CU
	063925	REF	LUG SLDLSS 500-4/0X17/32 AL/CU
44	074349A	2	SW CVR WN 600A 3P
	074349B	2	SW CVR WN 600A 4P
	074349C	2	SW CVR WN 800/1000A 3P
	074349D	2	SW CVR WN 800/1000A 4P
45	0C8308	2	DECAL TERMINAL SHOCK HAZARD
46 *	0F6962$	1	WIRE HARNESS HTS (NOT SHOWN)
47	0F6888	1	SUB-PLATE HTS 600-2600A
48	0F6776A	1	DECAL, DIP SWITCH CONFIG
49	0F6776B	1	DECAL, DIP SWITCH CONFIG
50	063986	4	KNOB,COVER HOLD-DOWN
51	074351	2	CVR BRKT 600-1600A RH
52	074351A	2	CVR BRKT 600-1600A LH
53	074604	1	AUX CONTACT N-TYP SPDT
54	0F6685	8	TIE-WRAP MOUNT(FIR TREE SYTLE)
55	0C7942	2	HARN STRIP 8"
56	0F9340	1	TAG BATTERY DISCONNECT
57	0G7015	1	TVSS ASSEMBLY 600-2600A
58	0C8095	1	WIRE HARN. STRIP 16"
100	0C6748	2	NUT HEX LOCK M4-0.7 SS NYL INS
101	038150	3	WASHER FLAT #8 ZINC
102	022264	3	WASHER LOCK #8-M4
103	051715	2	NUT HEX M4-0.7 G8 YEL CHR
104	087680	1	NUT WING M6-1.0
105	0D6511	12	SPACER .20 X .375 X .375 PL
106	0E6423	12	NUT HEX FL WHIZ M5-0.8 BOX
107	0C2212	4	SCREW PHTT M4-0.7 X 16 ZYC
108	0A2111	2	SCREW SWAGE #10-32 X 5/16 ZYC
109	0C2267	8	SCREW HHTT M5-0.8 X 12 BP
110	0A1661	REF.	RIVET POP .156 X .675 AL
111	022152	8	WASHER LOCK #10
112	024469	8	SCREW HHTT #10-32 X 3/8 CZ
113	022302	REF	WASHER LOCK 7/16
114	026209	REF.	SCREW HHC 7/16-14 X 1-3/4 G5
115	022509	REF	NUT HEX 7/16-14 STEEL
116	067989	REF.	NUT HEX FL WHIZ M8-1.25
117	063378	8	HOLDER CABLE TIE
118	091477	7	RIVET WIRE DUCT MNT
119	0F5272	5	CLAMP CABLE FLAT
120	042911	3	SCREW HHC M10-1.5 X 30 G8.8
121	046526	3	WASHER LOCK M10
123	026902	7	SCREW HHTT #8-32 X 1/4 CZ
125	029333A	2	TIE WRAP UL 7.4" X .19" BLK
126	064101	4	NUT HEX FL WHIZ 3/8-16
127	022195	REF	WASHER LOCK 1/2
128	022196	REF	NUT HEX 1/2-13 STEEL
129	023316	REF	SCREW HHC 1/2-13 X 4 G5
130	092980	1	SCREW PPHM M4-0.7 X 25
131	0F7806	2	NUT HEX FL WHIZ M4-0.7

* DESIGNATES ITEMS STRUCTURED IN WIRE HARNESS (NOT SHOWN)

Parts List on page 44.

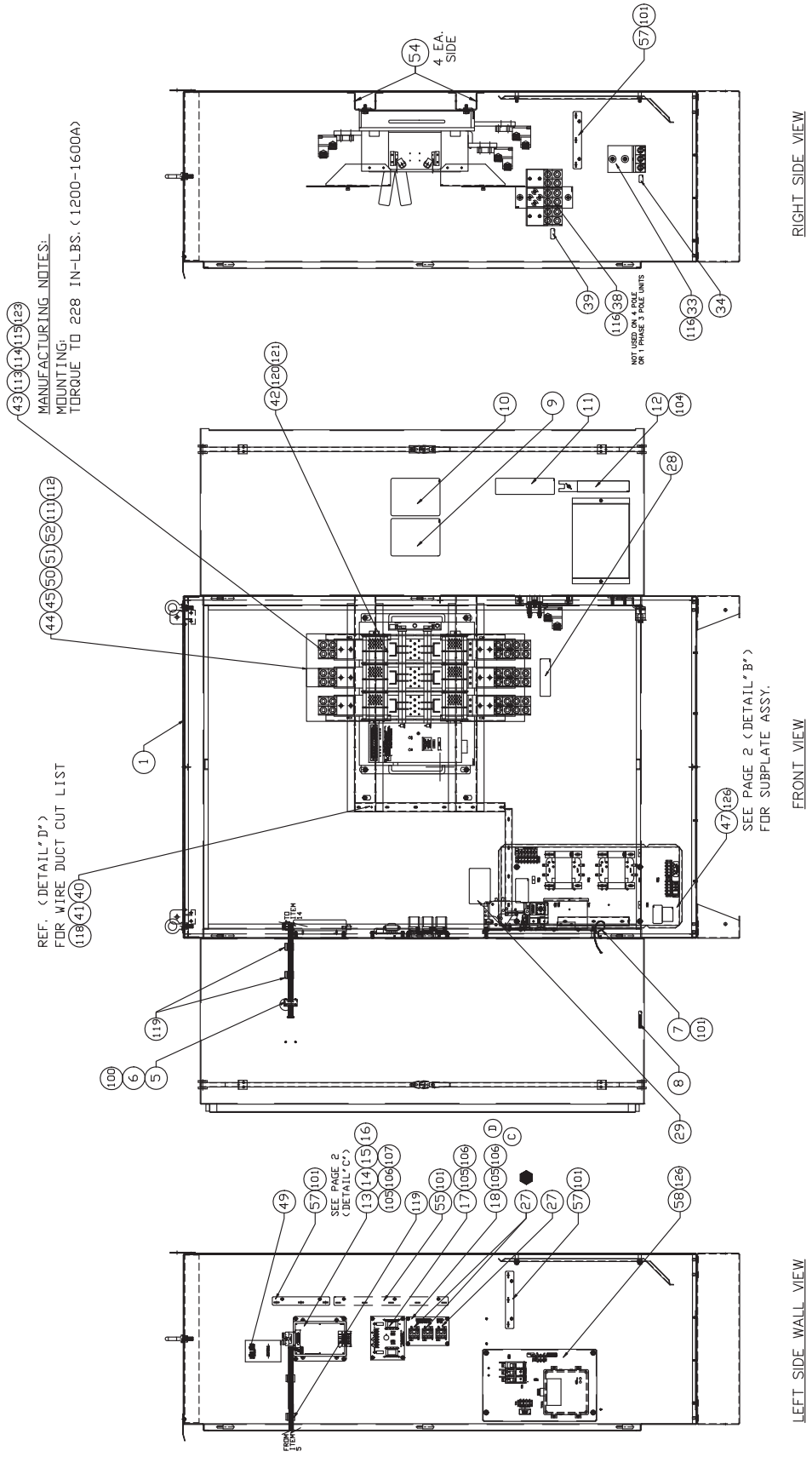


Parts List on page 44.

