

POWERWARE

OPERATORS MANUAL

+PLUS

EMERG
POWER
OFF

EXIDE ELECTRONICS

WARNING:

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for Class A computing device pursuant to Subpart J of Part 15 of the FCC rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

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IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS

This manual contains important instructions for your Powerware® Plus 6 Uninterruptible Power System which should be followed during the installation and maintenance of the UPS and batteries.

CONSERVER CES INSTRUCTIONS

CETTE NOTICE CONTIENT DES INSTRUCTIONS IMPORTANTES
CONCERNANT LA SÉCURITÉ.

IMPORTANT PASSWORD INFORMATION

The password for System Setup in the Digital Front Panel Display option is factory set. The password is MEMORY. To ensure security of your data, we recommend that you tear out this page after the appropriate people are given access.

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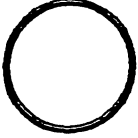
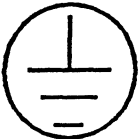

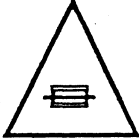
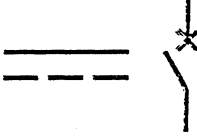
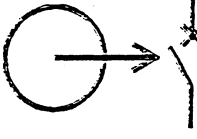

CUSTOMER DRAWINGS

OUTLINE & INSTALLATION	110719029
ONELINE & INSTALLATION	110712170
PDM INSTALLATION	110719030
BATTERY INSTALLATION	110719031

1. OVERVIEW

1.1. USING YOUR UPS

Shown below are common symbols that can be found on your UPS, along with their names and a short explanation.

On		This symbol indicates the principal switch is in the "on" position.
Off		This symbol indicates the principal switch is in the "off" position.
Safety Earthing Terminal		This symbol indicates a ground.
Caution: Refer to Operator's Manual		This symbol indicates that the Operator's Manual should be referenced for additional information.
Current Fuse		This symbol indicates that the fuse must be replaced with one having the ratings indicated.
DC Breaker		This symbol indicates a DC circuit breaker.
Output AC Breaker		This symbol indicates an AC output breaker.
Risk of Electric Shock		This symbol indicates that a risk of electric shock is present and that associated warnings should be observed.

1.2. INTRODUCTION AND SYSTEM DESCRIPTION

This UPS is a high performance, on-line, microprocessor controlled Uninterruptible Power System designed to protect personal computers, computer equipment for data processing, telecommunications, hospital/health care and any other computing equipment from corruption or loss of information due to electrical line disturbances. During electrical power failures, the unit employs internal maintenance-free batteries to supply back-up power. This allows additional time for you to complete your computer activity and safely store the data. When commercial power is present, the UPS supplies filtered and regulated power to your equipment and maintains the battery in a charged condition. The advanced switching technology employed in this UPS enables the unit to handle a wide range of input voltage.

During normal operation, incoming commercial power is filtered to reduce noise and spikes. The Rectifier provides isolated, regulated and filtered DC power to the Inverter. A portion of this isolated power is used to charge the battery. The Inverter provides further regulated and filtered AC power to the load. In the event of a severe overload or Inverter failure, the Auto Bypass* will switch the load to the filtered input power. If Bypass is not available the Inverter can still support difficult loads for a given period of time.

If utility power falls out of tolerance, the UPS remains on-line, deriving power from the battery. During extended power outages, the battery continues to supply power until nearly discharged, at which time the UPS automatically shuts off power to the load. When the utility power comes back within tolerance, the UPS restarts to supply power to your protected equipment while recharging the battery or it restarts the load.

The UPS is available in 3.6 kVA (2.4 kW), 4.5 kVA (3 kW) or 5 kVA (4 kW) capacities for 50 Hz or 60 Hz equipment. The kVA ratings are based upon 120/240 split phase configuration. Output current is fixed, thus lowering the output voltage lowers the kVA rating.

*Optional - not available with all input and output configurations.

