



*Owner's Manual*  
*For*  
*HTS Automatic Transfer Switch*

100 - 2600 Amp, 600 Volts

MODEL: \_\_\_\_\_

SERIAL: \_\_\_\_\_

DATE PURCHASED: \_\_\_\_\_

**⚠ DANGER!**



**NOT INTENDED FOR USE IN CRITICAL  
LIFE SUPPORT APPLICATIONS.**



**ONLY QUALIFIED ELECTRICIANS OR  
CONTRACTORS SHOULD ATTEMPT  
INSTALLATION!**

**This manual should remain with the unit.**



# Table of Contents

## **Section 1 Safety**

<b>1.1 Introduction</b>	<b>1</b>
<b>1.2 Safety Rules</b>	<b>1</b>
<b>1.3 Safety Symbols and Meanings</b>	<b>2</b>

## **Section 2 General Information**

<b>2.1 Equipment Description</b>	<b>3</b>
2.1.1 Automatic Transfer Switch	3
2.1.2 Transient Voltage Surge Suppression	3
2.1.2.1 Modes of Protection	3
2.1.2.2 Ratings	3
2.1.2.3 Certification	3
2.1.2.4 TVSS Disconnect	3
2.1.2.5 Status Indicators	3
2.1.2.6 Remote Alarm Contacts	4
<b>2.2 Communications</b>	<b>4</b>
2.2.1 G and H Panel Generators	4
2.2.2 Non G and H Panel Generators	4
<b>2.3 Operation With Loss of Communications</b>	<b>4</b>
<b>2.4 Transfer Switch Data Label</b>	<b>5</b>
<b>2.5 Transfer Switch Enclosure</b>	<b>5</b>
<b>2.6 Safe Use of Transfer Switch</b>	<b>5</b>

## **Section 3 Installation**

<b>3.1 Introduction to Installation</b>	<b>7</b>
<b>3.2 Unpacking</b>	<b>7</b>
<b>3.3 Mounting</b>	<b>7</b>
<b>3.4 Connecting Power Source and Load Lines</b>	<b>7</b>
3.4.1 Transfer Mechanisms (100-400A)	7
3.4.2 Transfer Mechanisms (600-2600A)	8
<b>3.5 Transfer Mechanism</b>	<b>8</b>
3.5.1 100-400A Models	8
3.5.2 600-2600A Models	8
<b>3.6 Transfer Mechanism Operation</b>	<b>8</b>
3.6.1 100-400A Models	8
3.6.2 600-2600A Models	8
<b>3.7 Main Contacts at Normal (Utility)</b>	<b>9</b>
<b>3.8 Main Contacts at Neutral</b>	<b>9</b>

<b>3.9 Main Contacts at Standby (Emergency)</b>	<b>9</b>
<b>3.10 Connecting Controller Communication Wires</b>	<b>9</b>
<b>3.11 Setting Dip Switches</b>	<b>9</b>
3.11.1 Dip Switch 1	10
3.11.2 Dip Switch 2	10
3.11.3 Switches 2 to 6	10
3.11.4 Switches 7 and 8	10
3.11.5 Synchronization Limits	10
3.11.6 Voltage Limits	10
<b>3.12 Programming</b>	<b>11</b>
<b>3.13 Auxiliary Contacts</b>	<b>11</b>

## **Section 4 Operation**

<b>4.1 Functional Tests and Adjustments</b>	<b>13</b>
<b>4.2 Manual Operation</b>	<b>13</b>
4.2.1 100 - 400 Amp Models	14
4.2.1.1 Close to Normal Source Side	14
4.2.1.2 Close to Standby Source Side	14
4.2.1.3 Return to Normal Source Side	14
4.2.2 600 - 2600 Amp Models	14
4.2.2.1 Trip to Neutral Position	14
4.2.2.2 Close to Emergency Source Side	14
4.2.2.3 Close to Normal Source Side	15
<b>4.3 Voltage Checks</b>	<b>15</b>
<b>4.4 Electrical Operation</b>	<b>16</b>
<b>4.5 Switches and Indicators</b>	<b>16</b>
4.5.1 System Ready LED	17
4.5.2 Standby Operating LED	17
4.5.3 Switch Position LEDs	17
4.5.4 Utility Available LED	17
4.5.5 Test Switch and Curtailment Input	17
4.5.6 Fast Test Button	17
4.5.7 Return to Normal Switch	17
4.5.8 Maintenance Disconnect Switch (Auto/Manual)	17
<b>4.6 Sequence of Operation</b>	<b>17</b>
4.6.1 Sequence 1 - Utility Voltage Dropout	17
4.6.2 Sequence 2 - Line Interrupt Delay	18
4.6.3 Sequence 3 - Engine Minimum Run and Engine Warmup Timers	18

4.6.4 Sequence 4 - Signal Before Transfer .....	18
4.6.5 Sequence 5 - ATS Transfer to Generator Position .....	18
4.6.6 Sequence 6 - Utility Voltage Pickup .....	18
4.6.7 Sequence 7 - Return to Utility Timer .....	18
4.6.8 Sequence 8 - Signal Before Transfer .....	18
4.6.9 Sequence 9 - ATS Transfer to Utility Position ..	18
4.6.10 Sequence 10 - Engine Cooldown Timer .....	18
<b>4.7 Transfer Switch Options .....</b>	<b>18</b>
4.7.1 Signal Before Transfer .....	19
4.7.2 Instrument Package (Utility Monitor) .....	20

## ***Section 5 Maintenance***

<b>5.1 Operate Transfer Switch .....</b>	<b>21</b>
<b>5.2 Clean and Inspect Transfer Switch .....</b>	<b>21</b>
<b>5.3 Lubrication .....</b>	<b>21</b>
<b>5.4 Main Current Carrying Contacts .....</b>	<b>21</b>
<b>5.5 Batteries .....</b>	<b>21</b>

## ***Section 6 Installation Drawings***

<b>6.1 100-400 Amp LV .....</b>	<b>23</b>
6.1.1 No. 0H6400ID-B (Part 1 of 2) .....	23
6.1.2 No. 0H6400ID-B (Part 2 of 2) .....	24
<b>6.2 100-400 Amp LV .....</b>	<b>25</b>
6.2.1 No. 0H6410ID-B (Part 1 of 2) .....	25
6.2.2 No. 0H6410ID-B (Part 2 of 2) .....	26
<b>6.3 100-400 Amp HV .....</b>	<b>27</b>
6.3.1 No. 0H6420ID-B (Part 1 of 2) .....	27
6.3.2 No. 0H6420ID-B (Part 2 of 2) .....	28
<b>6.4 600-1000 Amp .....</b>	<b>29</b>
6.4.1 No. 0H6440ID-C (Part 1 of 2) .....	29
6.4.2 No. 0H6440ID-C (Part 2 of 2) .....	30
<b>6.5 1200-1600 Amp .....</b>	<b>31</b>
6.5.1 No. 0H6450ID-C (Part 1 of 2) .....	31
6.5.2 No. 0H6450ID-C (Part 2 of 2) .....	32
<b>6.6 2000-2600 Amp .....</b>	<b>33</b>
6.6.1 No. 0H6460ID-C (Part 1 of 2) .....	33
6.6.2 No. 0H6460ID-C (Part 1 of 2) .....	34



# Section 1 *Safety*

---

## 1.1 — Introduction

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.

## 1.2 — Safety Rules

The manufacturer 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 not all-inclusive. If using a procedure, work method or operating technique the manufacturer does not specifically recommend, ensure that it is safe. Also make sure the procedure, work method or operating technique used does not render the transfer switch unsafe.

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

---

### **DANGER**

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

(000001)

---

### **WARNING**

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

(000002)

---

### **CAUTION**

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

(000003)

---

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

These safety 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.

## 1.3 — Safety Symbols and Meanings

**⚠ DANGER**

Electrocution. Turn utility and emergency power supplies to OFF before connecting power source and load lines. Failure to do so will result in death or serious injury. (000116)

**⚠ DANGER**

Electrocution. Turn utility supply OFF before working on utility connections of the transfer switch. Failure to do so will result in death or serious injury. (000123)

**⚠ DANGER**

Electrocution. High voltage is present at transfer switch and terminals. Contact with live terminals will result in death or serious injury. (000129)

**⚠ DANGER**

Electrocution. In the event of electrical accident, immediately shut power OFF. Use non-conductive implements to free victim from live conductor. Apply first aid and get medical help. Failure to do so will result in death or serious injury. (000145)

**⚠ DANGER**

Electrocution. Water contact with a power source, if not avoided, will result in death or serious injury. (000104)

**⚠ DANGER**

Electrocution. Do not manually transfer under load. Disconnect transfer switch from all power sources prior to manual transfer. Failure to do so will result in death or serious injury, and equipment damage. (000132)

**⚠ DANGER**

Electrical backfeed. Use only approved switchgear to isolate generator when electrical utility is the primary power source. Failure to do so can result in generator damage and could result in death or serious injury. (000131)

**⚠ DANGER**

Electrocution. Do not wear jewelry while working on this equipment. Doing so will result in death or serious injury. (000188)

**⚠ DANGER**

Electrocution, equipment and property damage. Handle transfer switches carefully when installing. Never install a damaged transfer switch. Doing so could result in death or serious injury, equipment and property damage. (000195)

**⚠ WARNING**

Sudden start-up. Always set the safety disconnect switch to MANUAL before working on equipment. Failure to do so could result in death or serious injury. (000194)

**⚠ WARNING**

Consult Manual. Read and understand manual completely before using product. Failure to completely understand manual and product could result in death or serious injury. (000100a)

## Section 2 General Information

### 2.1 — Equipment Description

#### 2.1.1— Automatic Transfer Switch

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.

#### 2.1.2— 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 con-

nected 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.

##### 2.1.2.1—Modes of Protection

The TVSS provides protection on all modes:

- Single Phase (6): L-L, L-N, L-N, L-G, L-G and NG.
- Three Phase (10): L-L, L-L, L-L, L-N, L-N, L-N, L-G, L-G, L-G and N-G.

##### 2.1.2.2—Ratings

- Surge Capacity: 200 kA maximum.

##### 2.1.2.3—Certification

The TVSS is UL recognized to the requirements of UL 1449 3rd edition.

##### 2.1.2.4—TVSS Disconnect



Only qualified service personnel may install, operate and maintain this equipment. Failure to follow proper installation requirements could result in death, serious injury, and damage to equipment or property. (000182)

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.

**IMPORTANT: Turn on TVSS disconnect circuit breaker when the procedure is complete. If circuit breaker is not turned on, the TVSS module will not provide surge protection for customer load.**

##### 2.1.2.5—Status Indicators

Each TVSS module has comprehensive, solid state, continual visual status monitoring of each protection mode present. There are two LEDs 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 both the green and red LEDs are on, there is a neutral to ground fault.

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.

### 2.1.2.6—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, 120Vac 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.

## 2.2 — Communications

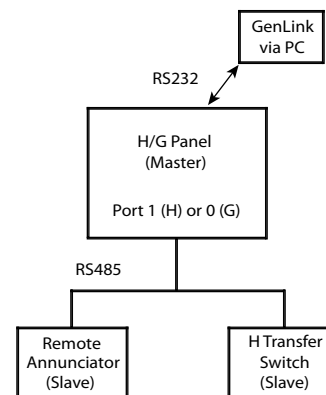
### 2.2.1— G and H Panel Generators

The HTS acts as a Modbus slave on the communications network. For the “H” series of generator controllers, Port 1 is used for the connection. On the “G” series of controllers, Port 0 is 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 OFF.

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. See Figure 2-1.



000649

**Figure 2-1. Typical Communication Network**

### 2.2.2— Non G and H Panel Generators

This switch is provided with a “2-wire start” output. The 2-wire start output is for use with non-G and H control panel generators. The 2-wire start connection is made on the 6 position terminal strip labeled Engine Generator Connections, wire numbers 178 and 183. This connection is best used as a back up to the normal RS-485 communication link.

The 2-wire start output allows the ATS to start and stop the generator automatically. Without a RS-485 communication link and 2-wire start, the timing functions of the transfer switch will be the last settings downloaded from the G or H panel or if all power is removed from the ATS, the controller will revert to the default settings.

## 2.3 — Operation With Loss of Communications

Local control means that if the generator is running, the generator can be running in Manual or Auto. If there is no utility, the switch will transfer to the generator. If utility returns, the switch will transfer back to utility. If only the RS-485 communication lines are connected, the generator will not start or stop automatically as it cannot communicate with the switch to know the utility is missing. It will have to be manually started and stopped (with the key-switch set in the manual position). If the RS-485 communication link is not functioning and the 2-wire start lines are connected between the HTS and the generator, the generator will start and stop automatically via the 2-wire start lines.

## 2.4 — 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.

## 2.5 — 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.

## 2.6 — Safe Use of Transfer Switch

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

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

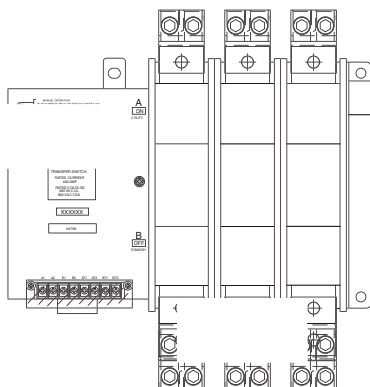
**NOTE:** It is essential to use the latest version of any standard to ensure correct and current information.

**This page intentionally left blank.**



### 3.4.2— Transfer Mechanisms (600-2600A)

See Figure 3-2. The transfer mechanism may be either a 2-pole, 3-pole, or 4-pole type. The switch enclosure may include a neutral block for connection of the neutral line.



000635

**Figure 3-2. Transfer Mechanism**

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
600 AMP	500MCM-1/0	375 in-lbs
800/1000 AMP	500MCM-1/0	375 in-lbs
1200/2600 AMP	750MCM-1/0	500 in-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.

## 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. See Figure 3-1.

Power for the operating coils 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.

### 3.5.1— 100-400A Models

Main contacts are actuated by a single solenoid, are electrically operated and mechanically held. load or “T” contacts, bolted to an insulated plastic pole piece are sta-

tionary. The normal (utility) and standby (emergency) contacts are moveable. The contacts are actuated by means of a closing coil and mechanical linkage. The pole assemblies which retain the stationary moveable main contacts are assembled together and retained by through bolts.

### 3.5.2— 600-2600A Models

600-2600A models 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

### 3.6.1— 100-400A Models

There is a single solenoid coil in the “W” switch that is used to transfer the power to the respective load. The solenoid coil is energized to move the mechanism to the neutral position (both sources of supply disconnected). If the solenoid coil is kept energized the switch mechanism will remain in the neutral position. When the solenoid coil is de-energized the mechanism will close the contacts in the opposite position. This process is repeated to move the mechanism back to the original position.

### 3.6.2— 600-2600A Models

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.

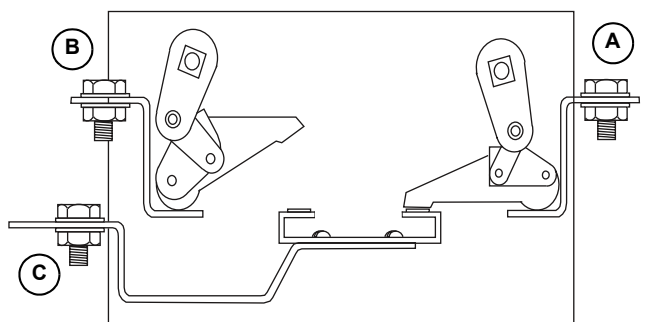
All 3 solenoids are only energized momentarily.

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



### 3.7 — Main Contacts at Normal (Utility)

The illustration shows the load terminals connected to the normal (utility) terminals. Window "A" will display the word "ON," Window "B" the word "OFF." See Figure 3-3.

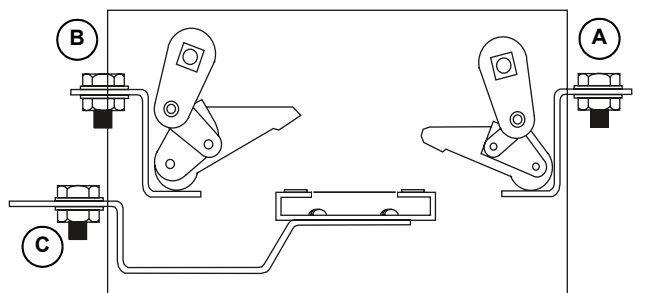


**Figure 3-3. Main Contact at Normal (Utility)**

A	Utility Position "ON"
B	Emergency Position "OFF"
C	Load

### 3.8 — Main Contacts at Neutral

Load terminals are disconnected from both power supply terminals. The word "OFF" will be displayed in both Windows "A" and "B." See Figure 3-4.

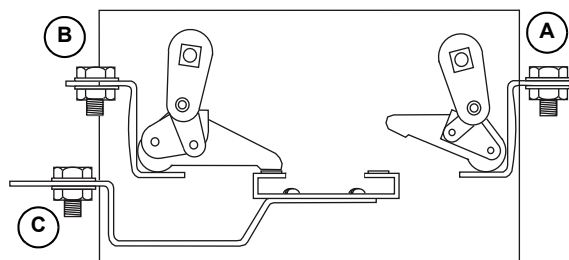


**Figure 3-4. Main Contacts at Neutral**

A	Utility Position "ON"
B	Emergency Position "OFF"
C	Load

### 3.9 — Main Contacts at Standby (Emergency)

Load terminals are connected to the standby (emergency) power supply. Window "B" will display the word "ON," Window "A" the word "OFF." See Figure 3-5.



**Figure 3-5. Main Contacts at Standby (Emergency)**

A	Utility Position "ON"
B	Emergency Position "OFF"
C	Load

### 3.10 — 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 - 6-position terminal block, in the bottom of the transfer switch enclosure (labeled "comm. Ports").
- Engine generator - terminal strip in customer connection panel. Do not connect the shield at this end.

### 3.11 — 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.

### 3.11.1— 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 (typically 50Hz)	1 0 0
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

### 3.11.2— 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.

### 3.11.3— Switches 2 to 6

These switches no longer have any function.

### 3.11.4— 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)

### 3.11.5— 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).

### 3.11.6— Voltage Limits

Determination of proper Utility is performed 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

## 3.12 — 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.

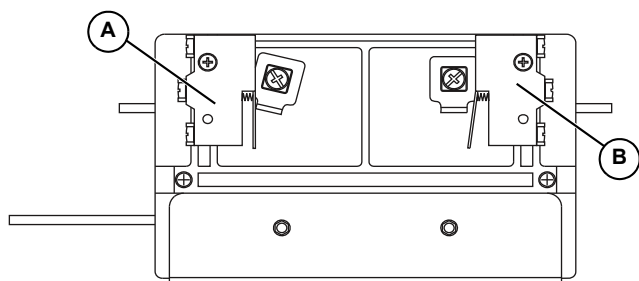
## 3.13 — Auxiliary Contacts

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.

Contact operation is shown in the following chart:

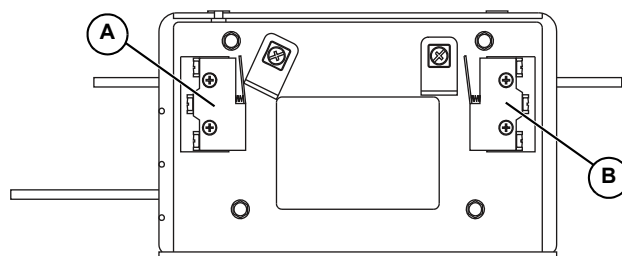
	Switch Position	
	Utility	Standby
Common to Normally Open	Closed	Open
Common to Normally Closed	Open	Closed

**NOTE:** Auxiliary Contacts are rated 10 amps at 125 or 250 volts AC. do not exceed the rated voltage and current of the contacts.



000639

**Figure 3-6. 100-200 amp Switches**

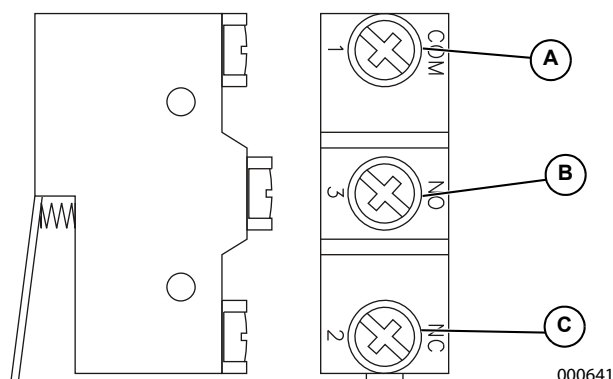


000640

**Figure 3-7. 300-2600 amp Switches**

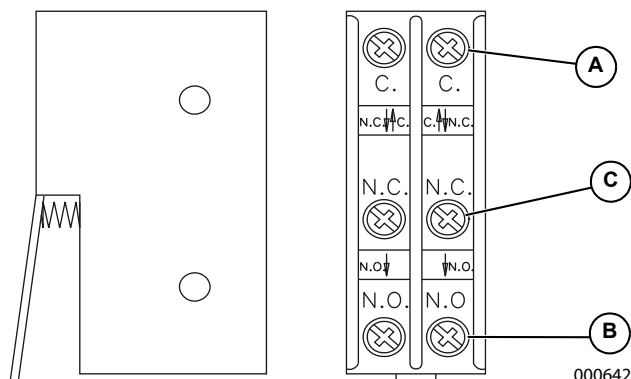
Figure 3.6 – 3.7	
A	Auxiliary Contact (Actuated)
B	Auxiliary Contact (Non-Actuated)

*Both side views shown in UTILITY position.*



000641

**Figure 3-8. Single Auxiliary Contacts**



000642

**Figure 3-9. Double Auxiliary Contacts**

Figure 3.8 – 3.9	
A	Common
B	Normally Open
C	Normally Closed

**This page intentionally left blank.**

## Section 4 Operation

### 4.1 — 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 damage to the switch could result.

**IMPORTANT:** Before proceeding with functional tests, verify the instructions and information in this section is understood. Also read the information and instructions of labels and decals affixed to the switch. Note any options or accessories that might be installed and review their operation. Confirm that there is no debris present in and/or around the switch mechanism from the installation.

### 4.2 — Manual Operation



#### **⚠ DANGER**

Electrocution. Do not manually transfer under load. Disconnect transfer switch from all power sources prior to manual transfer. Failure to do so will result in death or serious injury, and equipment damage. (000132)

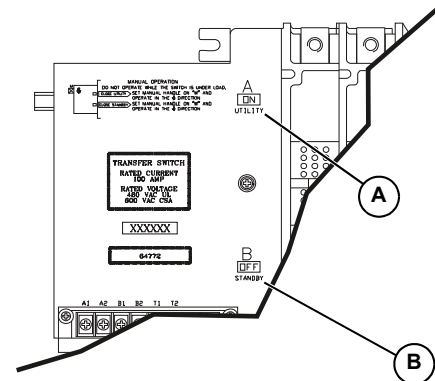
#### **⚠ CAUTION**

Equipment damage. Do not use excessive force when manually operating the transfer switch. Doing so could result in damage to the switch handle. (000196)

A manual switch 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 turned 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).

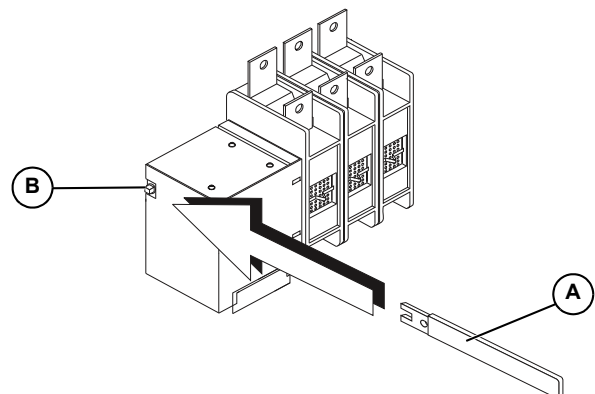
4. Note position of transfer mechanism main contacts by observing display windows in "A" and "B" in Figure 4-1 as follows:
  - Window (A) ON, Window "B" OFF - load terminals (T1, T2, T3) are connected to normal terminals (N1, N2, N3).
  - Window (A) OFF, Window "B" ON - load terminals (T1, T2, T3) are connected to standby terminals (E1, E2, E3).



000645

**Figure 4-1. Main Contacts**

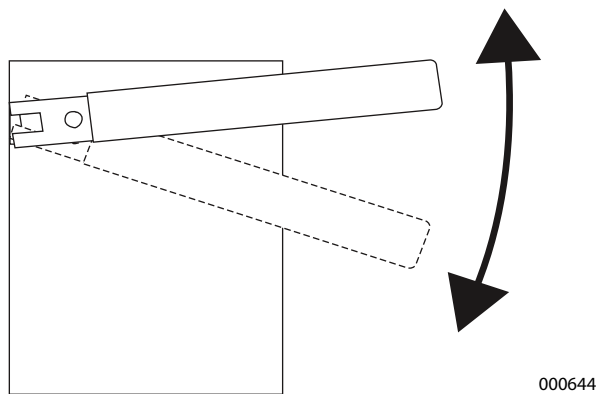
5. See Figure 4-2. Attach handle (A) to actuating shaft (B).



000643

**Figure 4-2. Attach Handle to Actuating Shaft**

6. Move handle down, then release slowly to allow internal spring to relax.



**Figure 4-3. Move Handle Down**

#### 4.2.1— 100 - 400 Amp Models

##### 4.2.1.1—Close to Normal Source Side

Before proceeding, verify the position of the switch by observing window “A” in Figure 4-1. If window “A” reads “ON”, proceed with Step 1, and if it reads “OFF,” proceed with Step 2.

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.
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 Subsection 4.2.1.2— Close to Standby Source Side.

##### 4.2.1.2—Close to Standby Source Side

Before proceeding, ensure completion of Step 2 under Subsection 4.2.1.1— Close to Normal Source Side. See Figure 4-1. 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”.

##### 4.2.1.3—Return to Normal Source Side

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

#### 4.2.2— 600 - 2600 Amp Models

##### 4.2.2.1—Trip to Neutral Position

1. See Figure 4-4. Remove manual handle from square shaft at the upper left corner of the switch.
2. Insert a screwdriver into the “Trip” hole and push in.
3. The main contact should trip to the neutral position and the word “OFF” should appear in both windows “A” and “B”.



000646

**Figure 4-4. Trip to Neutral**

##### 4.2.2.2—Close to Emergency Source Side

Before proceeding, verify the position of the switch by observing window “A” and window “B”. If window “B” displays ON, the ATS is closed in the standby position, with the load connected to the standby source. It is not necessary to manually close in the standby position. See Figure 4-5.

If window “B” reads OFF and window “A” reads ON it will be necessary to trip the ATS to the neutral position. See the Trip to Neutral Position section.

With handle attached to the actuating shaft. Insert screwdriver into hole marked “Select”. While pushing inward on screwdriver, move manual handle upward as indicated by arrow in illustration until it stops. do not force. Confirm main contacts close to standby source when window “B” is ON and window “A” is OFF. Remove handle from switch.

1. See Figure 4-5. Attach manual handle to shaft “M.”
2. Insert screwdriver into the “Select” hole and push in.
3. While pushing screwdriver in, actuate handle in direction indicated by arrow.
4. Confirm closure to emergency source by the word “OFF” in Window “A,” “ON” in Window “B.”