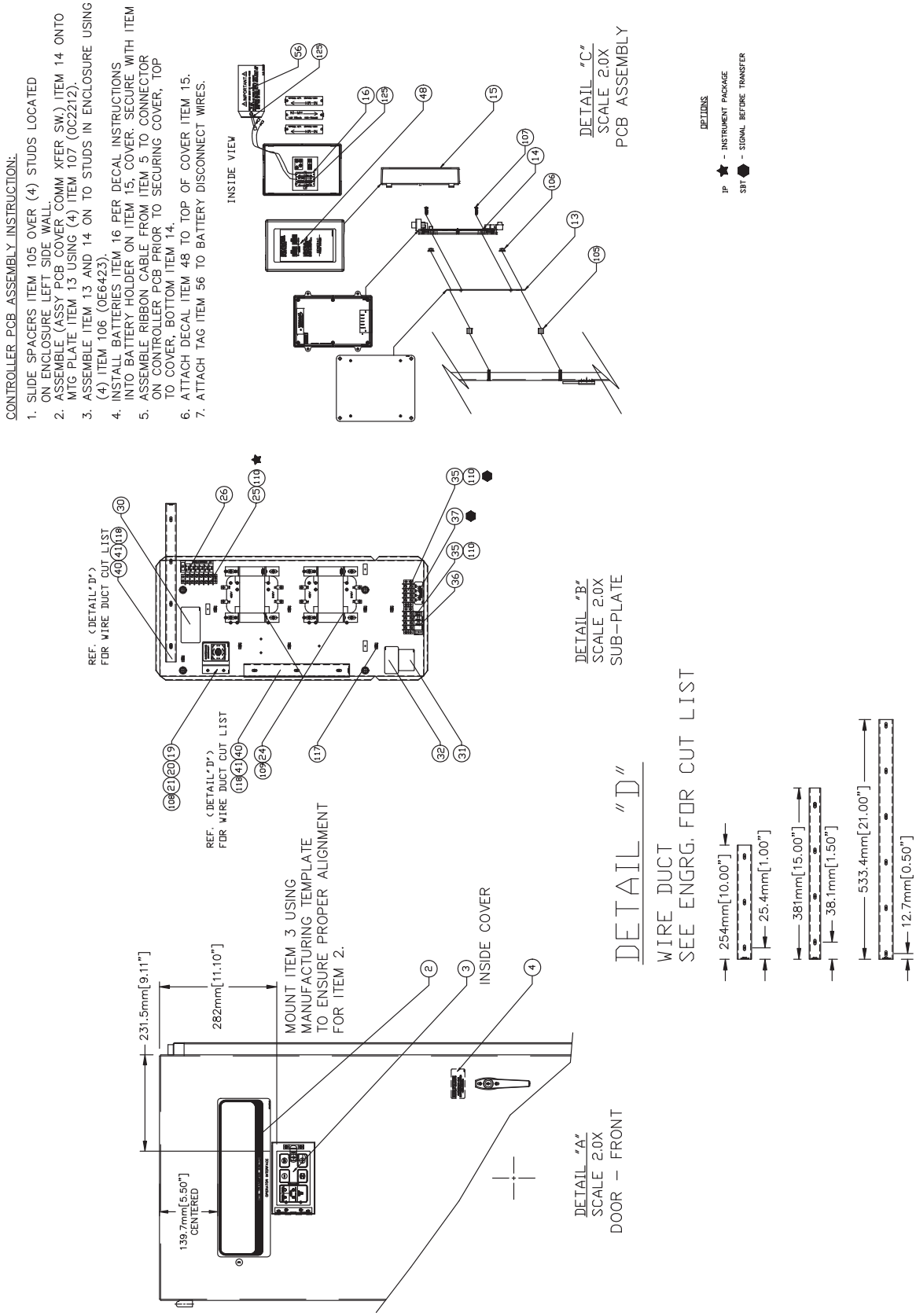


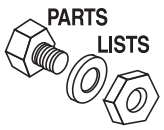
ITEM	PART NO.	QTY.	DESCRIPTION
1	0F7509	1	ENCL NEMA 12 HTS 48 X 72 X 24
2	0F5083	1	DECAL HTS TRANSFER SWITCH
	0G3009	1	DECAL HTS T/S
	0G3009A	1	DECAL HTS T/S
	0G2749	1	DECAL, HTS T/S
3	0F4284	1	KEYPAD COMM XFER SW IN-PHASE
4	095282	1	DECAL-LIVE CIRCUIT
5	0F4302A	1	ASSY KEYPAD INTERFACE 32" HTS
6	0F4460	2	SPACER M4/#8 X 5/16 X 1/4 NYL
7	0536210193	1	ASSY WIRE #0 12.00" (GROUND WIRE)
8	077228	1	DECAL-ENCLOSURE NOTE
9	0F5508J	1	DECAL HTS TEST SEQUENCE 1200A
	0F5508K	1	DECAL HTS TEST SEQUENCE 1600A
10	0F5503	1	DECAL SWITCH INFO
11	074525	1	DECAL MANUAL OPERATION
12	072164	1	MNL HNDL 6-1600A WN (SUPPLIED W/SW)
13	0F4801	1	PLATE MOUNTING PCB ASSEMBLY
14	0F5926	1	ASSY COVER PCB COM XFER SWTCH
15	0F5901	1	ASSY COVER COMM XFER SWITCH
16	0F5180	3	BATTERY AAA
17 *	0F4410	1	ASSY PCB COMM TRANSFORMER
18 *	0F5641A	1	ASSY PCB OTS RELAY-COMM XFERSW
19	0F4802	1	BRACKET TOGGLE SWITCH
20	0D3610	1	DECAL MAINTENANCE DISCONNECT
21 *	055868	1	SWITCH TOGGLE 4PDT 15A SPADE
24	074653	2	TRANSFRM 600V TO 240V 350VA
	064929	2	TRANSFRM 240/480V-120/480V
25 *	046357	REF	BLOCK TERM 20A 6 X 6 X 1100V
26	0F5039	1	LABEL CPL (CT) TB1
27 *	027911	REF	RELAY PNL 12VDC DPDT 10A@240VA
28	064510	1	DECAL-TERMINAL NOTE
29	063578	1	PLATE DATA - GTS
30	054199	1	DECAL DANGER HIGH VOLTAGE
31	062209	1	DECAL UL LABEL E84929-GTS
32	083736	1	DECAL-CSA GTS
33	0D6584	1	ASSY GRD.TERM.1600-2600A
34	067210A	1	DECAL GROUND LUG
35 *	046689	REF	BLOCK TERM 20A 4 X 6 X 1100V
36	0F5040	1	LABEL CPL (RS485) TB2
37	075355	1	DECAL SIGNAL BEFORE XFER
38	0D4203	1	ASSY NEUTRAL BLOCK 1600A ATS
39	0A9457	1	DECAL NEUTRAL
40	091472	1	DUCT WIRING 1 X 1.5 (45” LG)
41	091472A	1	COVER WIRE DUCT 1 IN (45” LG)
42	072124	1	XFRSW 1200A 3P WN600V
	072125	1	XFRSW 1200A 4P WN600V
	072114	1	XFRSW 1600A 3P WN600V
	072120	1	XFRSW 1600A 4P WN600V
43	063963	REF	LUG SLDLSS 750-1/2 X 13/32 AL/CU
44	074349E	2	SW CVR 1200/1600A 3P
	074349F	2	SW CVR 1200/1600A 4P
45	0C8308	2	DECAL TERMINAL SHOCK HAZARD
46 *	0F7517$	1	HARNESS HTS 1200-1600A (NOT SHOWN)
47	0F6888	1	SUB-PLATE HTS 600-2600A
48	0F6776A	1	DECAL DIP SWITCH CONFIG PCB COVER
49	0F6776B	1	DECAL DIP SWITCH CONFIG ENCL
50	063986	4	KNOB COVER HOLD-DOWN
51	074351	2	COVER BRACKET 600-1600A RH
52	074351A	2	COVER BRACKET 600-1600A LH
54	0F6685	8	TIE-WRAP MOUNT(FIR TREE SYTLE)
55	0C8095	1	WIRE HARN. STRIP 16"
56	0F9340	1	TAG BATTERY DISCONNECT
57	0C7942	1	HARN STRIP 8"
58	0G7015	1	TVSS ASSEMBLY 600-2600A
100	0C6748	2	NUT HEX LOCK M4-0.7 SS NYL INS
101	0F7806	11	NUT HEX FL WHIZ M4-0.7
104	087680	1	NUT WING M6-1.0
105	0D6511	12	SPACER .20 X .375 X .375 PL
106	0E6423	12	NUT HEX FL WHIZ M5-0.8
107	0C2212	4	SCREW PHTT M4-0.7 X 16 ZYC
108	0A2111	2	SCREW SWAGE #10-32 X 5/16 ZYC
109	0C2267	8	SCREW HHTT M5-0.8 X 12 BP
110	0A1661	REF	RIVET POP .156 X .675 AL
111	022152	8	WASHER LOCK #10
112	024469	8	SCREW HHTT #10-32 X 3/8 CZ
113	022237	REF	WASHER LOCK 3/8
114	022258	REF	SCREW HHC 3/8-16 X 2 G5
115	022241	REF	NUT HEX 3/8-16 STEEL
116	067989	REF	NUT HEX FL WHIZ M8-1.25
117	063378	8	HOLDER CABLE TIE
118	091477	7	RIVET WIRE DUCT MNT
119	0F5272	5	CLAMP CABLE FLAT
120	042911	4	SCREW HHC M10-1.5 X 30 G8.8
121	046526	4	WASHER LOCK M10
123	026902	7	SCREW HHTT #8-32 X 1/4 CZ
125	029333A	2	TIE WRAP UL 7.4"X .19" BLK
126	064101	REF	NUT HEX FL WHIZ 3/8-16