1.3. PRODUCT SPECIFICATIONS

Rating

Model 6/3: 3.6 kVA, 2.4 KW

Model 6/4: 4.5 kVA, 3.0 KW

Model 6/6: 6.0 kVA, 4.0 KW

Nominal Voltage

200 VAC 1 PH input, 100/200 VAC 1 PH output

220 VAC 1 PH input, 110/220 VAC 1 PH output

230 VAC 1 PH input, 115/230 VAC 1 PH output

240 VAC 1 PH input, 120/240 VAC 1 PH output

208 VAC 3 PH input, 120/208 VAC 2 PH output

Nominal Frequency

50/60 HZ

Nominal Phase Current

Model 3: 15 A

Model 4: 19 A

Model 6: 25 A

Crest Ratio

3:1

Neutral Current Capability

175% of phase current

Output Power Factor

0.6 lagging - 0.6 leading

Unbalanced Load Capability

100%

Input Power Factor

0.95 lag minimum

Operating Temperature

0 to 40 degrees Celsius

Relative Humidity

95% max. non-condensing

Elevation

5000 ft. max. without derating

Dimensions

Standard UPS Unit

8.5" x 28" x 25" (21.6 x 71 x 63.5 cm)

Optional Battery Cabinet

8.5" x 28" x 24.5" (21.6 x 71 x 62 cm)

Weight	
Standard UPS Unit	270 lbs. (123 kg)
Optional Battery Cabinet	310 lbs. (141 kg)

BATTERY SPECIFICATIONS

Battery Type

Sealed maintenance-free, high-rate-discharge, lead-acid cells

Expected Life

5 years or a maximum of 200 deep discharges

Nominal Battery-String Voltage

240 VDC (120 cells)

Nominal Battery Current

Model 6/3: 13 Amps

Model 6/4: 16 Amps

Model 6/6: 21 Amps

1.4. SAFETY CONSIDERATIONS

DANGER:

The UPS contains LETHAL VOLTAGES. All repairs should be performed by authorized service personnel. There are no user serviceable parts inside the UPS.

CAUTION:

The UPS contains its own energy source (battery). The output receptacles may be live even when the UPS is not connected to an AC supply.

CAUTION:

To fully de-energize the UPS, turn OFF (open) the Output Breaker.

CAUTION:

A battery can present a risk of electrical shock, burn from high short-circuit current, fire or explosion from vented gases. Observe proper precautions.

Proper disposal of batteries is required. Refer to your local codes for disposal requirements.

ATTENTION:

UNE BATTERIE PEUT PRÉSENTER UN RISQUE DE CHOC ÉLECTRIQUE, DE BRÛLURE PAR TRANSFERT D'ÉNERGIE, D'INCENDIE OU D'EXPLOSION DES GAZ DÉGAGÉS. SUIVRE LES PRÉCAUTIONS QUI S'IMPOSENT.

L'ÉLIMINATION DES BATTERIES EST RÈGLEMENTÉE. CONSULTER LES CODES LOCAUX À CET EFFET.

Observe the following precautions to ensure personnel safety and continued equipment operation:

- Examine the packing container for damage. Notify the carrier immediately if damage is present.
- Do not disassemble the UPS.
- Do not operate near water or excessive humidity.
- Install UPS in a well ventilated area. Do not block air vents.
- Do not operate close to gas or electric heat sources and avoid direct sunlight.

1.5. FUNCTIONAL DESCRIPTION

There are three main modes of operation in the UPS system, NORMAL, BATTERY and optional BYPASS. Each mode supplies power to the critical load. The heart of the UPS is a Rectifier/Inverter which provides a clean, quality sine wave for the critical load. In NORMAL mode incoming utility AC is processed by the Rectifier/Inverter to supply the critical load and also supplies charging current for the battery. In ON BATTERY mode, the critical load is supported by the battery. BYPASS mode allows utility AC to supply the load directly. The UPS automatically switches between NORMAL, ON BATTERY and BYPASS modes, as required, with no operator intervention.

Sophisticated detection and switching logic is used to ensure that any change in mode of operation is automatic and transparent to the load. The UPS monitoring system indicates the current mode of operation and various critical parameters.