1

2

3

4

000647

**Figure 4-5. Closure to Emergency Source Side**

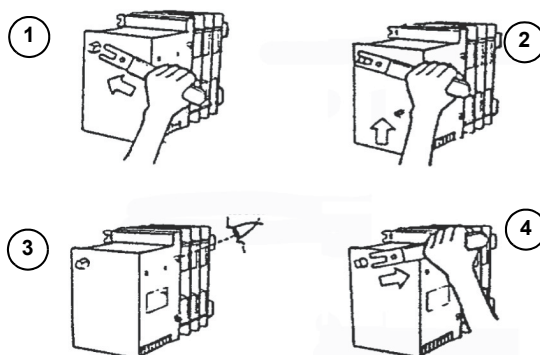
#### 4.2.2.3—Close to Normal Source Side

Before proceeding, verify the position of the switch by observing window “A” and window “B”. If window “A” reads ON the ATS is closed in the utility position, with the load connected to the normal source. It is not necessary to manually close in the utility position. See Figure 4-6.

If window “A” reads OFF and window “B” reads ON it will be necessary to trip the ATS to the neutral position. See the Trip to Neutral Position section.

With handle attached to the actuating shaft. Move manual handle upward as indicated by arrow in illustration until it stops. do not force. Confirm main contacts close to utility source when window “A” is ON and window “B” is OFF. Remove handle from switch.

1. See Figure 4-6. Attach manual handle to shaft “M.”
2. Actuate handle in direction indicated until it stops.
3. Confirm closure to normal source by “ON” in Window “A,” “OFF” in Window “B.”
4. Detach the manual handle.



000648

**Figure 4-6. Closure to Normal Source Side**

## 4.3 — Voltage Checks


**⚠ DANGER**

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

(000129)

**IMPORTANT:** Any voltage measurements should be performed with a meter that meets UL3111 safety standards, and meets or exceeds overvoltage class CAT III.

Before performing voltage checks, verify the following:

1. Disconnect all loads from transfer switch until all voltage checks and phase rotation checks have been completed.
2. Set the Maintenance Disconnect switch (inside transfer switch enclosure) to MANUAL.
3. Check the transfer switch data label for rated voltage. Verify voltage is compatible with normal and standby power source voltages.

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” on page 13 for location of “A” and “B” windows.

**IMPORTANT:** Before proceeding, 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**

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

(000129)

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 return to Step 1 of Subsection 4.3 — 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, and N3, and neutral. supplied voltages must be fully compatible with transfer switch rated voltage.

**IMPORTANT: Verify 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.

**IMPORTANT: Verify 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.

**IMPORTANT: 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 after completion of Subsection 4.3 — Voltage Checks. Connect the load to the transfer switch by whatever means provided, such as cir-

cuit breaker(s), then proceed to Subsection 4.4 — Electrical Operation.

## 4.4 — Electrical Operation

Test transfer system electrical operation as follows:

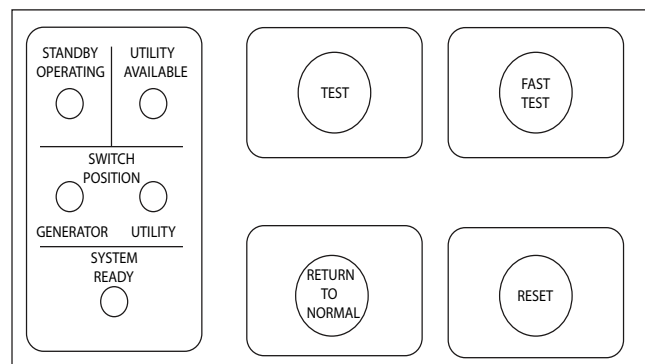
1. On the enclosure door, check that the utility available led is ON.
2. On the enclosure door, check that the switch position-utility LED is ON.

**IMPORTANT: 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.

## 4.5 — 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 4-7.



000685

**Figure 4-7. OTTS Switch**



### 4.5.1— 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.

### 4.5.2— 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.

### 4.5.3— Switch Position LEDs

The transfer switch position is monitored by two auxiliary contacts mounted on the transfer switch mechanism. These LEDs 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 LEDs will flash.

### 4.5.4— 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.

### 4.5.5— 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.

### 4.5.6— 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.

### 4.5.7— 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.

### 4.5.8— 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.

## 4.6 — 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.

### 4.6.1— 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.

#### 4.6.2— 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 is activated.
- Once the Generator voltage reaches Load Accept Voltage and Load Accept Frequency this will trigger Sequence 3.

#### 4.6.3— 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.

#### 4.6.4— Sequence 4 - Signal Before Transfer

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

#### 4.6.5— 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.

#### 4.6.6— 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.

#### 4.6.7— 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.

#### 4.6.8— 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.

#### 4.6.9— 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.

#### 4.6.10— 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.**

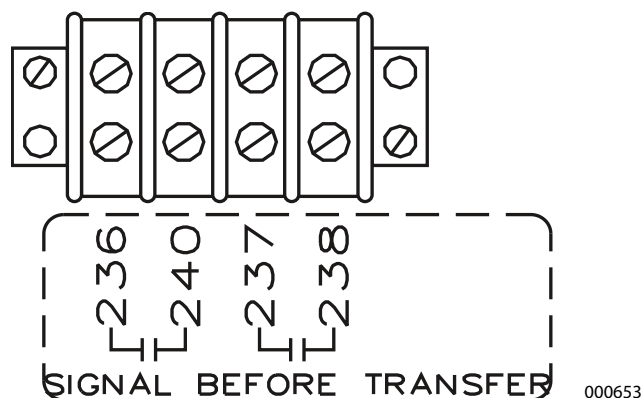
### 4.7 — Transfer Switch Options

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

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

### 4.7.1— Signal Before Transfer

The Signal Before Transfer option includes a signal relay, customer connection terminal strip and the associated wiring. See Figure 4-8.



**Figure 4-8. Signal Before Transfer**

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

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 HTS 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.

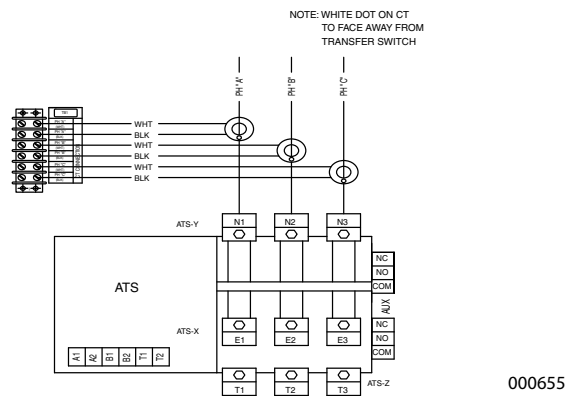
**NOTE:** This delay is not active on a Normal source failure. Transfer during Normal source failure is immediate.

**NOTE:** The “Signal Before Transfer” feature provides a time delay that allows elevators to continue operating before transfer to another power supply occurs.

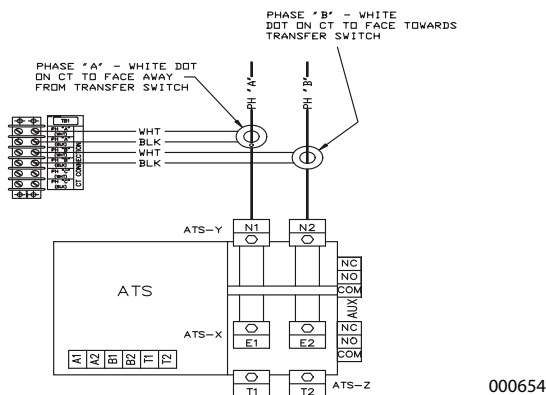
### 4.7.2— Instrument Package (Utility Monitor)

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 4-9 for three-phase connection details. See Figure 4-10 for single-phase connection details.



**Figure 4-9. Connect Signal Wires (Three-Phase)**



**Figure 4-10. Connect Signal Wires (Single-Phase)**

## Section 5 *Maintenance*

---

### 5.1 — 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.

### 5.2 — 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.

### 5.3 — 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.

**IMPORTANT: Use only specified greases to lubricate contactor parts. DO NOT USE ANY SUBSTITUTES.**

Use the following lubricants for the:

1. Operating Mechanism (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. Main Contacts (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)

### 5.4 — 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.

### 5.5 — Batteries

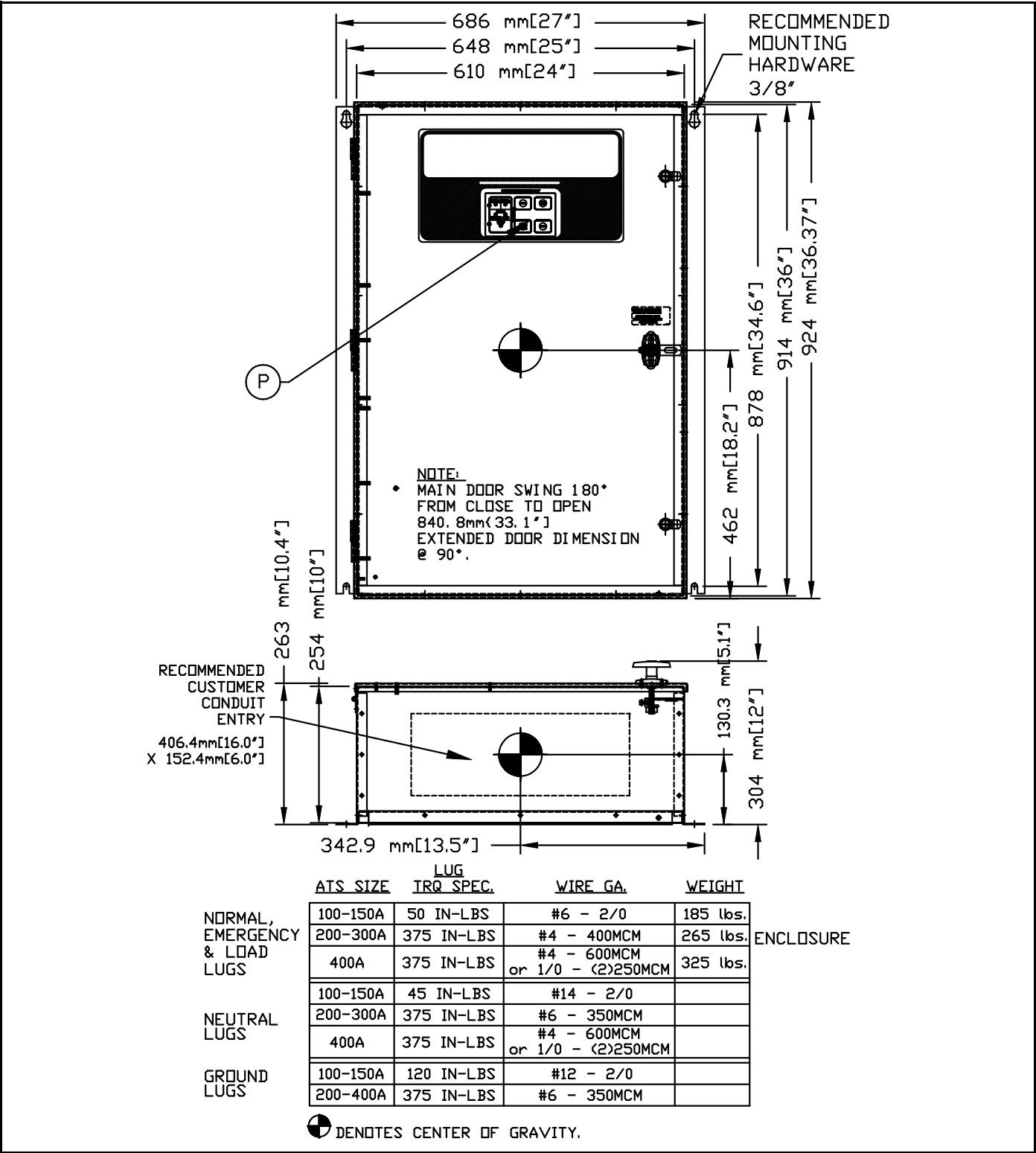
The batteries in the transfer switch controller are of the nickel metal hydride type. The batteries are rechargeable. Replace with Panasonic catalog no. HHR75AAA or equivalent every three (3) years.

**This page intentionally left blank.**

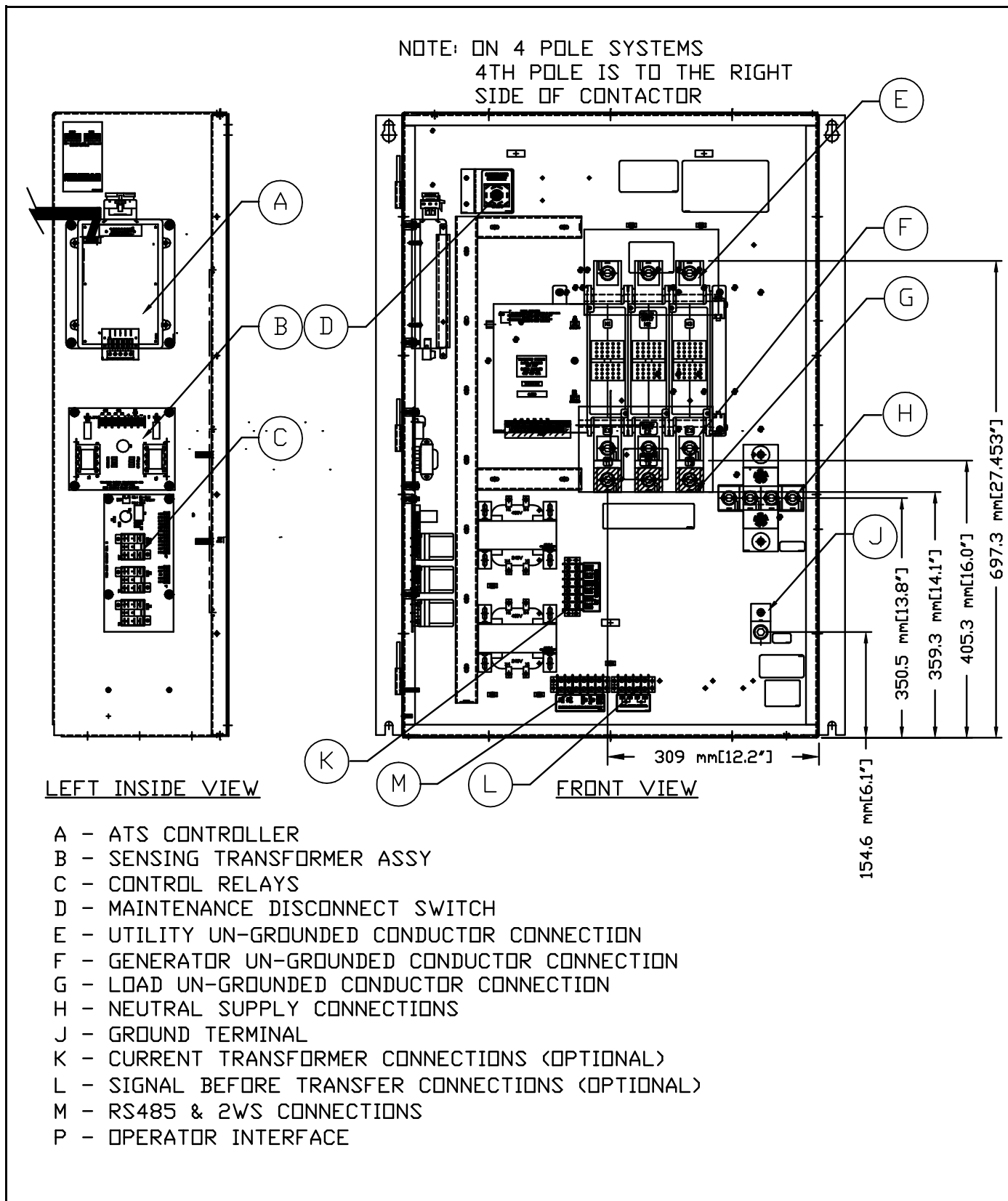
# Section 6 Installation Drawings

## 6.1 — 100-400 Amp LV

### 6.1.1— No. 0H6400ID-B (Part 1 of 2)



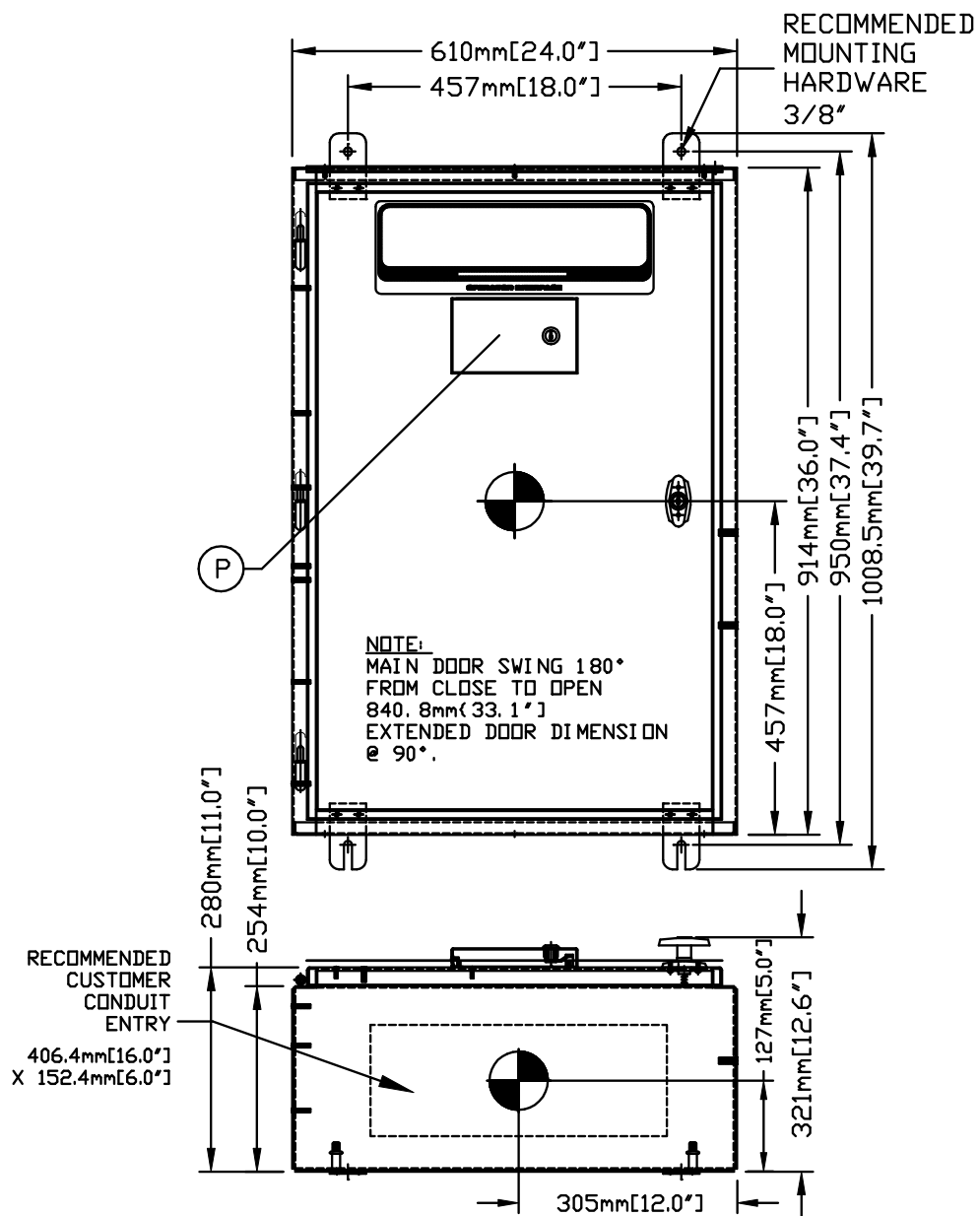
6.1.2— No. 0H6400ID-B (Part 2 of 2)





## 6.2 — 100-400 Amp LV

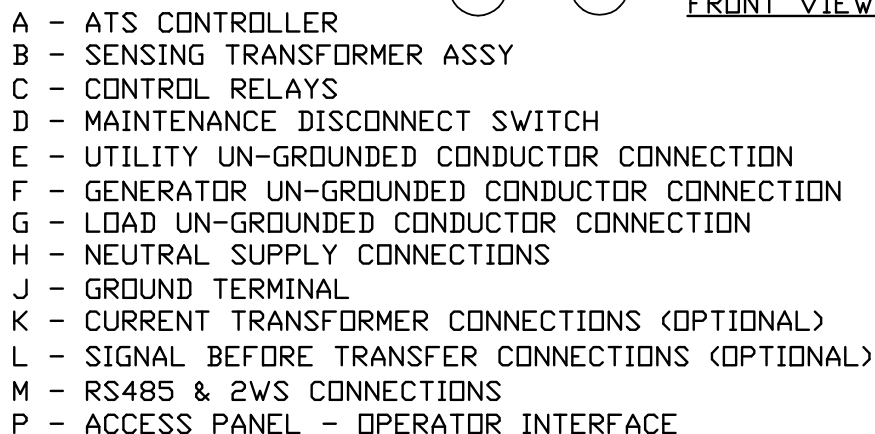
### 6.2.1— No. 0H6410ID-B (Part 1 of 2)



	ATS SIZE	LUG TRQ SPEC.	WIRE GA.	WEIGHT	
NORMAL, EMERGENCY & LOAD LUGS	100-150A	50 IN-LBS	#6 - 2/0	185 lbs.	ENCLOSURE
	200-300A	375 IN-LBS	#4 - 400MCM	265 lbs.	
	400A	375 IN-LBS	#4 - 600MCM or 1/0 - (2)250MCM	325 lbs.	
NEUTRAL LUGS	100-150A	45 IN-LBS	#14 - 2/0		
	200-300A	375 IN-LBS	#6 - 350MCM		
	400A	375 IN-LBS	#4 - 600MCM or 1/0 - (2)250MCM		
GROUND LUGS	100-150A	120 IN-LBS	#12 - 2/0		
	200-400A	375 IN-LBS	#6 - 350MCM		

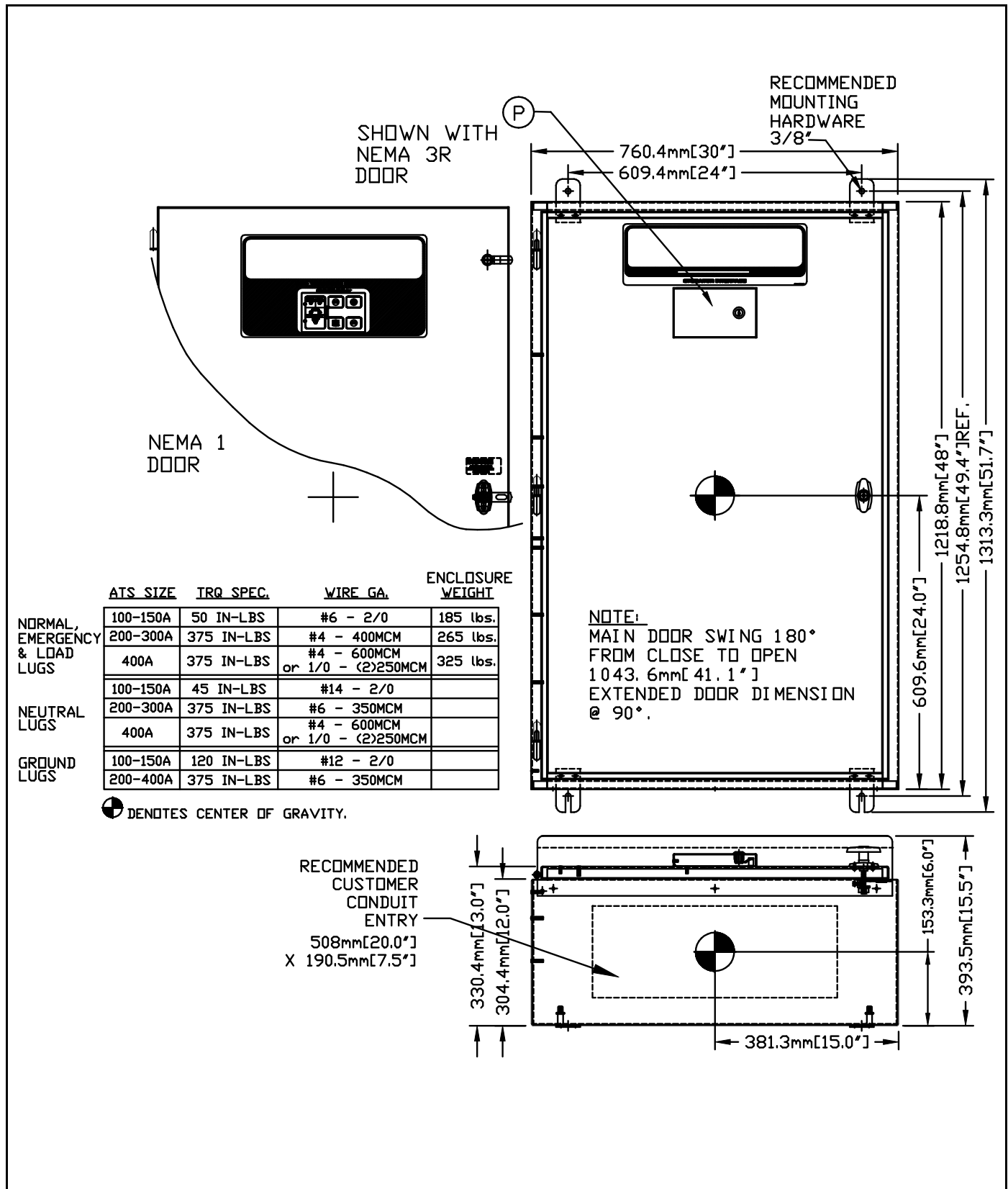
 DENOTES CENTER OF GRAVITY.