Parts List on page 47.



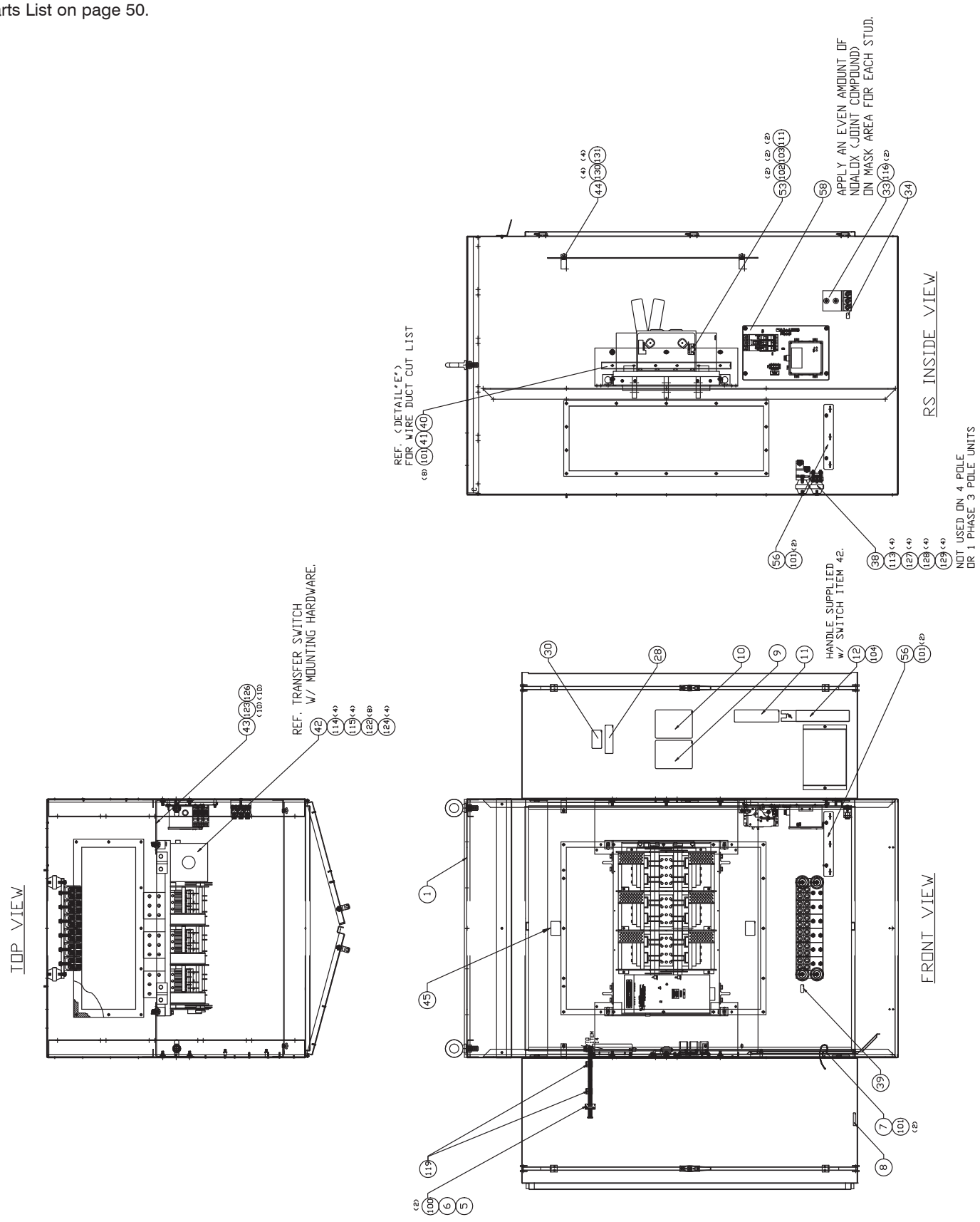
Parts List on page 47.