In NORMAL mode, incoming AC commercial power is filtered to reduce spikes and noise. A portion of the utility power is automatically redirected to charge the battery. During this mode, the battery charge condition is monitored. If the utility AC fails or falls out of specified limits, the UPS automatically goes to ON BATTERY mode. The UPS

will automatically return to NORMAL mode when the utility power returns to within specified limits.

In BATTERY mode, the battery system provides DC power which is converted to conditioned AC by the UPS. Depending on battery capacity, the system operates in the ON BATTERY mode until the battery is fully drained. Output power is no longer available to the load. If incoming power returns to within specified parameters, then the UPS will automatically return to NORMAL mode.

In the optional BYPASS mode, the UPS transfers the critical load directly to the utility AC power, provided the bypass source is available. This will occur due to one of the following conditions:

- Load current is between 106% - 124% of rating for 10 minutes, 125% - 149% for 30 seconds or 150% - 299% for 10 cycles.
- UPS internal temperature exceeds safe operating range.
- UPS output falls out of the specified voltage limits.
- Input current exceeds specified limits.
- Load current inrush (surge) exceeds peak current capability.

When the unit is in NORMAL mode and it automatically transfers to BYPASS due to a load-related transient, the UPS will attempt to return to NORMAL. After output overload failure or input current failure, return to NORMAL mode must be done manually (system start-up). Automatic return to NORMAL mode occurs when any other condition clears. The UPS will remain in BYPASS mode if three attempts occur within a ten minute period.

SET TYPE (SYSTEM SETUP) allows you to configure the output voltage and frequency. The type was set at the factory according to your order, so you do not need to set the type. You may, however, wish to use this mode to verify or change the type.

1.6. CONTROLS AND INDICATORS

During normal operation the UPS functions automatically. Various operator accessible controls and indicators enable monitoring of the system status, manual transfer between modes, system shutdown and system start-up. Location of each control and indicator is given in Figure 1-1. Their individual functions are described as follows:

1.6.1 Operating Controls

There are three push-button controls on the basic front panel.

HORN SILENCE

Use to silence audible alarm, light all indicator lights as Lamp Test and to test alarm.

UPS ON

Use to start-up system.

UPS OFF

Use to shutdown system.

1.6.2 Indicator Lights

These are normally invisible indicators, located on the front control panel, which illuminate when the appropriate condition is active.

NORMAL

Lit green when UPS is in NORMAL operating mode. If Bypass is installed, the Normal light flashes when Bypass is unavailable. This indicates that you have either a frequency or voltage problem with your utility service. Your UPS compensates for this problem. However, as long as this condition exists you cannot use Bypass. Normally, this condition clears up in a few moments. If not, you should have your service checked by the power company.

BYPASS

Lit yellow when UPS is in BYPASS mode. For 3 phase 120/208, Bypass flashes in the event of a phase rotation error.

BATTERY

Lit yellow when UPS is running ON BATTERY. Flashes when there is one minute or less of battery time remaining. [If the UPS is not running ON BATTERY, this indicator will flash when the UPS battery is disconnected (battery breaker open or battery disconnected).] Note that AT&T will use a two-minute warning.

OVERLOAD

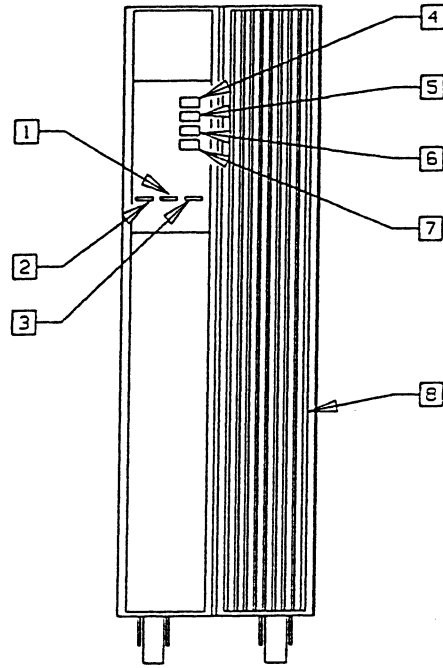
Lit yellow when UPS is in an overload condition.

NOTE: If all the indicator lights are flashing simultaneously, then there is a problem with the UPS. Please contact your field service representative.