THIS DRAWING REPRESENTS NEMA 3R CONSTRUCTION OF  
HTS MODELS 100-400A "A" (120-240V 1PH) VOLTAGE  
"G" (120-208V 3PH) VOLTAGE  
100A "K" (270/480V 3PH) VOLTAGE  
ON 4 POLE SYSTEMS  
4TH POLE IS TO THE RIGHT SIDE OF CONTACTOR



## 6.3 — 100-400 Amp HV

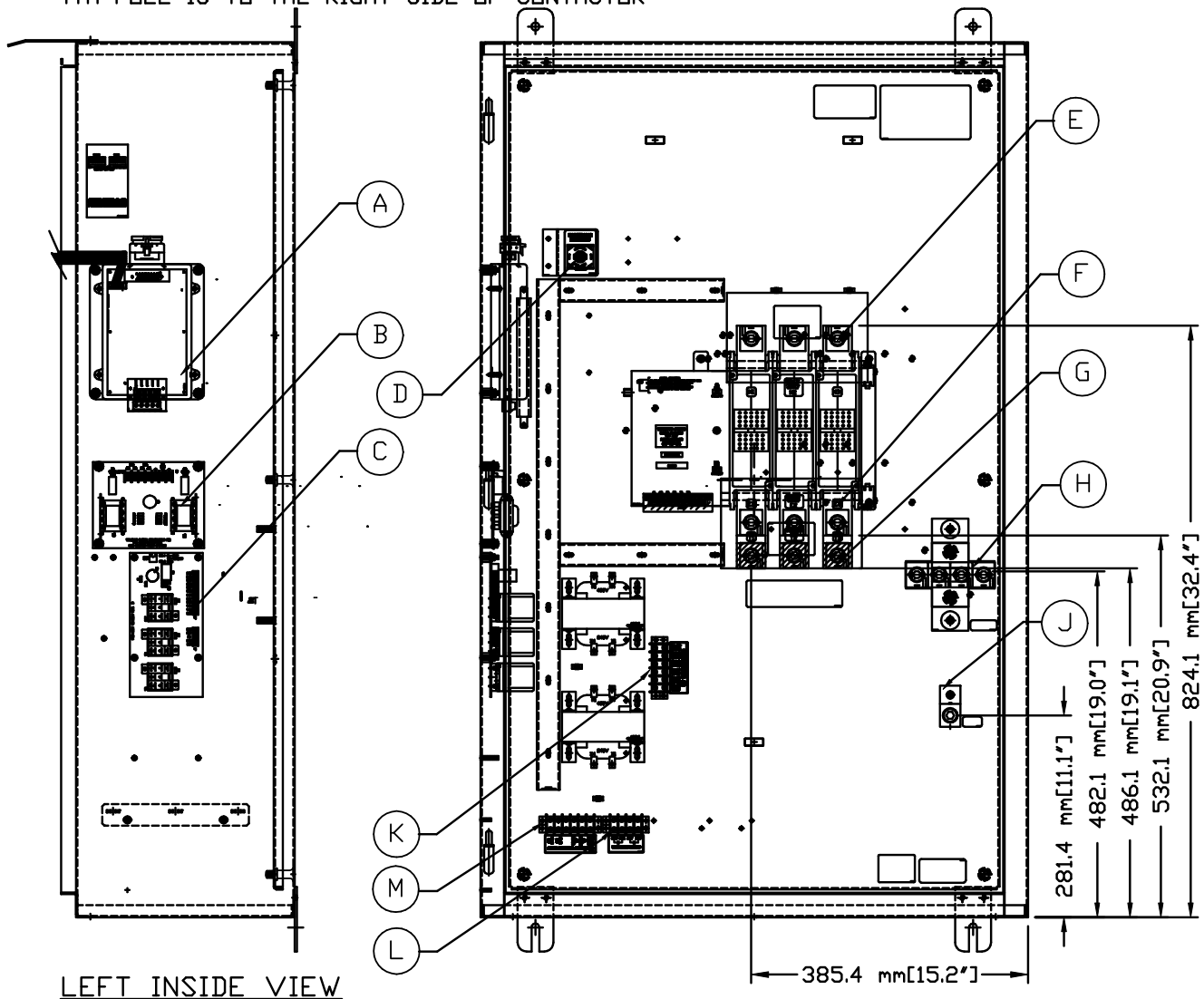
### 6.3.1— No. 0H6420ID-B (Part 1 of 2)



## 6.3.2— No. 0H6420ID-B (Part 2 of 2)

**NOTE:**

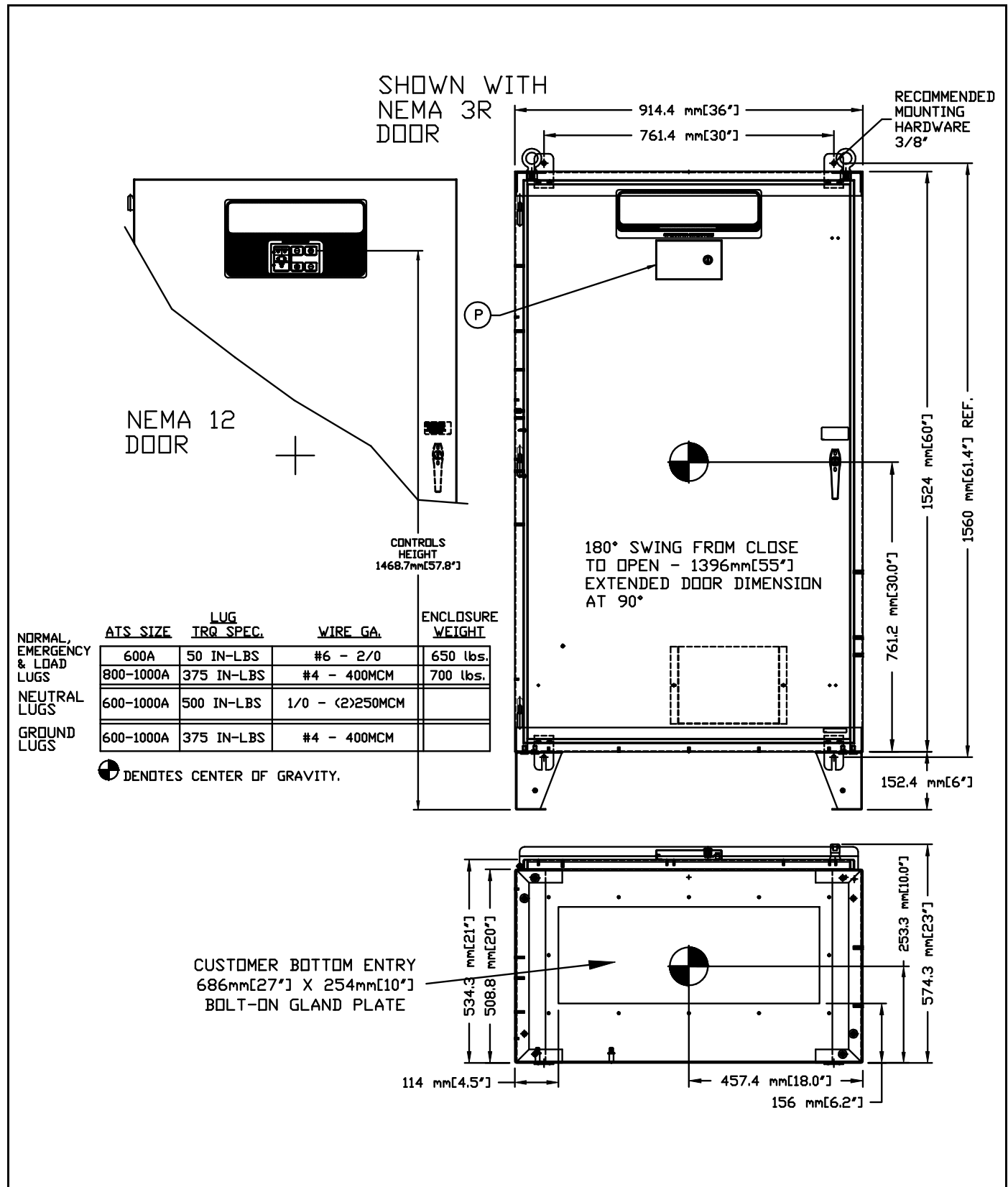
THIS DRAWING REPRESENTS NEMA 3R CONSTRUCTION OF  
HTS MODELS 150-400A "K" (277/480V 3PH) VOLTAGE  
ON 4 POLE SYSTEMS  
4TH POLE IS TO THE RIGHT SIDE OF CONTACTOR



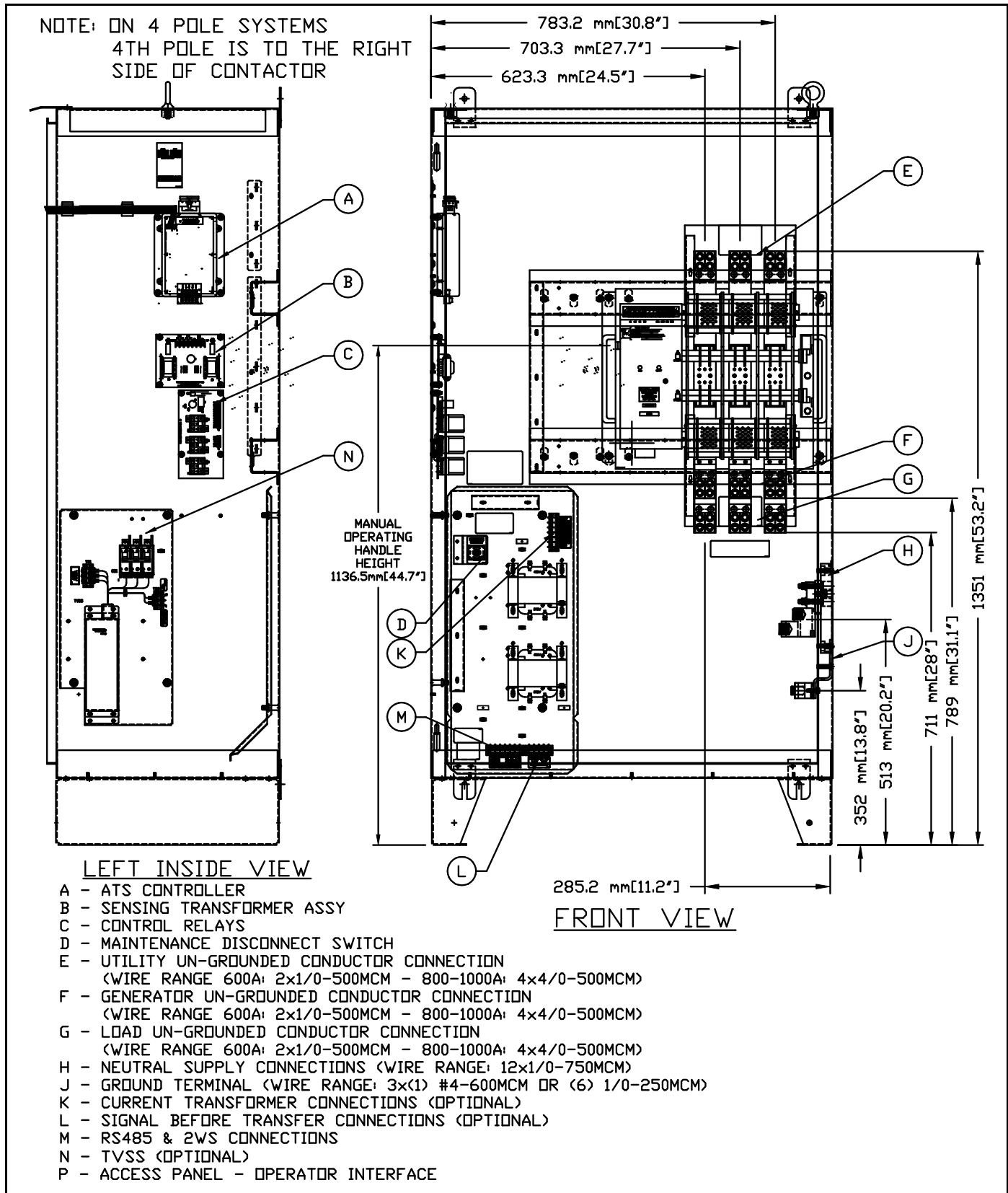
- A - ATS CONTROLLER
- B - SENSING TRANSFORMER ASSY
- C - CONTROL RELAYS
- D - MAINTENANCE DISCONNECT SWITCH
- E - UTILITY UN-GROUNDED CONDUCTOR CONNECTION
- F - GENERATOR UN-GROUNDED CONDUCTOR CONNECTION
- G - LOAD UN-GROUNDED CONDUCTOR CONNECTION
- H - NEUTRAL SUPPLY CONNECTIONS
- J - GROUND TERMINAL
- K - CURRENT TRANSFORMER CONNECTIONS (OPTIONAL)
- L - SIGNAL BEFORE TRANSFER CONNECTIONS (OPTIONAL)
- M - RS485 & 2WS CONNECTIONS
- P - ACCESS PANEL - OPERATOR INTERFACE

## 6.4 — 600-1000 Amp

### 6.4.1— No. 0H6440ID-C (Part 1 of 2)

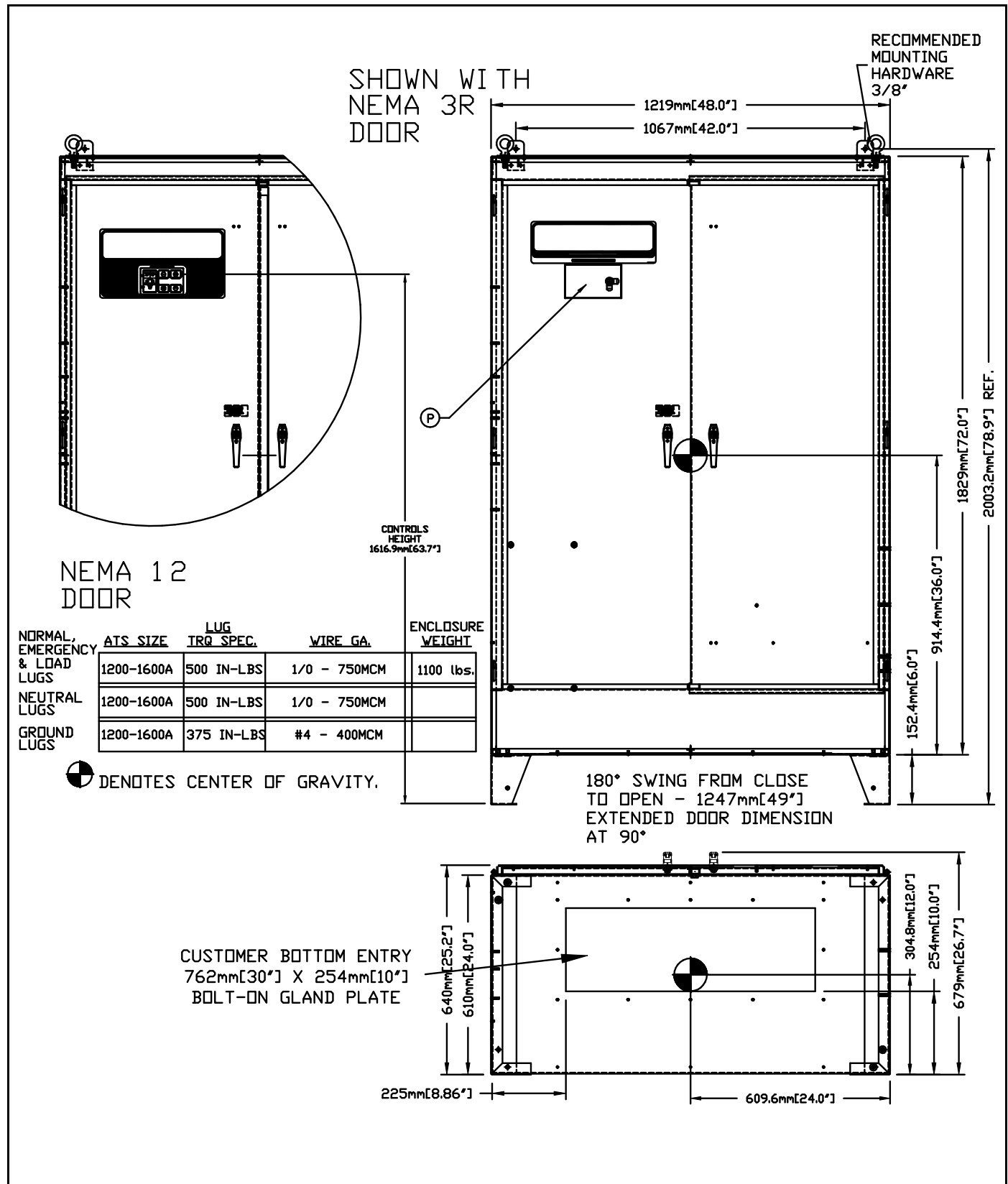


6.4.2— No. 0H6440ID-C (Part 2 of 2)

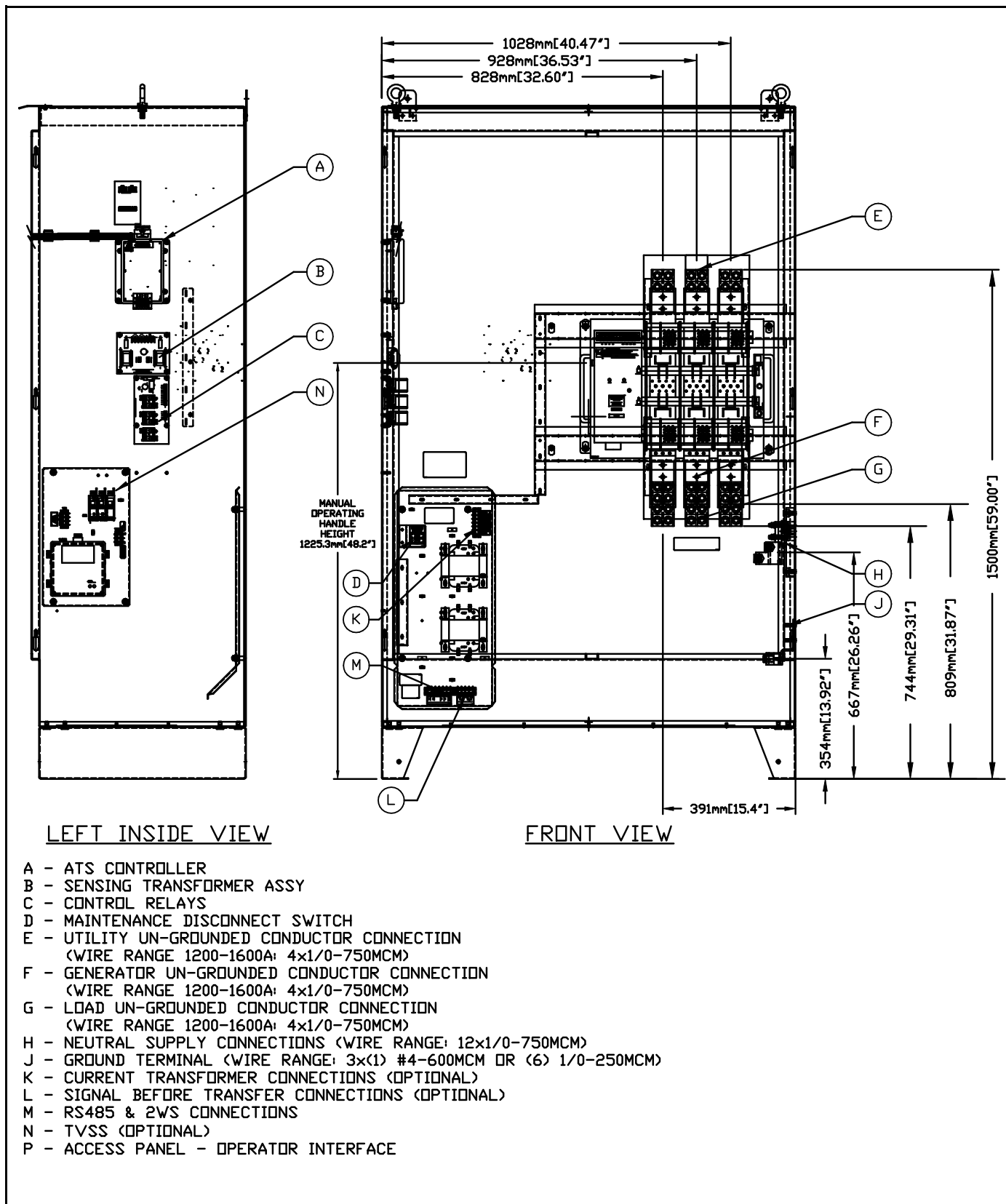


## 6.5 — 1200-1600 Amp

### 6.5.1— No. 0H6450ID-C (Part 1 of 2)



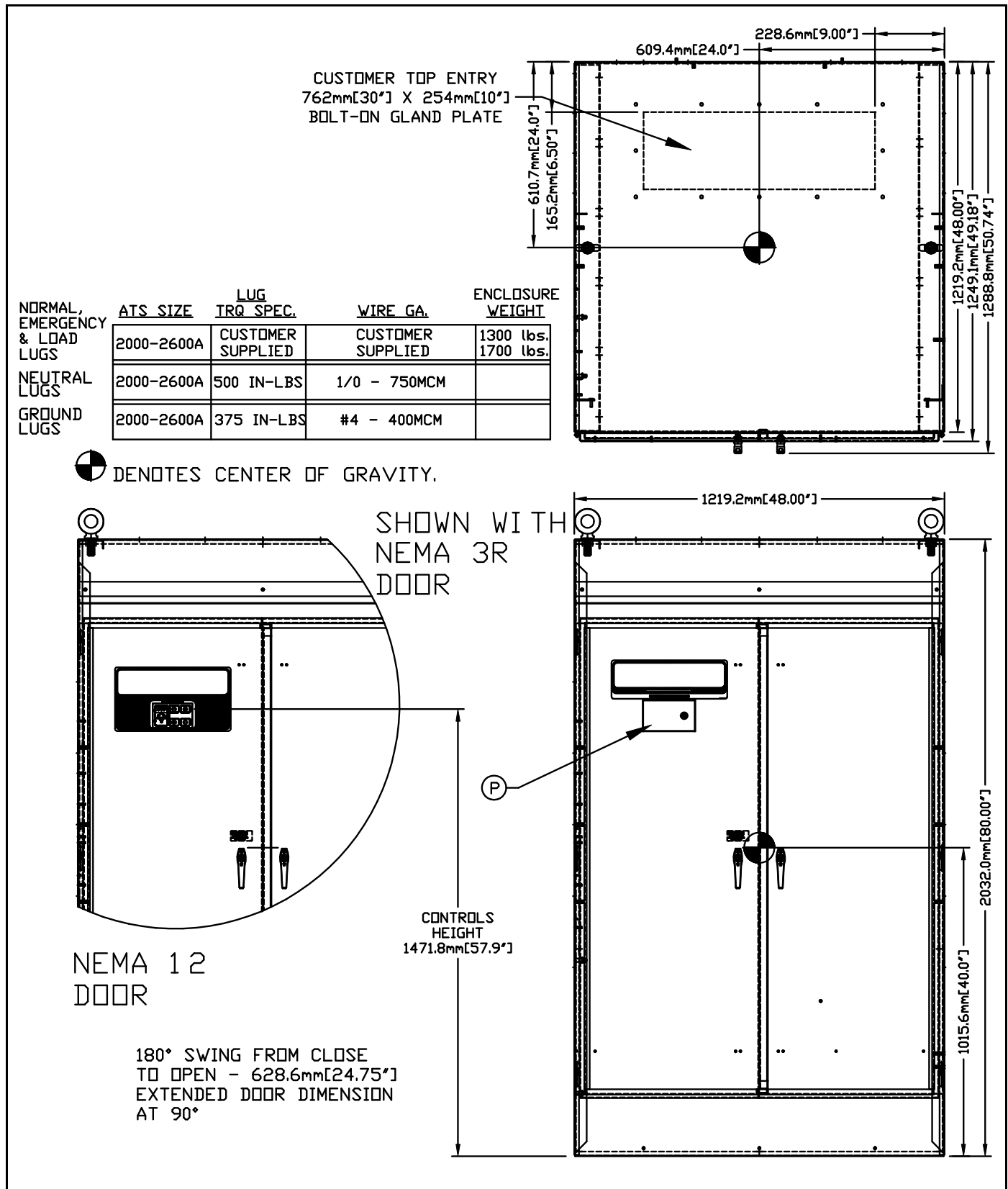
6.5.2— No. 0H6450ID-C (Part 2 of 2)

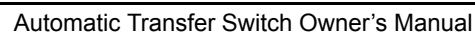




## 6.6 — 2000-2600 Amp

### 6.6.1— No. 0H6460ID-C (Part 1 of 2)





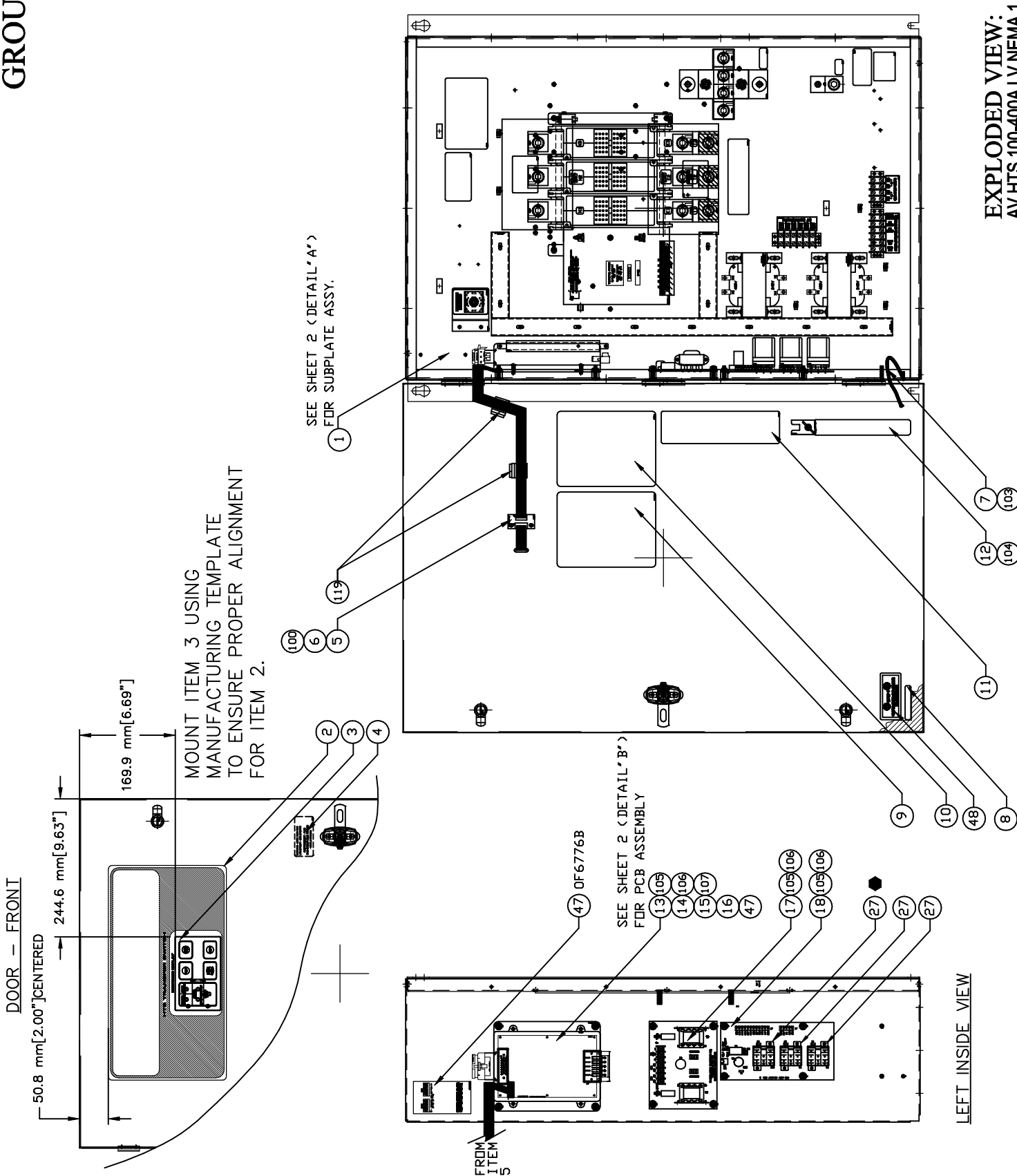


Part No. 0H6470    Rev. B 04/23/15    Printed in USA  
© Generac Power Systems, Inc. All rights reserved  
Specifications are subject to change without notice.  
No reproduction allowed in any form without prior written  
consent from Generac Power Systems, Inc.