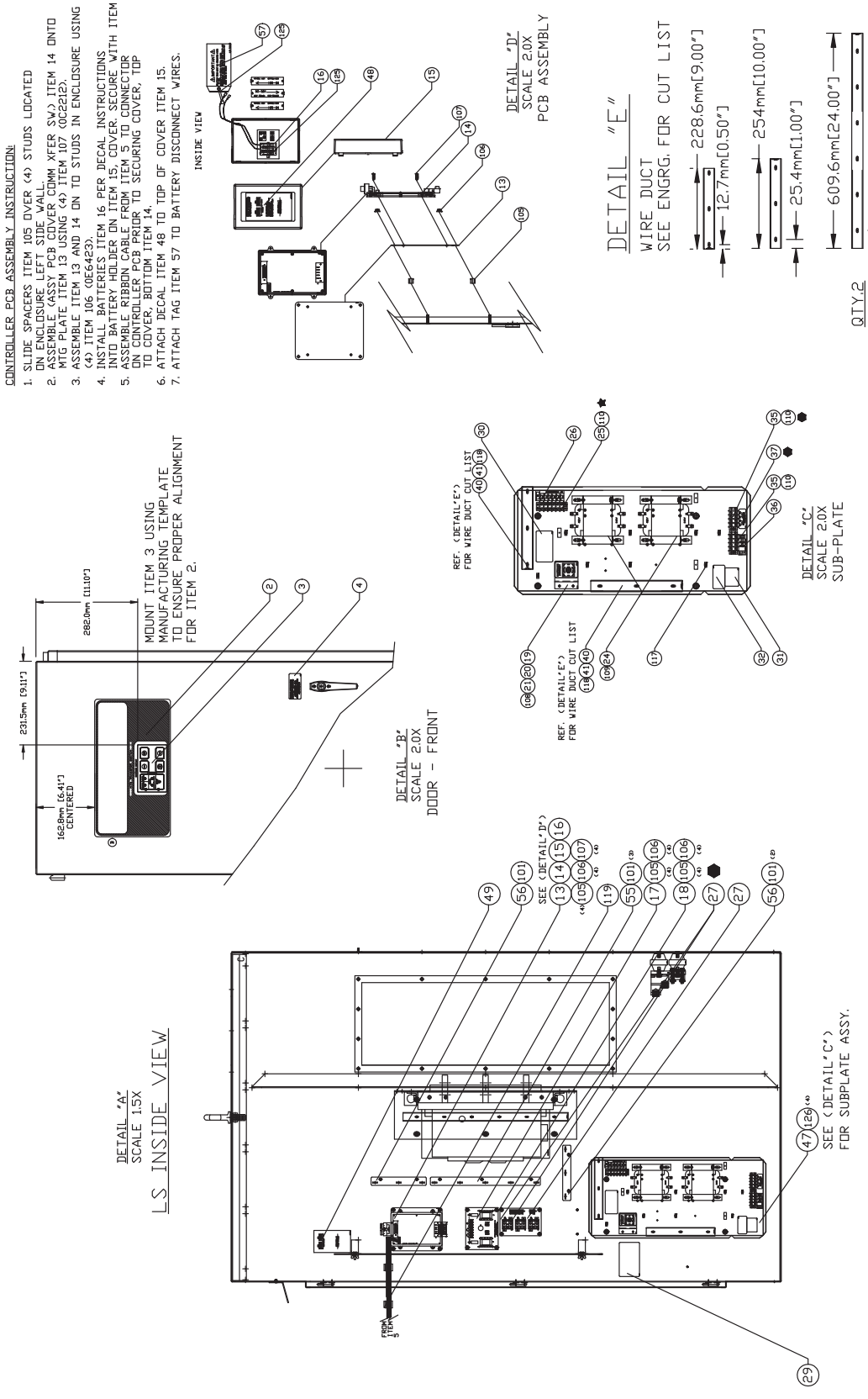


ITEM	PART NO.	QTY.	DESCRIPTION
1	0F7510	1	ENCL NEMA 3R HTS 48 X 72 X 24
2	0F7145	1	DECAL HTS TRANSFER SW NEMA 3R
	0G3010	1	DECAL HTS T/S N3R
	0G3010A	1	DECAL HTS T/S N3R
	0G2774	1	DECAL HTS (XR)TRANS SW NEMA 3R
3	0F4284	1	KEYPAD COMM XFER SW IN-PHASE
4	095282	1	DECAL-LIVE CIRCUIT
5	0F4302A	1	ASSY KEYPAD INTERFACE 32" HTS
6	0F4460	2	SPACER M4/#8 X 5/16 X 1/4 NYL
7	0536210193	1	ASSY WIRE #0 12.00" (GROUND WIRE)
8	0E8594	1	DECAL ENCL NOTE NEMA 3R
9	0F5508J	1	DECAL HTS TEST SEQUENCE 1200A
	0F5508K	1	DECAL HTS TEST SEQUENCE 1600A
10	0F5503	1	DECAL SWITCH INFO
11	074525	1	DECAL MANUAL OPERATION
12	072164	1	MNL HNDL 6-1600A WN (SUPPLIED W/SW)
13	0F4801	1	PLATE MOUNTING PCB ASSEMBLY
14	0F5926	1	ASSY COVER PCB COM XFER SWTCH
15	0F5901	1	ASSY COVER COMM XFER SWITCH
16	0F5180	3	BATTERY AAA
17 *	0F4410	1	ASSY PCB COMM TRANSFORMER
18 *	0F5641A	1	ASSY PCB OTS RELAY-COMM XFERSW
19	0F4802	1	BRACKET TOGGLE SWITCH
20	0D3610	1	DECAL MAINTENANCE DISCONNECT
21 *	055868	1	SWITCH TOGGLE 4PDT 15A SPADE
24	074653	2	TRANSFRM 600V TO 240V 350VA
	064929	2	TRANSFRM 240/480V-120/480V
25 *	046357	REF	BLOCK TERM 20A 6 X 6 X 1100V
26	0F5039	1	LABEL CPL (CT) TB1
27 *	027911	REF	RELAY PNL 12VDC DPDT 10A@240VA
28	064510	1	DECAL-TERMINAL NOTE
29	063578	1	PLATE DATA - GTS
30	054199	1	DECAL DANGER HIGH VOLTAGE
31	062209	1	DECAL UL LABEL E84929-GTS
32	083736	1	DECAL-CSA GTS
33	0D6584	1	ASSY GRD.TERM.1600-2600A
34	067210A	1	DECAL GROUND LUG
35 *	046689	REF	BLOCK TERM 20A 4 X 6 X 1100V
36	0F5040	1	LABEL CPL (RS485) TB2
37	075355	1	DECAL SIGNAL BEFORE XFER
38	0D4203	1	ASSY NEUTRAL BLOCK 1600A ATS
39	0A9457	1	DECAL NEUTRAL
40	091472	1	DUCT WIRING 1 X 1.5 (45” LG)
41	091472A	1	COVER WIRE DUCT 1 IN (45” LG)
42	072124	1	XFRSW 1200A 3P WN600V
	072125	1	XFRSW 1200A 4P WN600V
	072114	1	XFRSW 1600A 3P WN600V
	072120	1	XFRSW 1600A 4P WN600V
43	063963	REF	LUG SLDLSS 750-1/2 X 13/32 AL/CU
44	074349E	2	SW CVR 1200/1600A 3P
	074349F	2	SW CVR 1200/1600A 4P
45	0C8308	2	DECAL TERMINAL SHOCK HAZARD
46 *	0F7517$	1	HARNESS HTS 1200-1600A (NOT SHOWN)
47	0F6888	1	SUB-PLATE HTS 600-2600A
48	0F6776A	1	DECAL DIP SWITCH CONFIG PCB COVER
49	0F6776B	1	DECAL DIP SWITCH CONFIG ENCL
50	063986	4	KNOB COVER HOLD-DOWN
51	074351	2	COVER BRACKET 600-1600A RH
52	074351A	2	COVER BRACKET 600-1600A LH
54	0F6685	8	TIE-WRAP MOUNT(FIR TREE SYTLE)
55	0C8095	1	WIRE HARN. STRIP 16"
56	0F9340	3	TAG BATTERY DISCONNECT
57	0C7942	1	HARN STRIP 8"
58	0G7015	1	TVSS ASSEMBLY 600-2600A
100	0C6748	2	NUT HEX LOCK M4-0.7 SS NYL INS
101	0F7806	11	NUT HEX FL WHIZ M4-0.7
104	087680	1	NUT WING M6-1.0
105	0D6511	12	SPACER .20 X .375 X .375 PL
106	0E6423	12	NUT HEX FL WHIZ M5-0.8
107	0C2212	4	SCREW PHTT M4-0.7 X 16 ZYC
108	0A2111	2	SCREW SWAGE #10-32 X 5/16 ZYC
109	0C2267	8	SCREW HHTT M5-0.8 X 12 BP
110	0A1661	REF	RIVET POP .156 X .675 AL
111	022152	8	WASHER LOCK #10
112	024469	8	SCREW HHTT #10-32 X 3/8 CZ
113	022237	REF	WASHER LOCK 3/8
114	022258	REF	SCREW HHC 3/8-16 X 2 G5
115	022241	REF	NUT HEX 3/8-16 STEEL
116	067989	REF	NUT HEX FL WHIZ M8-1.25
117	063378	8	HOLDER CABLE TIE
118	091477	7	RIVET WIRE DUCT MNT
119	0F5272	5	CLAMP CABLE FLAT
120	042911	4	SCREW HHC M10-1.5 X 30 G8.8
121	046526	4	WASHER LOCK M10
123	026902	7	SCREW HHTT #8-32 X 1/4 CZ
125	029333A	2	TIE WRAP UL 7.4"X .19" BLK
126	064101	REF	NUT HEX FL WHIZ 3/8-16