Generac Power Systems, Inc.  
S45 W29290 Hwy. 59  
Waukesha, WI 53189  
1-888-GENERAC (1-888-436-3722)  
[generac.com](http://generac.com)

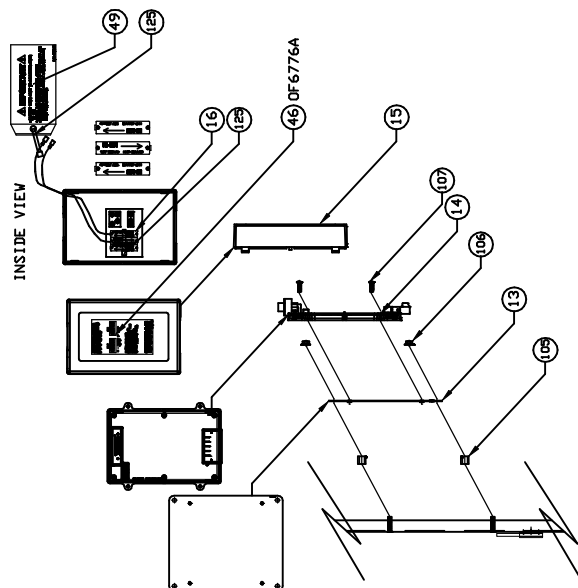
# GROUP B



## GROUP B

**CONTROLLER PCB ASSEMBLY INSTRUCTION:**

1. SLIDE SPACERS ITEM 105 OVER (4) STUDS LOCATED ON ENCLOSURE LEFT SIDE WALL.
2. ASSEMBLE (ASSY PCB COVER COMM XFER SW.) ITEM 14 ONTO MTG PLATE ITEM 13 USING (4) ITEM 107 (OC2212).
3. ASSEMBLE ITEM 13 AND 14 ON TO STUDS IN ENCLOSURE USING (4) ITEM 106 (06F6423).
4. INSTALL BATTERIES ITEM 16 PER DECAL INSTRUCTIONS INTO BATTERY HOLDER ON ITEM 15; COVER: SECURE WITH ITEM 125.
5. ASSEMBLE RIBBON CABLE FROM ITEM 5 TO CONNECTOR ON CONTROLLER PCB PRIOR TO SECURING COVER, TOP TO COVER, BOTTOM ITEM 14.
6. ATTACH DECAL ITEM 47 TO TOP OF COVER ITEM 15.
7. ATTACH TAG ITEM 49 TO BATTERY DISCONNECT WIRES.



DETAIL "B"

DETAIL "C"

WIRE DUCT  
SEE ENGRG  
END CUT LIST

SEE ENGR. FOR CUT LIST

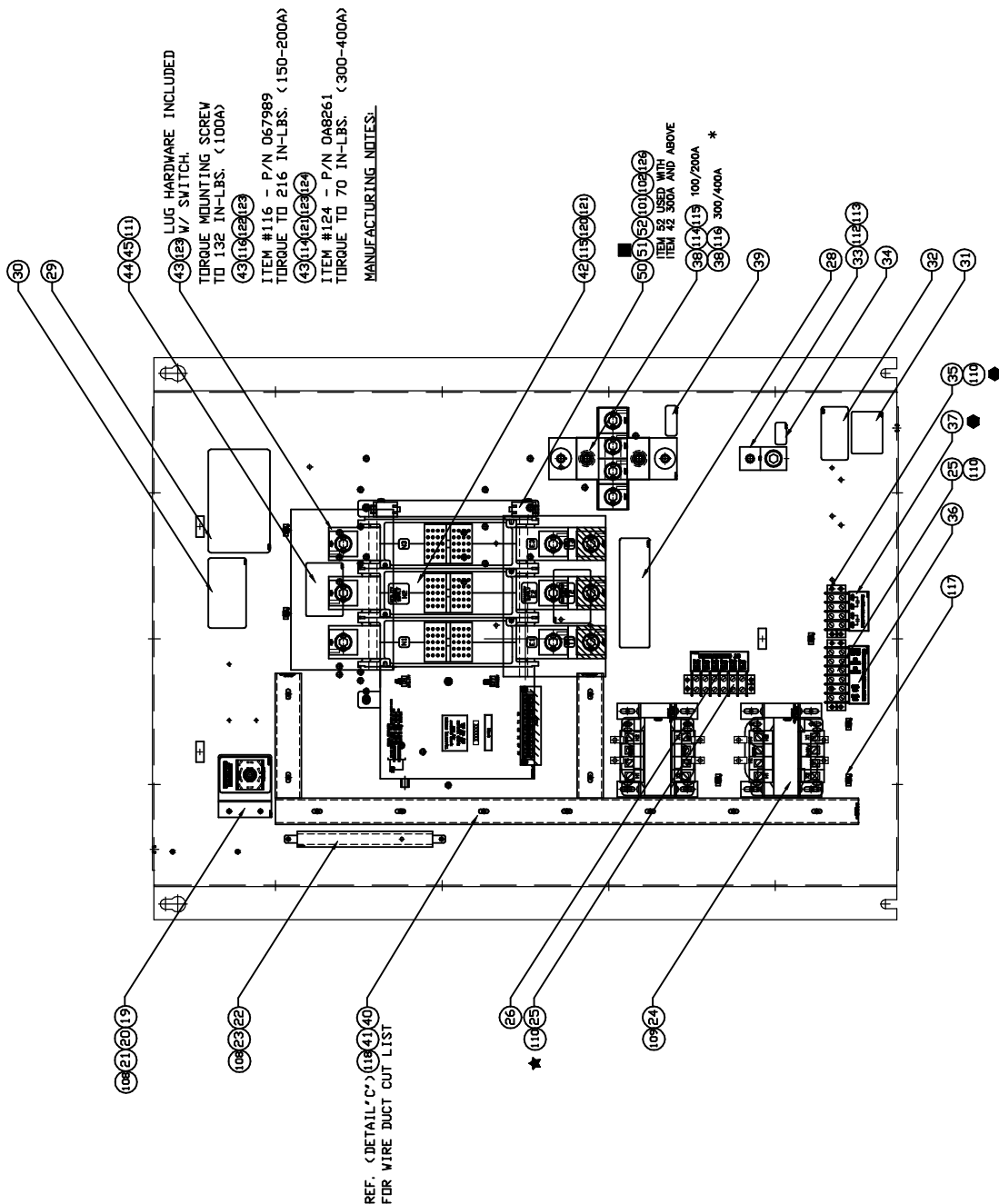
QTY.	2
------	---

25.4 mm [1.00"]

50.8 mm [2.00"]

\* - NEUTRAL BLOCK NOT USED ON  
4 POLE OR 1 PHASE 3 POLE UNITS

**EXPLODED VIEW:**  
AV HTS 100-400A LV NEMA1  
**DRAWING #:** 0H6400



REF. <DETAIL'C'> 1184140  
FOR WIRE DUCT CUT LIST

\* - NEUTRAL BLOCK NOT USED ON  
4 POLE OR 1 PHASE 3 POLE UNITS

EXPLODED VIEW: AV HTS 100-400A LV NEMA 1  
DRAWING #: 0H6400

GROUP B

APPLICABLE TO:

ITEM	PART #	QTY.	DESCRIPTION
1	0F5153	1	EV HTS ENCLOSURE NEMA 1
2	0F5083	1	DECAL HTS T/SWITCH NEMA 1
	0G2749	1	DECAL HTS T/SWITCH NEMA 1 P/L
3	0F4284	1	KEYPAD, COMM XFER SW IN-PHASE
4	095282	1	DECAL-LIVE CIRCUIT
5	0F4302	1	KEYPAD INTERFACE ASSY
6	0F4460	2	SPACER PCB M4/#8X5/16X1/4 NYL
7	0536210193	1	ASSY WIRE #0 12.00"(GROUND WIRE)
8	077228	1	DECAL-ENCLOSURE NOTE
9	0F5508A	1	DECAL HTS TEST SEQUENCE 100A
	0F5508B	1	DECAL HTS TEST SEQUENCE 150A
	0F5508C	1	DECAL HTS TEST SEQUENCE 200A
	0F5508D	1	DECAL HTS TEST SEQUENCE 300A
	0F5508E	1	DECAL HTS TEST SEQUENCE 400A
10	0F5503	1	DECAL HTS SWITCH INFO
11	0D4545	1	DECAL, MANUAL OPERATION
12	063321	1	HANDLE XFER SWITCH 1-400A
13	0F4801	1	PLATE MOUNTING PCB ASSEMBLY
14	0F5926	1	ASSY PCB COVER COMM XFER SW
15	0F5901	1	ASSY COVER COMM XFER SW
16	0F5180	1	BATTERY, AAA
(1)17	0F4410	1	ASSY PCB COMM TRANSFORMER
(1)18	0H6017	1	OTS RELAY-COMM XFER SWITCH W
19	0F4802	1	BRACKET TOGGLE SWITCH
20	0D3610	1	DECAL, MAINTENANCE DISCONNECT
(1)21	055868	1	SWITCH TOGGLE 4PDT 15A SPADE
22	063971	1	RES 250R 5% 100W
23	063324	2	RES MTG BRACKET FOR 100W
24	064126	2	TRANSFRM 240/480V-120/240V
	072162	2	TRANSFRM 600V TO 240V 200VA
(1)25	046357	REF	BLOCK TERM 20A 6 X 6 X 1100V
26	0F5039	1	DECAL CT CONNECTIONS
(1)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	062684	1	LUG SLDLSS 2/0
	057329	1	LUG SLDLSS 350
34	067210A	1	DECAL, GND
(1)35	046689	REF	BLOCK TERM 20A 4 X 6 X 1100V
36	0H6016	1	DECAL (RS485 & 2WS)
37	075355	1	DECAL SIGNAL BEFORE XFER
38	0E3717	1	ASSY NEUT BLK 100A W/TAP
	0E3717A	1	ASSY NEUT BLK 200-400A W/TAP
	0F4034	1	ASSY TERMINAL BLOCK 300-400A
39	0A9457	1	DECAL NEUTRAL
40	091472	FT	DUCT WIRING 1X1.5 (34"=2.833FT)
41	091472A	FT	COVER WIRE DUCT 1 IN (34"=2.833FT)
42	0D7300	1	XFER SW W 100A600V2P
	0D7301	1	XFER SW W 100A600V3P
	0D7302	1	XFER SW W 100A600V4P
	0C8881	1	XFER SW W 150A600V2P
	0C8882	1	XFER SW W 150A600V3P
	0C8883	1	XFER SW W 150A600V4P
	0C8884	1	XFER SW W 200A600V2P
	0C8885	1	XFER SW W 200A600V3P
	0C8886	1	XFER SW W 200A600V4P
	0D7297	1	XFER SW W 300A600V2P
	0D7298	1	XFER SW W 300A600V3P
	0D7299	1	XFER SW W 300A600V4P
	0D7294	1	XFER SW W 400A600V2P
	0D7295	1	XFER SW W 400A600V3P
	0D7296	1	XFER SW W 400A600V4P
43	099084	REF	LUG SLDLSS 2/0
	0A9949	REF	LUG SLDLSS 400
	0A7822	REF	LUG SLDLSS 600/250
44	0C7907A	2	COVER LUG 2P 100AMP
	0C7907B	2	COVER LUG 3P 100AMP
	0C7907C	2	COVER LUG 4P 100AMP
	0C7907H	2	COVER LUG 2P 150/200AMP
	0C7907D	2	COVER LUG 3P 150/200AMP

ITEM	PART #	QTY.	DESCRIPTION
44	0C7907E	2	COVER LUG 4P 150/200AMP
	0C7907J	2	COVER LUG 2P 300/400AMP
	0C7907F	2	COVER LUG 3P 300/400AMP
	0C7907G	2	COVER LUG 4P 300/400AMP
45	0C8308	2	DECAL TERMINAL SHOCK HAZARD
46	0F6776A	1	DECAL DIP SW. CONFIG. PCB COVER
47	0F6776B	1	DECAL DIP SW. CONFIG. ENCL
48	0G1484	1	DECAL UL CTRL PANEL ENCL
49	0F9340	1	TAG, BATTERY DISCONNECT
50	074604	1	AUX CONTACT N-TYP SPDT
51	074672A	2	SWITCH MICRO DPDT SEL & AUX2PL
52	092979	1	AUX CONT INSULATOR ( 300A->)
(1)53	0H6400HD	1	WIRE HARNESS HTS (NOT SHOWN)
HARDWARE			
100	0C6748	2	NUT HEX LOCK M4-0.7 SS NYL INS
101	022985	REF	WASHER FLAT #6 ZINC
102	022264	REF	WASHER LOCK #8-M4
103	0F7806	2	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 PHHT M4-0.7 X 16 ZYC
108	0A2111	4	SCREW SWAGE #10-32 X 5/16 ZYC
109	056893	8	SCREW CRIMPITE 10-24 X 1/2
110	0A1661	REF	RIVET POP .156 X .675 AL
111	0C8275	4	SCREW PPHM DSEMS M4-7 X 10 ZNC
112	027482	1	WASHER SHAKEPROOF EXT 5/16 STL
113	024526	1	SCREW HHTT 5/16-18 X 3/4 CZ
114	022473	REF	WASHER FLAT 1/4-M6 ZINC
115	074906	5	SCREW HHTT M6-1.0 X 20 BP
116	067989	REF	NUT HEX FL WHIZ M8-1.25
117	063378	6	HOLDER CABLE TIE
118	091477	11	RIVET, WIRE DUCT MNT
119	0F5272	2	CLAMP CABLE FLAT
120	022473	3	WASHER FLAT 1/4-M6 ZINC
121	022097	REF	WASHER LOCK M6-1/4
122	0C4896	REF	SCREW FHM M8-1.25 X 20MM CR
123	026902	REF	SCREW HHTT #8-32 X 1/4 CZ
124	0A8261	REF	SCREW HHC 1/4-28 X 5/8 .625TH
125	029333A	2	TIE WRAP UL 7.4"X .19" BLK
126	092980	REF	SCREW PPHM M4-0.7 X 25

(1)DESIGNATES ITEMS STRUCTURED IN  
WIRE HARNESS (NOT SHOWN).

**EXPLODED VIEW: AV HTS 100-400A LV NEMA 1**

**DRAWING #: 0H6400**

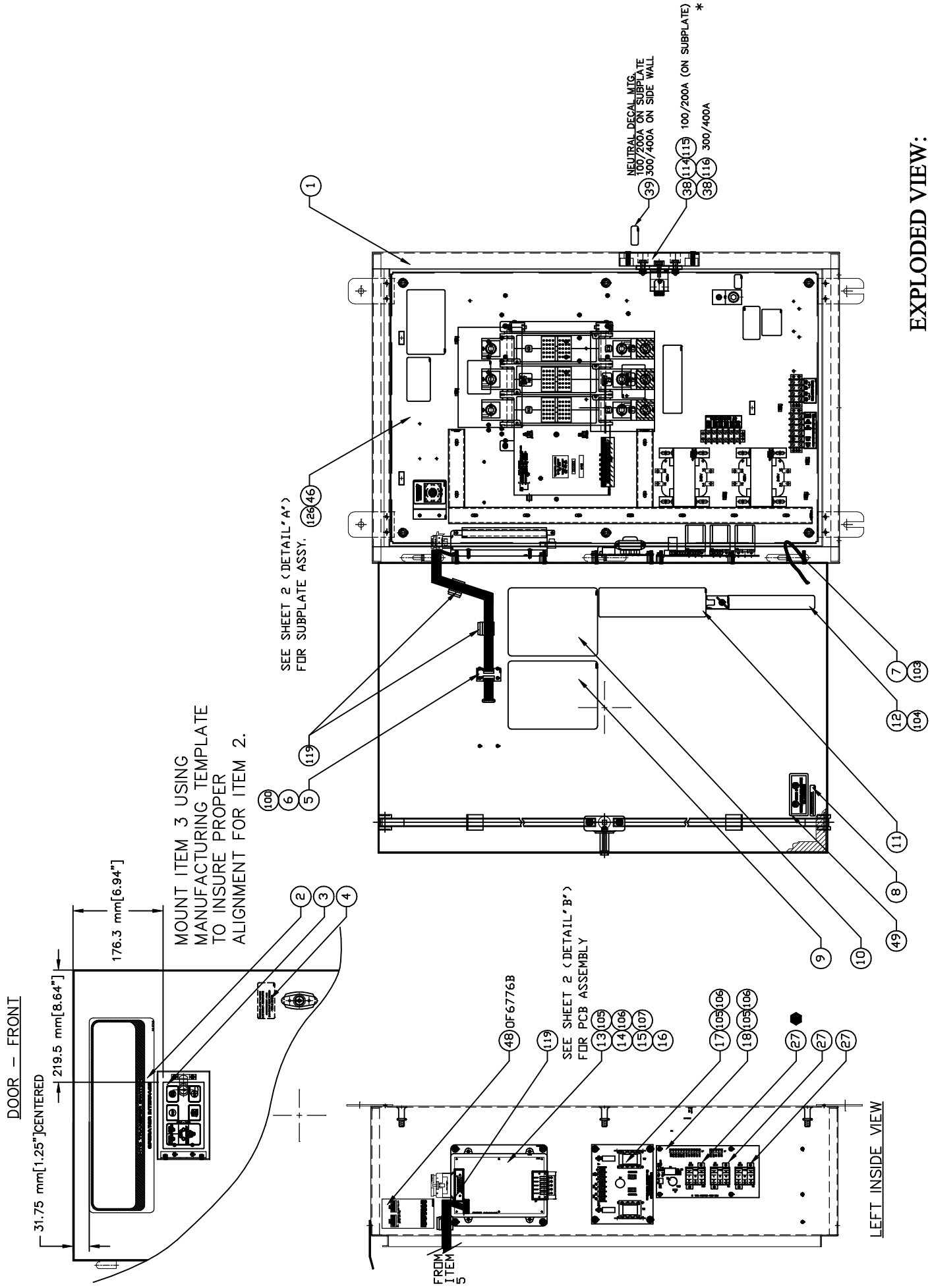
**APPLICABLE TO:**

**GROUP B**

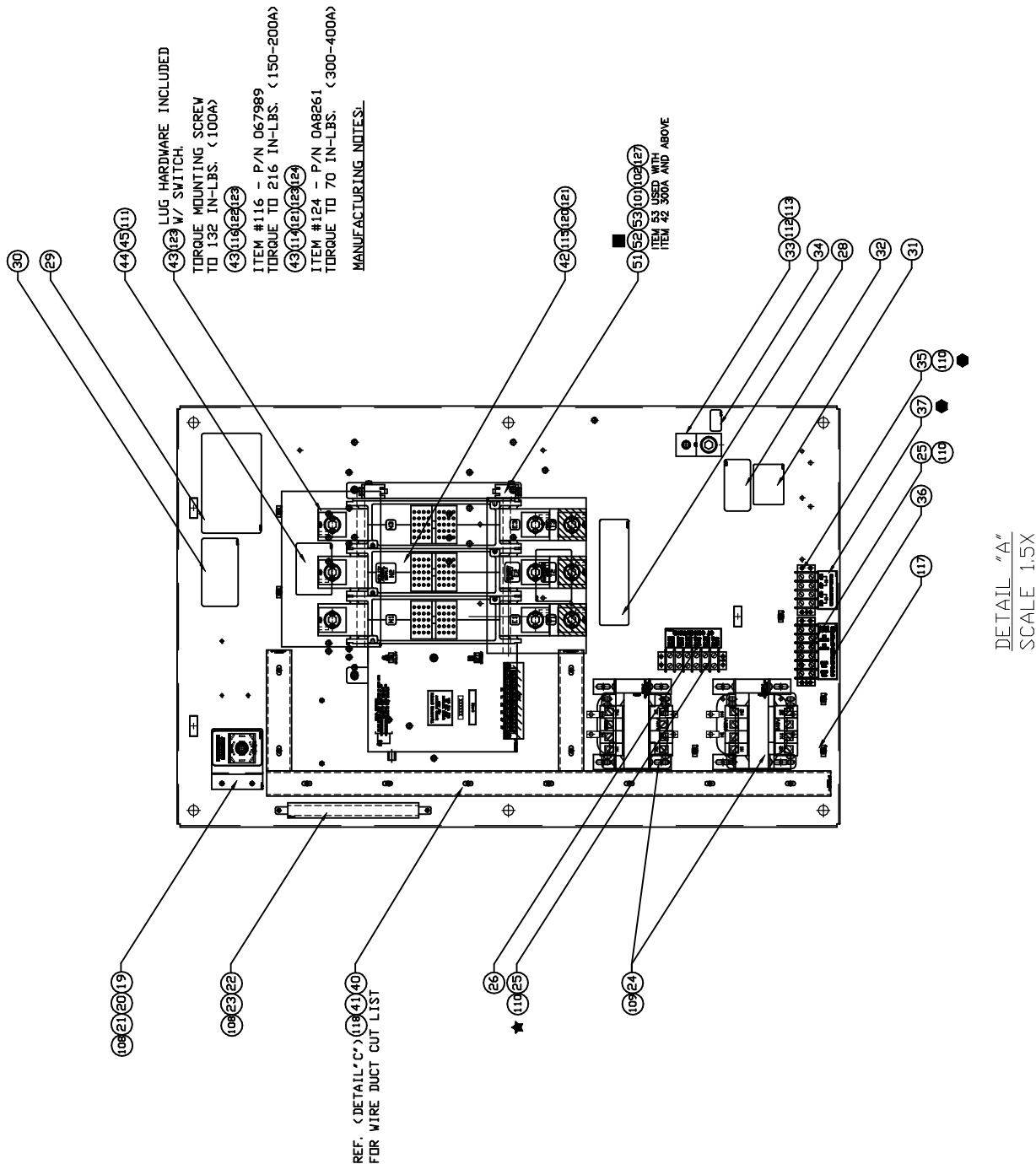
THIS PAGE IS LEFT INTENTIONALLY BLANK



# GROUP B



# GROUP B



EXPLODED VIEW:  
AV HTS 100-400A LV NEMA 3R  
DRAWING #: 0H6410

EXPLODED VIEW: AV HTS 100-400A LV NEMA 3R  
DRAWING #: 0H6410

GROUP B

APPLICABLE TO:

ITEM	PART #	QTY.	DESCRIPTION
1	0F7110	1	ENCL NEMA 3R 24X36X10
2	0F7145	1	DECAL HTS TRANSFER SW NEMA 3R
3	0G2774	1	DECAL HTS(XR)TRANS SW NEMA 3R
4	0F4284	1	KEYPAD, COMM XFER SW IN-PHASE
5	095282	1	DECAL-LIVE CIRCUIT
6	0F4302	2	KEYPAD INTERFACE ASSY
7	0F4460	1	SPACER PCB M4/#8X5/16X1/4 NYL
8	0536210193	1	ASSY WIRE #0 12.00"(GROUND WIRE)
9	0E8594	1	DECAL ENCL NOTE NEMA 3R
	0F5508A	1	DECAL HTS TEST SEQUENCE 100A
	0F5508B	1	DECAL HTS TEST SEQUENCE 150A
	0F5508C	1	DECAL HTS TEST SEQUENCE 200A
	0F5508D	1	DECAL HTS TEST SEQUENCE 300A
	0F5508E	1	DECAL HTS TEST SEQUENCE 400A
10	0F5503	1	DECAL HTS SWITCH INFO
11	0D4545	1	DECAL, MANUAL OPERATION
12	063321	1	HANDLE XFER SWITCH 1-400A
13	0F4801	1	PLATE MOUNTING PCB ASSEMBLY
14	0F5926	1	ASSY PCB COVER COMM XFER SW
15	0F5901	1	ASSY COVER COMM XFER SW
16	0F5180	3	BATTERY, AAA
(1)17	0F4410	1	ASSY PCB COMM TRANSFORMER
(1)18	0H6017	1	OTS RELAY-COMM XFER SWITCH W
19	0F4802	1	BRACKET TOGGLE SWITCH
20	0D3610	1	DECAL, MAINTENANCE DISCONNECT
(1)21	055868	1	SWITCH TOGGLE 4PDT 15A SPADE
22	063971	1	RES 250R 5% 100W
23	063324	2	RES MTG BRACKET FOR 100W
24	064126	2	TRANSFRM 240/480V-120/240V
	072162	2	TRANSFRM 600V TO 240V 200VA
(1)25	046357	REF	BLOCK TERM 20A 6 X 6 X 1100V
26	0F5039	1	DECAL CT CONNECTIONS
(1)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	062684	1	LUG SLDLSS 2/0-#12 X 11/32 CU
	057329	1	LUG SLDLSS 350-#6X13/32 AL/CU
34	067210A	1	DECAL, GND
(1)35	046689	REF	BLOCK TERM 20A 4 X 6 X 1100V
36	0H6016	1	DECAL (RS485 & 2WS)
37	075355	1	DECAL SIGNAL BEFORE XFER
38	0E3717	1	ASSY NEUTRAL BLOCK 100A W/TAP
	0E3717A	1	ASSY NEUTRAL BL150-200A W/TAP
	0F4034	1	ASSY TERMINAL BLOCK 300-400A
39	0A9457	1	DECAL NEUTRAL
40	091472	FT	DUCT WIRING 1X1.5 (34"=2.833FT)
41	091472A	FT	COVER WIRE DUCT 1 IN (34"=2.833FT)
42	0D7300	1	XFER SW-W 100A600V2P
	0D7301	1	XFER SW-W 100A600V3P
	0D7302	1	XFER SW-W 100A600V4P
	0C8881	1	XFER SW-W 150A600V2P
	0C8882	1	XFER SW-W 150A600V3P
	0C8883	1	XFER SW-W 150A600V4P
	0C8884	1	XFER SW-W 200A600V2P
	0C8885	1	XFER SW-W 200A600V3P
	0C8886	1	XFER SW-W 200A600V4P
	0D7297	1	XFER SW-W 300A600V2P
	0D7298	1	XFER SW-W 300A600V3P
	0D7299	1	XFER SW-W 300A600V4P
	0D7294	1	XFER SW-W 400A600V2P
	0D7295	1	XFER SW-W 400A600V3P
	0D7296	1	XFER SW-W 400A600V4P

ITEM	PART #	QTY.	DESCRIPTION
43	099084	REF	LUG SLDLSS 2/0-#6X21/64 AL/CU
	0A9949	REF	LUG SLDLSS 400-#4X1/4-20 CU7AL
	0A7822	REF	LUG SLDLSS 600/250-1/0X1/4-28
44	0C7907A	2	COVER LUG 2P 100AMP
	0C7907B	2	COVER LUG 3P 100AMP
	0C7907C	2	COVER LUG 4P 100AMP
	0C7907H	2	COVER LUG 2P 150/200AMP
	0C7907D	2	COVER LUG 3P 150/200AMP
	0C7907E	2	COVER LUG 4P 150/200AMP
	0C7907J	2	COVER LUG 2P 300/400AMP
	0C7907F	2	COVER LUG 3P 300/400AMP
	0C7907G	2	COVER LUG 4P 300/400AMP
45	0C8308	2	DECAL TERMINAL SHOCK HAZARD
46	0F5089	1	SUBPLATE HTS 400A NEMA 3R
47	0F6776A	1	DECAL DIP SW. CONFIG. PCB COVER
48	0F6776B	1	DECAL DIP SW. CONFIG. ENCL
49	0G1484	1	DECAL UL CTRL PANEL ENCL
50	0F9340	1	TAG, BATTERY DISCONNECT
51	074604	1	AUX CONTACT N-TYP SPDT
52	074672A	2	SWITCH MICRO DPDT SEL & AUX2PL
53	092979	1	AUX CONT INSULATOR (300A->)
(1)54	0H6400HD	1	WIRE HARNESS HTS (NOT SHOWN)
HARNESS			
100	0C6748	2	NUT HEX LOCK M4-0.7 SS NYL INS
101	022985	REF	WASHER FLAT #6 ZINC
102	022264	REF	WASHER LOCK #8-M4
103	0F7806	2	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	4	SCREW SWAGE #10-32 X 5/16 ZYC
109	056893	8	SCREW CRIMPTITE 10-24 X 1/2
110	0A1661	REF	RIVET POP .156 X .675 AL
111	0C8275	4	SCREW PPHM DSEMS M4-7 X 10 ZNC
112	027482	1	WASHER SHAKEPROOF EXT 5/16 STL
113	024526	1	SCREW HHTT 5/16-18 X 3/4 CZ
114	022473	REF	WASHER FLAT 1/4-M6 ZINC
115	074906	5	SCREW HHTT M6-1.0 X 20 BP
116	067989	REF	NUT HEX FL WHIZ M8-1.25
117	063378	6	HOLDER CABLE TIE
118	091477	11	RIVET, WIRE DUCT MNT
119	0F5272	3	CLAMP CABLE FLAT
120	022473	3	WASHER FLAT 1/4-M6 ZINC
121	022097	REF	WASHER LOCK M6-1/4
122	0C4896	REF	SCREW FHM M8-1.25 X 20MM CR
123	026902	REF	SCREW HHTT #8-32 X 1/4 CZ
124	0A8261	REF	SCREW HHC 1/4-28 X 5/8 .625TH
125	029333A	2	TIE WRAP UL 7.4"X .19" BLK
126	064101	6	NUT HEX FL WHIZ 3/8-16
127	092980	REF	SCREW PPHM M4-0.7 X 25
(1)NEUTRAL BLOCK NOT USED ON 4 POLE OR 1 PHASE 3 POLE UNITS			