Parts List on page 50.

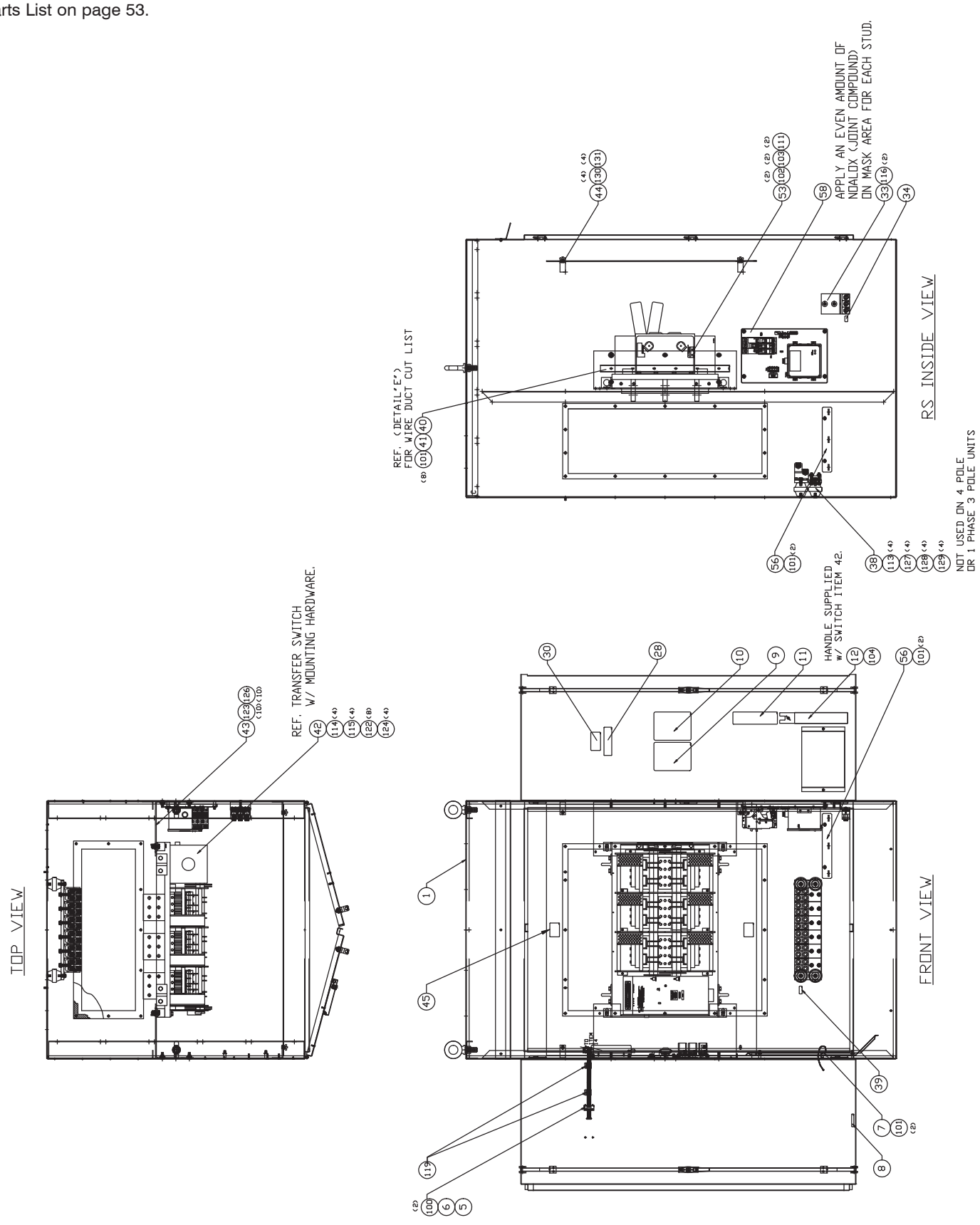


Parts List on page 50.