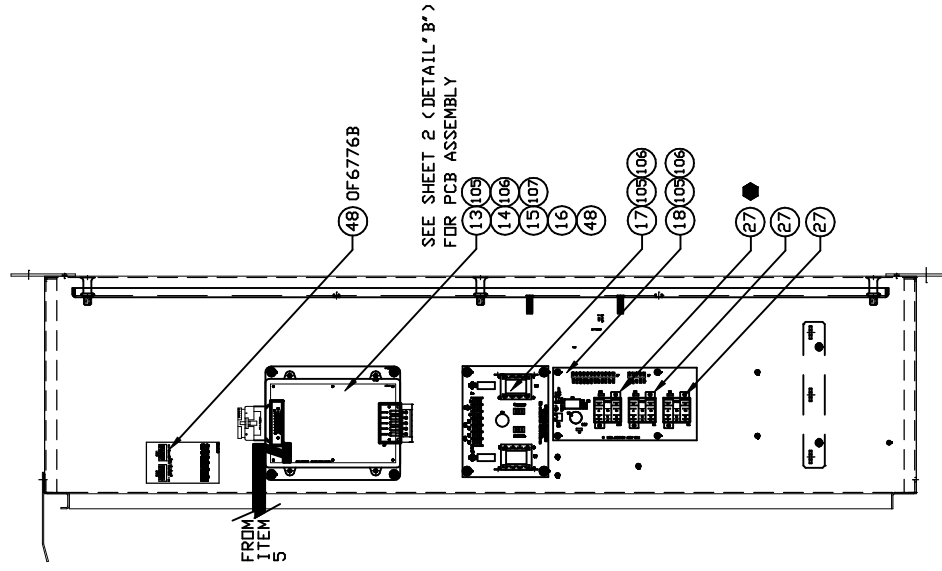
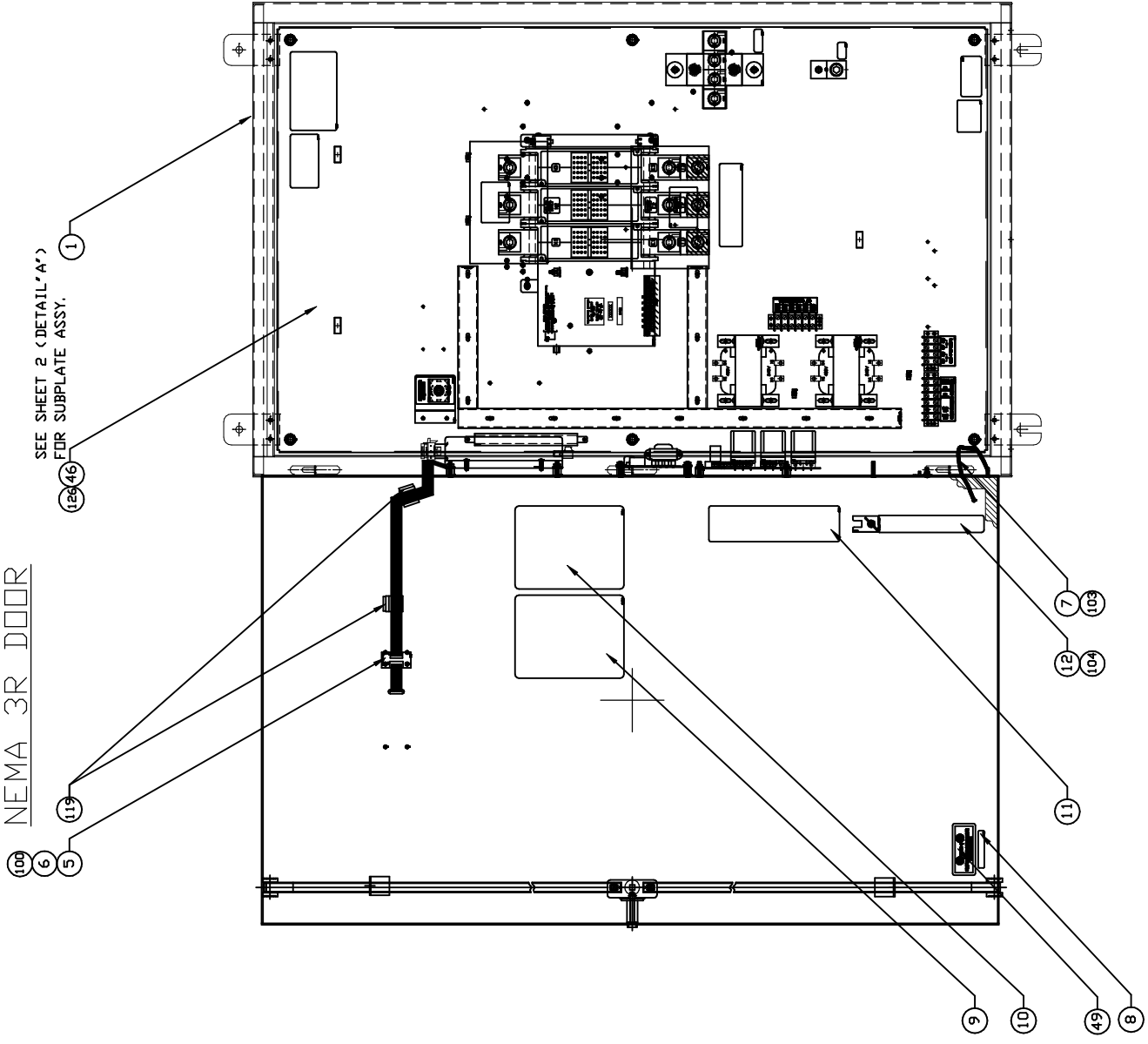
**EXPLODED VIEW: AV HTS 100-400A LV NEMA 3R**  
**DRAWING #: 0H6410**  
**APPLICABLE TO:**

**GROUP B**

THIS PAGE IS LEFT INTENTIONALLY BLANK

# GROUP B

SHOWN WITH  
NEMA 3R DOOR



EXPLODED VIEW:  
AV HTS 150-400A HV NEMA 1/3R  
DRAWING #: 0H6420

Technical drawing of the NEMA 1 and NEMA 3R door-front details of the 1000 Series Control Panel. The drawing includes two main views: NEMA 1 (top) and NEMA 3R (bottom). Each view shows the internal components of the control panel, including the terminal block, fuse holder, and various wiring connections. Dimensions are provided for the overall panel size and the internal components. A detailed view of the terminal block is shown on the right, with labels for the various terminals and their corresponding wire colors and gauges. A table of wire duct specifications is also included.

**NEMA 1**  
DETAIL "A"  
SCALE 1.0X  
DOOR-FRONT

**NEMA 3R**  
DETAIL "A"  
SCALE 1.0X  
DOOR-FRONT

Dimensions:  
 - 57.2 mm [2.25"] CENTERED  
 - 295.7 mm [11.64"]  
 - 178.3 mm [6.94"]  
 - 31.75 mm [1.25"] CENTERED

Labels:  
 - 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755,

**EXPLODED VIEW:**  
AV HTS 150-400A HV NEMA 1/3R  
**DRAWING #:** 0H6420

EXPLODED VIEW: AV HTS 150-400A HV NEMA 1/3R  
DRAWING #: 0H6420

GROUP B

APPLICABLE TO:

ITEM	PART #	QTY.	DESCRIPTION
1	0F6251	1	EV HTS ENCLOSURE NEMA 1
	0F7117	1	EV HTS ENCLOSURE NEMA 3R
2	0F5083	1	DECAL, HTS T/SWITCH NEMA 1
	0G2749	1	DECAL, HTS T/SWITCH NEMA 1 P/L
	0F7145	1	DECAL, HTS T/SWITCH NEMA 3R
	0G2774	2	DECAL, HTS T/SWITCH NEMA 3R P/L
3	0F4284	1	KEYPAD, COMM XFER SW IN-PHASE
4	095282	1	DECAL-LIVE CIRCUIT
5	0F4302	1	KEYPAD INTERFACE ASSY
6	0F4460	1	SPACER PCB M4#8X5/16X1/4 NYL
7	0536210193	1	ASSY WIRE #0 12.00"(GROUND WIRE)
8	077228	1	DECAL-ENCLOSURE NOTE
	0E8594	1	DECAL-ENCLOSURE NOTE NEMA 3R
9	0F5508B	1	DECAL HTS TEST SEQUENCE 150A
	0F5508C	1	DECAL HTS TEST SEQUENCE 200A
	0F5508D	3	DECAL HTS TEST SEQUENCE 300A
	0F5508E	1	DECAL HTS TEST SEQUENCE 400A
10	0F5503	1	DECAL HTS SWITCH INFO
11	0D4545	1	DECAL, MANUAL OPERATION
12	063321	1	HANDLE XFER SWITCH 1-400A
13	0F4801	1	PLATE MOUNTING PCB ASSEMBLY
14	0F5926	1	ASSY PCB COVER COMM XFER SW
15	0F5901	2	ASSY COVER COMM XFER SW
16	0F5180	1	BATTERY, AAA
(1)17	0F4410	1	ASSY PCB COMM TRANSFORMER
(1)18	0H6017	1	OTS RELAY-COMM XFER SWITCH W
19	0F4802	1	BRACKET TOGGLE SWITCH
20	0D3610	1	DECAL, MAINTENANCE DISCONNECT
(1)21	055868	2	SWITCH TOGGLE 4PDT 15A SPADE
22	063971	1	RES 250R 5% 100W
23	063324	1	RES MTG BRACKET FOR 100W
24	064126	2	TRANSFRM 240/480V-120/240V
	072162	2	TRANSFRM 600V TO 240V 200VA
(1)25	046357	REF	BLOCK TERM 20A 6 X 6 X 1100V
26	0F5039	1	DECAL CT CONHNECTIONS
(1)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	057329		LUG SLDLSS 350-#6X13/32 AL/CU
34	067210A	1	DECAL, GND
(1)35	046689	REF	BLOCK TERM 20A 4 X 6 X 1100V
36	0H6016	1	DECAL (RS485 & 2WS)
37	075355	1W	DECAL SIGNAL BEFORE XFER

ITEM	PART #	QTY.	DESCRIPTION
38	0E3717A	1	ASSY-NEUT BLK 200-400A W/TAP
	0F4034	1	ASSY TERMINAL BLOCK 300-400A
39	0A9457	1	DECAL NEUTRAL
40	091472	FT	DUCT WIRING 1X1.5 (46"=3.833FT)
41	091472A	FT	COVER WIRE DUCT 1 IN (46"=3.833FT)
42	0C8882	1	XFER SW-W 150A600V3P
	0C8883	1	XFER SW-W 150A600V4P
	0C8885	1	XFER SW-W 200A600V3P
	0C8886	1	XFER SW-W 200A600V4P
	0D7298	1	XFER SW-W 300A600V3P
	0D7299	1	XFER SW-W 300A600V4P
	0D7295	1	XFER SW-W 400A600V3P
	0D7296	1	XFER SW-W 400A600V4P
43	0A9949	REF	LUG SLDLSS 400-#4X1/4-20 CU7AL
	0A7822	REF	LUG SLDLSS 600/250-1/0X1/4-28
44	0C7907D	2	COVER LUG 3P 150/200AMP
	0C7907E	2	COVER LUG 4P 150/200AMP
	0C7907F	2	COVER LUG 3P 300/400AMP
	0C7907G	2	COVER LUG 4P 300/400AMP
45	0C8308	2	DECAL TERMINAL SHOCK HAZARD
46	0F6300	1	SUB-PLATE HTS 400A HV
47	0F6776A	1	DECAL DIP SW. CONFIG. PCB COVER
48	0F6776B	1	DECAL DIP SW. CONFIG. ENCL
49	0G1484	1	DECAL UL CTRL PANEL ENCL
50	0F9340	1	TAG, BATTERY DISCONNECT
51	074604	1	AUX CONTACT N-TYP SPDT
52	074672A	2	SWITCH MICRO DPDT SEL & AUX2PL
53	092979	1	AUX CONT INSULATOR ( 300A->)
(1)54	0H6420HD	1	WIRE HARNESS HTS HV(NOT SHOWN)
HARNESS			
100	0C6748	2	NUT HEX LOCK M4-0.7 SS NYL INS
101	022985	REF	WASHER FLAT #6 ZINC
102	022264	REF	WASHER LOCK #8-M4
103	0F7806	2	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	4	SCREW SWAGE #10-32 X 5/16 ZYC
109	056893	8	SCREW CRIMPTITE 10-24 X 1/2
110	0A1661	REF	RIVET POP .156 X .675 AL
111	0C8275	4	SCREW PPHM DSEMS M4-7 X 10 ZNC
112	027482	1	WASHER SHAKEPROOF EXT 5/16 STL
113	024526	1	SCREW HHTT 5/16-18 X 3/4 CZ
114	022473	REF	WASHER FLAT 1/4-M6 ZINC
115	074906	5	SCREW HHTT M6-1.0 X 20 BP
116	067989	REF	NUT HEX FL WHIZ M8-1.25
117	063378	4	HOLDER CABLE TIE
118	091477	13	RIVET, WIRE DUCT MNT
119	0F5272	2	CLAMP CABLE FLAT
120	022473	3	WASHER FLAT 1/4-M6 ZINC
121	022097	REF	WASHER LOCK M6-1/4
122	0C4896	REF	SCREW FHM M8-1.25 X 20MM CR
123	026902	REF	SCREW HHTT #8-32 X 1/4 CZ
124	0A8261	REF	SCREW HHC 1/4-28 X 5/8 .625TH
125	029333A	2	TIE WRAP UL 7.4"X .19" BLK
126	064101	6	NUT HEX FL WHIZ 3/8-16
127	092980	REF	SCREW PPHM M4-0.7 X 25

(1) DESIGNATES ITEMS STRUCTURED IN WIRE HARNESS (NOT SHOWN).

**EXPLODED VIEW: AV HTS 150-400A HV NEMA 1/3R**

**DRAWING #: 0H6420**

**APPLICABLE TO:**

**GROUP B**

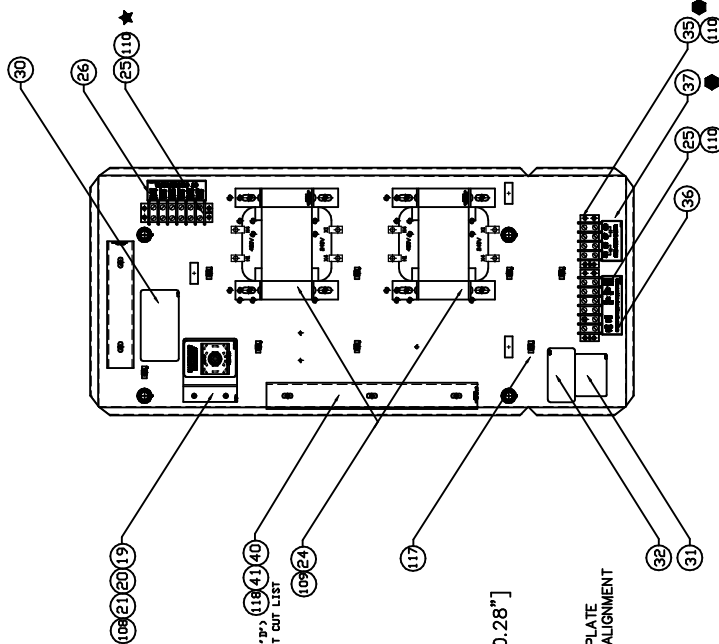
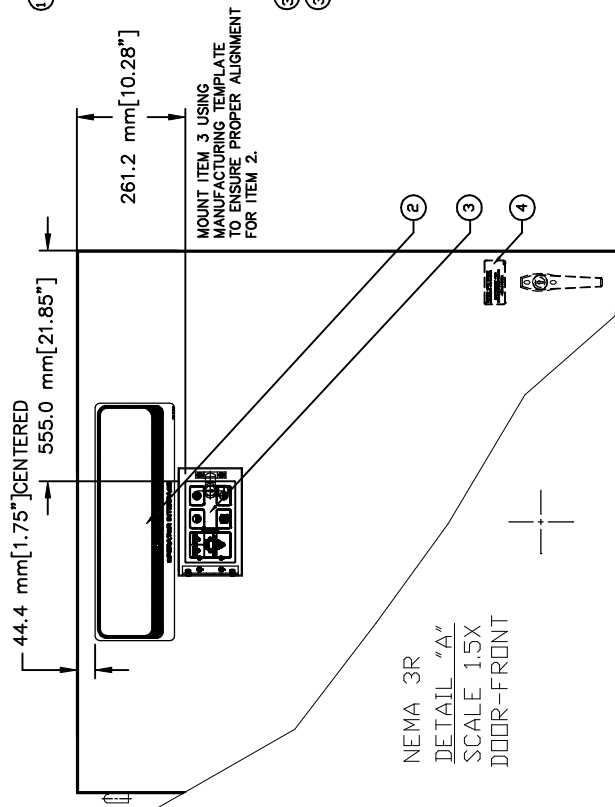
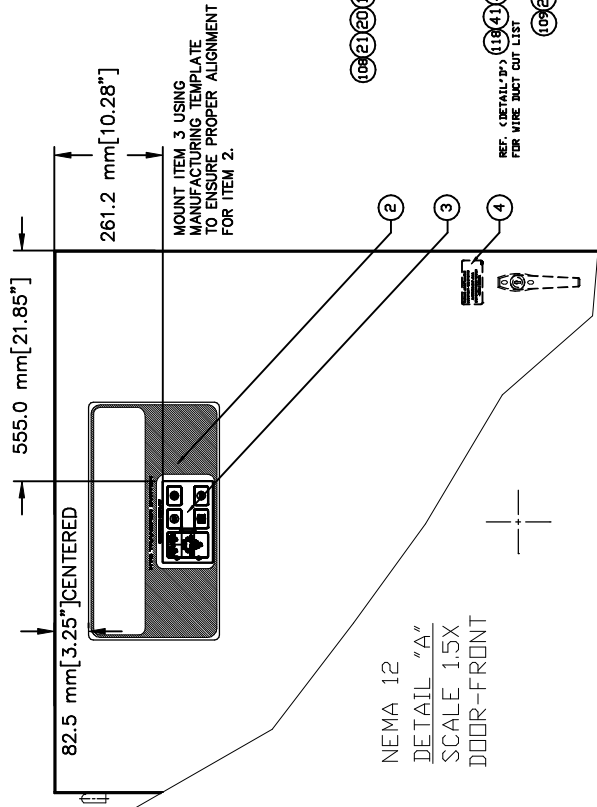
THIS PAGE IS LEFT INTENTIONALLY BLANK



SHOWN WITH  
NEMA 3R DOOR



# GROUP B



EXPLODED VIEW:  
AV HTS 600-1000A NEMA 12/3R  
DRAWING #: 0H6440

EXPLODED VIEW: AV HTS 600-1000A NEMA 12/3R  
DRAWING #: 0H6440

GROUP B

APPLICABLE TO:

ITEM	PART #	QTY.	DESCRIPTION
1	0F6610	1	ENCL NEMA 12 36X66X20
	0F7312	1	ENCL NEMA 3R 36X66X20
2	0F5083	1	DECAL,HTS T/SWITCH NEMA 1
	0G2749	1	DECAL,HTS T/SWITCH NEMA 1 P/L
	0F7145	1	DECAL,HTS T/SWITCH NEMA 3R
	0G2774	2	DECAL,HTS T/SWITCH NEMA 3R P/L
3	0F4284	1	KEYPAD, COMM XFER SW IN-PHASE
4	095282	1	DECAL-LIVE CIRCUIT
5	0F4302A	1	KEYPAD INTERFACE ASSY
6	0F4460	1	SPACER PCB M4/#8X5/16X1/4 NYL
7	0536210193	1	ASSY WIRE #0 12.00"(GROUND WIRE)
8	077228	1	DECAL-ENCLOSURE NOTE
	0E8594	1	DECAL-ENCLOSURE NOTE NEMA 3R
9	0F5508F	1	DECAL HTS TEST SEQUENCE 600A
	0F5508G	1	DECAL HTS TEST SEQUENCE 800A
	0F5508H	3	DECAL HTS TEST SEQUENCE 1000A
10	0F5503	1	DECAL HTS SWITCH INFO
11	0D4545	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 PCB COVER COMM XFER SW
15	0F5901	8	ASSY COVER COMM XFER SW
16	0F5180	1	BATTERY, AAA
(1)17	0F4410	2	ASSY PCB COMM TRANSFORMER
(1)18	0H6017A	REF	OTS RELAY-COMM XFER SWITCH WN
19	0F4802	1	BRACKET TOGGLE SWITCH
20	0D3610	REF	DECAL, MAINTENANCE DISCONNECT
(1)21	055868	1	SWITCH TOGGLE 4PDT 15A SPADE
22	0F6685	1	TIE-WRAP MOUNT FIR TREE (STYLE)
23	0F9340	1	TAG, BATTERY DISCONNECT
24	074652	1	TRANSFRM 600V TO 240V 250VA
	064932	1	TRANSFRM 480/240V 250VA
(1)25	046357	1	BLOCK TERM 20A 6 X 6 X 1100V
26	0F5039	1	DECAL CT CONNECTIONS
(1)27	027911	1	RELAY PNL 12VDC DPDT 10A@240VA
28	064510	2	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, GND
(1)35	046689	REF	BLOCK TERM 20A 4 X 6 X 1100V
36	0H6016	1	DECAL (RS485 & 2WS)
37	075355	1	DECAL SIGNAL BEFORE XFER
38	0D8700	1	ASSY NEUTRAL BLK 600-1000A ATS
39	0A9457	1	DECAL NEUTRAL
40	091472	FT	DUCT WIRING 1X1.5 (33"=2.750FT)
41	091472A	FT	COVER WIRE DUCT 1 IN (33"=2.750FT)
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

ITEM	PART #	QTY.	DESCRIPTION
43	080433	REF	LUG SLDLSS 500-#1X13/32 AL/CU
	063925	REF	LUG SLDLSS 500-40X17/32 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	0G7015	1	TVSS ASSEMBLY 600-2600A
47	0F6888	1	SUB-PLATE HTS 600-1000A
48	0F6776A	1	DECAL DIP SW. CONFIG. PCB COVER
49	0F6776B	1	DECAL DIP SW. CONFIG. ENCL
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	074672A	2	SWITCH MICRO DPDT SEL & AUX2PL
55	092979	1	AUX CONT INSULATOR (300A->)
56	0G1484	1	DECAL UL CTRL PANEL ENCL
(1)57	0H6440HD	1	WIRE HARNESS HTS 6-1000A(NOT SHOWN)
HARNESS			
100	0C6748	2	NUT HEX LOCK M4-0.7 SS NYL INS
101	022985	2	WASHER FLAT #6 ZINC
102	022264	2	WASHER LOCK #8-M4
103	0F7806	2	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	WASHER SHAKEPROOF EXT 5/16 STL
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	4	CLAMP CABLE FLAT
120	042911	3	SCREW HHC M10-1.5 X 30 G8.8
121	046526	3	WASHER LOCK M10
122	092980	2	SCREW PPHM M4-0.7 X 25
123	026902	7	SCREW HHTT #8-32 X 1/4 CZ
124	029333A	2	TIE WRAP UL 7.4"X .19" BLK
125	064101	REF	NUT HEX FL WHIZ 3/8-16
126	022195	REF	WASHER LOCK 1/2
127	022196	REF	NUT HEX 1/2-13 STEEL
128	023316	REF	SCREW HHC 1/2-13 X 4 G5

(1)DESIGNATES ITEMS STRUCTURED IN WIRE HARNESS (NOT SHOWN).