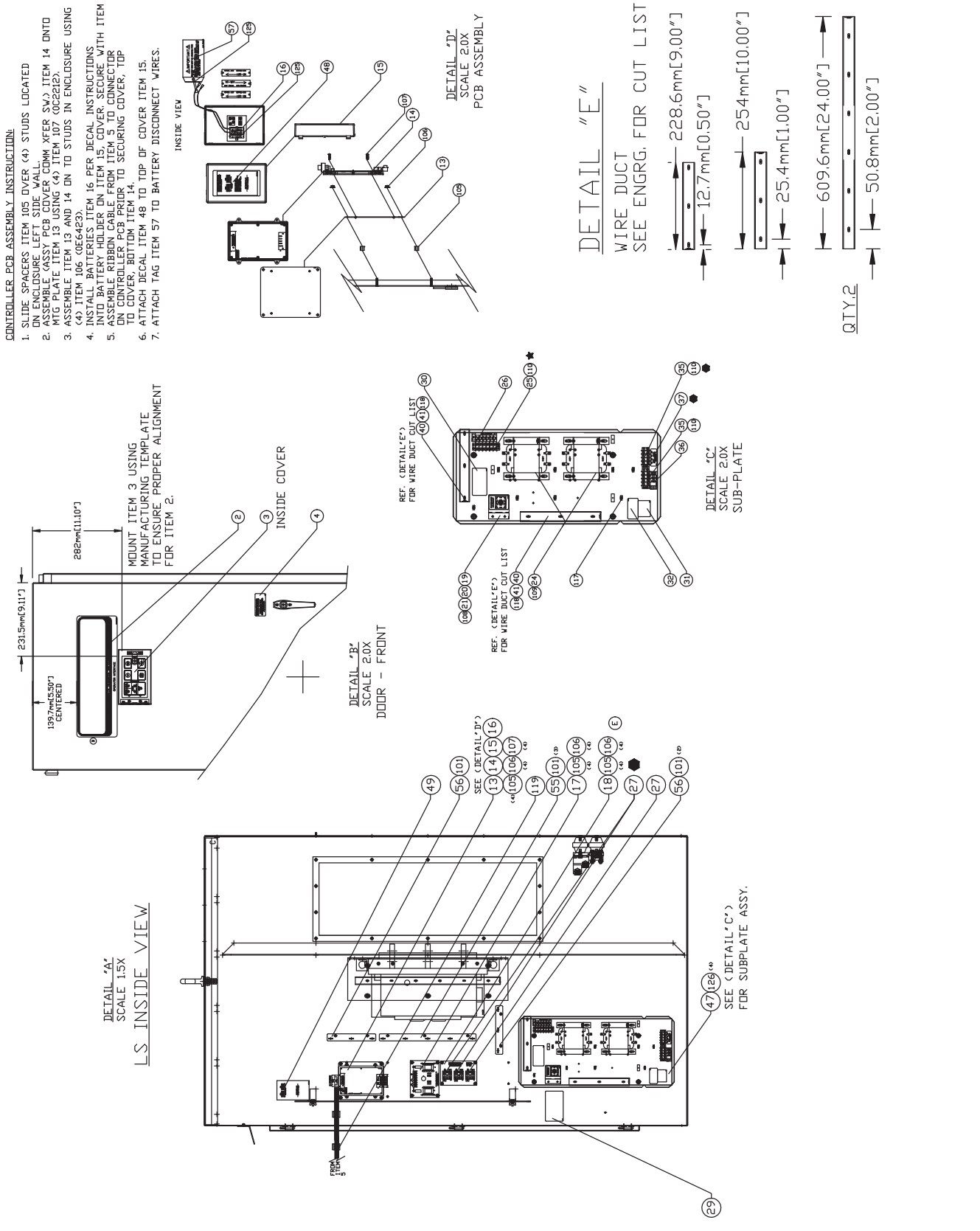


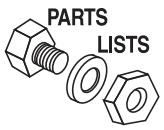
ITEM	PART NO.	QTY.	DESCRIPTION
1	0F8934	1	AV HTS 2000-2600A NEMA12
2	0F5083	1	DECAL HTS TRANSFER SWITCH
	0G3009	1	DECAL HTS T/S
	0G3009A	1	DECAL HTS T/S
	0G2749	1	DECAL, HTS T/S
3	0F4284	1	KEYPAD COMM XFER SW IN-PHASE
4	095282	1	DECAL-LIVE CIRCUIT
5	0F4302A	1	ASSY KEYPAD INTERFACE 32" HTS
6	0F4460	2	SPACER M4/#8 X 5/16 X 1/4 NYL
7	0536210193	1	ASSY WIRE #0 12.00" (GROUND WIRE)
8	077228	1	DECAL-ENCLOSURE NOTE
9	0F5508L	1	DECAL HTS TEST SEQUENCE 2000A
	0F5508M	1	DECAL HTS TEST SEQUENCE 2600A
10	0F5503	1	DECAL SWITCH INFO
11	074525	1	DECAL MANUAL OPERATION
12	072164	1	MNL HNDL 6-1600A WN (SUPPLIED W/SW)
13	0F4801	1	PLATE MOUNTING PCB ASSEMBLY
14	0F5926	1	ASSY COVER PCB COM XFER SWTCH
15	0F5901	1	ASSY COVER COMM XFER SWITCH
16	0F5180	3	BATTERY AAA
17 *	0F4410	1	ASSY PCB COMM TRANSFORMER
18 *	0G5641A	1	ASSY PCB OTS RELAY-COMM XFERSW
19	0F4802	1	BRACKET TOGGLE SWITCH
20	0D3610	1	DECAL MAINTENANCE DISCONNECT
21 *	055868	1	SWITCH TOGGLE 4PDT 15A SPADE
24	074654	2	TRANSFRM 600V TO 240V 500VA
	064933	2	TRANSFRM 240/480V-120/480V
25 *	046357	REF	BLOCK TERM 20A 6 X 6 X 1100V
26	0F5039	1	LABEL CPL (CT) TB1
27 *	027911	REF	RELAY PNL 12VDC DPDT 10A@240VA
28	064510	1	DECAL-TERMINAL NOTE
29	063578	1	PLATE DATA - GTS
30	054199	1	DECAL DANGER HIGH VOLTAGE
31	062209	1	DECAL UL LABEL E84929-GTS
32	083736	1	DECAL-CSA GTS
33	0D6584	1	ASSY GRD.TERM.1600-2600A
34	067210A	1	DECAL GROUND LUG
35 *	046689	REF	BLOCK TERM 20A 4 X 6 X 1100V
36	0F5040	1	LABEL CPL (RS485) TB2
37	075355	1	DECAL SIGNAL BEFORE XFER
38	0D4203	1	ASSY NEUTRAL BLOCK 1600A ATS
39	0A9457	1	DECAL NEUTRAL
40	091472	1	DUCT WIRING 1 X 1.5 (138” LG)
41	091472A	1	COVER WIRE DUCT 1 IN (138” LG)
42	072115	1	XFRSW 2000A 3P WN600V
	072121	1	XFRSW 2000A 4P WN600V
	072116	1	XFRSW 2600A 3P WN600V
	072122	1	XFRSW 2600A 4P WN600V
43	0F8932A	2	BRKT SWITCH 2000A 3P
	0F8932B	2	BRKT SWITCH 2000A 4P-2600A 3P
	0F8932C	2	BRKT SWITCH 2600A 4P
44	0D6391	1	SHIELD TRANSFER SW 2000-2600A
45	0C8308	2	DECAL TERMINAL SHOCK HAZARD
46 *	0F8941$	1	WIRE HARNESS HTS 2000-2600A (NOT SHOWN)
47	0F6888	1	SUB-PLATE HTS 600-2600A
48	0F6776A	1	DECAL DIP SWITCH CONFIG PCB COVER
49	0F6776B	1	DECAL DIP SWITCH CONFIG ENCL
53	074672A	1	SWITCH MICRO DPDT SEL & AUX 2PL
55	0C8095	1	WIRE HARN. STRIP 16"
56	0C7942	4	HARN STRIP 8"
57	0F9340	1	TAG BATTERY DISCONNECT
58	0G7015	1	TVSS ASSEMBLY 600-2600A
100	0C6748	2	NUT HEX LOCK M4-0.7 SS NYL INS
101	0F7806	13	NUT HEX FL WHIZ M4-0.7
102	038150	2	WASHER FLAT #8 ZINC
103	022264	2	WASHER LOCK #8-M4
104	087680	1	NUT WING M6-1.0
105	0D6511	12	SPACER .20 X .375 X .375 PL
106	0E6423	12	NUT HEX FL WHIZ M5-0.8
107	0C2212	4	SCREW PHTT M4-0.7 X 16 ZYC
108	0A2111	2	SCREW SWAGE #10-32 X 5/16 ZYC
109	0C2267	8	SCREW HHTT M5-0.8 X 12 BP
110	0A1661	REF	RIVET POP .156 X .675 AL
111	092980	2	SCREW PPHM M4-0.7 X 25
113	022237	4	WASHER LOCK 3/8
114	022195	4	WASHER LOCK 1/2
115	022196	4	NUT HEX 1/2-13 STEEL
116	067989	2	NUT HEX FL WHIZ M8-1.25
117	063378	8	HOLDER CABLE TIE
118	091477	5	RIVET WIRE DUCT MNT
119	0F5272	12	CLAMP CABLE FLAT
122	022304	8	WASHER FLAT 1/2 ZINC
123	0A5768	10	WASHER FLAT M10 HEAVY DUTY
124	048610	4	SCREW HHC 1/2-13 X 1 G5
125	029333A	2	TIE WRAP UL 7.4" X .19" BLK
126	064101	REF	NUT HEX FL WHIZ 3/8-16
127	022131	4	WASHER FLAT 3/8-M10 ZINC
128	0C6937A	4	INSULATOR STANDOFF 3200V3/8-16
129	029745	4	SCREW HHC 3/8-16 X 1 G5
130	022473	4	WASHER FLAT 1/4-M6 ZINC
131	025870	4	NUT WING 1/4-20