EXPLODED VIEW: AV HTS 600-1000A NEMA 12/3R

DRAWING #: 0H6440

APPLICABLE TO:

GROUP B

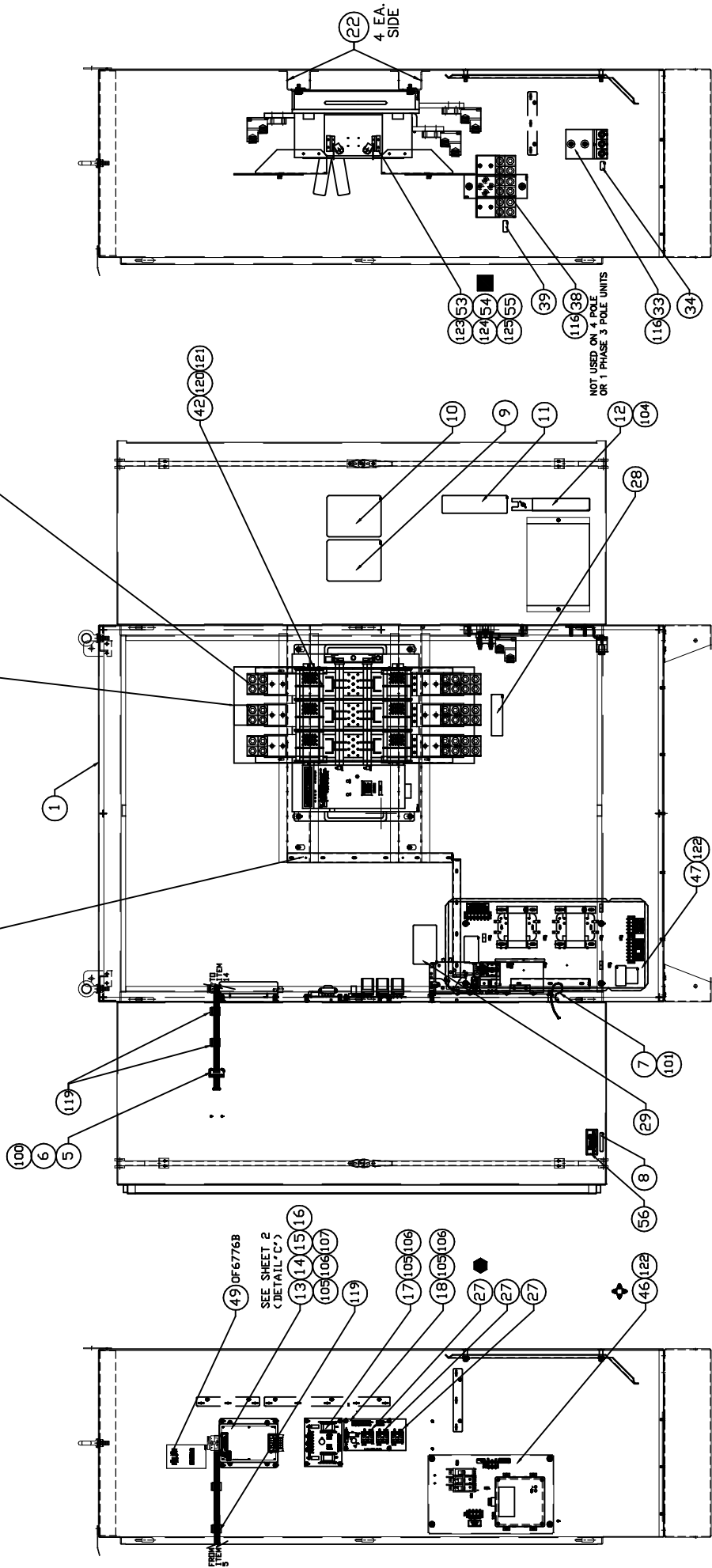
**THIS PAGE IS LEFT INTENTIONALLY BLANK**

# GROUP B

SHOWN WITH  
NEMA 3R DOOR

REF. <DETAIL 'D'>  
FOR WIRE DUCT CUT LIST

MANUFACTURING NOTES:  
MOUNTING:  
TORQUE TO 228 IN-LBS. <1200-1600A>



LEFT SIDE WALL VIEW

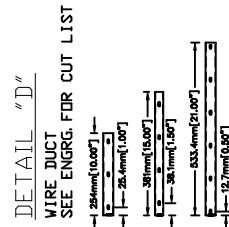
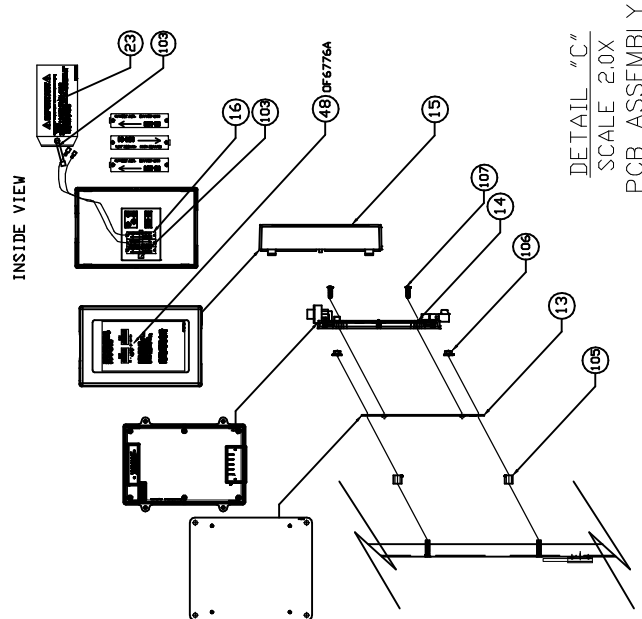
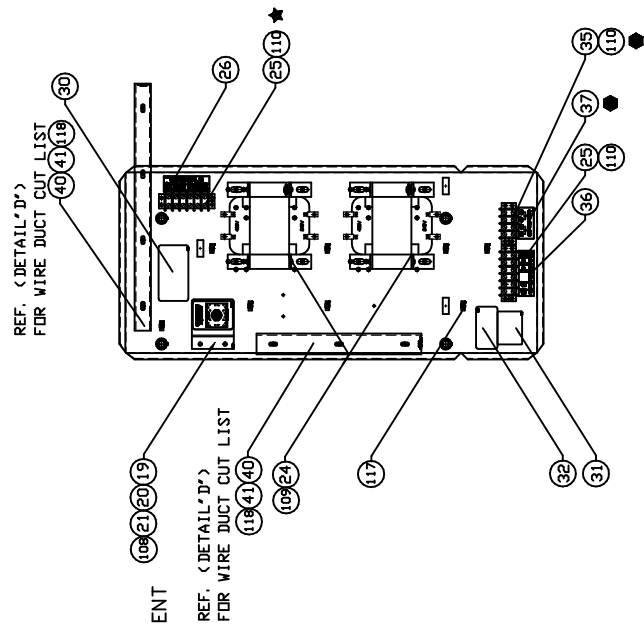
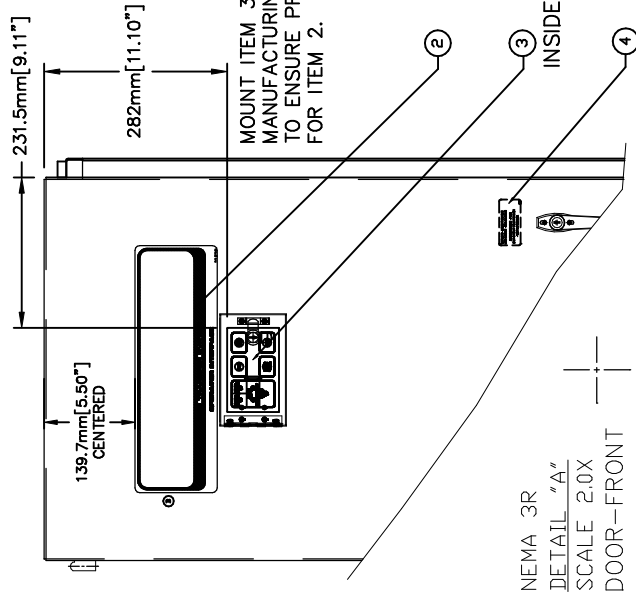
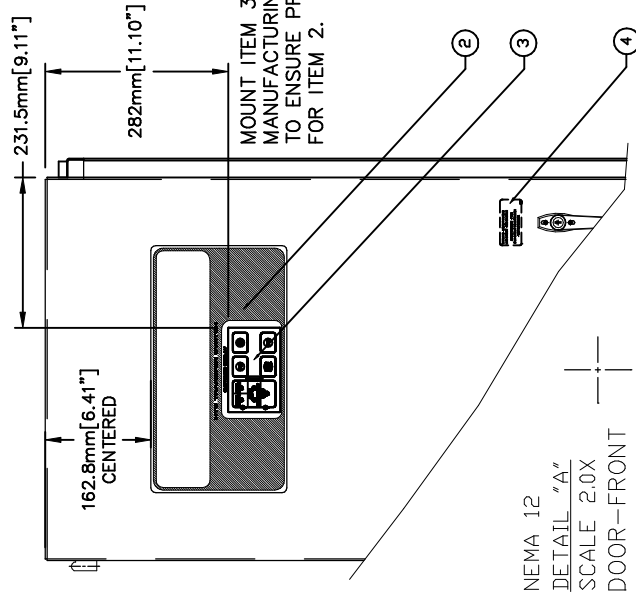
FRONT VIEW

RIGHT SIDE VIEW

EXPLODED VIEW:  
AV HTS 1200-1600 NEMA 12/3R  
DRAWING #: 0H6450

REVISION: -A-  
DATE: 01/14/11

# GROUP B



EXPLODED VIEW:  
AV HTS 1200-1600 NEMA 12/3R  
DRAWING #: 0H6450

EXPLODED VIEW: AV HTS 1200-1600 NEMA 12/3R  
DRAWING #: 0H6450

GROUP B

APPLICABLE TO:

ITEM	PART #	QTY.	DESCRIPTION
1	0F7509	1	ENCL NEMA 12 HTS 48X72X24
	0F7510	1	ENCL NEMA 3R HTS 48X72X24
2	0F5083	1	DECAL HTS T/SWITCH NEMA 1
	0G2749	1	DECAL HTS T/SWITCH NEMA 1 P/L
	0F7145	1	DECAL HTS T/SWITCH NEMA 3R
	0G2774	1	DECAL HTS T/SWITCH NEMA 3R P/L
3	0F4284	1	KEYPAD, COMM XFER SW IN-PHASE
4	095282	1	DECAL-LIVE CIRCUIT
5	0F4302A	1	KEYPAD INTERFACE ASSY
6	0F4460	2	SPACER PCB M4/#8X5/16X1/4 NYL
7	05362 10193	1	ASSY WIRE #0 12.00"(GROUND WIRE)
8	077228	1	DECAL-ENCLOSURE NOTE
	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 HTS 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 PCB COVER COMM XFER SW
15	0F5901	1	ASSY COVER COMM XFER SW
16	0F5180	3	BATTERY, AAA
(1)17	0F4410	1	ASSY PCB COMM TRANSFORMER
(1)18	0H6017A	1	OTS RELAY-COMM XFER SWITCH WN
19	0F4802	1	BRACKET TOGGLE SWITCH
20	0D3610	1	DECAL, MAINTENANCE DISCONNECT
(1)21	055868	1	SWITCH TOGGLE 4PDT 15A SPADE
22	0F6685	8	TIE-WRAP MOUNT FIR TREE (STYLE)
23	0F9340	1	TAG, BATTERY DISCONNECT
24	074653	2	TRANSFORM 600V TO 240V 350VA
	064929	2	TRANSFORM 240/480V-120/480V
(1)25	046357	REF	BLOCK TERM 20A 6 X 6 X 1100V
26	0F5039	1	DECAL CT CONNECTIONS
(1)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 E849 29-GTS
32	083736	1	DECAL-CSA GTS
33	0D6584	1	ASSY GRD.TERM.1600-2600A
34	067210A	1	DECAL, GND
(1)35	046689	REF	BLOCK TERM 20A 4 X 6 X 1100V
36	0H6016	1	DECAL (RS485 & 2WS)
37	075355	1	DECAL SIGNAL BEFORE XFER
38	0D4203	1	ASSY NEUTRAL BLK 1600A
39	0A9457	1	DECAL NEUTRAL
40	091472	FT	DUCT WIRING 1X1.5 (45"=3.75FT)
41	091472A	FT	COVER WIRE DUCT (45"=3.75FT)

ITEM	PART #	QTY.	DESCRIPTION
42	072124	1	LUG SL DLSS 750-1/2X13/32 AL/CU
	072125	1	SW CVR 1200/1600A 3P
	072114	1	SW CVR 1200/1600A 4P
	072120	1	DECAL TERMINAL SHOCK HAZARD
43	063963		TVSS ASSEMBLY 600-2600A
44	074349E	REF	SUB-PLATE HTS 600-2600A
	074349F	REF	DECAL DIP SW. CONFIG. PCB COVER
45	0C8308	2	DECAL DIP SW. CONFIG. ENCL
46	0G7015	1	KNOB,COVER HOLD-DOWN
47	0F6888	1	CVR BRKT 600-1600A RH
48	0F6776A	1	CVR BRKT 600-1600A LH
49	0F6776B	1	AUX CONT ACT N-TYP SPDT
50	063986	4	SWITCH MICRO DPDT SEL & AUX2PL
51	074351	2	AUX CONT INSULATOR (300A->)
52	074351A	2	DECAL UL CT RL PANEL ENCL
53	074604	1	WIRE HARNESS HTS 12-1600A (NOT SHOWN)
54	074672A	2	LUG SL DLSS 750-1/2X13/32 AL/CU
55	092979	1	SW CVR 1200/1600A 3P
56	0G1484	1	SW CVR 1200/1600A 4P
(1)57	0H6450HD	1	DECAL TERMINAL SHOCK HAZARD
HARNESS			
100	0C6748	2	NUT HEX LOCK M4-0.7 SS NYL INS
101	0F7806	2	NUT WHIZ LOCKING FLANGE M4-0.7
102	026902	7	SCREW HHTT #8-32 X 1/4 CZ
103	029333A	2	TIE WRAP UL 7.4"X .19" BLK
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 MTG
119	0F5272	4	CLAMP CABLE FLAT
120	042911	4	SCREW HHC M10-1.5 X 30 G8.8
121	046526	4	WASHER LOCK M10
122	064101	REF	NUT HEX FL WHIZ 3/8-16
123	022985	2	WASHER FLAT #6 ZINC
124	022264	2	WASHER LOCK #8-M4
125	092980	2	SCREW PPHM M4-0.7 X 25

(1) DESIGNATES ITEMS STRUCTURED IN WIRE HARNESS (NOT SHOWN).

EXPLODED VIEW: AV HTS 1200-1600 NEMA 12/3R

DRAWING #: 0H6450

APPLICABLE TO:

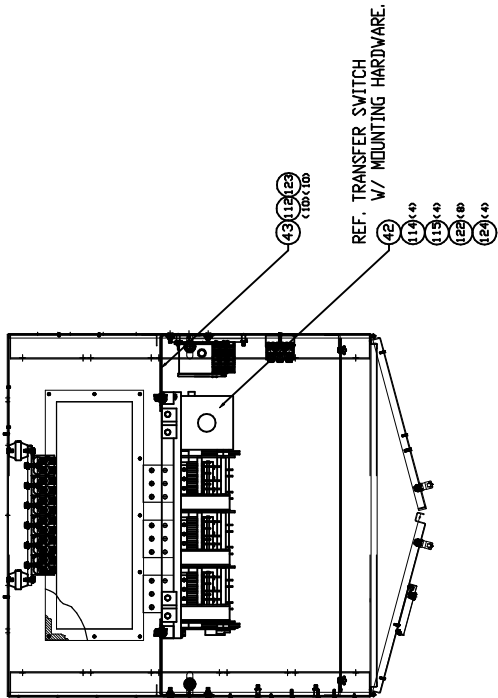
GROUP B

**THIS PAGE IS LEFT INTENTIONALLY BLANK**

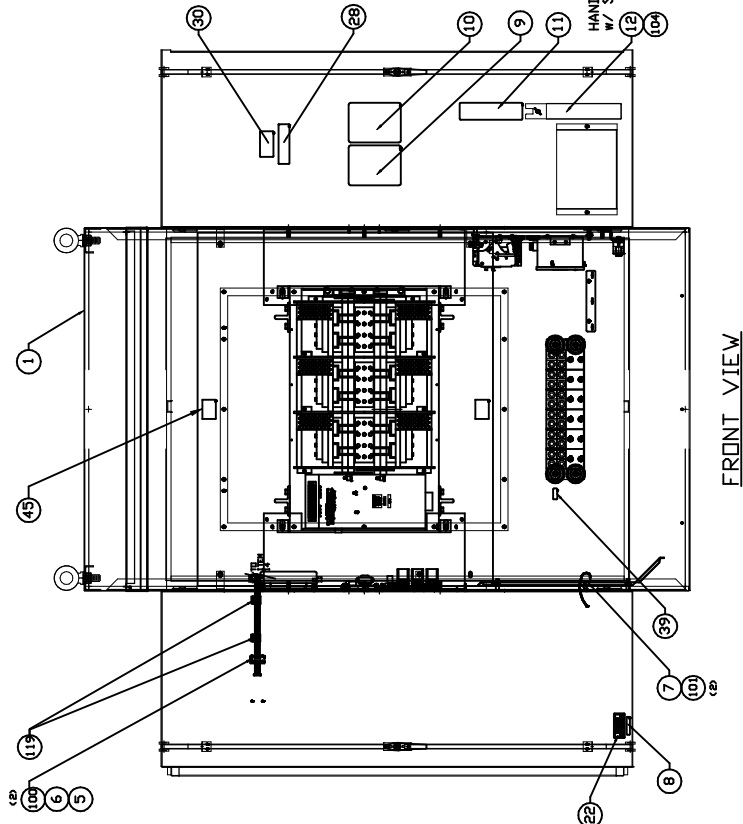


GROUP B

TOP VIEW

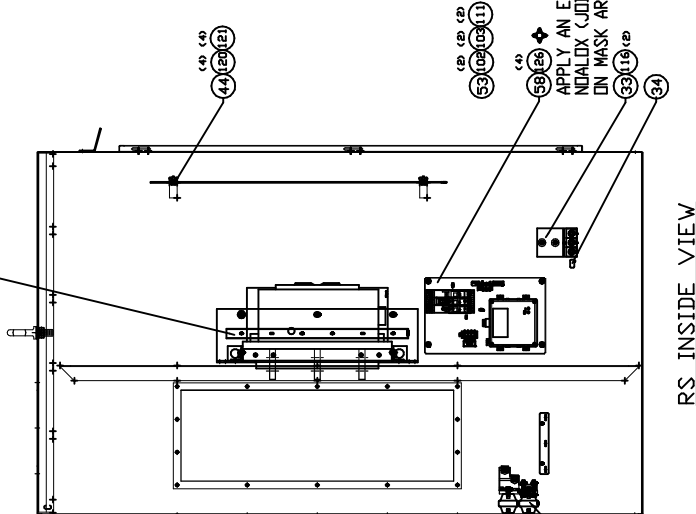


SHOWN WITH  
NEMA 3R DOOR



REF. (DETAIL 'E')  
FOR WIRE DUCT CUT LIST

40 41 103 100

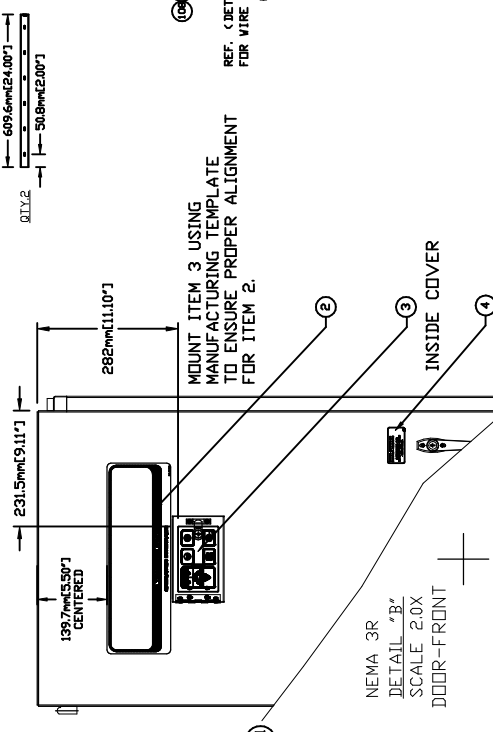
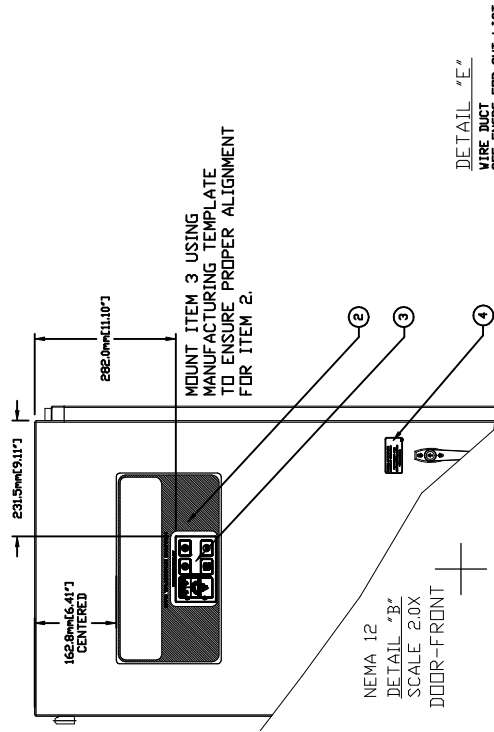


NOT USED ON 4 POLE  
OR 1 PHASE 3 POLE UNITS

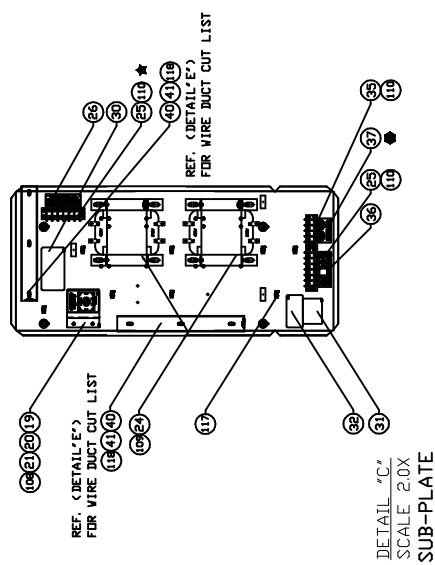
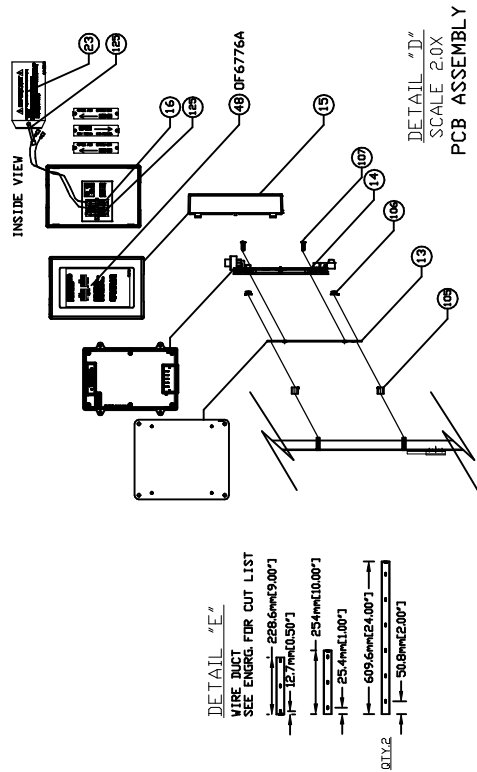
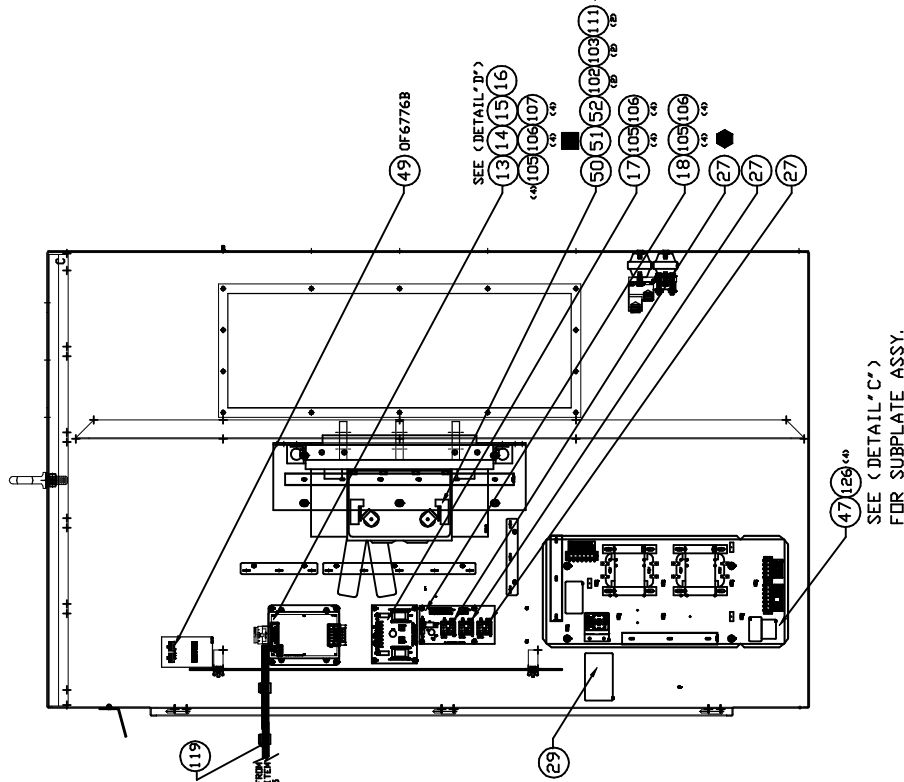
EXPLODED VIEW:  
AV HTS 2000-2600A NEMA12/3R  
DRAWING #: 0H6460

REVISION: -A-  
DATE: 01/14/11

# GROUP B



DETAIL "A"  
SCALE 1.5X  
LS INSIDE VIEW



EXPLODED VIEW:  
AV HTS 2000-2600A NEMA12/3R  
DRAWING #: 0H6460

EXPLODED VIEW: AV HTS 2000-2600A NEMA12/3R  
DRAWING #: 0H6460

GROUP B

APPLICABLE TO:

ITEM	PART #	QTY.	DESCRIPTION
1	0F8934	1	ENCL NEMA 12 HTS 48X80X48
	0F8933	1	ENCL NEMA 3R HTS 48X80X48
2	0F5083	1	DECAL,HTS T/SWITCH NEMA 1
	0G2749	1	DECAL,HTS T/SWITCH NEMA 1 P/L
	0F7145	1	DECAL,HTS T/SWITCH NEMA 3R
	0G2774	1	DECAL,HTS T/SWITCH NEMA 3R P/L
3	0F4284	1	KEYPAD, COMM XFER SW IN-PHASE
4	095282	1	DECAL-LIVE CIRCUIT
5	0F4302A	1	KEYPAD INTERFACE ASSY
6	0F4460	2	SPACER PCB M4/#8X5/16X1/4 NYL
7	0536210193	1	ASSY WIRE #0 12.00"(GROUND WIRE)
8	077228	1	DECAL-ENCLOSURE NOTE
	0E8594	1	DECAL-ENCLOSURE NOTE NEMA 3R
9	0F5508L	1	DECAL HTS TEST SEQUENCE 2000A
	0F5508M	1	DECAL HTS TEST SEQUENCE 2600A
10	0F5503	1	DECAL HTS SWITCH INFO
11	074525	1	DECAL, MANUAL OPERATION
12	074327	1	MNL HNDL 20-2600A WN(SUPPLIED W/SW)
13	0F4801	1	PLATE MOUNTING PCB ASSEMBLY
14	0F5926	1	ASSY PCB COVER COMM XFER SW
15	0F5901	1	ASSY COVER COMM XFER SW
16	0F5180	3	BATTERY, AAA
(1)17	0F4410	1	ASSY PCB COMM TRANSFORMER
(1)18	0H6017A	1	OTS RELAY-COMM XFER SWITCH WN
19	0F4802	1	BRACKET TOGGLE SWITCH
20	0D3610	1	DECAL, MAINTENANCE DISCONNECT
21	055868	1	SWITCH TOGGLE 4PDT 15A SPADE
22	0G1484	1	DECAL UL CTRL PANEL ENCL
23	0F9340	1	TAG, BATTERY DISCONNECT
24	074654	2	TRANSFRM 600V TO 240V 500VA
	064933	2	TRANSFRM 240/480V-120/480V
(1)25	046357	REF	BLOCK TERM 20A 6 X 6 X 1100V
26	0F5039	1	DECAL CT CONNECTIONS
(1)27	027911	REF	RELAY PNL 12VDC DPDT 10A@240VA
28	064510	1	DECAL-TERMINAL NOTE
29	063578	1	PLATE DATA - GTS
30	054199	2	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, GND
(1)35	046689	REF	BLOCK TERM 20A 4 X 6 X 1100V
36	0H6016	1	DECAL (RS485 & 2WS)
37	075355	1	DECAL SIGNAL BEFORE XFER
38	0D4515	1	ASSY NEUTRAL BLK 2600A
39	0A9457	1	DECAL NEUTRAL
40	091472	FT	DUCT WIRING 1X1.5 (138"=11.5FT)
41	091472A	FT	COVER WIRE DUCT (138"=11.5FT)

ITEM	PART #	QTY.	DESCRIPTION
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	0G7015	1	TVSS ASSEMBLY 600-2600A
47	0F6888	1	SUB-PLATE HTS 600-2600A
48	0F6776A	1	DECAL DIP SW. CONFIG. PCB COVER
49	0F6776B	1	DECAL DIP SW. CONFIG. ENCL
50	074604	1	AUX CONTACT N-TYP SPDT
51	074672A	2	SWITCH MICRO DPDT SEL & AUX2PL
(1)52	092979	1	AUX CONT INSULATOR (300A->)
(1)53	0H6460HDS	1	WIRE HARNESS HTS 20-2600A (NOT SHOWN)
HARNESS			
100	0C6748	2	NUT HEX LOCK M4-0.7 SS NYL INS
101	0F7806	2	NUT WHIZ LOCKING FLANGE M4-0.7
102	022985	2	WASHER FLAT #6 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
112	064101	REF.	NUT HEX FL WHIZ 3/8-16
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 MTG
119	0F5272	12	CLAMP CABLE FLAT
120	022473	4	WASHER FLAT 1/4-M6 ZINC
121	025870	4	NUT WING 1/4-20
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	022131	4	WASHER FLAT 3/8-M10 ZINC
127	0C6937A	4	INSULATOR,STANDOFF,3200V3/8-16
128	029745	4	SCREW HHC 3/8-16 X 1 G5

(1)DESIGNATES ITEMS STRUCTURED IN WIRE HARNESS (NOT SHOWN).