Parts List on page 53.



Parts List on page 53.





ITEM	PART NO.	QTY.	DESCRIPTION
1	0F8933	1	ENCL NEMA 3R HTS 48 X 80 X 48
2	0F7145	1	DECAL HTS TRANSFER SW NEMA 3R
	0G3010	1	DECAL HTS T/S N3R
	0G3010A	1	DECAL HTS T/S N3R
	0G2774	1	DECAL HTS (XR)TRANS SW NEMA 3R
3	0F4284	1	KEYPAD COMM XFER SW IN-PHASE
4	095282	1	DECAL-LIVE CIRCUIT
5	0F4302A	1	ASSY KEYPAD INTERFACE 32" HTS
6	0F4460	2	SPACER M4/#8 X 5/16 X 1/4 NYL
7	0536210193	1	ASSY WIRE #0 12.00" (GROUND WIRE)
8	0E8594	1	DECAL ENCL NOTE NEMA 3R
9	0F5508L	1	DECAL HTS TEST SEQUENCE 2000A
	0F5508M	1	DECAL HTS TEST SEQUENCE 2600A
10	0F5503	1	DECAL SWITCH INFO
11	074525	1	DECAL MANUAL OPERATION
12	074327	1	HANDLE-WN 2000-2600A (SUPPLIED W/SW)
13	0F4801	1	PLATE MOUNTING PCB ASSEMBLY
14	0F5926	1	ASSY COVER PCB COM XFER SWTCH
15	0F5901	1	ASSY COVER COMM XFER SWITCH
16	0F5180	3	BATTERY AAA
17 *	0F4410	1	ASSY PCB COMM TRANSFORMER
18 *	0F5641A	1	ASSY PCB OTS RELAY-COMM XFERSW
19	0F4802	1	BRACKET TOGGLE SWITCH
20	0D3610	1	DECAL MAINTENANCE DISCONNECT
21 *	055868	1	SWITCH TOGGLE 4PDT 15A SPADE
24	074654	2	TRANSFRM 600V TO 240V 500VA
	064933	2	TRANSFRM 240/480V-120/480V
25 *	046357	REF	BLOCK TERM 20A 6 X 6 X 1100V
26	0F5039	1	LABEL CPL (CT) TB1
27 *	027911	REF	RELAY PNL 12VDC DPDT 10A@240VA
28	064510	1	DECAL-TERMINAL NOTE
29	063578	1	PLATE DATA - GTS
30	054199	1	DECAL DANGER HIGH VOLTAGE
31	062209	1	DECAL UL LABEL E84929-GTS
32	083736	1	DECAL-CSA GTS
33	0D6584	1	ASSY GRD.TERM.1600-2600A
34	067210A	1	DECAL GROUND LUG
35 *	046689	REF	BLOCK TERM 20A 4 X 6 X 1100V
36	0F5040	1	LABEL CPL (RS485) TB2
37	075355	1	DECAL SIGNAL BEFORE XFER
38	0D4515	1	ASSY NEUTRAL BLOCK 2600A
39	0A9457	1	DECAL NEUTRAL
40	091472	1	DUCT WIRING 1 X 1.5 (138” LG)
41	091472A	1	COVER WIRE DUCT 1 IN (138” LG)
42	072115	1	XFRSW 2000A 3P WN600V
	072121	1	XFRSW 2000A 4P WN600V
	072116	1	XFRSW 2600A 3P WN600V
	072122	1	XFRSW 2600A 4P WN600V
43	08932A	2	BRKT SWITCH 2000A 3P
	08932B	2	BRKT SWITCH 2000A 4P-2600A 3P
	08932C	2	BRKT SWITCH 2600A 4P
44	0D6391	1	SHIELD TRANSFER SW 2000-2600A
45	0C8308	2	DECAL TERMINAL SHOCK HAZARD
46 *	0F8941$	1	WIRE HARNESS HTS 2000-2600A (NOT SHOWN)
47	0F6888	1	SUB-PLATE HTS 600-2600A
48	0F6776A	1	DECAL DIP SWITCH CONFIG PCB COVER
49	0F6776B	1	DECAL DIP SWITCH CONFIG ENCL
53	074672A	1	SWITCH MICRO DPDT SEL & AUX 2PL
55	0C8095	1	WIRE HARN STRIP 16"
56	0C7942	4	HARN STRIP 8"
57	0F9340	1	TAG BATTERY DISCONNECT
58	0G7015	1	TVSS ASSEMBLY 600-2600A
100	0C6748	2	NUT HEX LOCK M4-0.7 SS NYL INS
101	0F7806	21	NUT HEX FL WHIZ M4-0.7
102	038150	2	WASHER FLAT #8 ZINC
103	022264	2	WASHER LOCK #8-M4
104	087680	1	NUT WING M6-1.0
105	0D6511	12	SPACER .20 X .375 X .375 PL
106	0E6423	12	NUT HEX FL WHIZ M5-0.8
107	0C2212	4	SCREW PHTT M4-0.7 X 16 ZYC
108	0A2111	2	SCREW SWAGE #10-32 X 5/16 ZYC
109	0C2267	8	SCREW HHTT M5-0.8 X 12 BP
110	0A1661	REF	RIVET POP .156 X .675 AL
111	092980	2	SCREW PPHM M4-0.7 X 25
113	022237	4	WASHER LOCK 3/8
114	022195	4	WASHER LOCK 1/2
115	022196	4	NUT HEX 1/2-13 STEEL
116	067989	2	NUT HEX FL WHIZ M8-1.25
117	063378	8	HOLDER CABLE TIE
118	091477	5	RIVET WIRE DUCT MNT
119	0F5272	12	CLAMP CABLE FLAT
122	022304	8	WASHER FLAT 1/2 ZINC
123	0A5768	10	WASHER FLAT M10 HEAVY DUTY
124	048610	4	SCREW HHC 1/2-13 X 1 G5
125	029333A	2	TIE WRAP UL 7.4" X .19" BLK
126	064101	REF	NUT HEX FL WHIZ 3/8-16
127	022131	4	WASHER FLAT 3/8-M10 ZINC
128	0C6937A	4	INSULATOR STANDOFF 3200V3/8-16
129	029745	4	SCREW HHC 3/8-16 X 1 G5
130	022473	4	WASHER FLAT 1/4-M6 ZINC
131	025870	4	NUT WING 1/4-20