EXPLODED VIEW: AV HTS 2000-2600A NEMA12/3R

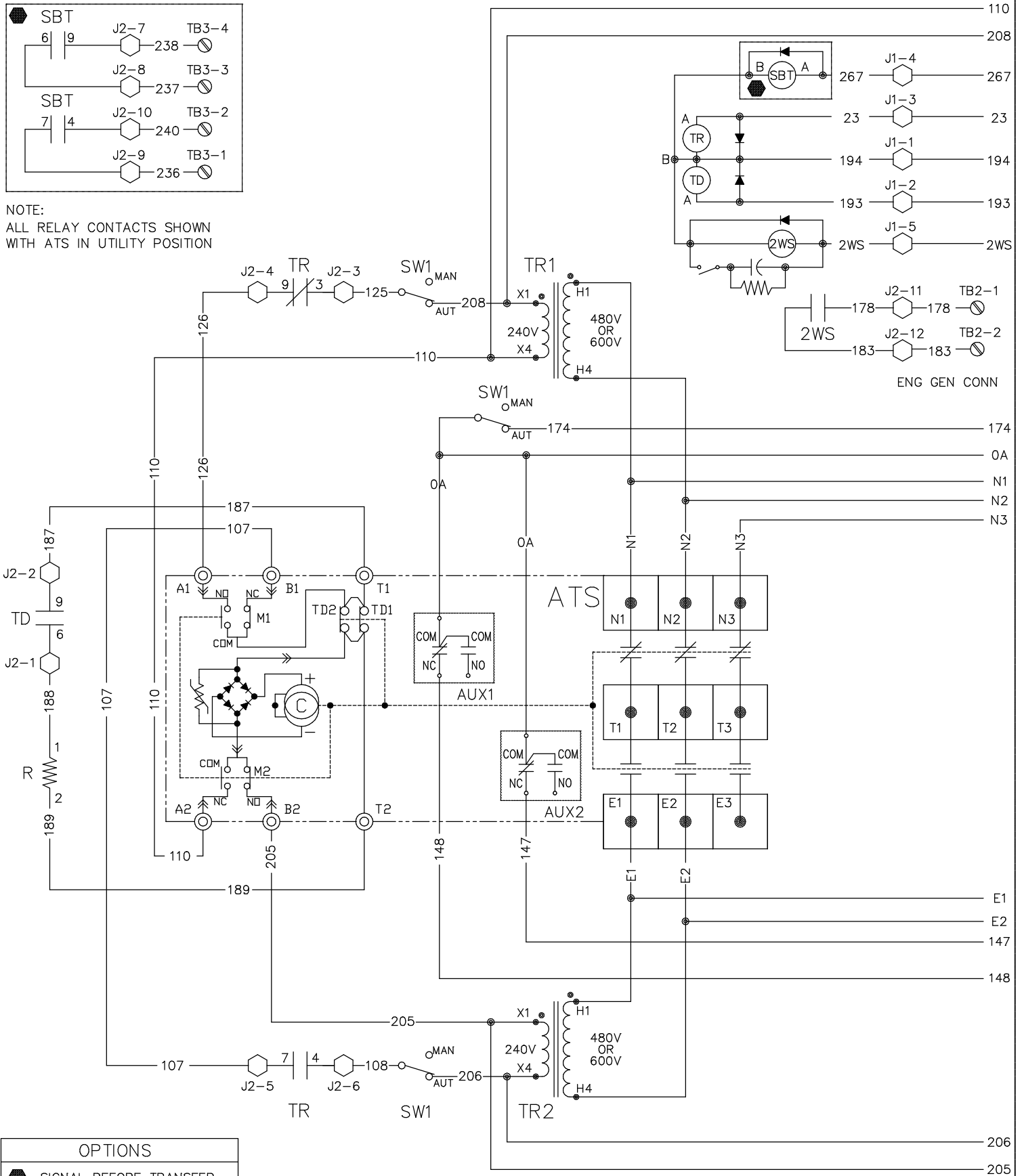
DRAWING #: 0H6460

APPLICABLE TO:

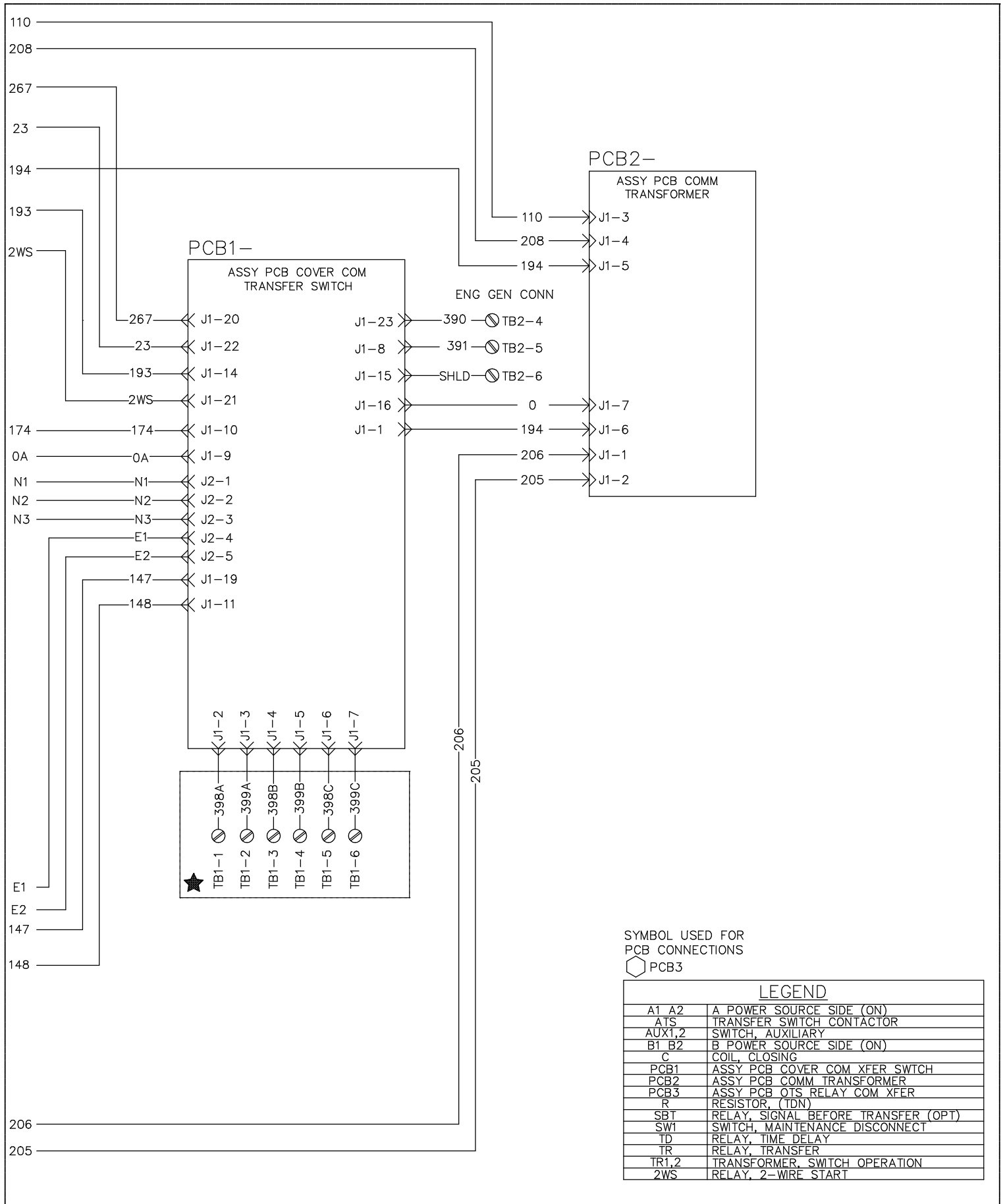
GROUP B

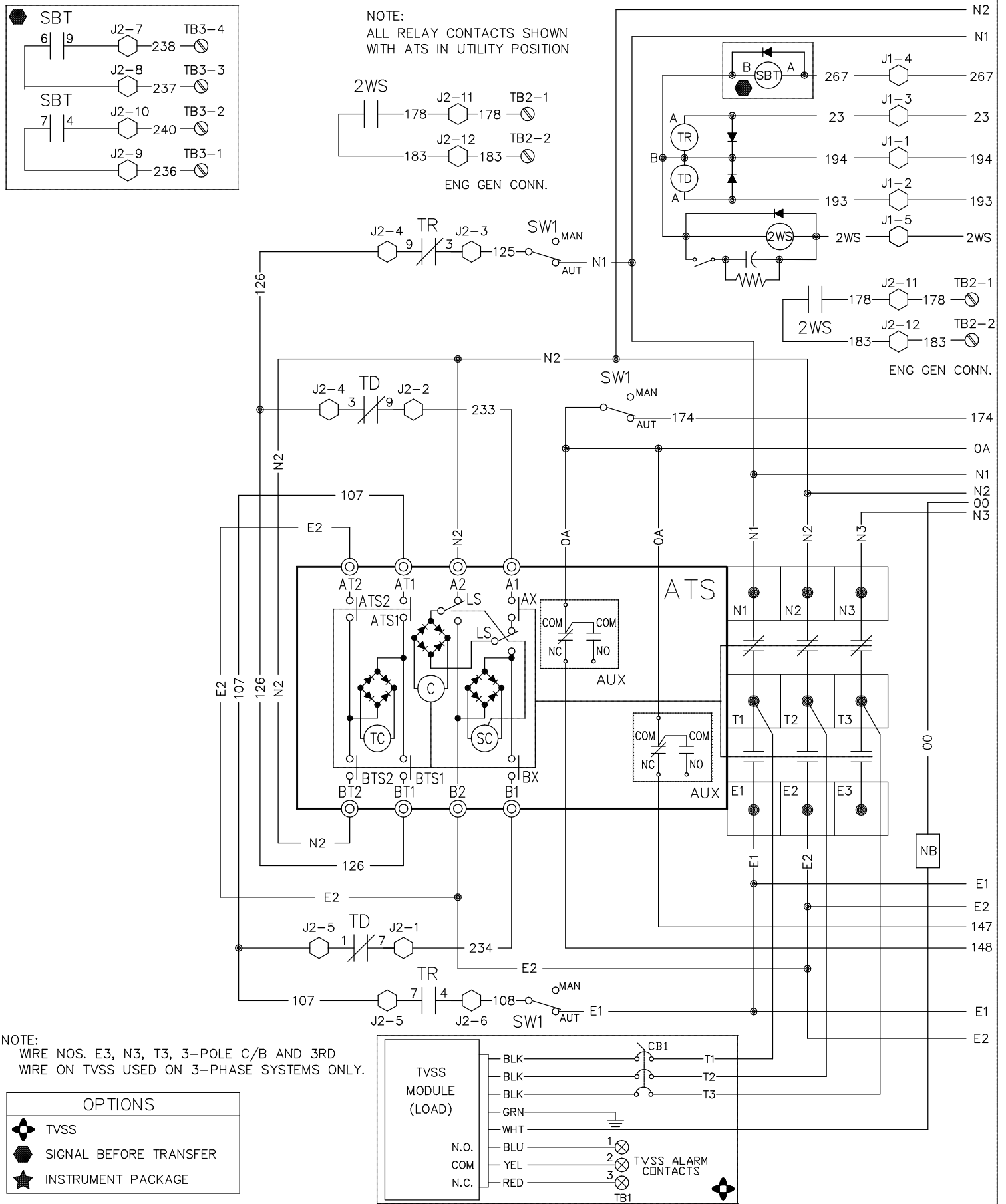
**THIS PAGE IS LEFT INTENTIONALLY BLANK**