GENERAC POWER SYSTEMS STANDARD TWO-YEAR LIMITED WARRANTY FOR GENERAC STATIONARY EMERGENCY TRANSFER SWITCH SYSTEMS

NOTE: ALL UNITS MUST HAVE A START-UP INSPECTION PERFORMED BY AN AUTHORIZED GENERAC DEALER.

For a period of two (2) years or two thousand (2,000) hours of operation from the date of start-up, which ever occurs first, Generac Power Systems, Inc. will, at its option, repair or replace any part(s) which, upon examination, inspection, and testing by Generac Power Systems or an Authorized/Certified Generac Power Systems Dealer, or branch thereof, is found to be defective under normal use and service, in accordance with the warranty schedule set forth below. Any equipment that the purchaser/owner claims to be defective must be examined by the nearest Authorized/Certified Generac Power Systems Dealer, or branch thereof. This warranty applies only to Generac Power Systems Transfer Switch used in "Stationary Emergency" applications, as Generac Power Systems, Inc. has defined Transfer Switch applications, provided said generator has been initially installed and/or inspected on-site by an Authorized/Certified Generac Power Systems Dealer, or branch thereof. Scheduled maintenance, as outlined by the generator owner's manual, must be performed by an Authorized/Certified Generac Power Systems Dealer, or branch thereof. This will verify service has been performed on the unit throughout the warranty period. This warranty is limited to and available only on Liquid-cooled units.

WARRANTY SCHEDULE

YEAR ONE — One hundred percent (100%) coverage on mileage, labor, and parts listed.
- ALL COMPONENTS

YEAR TWO — One hundred percent (100%) coverage on parts listed.
- ALL COMPONENTS — PARTS ONLY

Guidelines:

- Warranty only applies to permanently wired and mounted units.
- Any and all warranty repairs and/or concerns, must be performed and/or addressed by an Authorized/Certified Generac Power Systems Dealer, or branch thereof.
- A Generac Power Systems, Inc. Transfer Switch is highly recommended to be used in conjunction with the generator set. If a Non-Generac Power Systems, Inc. Transfer Switch is substituted for use and directly causes damage to the generator set, no warranty coverage shall apply.
- All warranty expense allowances are subject to the conditions defined in Generac Power Systems Warranty, Policies, Procedures and Flat Rate Manual.
- Units that have been resold are not covered under the Generac Power Systems Warranty, as this Warranty is not transferable except with change of ownership of original structure.
- Unit enclosure is only covered during the first year of the warranty provision.
- Use of Non-Generac replacement part(s) will void the warranty in its entirety.
- Engine coolant heaters (block-heaters), heater controls and circulating pumps are only covered during the first year of the warranty provision.

THIS WARRANTY SHALL NOT APPLY TO THE FOLLOWING:

1. Any unit built/manufactured prior to July 1, 2004.
2. Costs of normal maintenance (i.e. tune-ups, associated part(s), adjustments, loose/leaking clamps, installation and start-up).
3. Any failure caused by contaminated fuels, oils, coolants/antifreeze or lack of proper fuels, oils or coolants/antifreeze.
4. Units sold, rated or used for "Prime Power", "Trailer Mounted" or "Rental Unit" applications as Generac Power Systems has defined Prime Power, Trailer Mounted or Rental Unit. Contact a Generac Power Systems Distributor for Prime Power, Trailer Mounted or Rental Unit definition.
5. Failures caused by any act of God and other force majeure events beyond the manufactures control.
6. Products that are modified or altered in a manner not authorized by Generac Power Systems in writing.
7. Failures due, but not limited to, normal wear and tear, accident, misuse, abuse, negligence, or improper installation or sizing.
8. Any incidental, consequential or indirect damages caused by defects in materials or workmanship, or any delay in repair or replacement of the defective part(s).
9. Damage related to rodent and/or insect infestation.
10. Failure due to misapplication, misrepresentation, or bi-fuel conversion.
11. Telephone, facsimile, cellular phone, satellite, Internet, or any other communication expenses.
12. Rental equipment used while warranty repairs are being performed (i.e. rental generators, cranes, etc.).
13. Overtime, holiday, or emergency labor.
14. Modes of transportation deemed abnormal (refer to Generac Power Systems Warranty, Policies, Procedures and Flat Rate Manual).
15. Steel enclosures that are rusting due to improper installation, location in a harsh or saltwater environment or scratched where integrity of paint applied is compromised.
16. Any and all expenses incurred investigating performance complaints unless defective Generac materials and/or workmanship were the direct cause of the problem.
17. Starting batteries, fuses, light bulbs, engine fluids, and overnight freight cost for replacement part(s).

THIS WARRANTY IS IN PLACE OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, SPECIFICALLY, GENERAC POWER SYSTEMS MAKES NO OTHER WARRANTIES AS TO THE MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Any implied warranties which are allowed by law, shall be limited in duration to the terms of the express warranty provided herein. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to purchaser/owner.

GENERAC POWER SYSTEMS ONLY LIABILITY SHALL BE THE REPAIR OR REPLACEMENT OF PART(S) AS STATED ABOVE. IN NO EVENT SHALL GENERAC POWER SYSTEMS BE LIABLE FOR ANY INCIDENTAL, OR CONSEQUENTIAL DAMAGES, EVEN IF SUCH DAMAGES ARE A DIRECT RESULT OF GENERAC POWER SYSTEMS, INC. NEGLIGENCE.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations may not apply to purchaser/owner. Purchaser/owner agrees to make no claims against Generac Power Systems, Inc. based on negligence. This warranty gives purchaser/owner specific legal rights. Purchaser/owner also may have other rights that vary from state to state.

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Bulletin 0166260SBY / Printed in U.S.A. 12.08