## GROUP G



REVISION: "A"  
DATE: 01/14/11

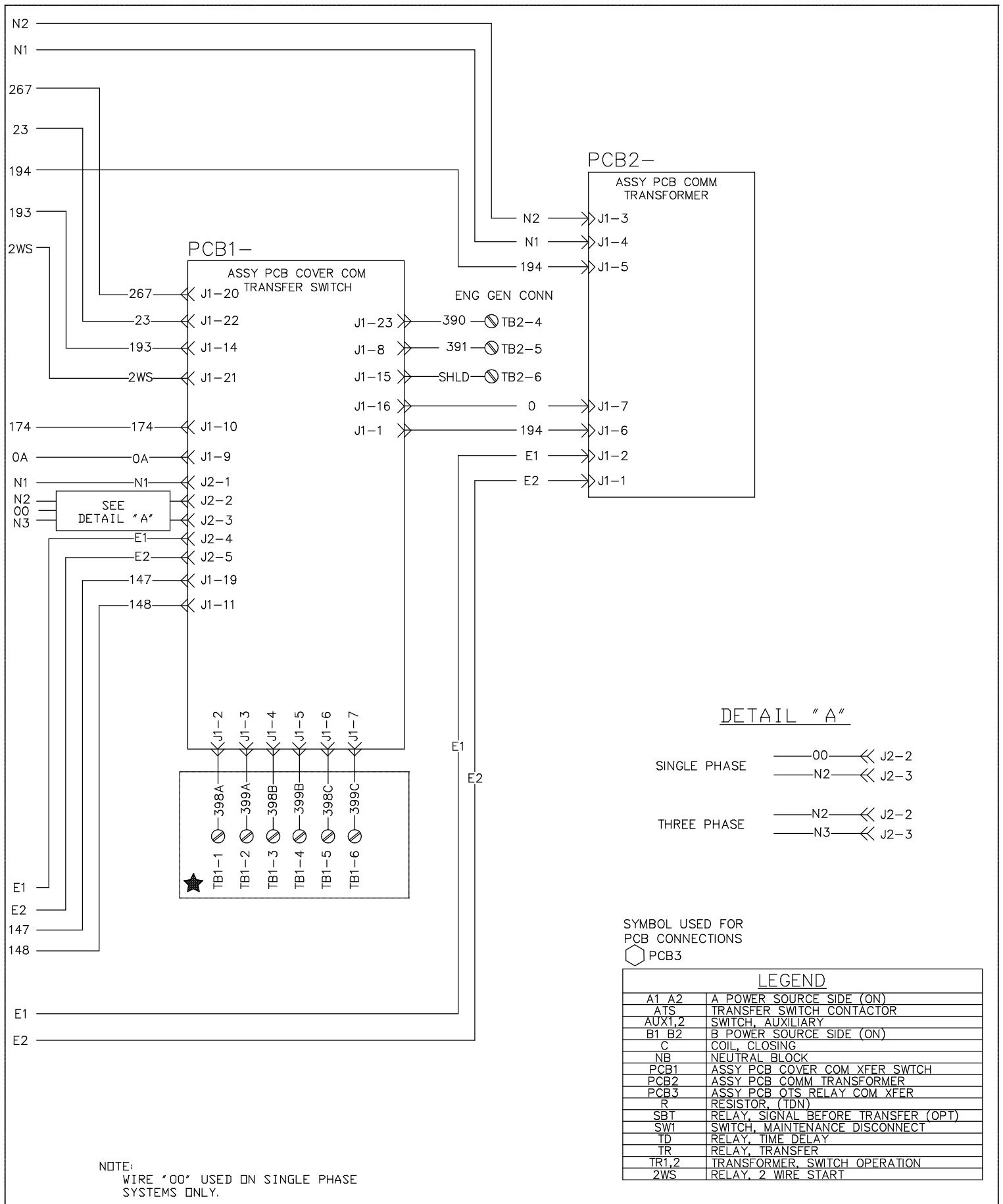




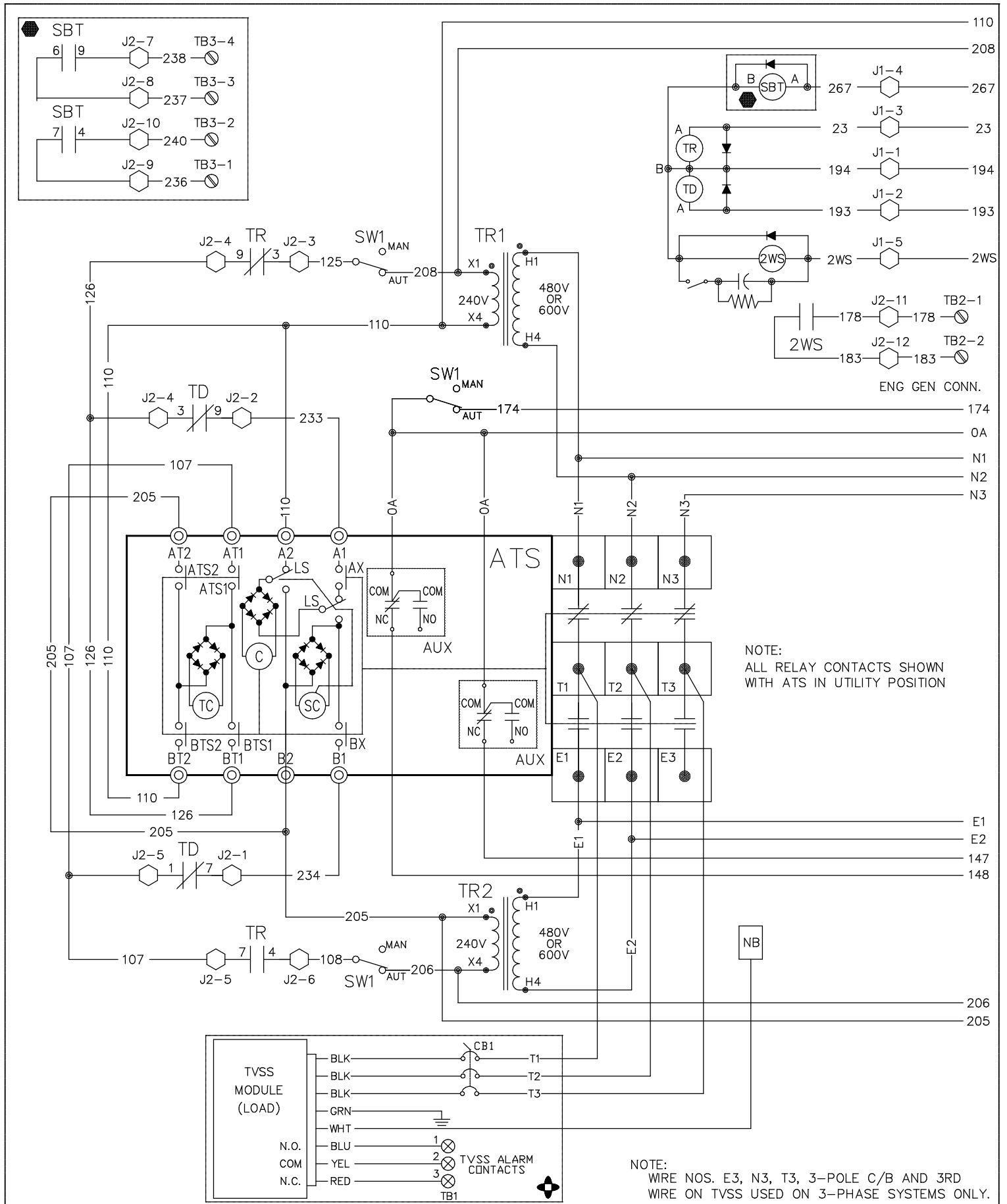
SCHEMATIC - DIAGRAM

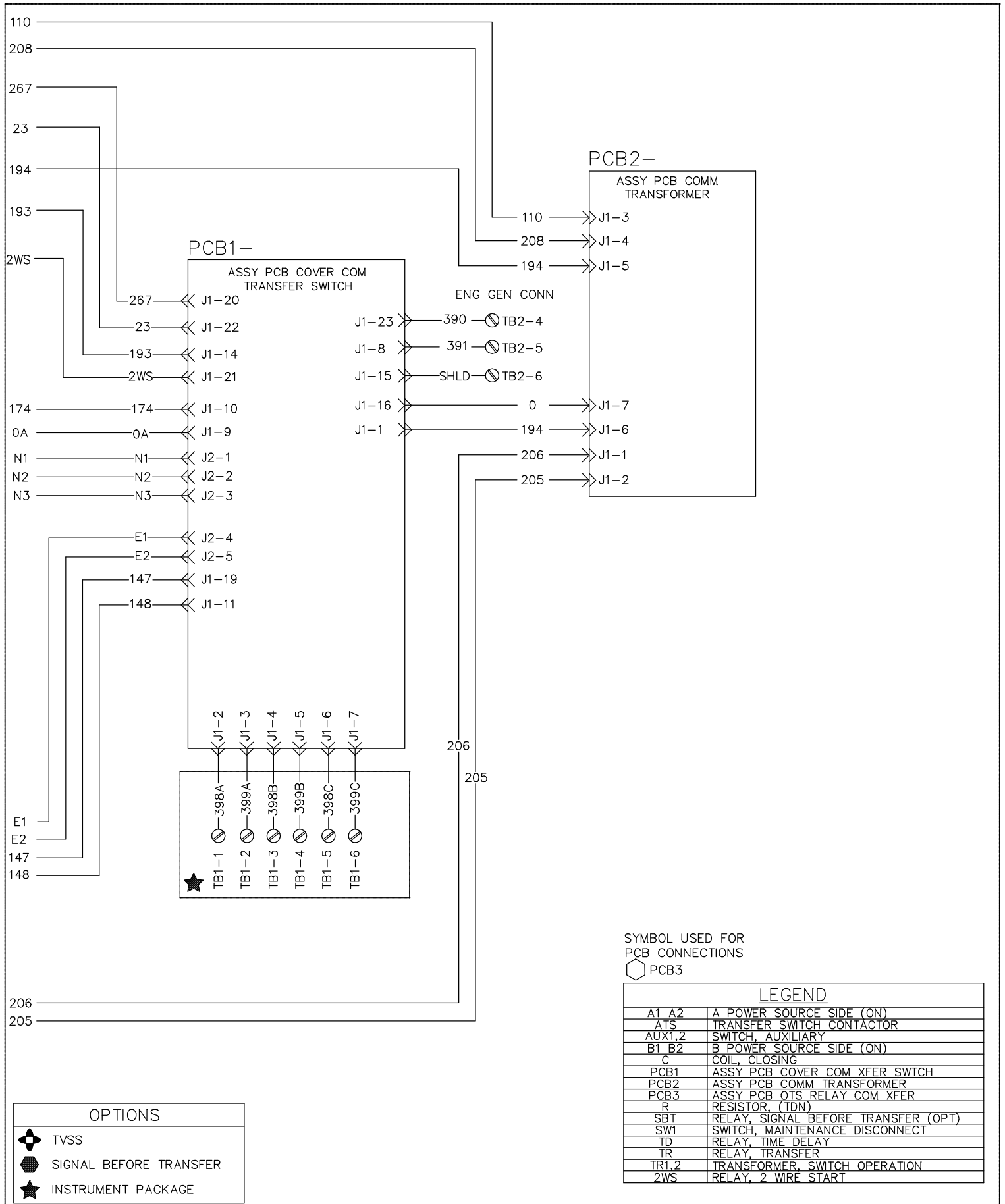
WN-SWITCH

DRAWING #: 0H6442

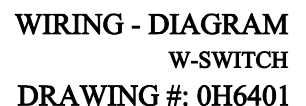


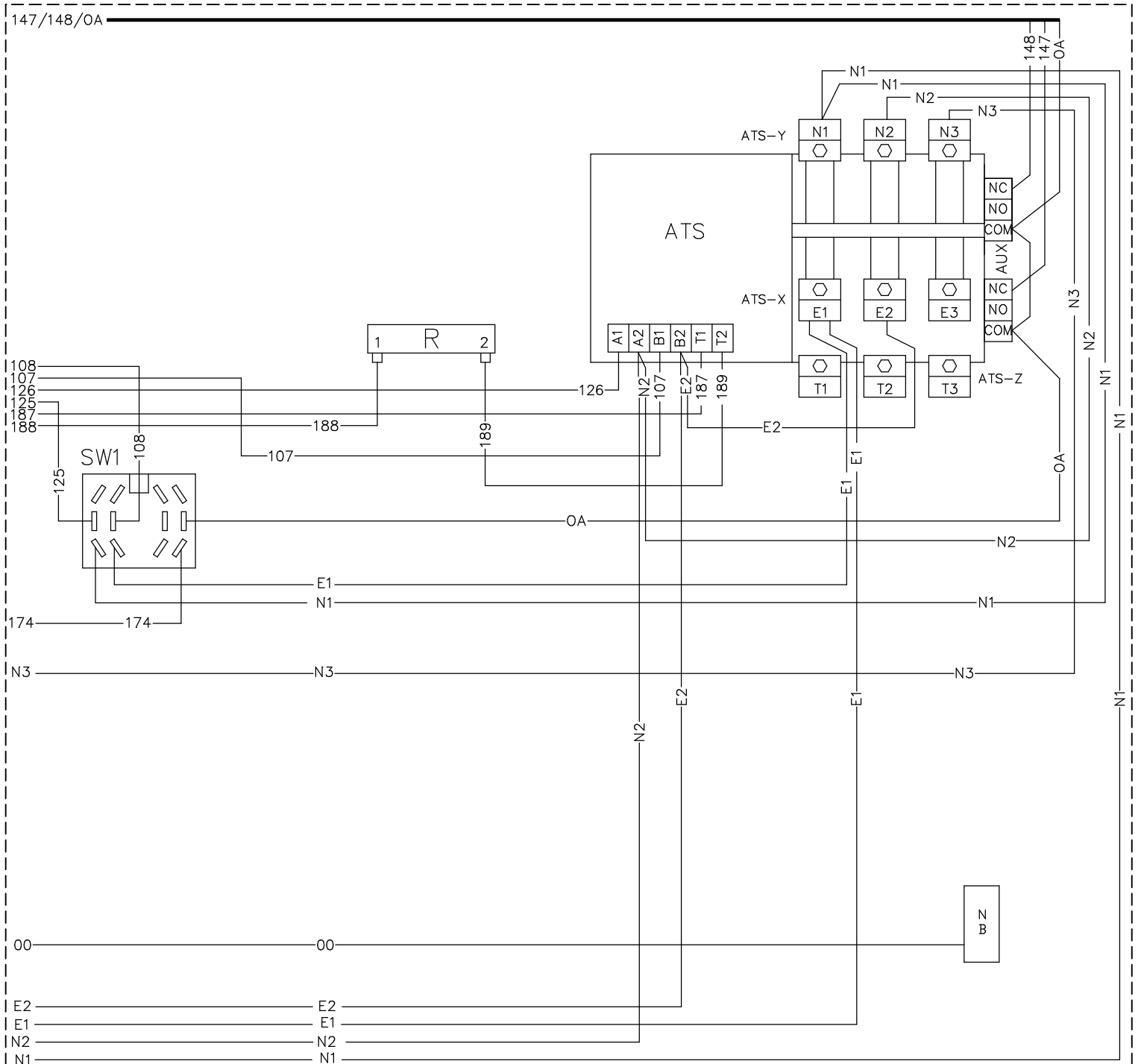




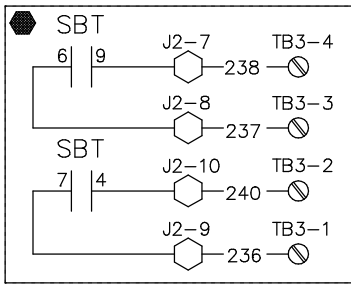


## 147/148/OA

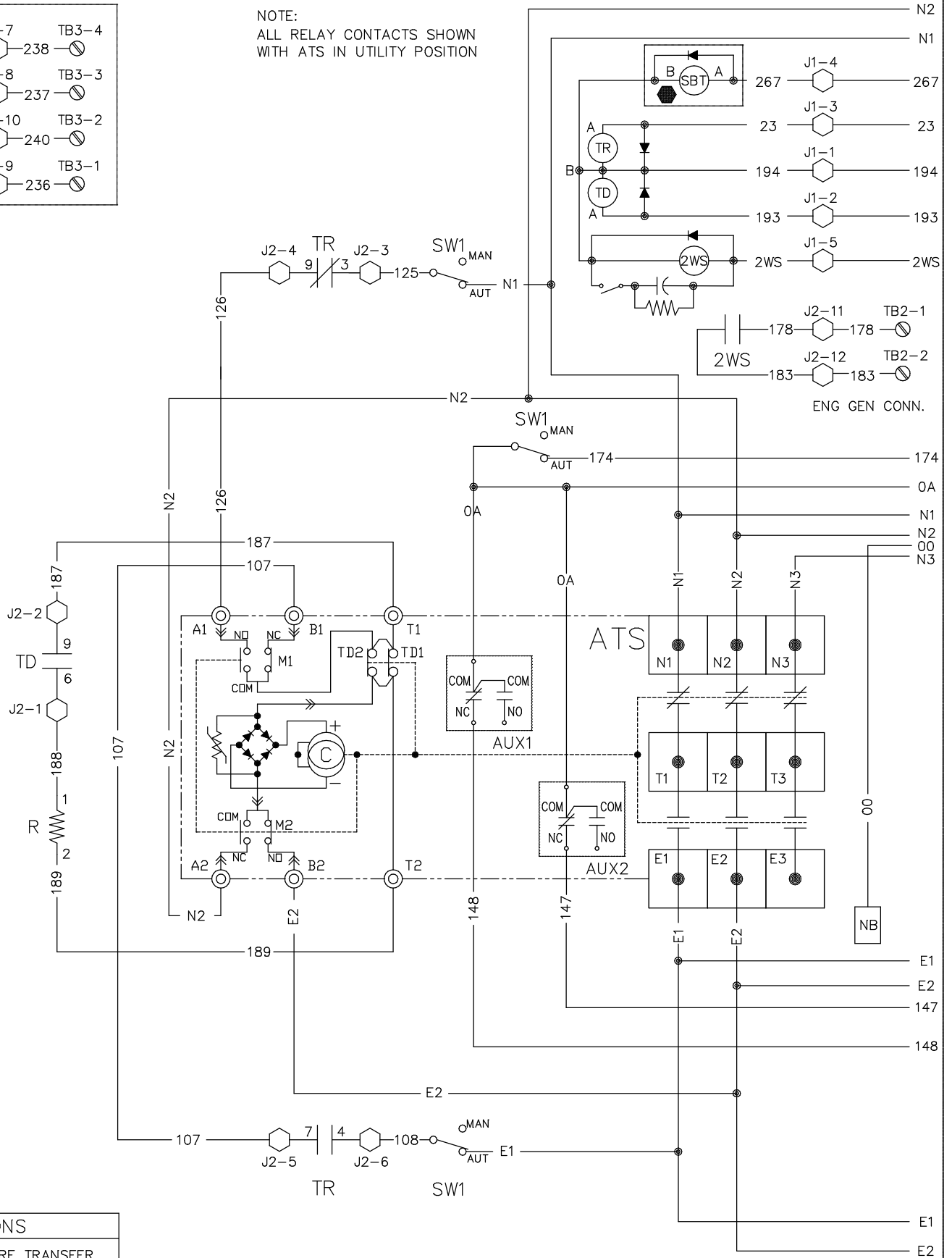




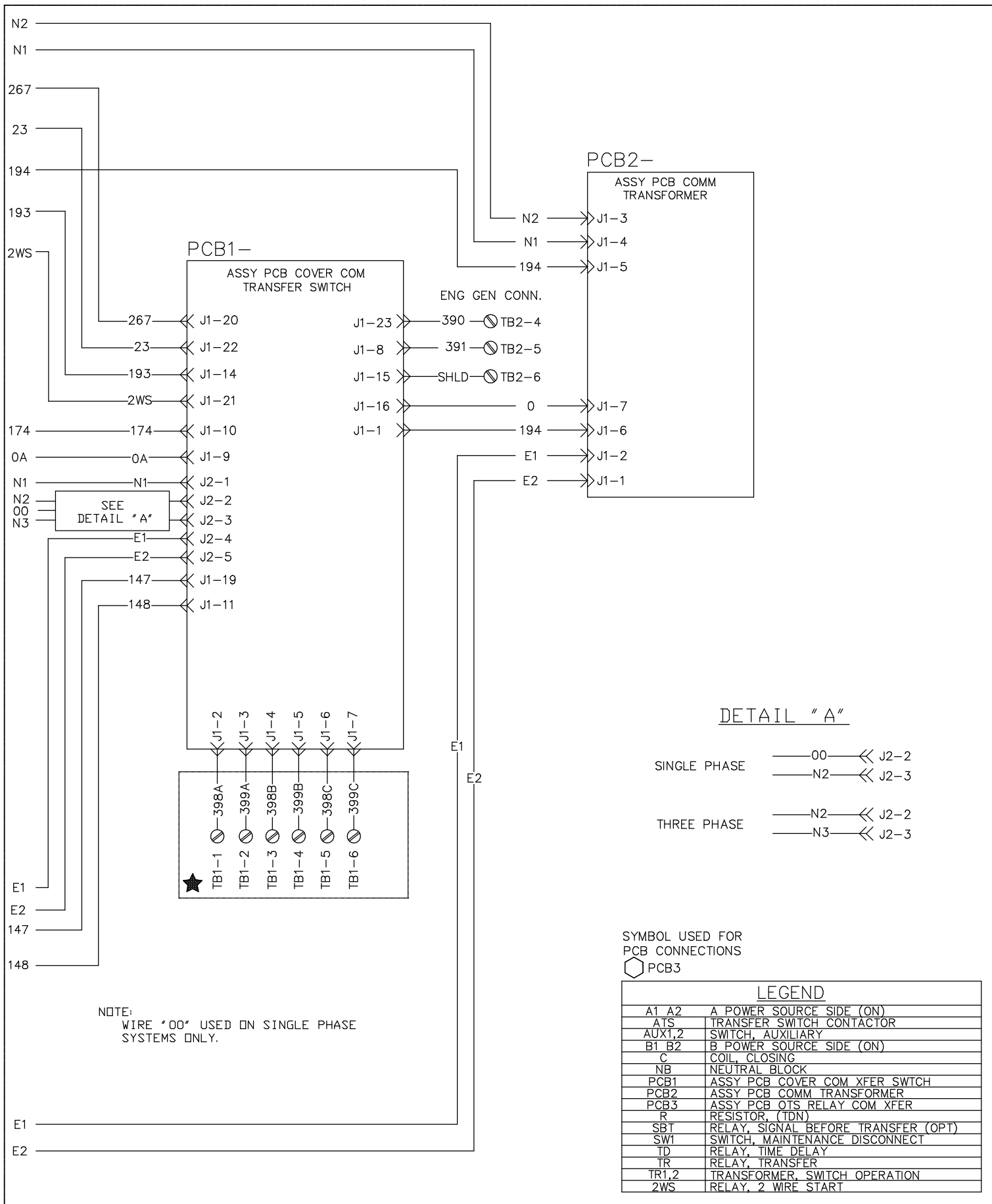
NOTES:  
WIRE "00" USED ON SINGLE PHASE SYSTEMS ONLY.



NOTE:  
ALL RELAY CONTACTS SHOWN  
WITH ATS IN UTILITY POSITION



OPTIONS	
●	SIGNAL BEFORE TRANSFER
★	INSTRUMENT PACKAGE



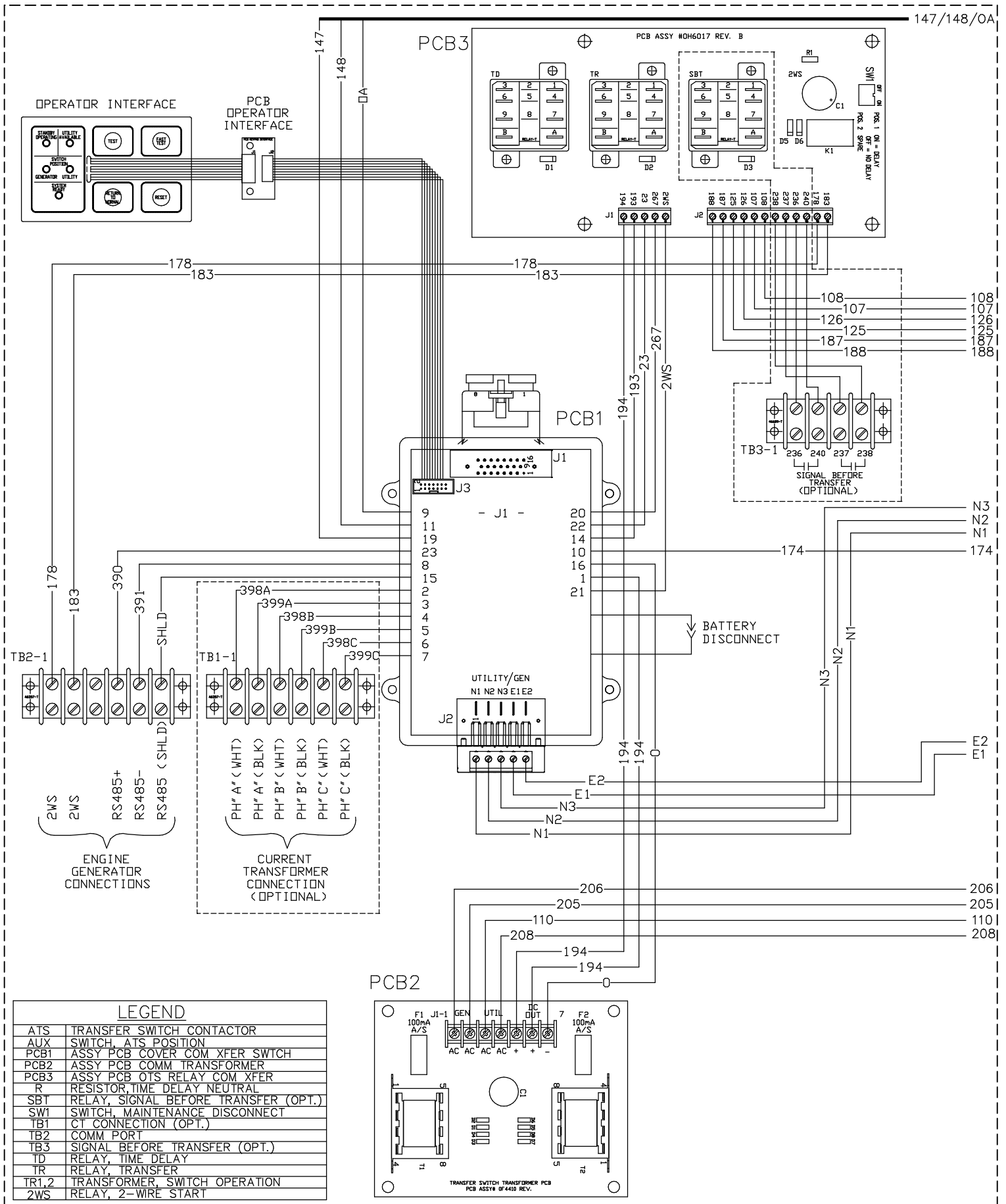
SCHEMATIC - DIAGRAM

W-SWITCH

DRAWING #: 0H6402

REVISION: "A"

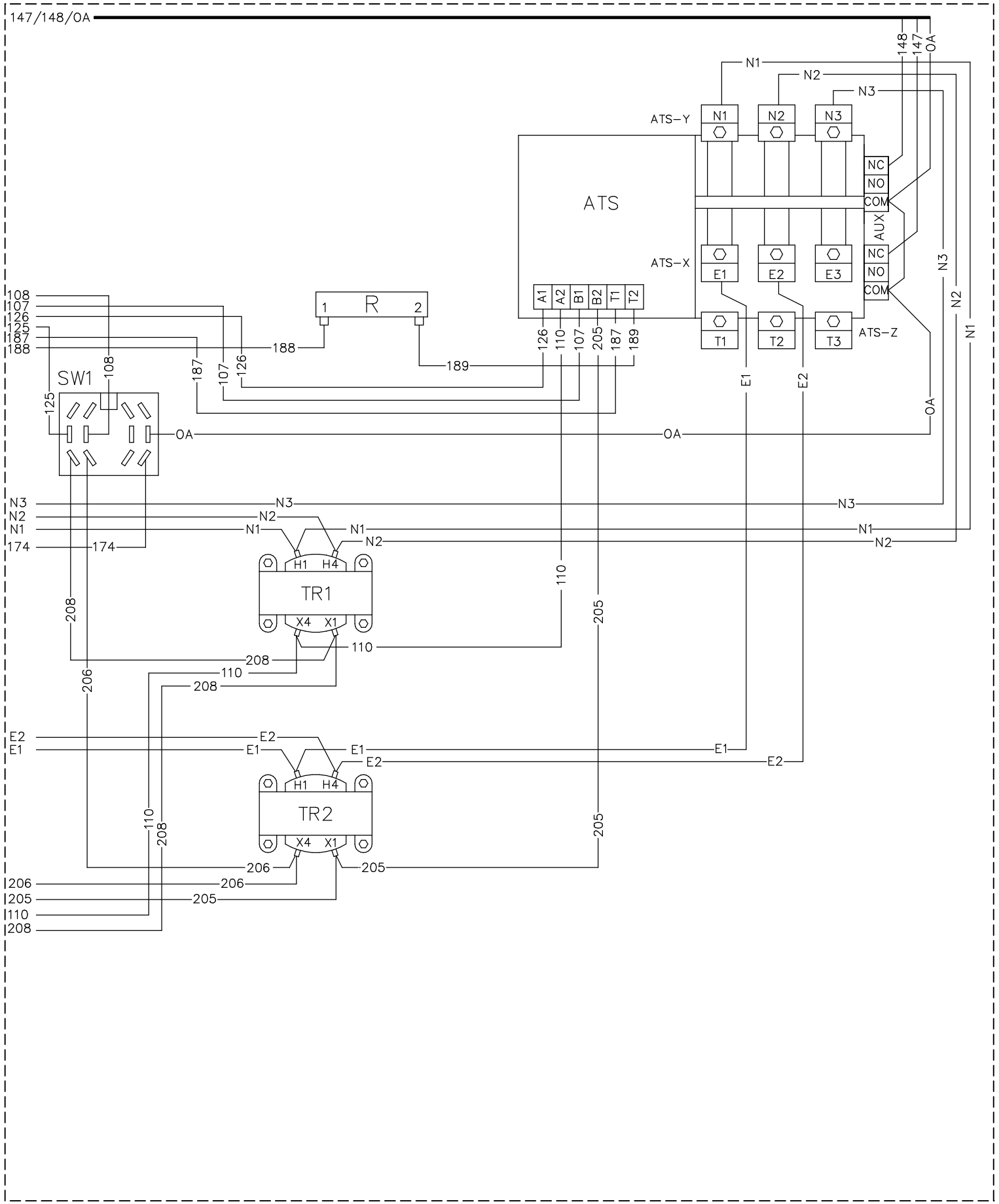
DATE: 01/14/11



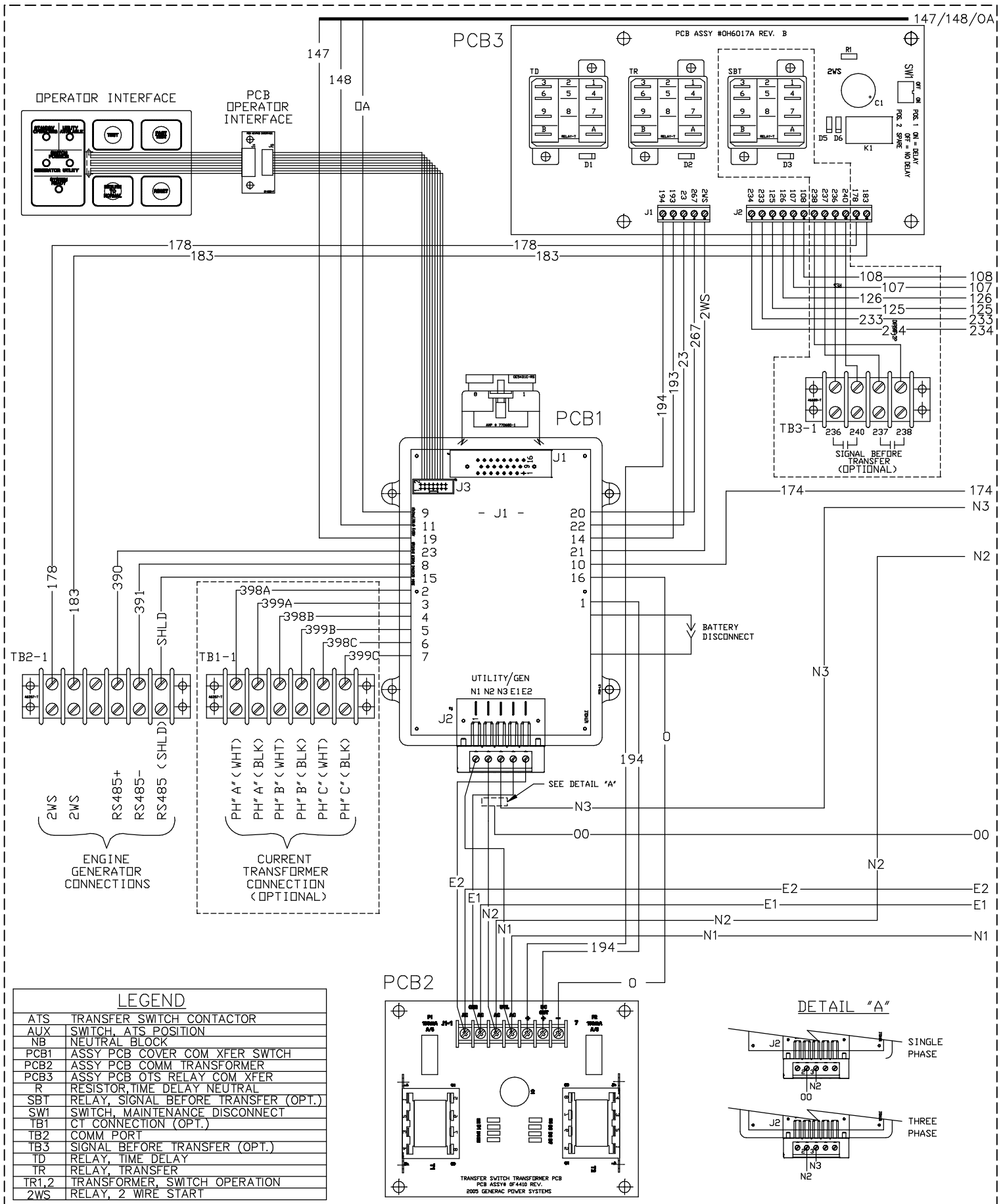
WIRING - DIAGRAM

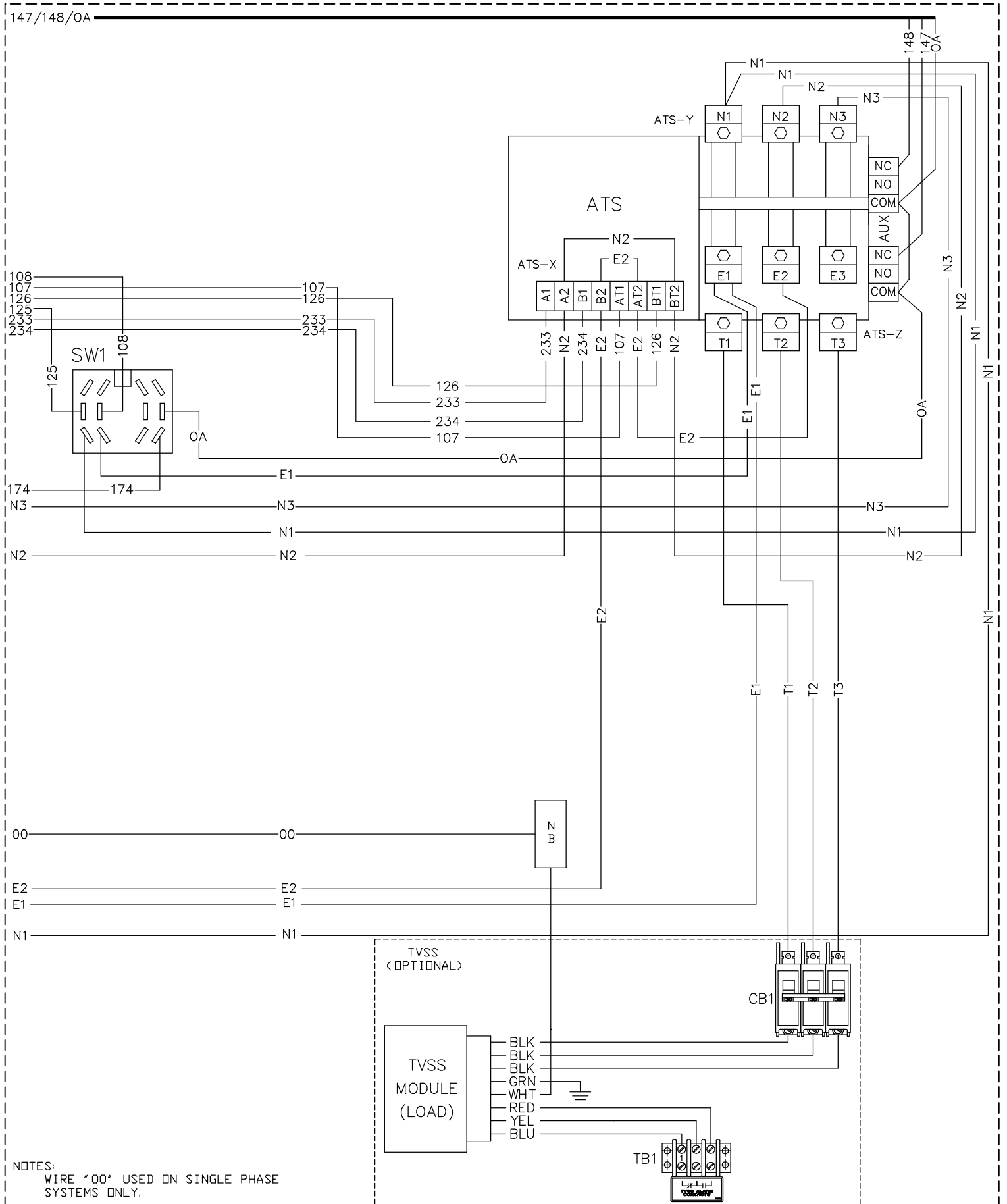
W-SWITCH

DRAWING #: 0H6403

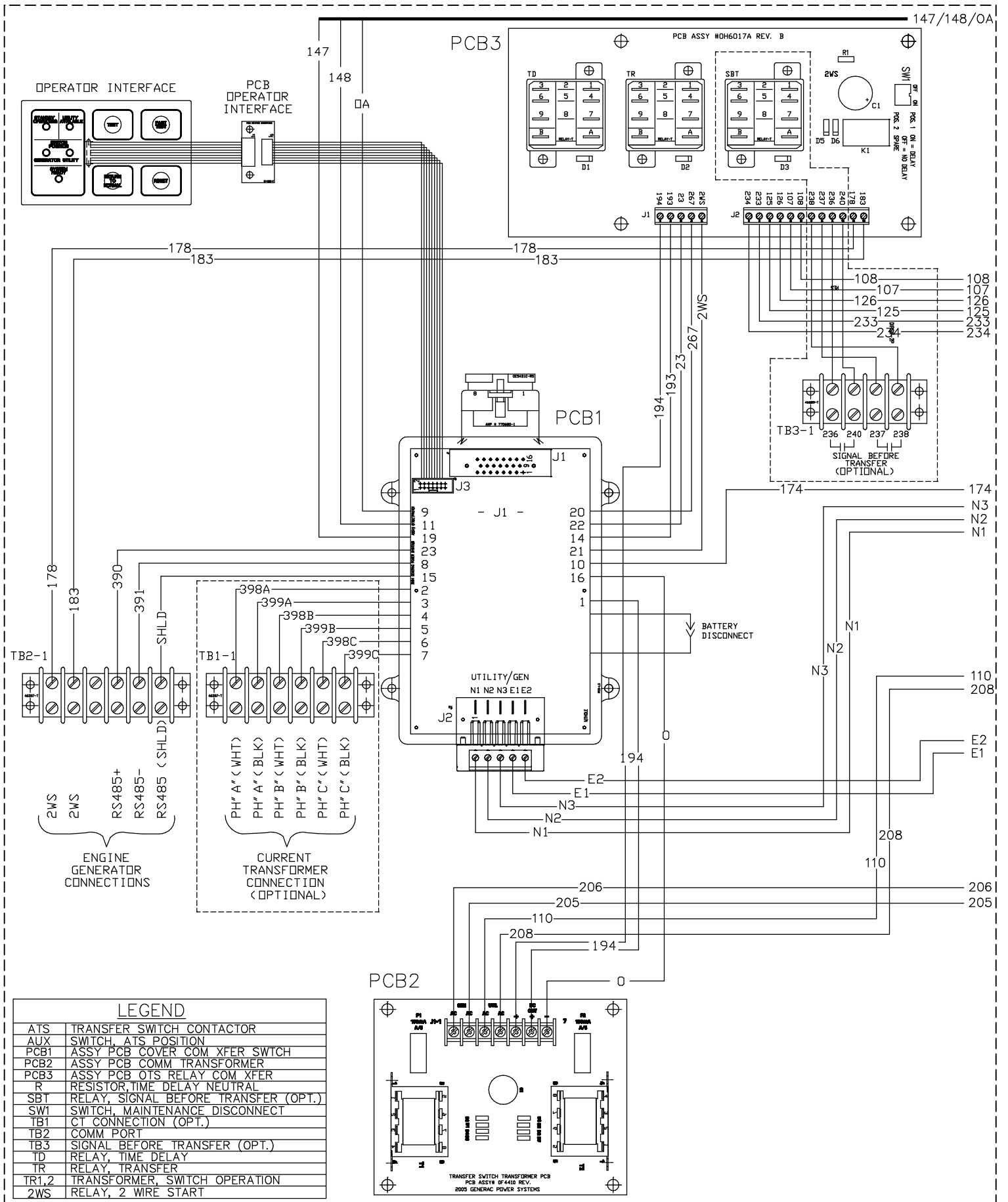








NOTES:  
WIRE "00" USED ON SINGLE PHASE  
SYSTEMS ONLY.



147/148/OA