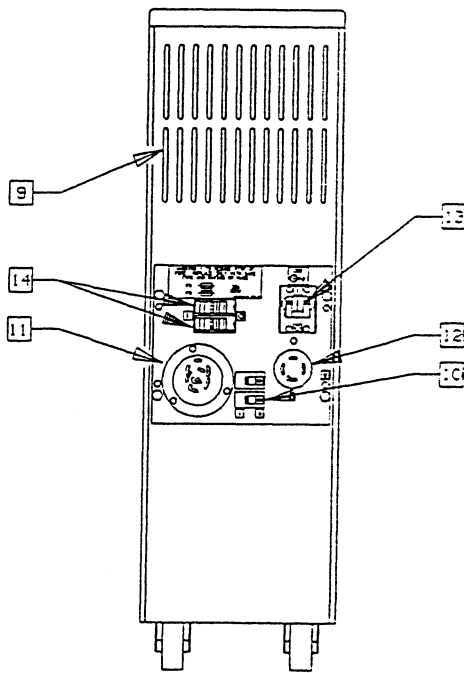
1.6.3 Audible Alarm

Sounds a pulsing tone when the UPS is in **OVERLOAD** or **ON BATTERY**. A beeping horn will sound when running **ON BATTERY**. When there is one minute or less of battery time remaining, you will hear a constant tone. The constant tone will also sound if the UPS is **NOT ON BATTERY** and the UPS battery is disconnected (battery breaker is open, battery disconnected or there is a blown fuse in the battery cabinet). Note that AT&T will use a two minute warning.

- 1 UPS ON
- 2 HORN SILENCE
- 3 UPS OFF
- 4 NORMAL INDICATOR LIGHT (GREEN)
- 5 BYPASS INDICATOR LIGHT (YELLOW)
- 6 BATTERY INDICATOR LIGHT (YELLOW)
- 7 OVERLOAD INDICATOR LIGHT (YELLOW)
- 8 AIR INTAKE VENTS



FRONT VIEW



REAR VIEW

- 9 AIR EXHAUST
- 10 INPUT NEUTRAL SWITCH (S2)
- 11 INPUT PLUG
- 12 OUTPUT RECEPTACLE
- 13 OUTPUT BREAKER
- 14 BATTERY FUSES

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FIGURE 1-1 CONTROLS AND INDICATORS

2. OPERATION

This section gives the procedure to follow when you start up your UPS. It assumes that you have connected your UPS according to the installation instructions provided in this manual. Section 2.1 describes the usual start-up procedure. Section 2.2 provides instructions for a DC start-up of your UPS. A DC start requires both the Hardwired input/output module option and the DC start option.

2.1. SYSTEM START-UP

If your UPS was not configured at the factory, please refer to Set Type in the Installation section of this manual.

1. Make sure that the UPS is OFF (all indicator lights are OFF).

WITHOUT BYPASS

2. Apply AC power to the UPS (all indicator lights illuminate for approximately ten seconds and then go OFF) and turn ON the Output Breaker. Power is not supplied to the load.

3. Depress the ON button; the HORN beeps and the BATTERY & BYPASS lights flash as the Rectifier turns on. After approximately 15 seconds, the BYPASS & NORMAL lights flash as the Inverter turns ON. Once the UPS is ON, the NORMAL light will be on solid indicating that the UPS is operating in Normal mode and power is supplied to the load.

WITH BYPASS

2. Apply AC power to the UPS (all indicator lights illuminate for approximately ten seconds) and turn ON the Output Breaker (BYPASS light remains ON). The UPS supplies incoming AC power to the load. The BYPASS light will flash in the event of a phase rotation error.

3. Depress the ON button; the HORN beeps and the BATTERY & BYPASS lights flash as the Rectifier turns on. After approximately 15 seconds, the BYPASS and NORMAL lights flash as the Inverter turns ON. Once the UPS is ON, the NORMAL light will be on solid indicating that the UPS is operating in Normal mode and power is supplied to the load.

If the BYPASS & BATTERY or BYPASS & NORMAL lights flash for more than one minute or if the lights flash in any combination other than mentioned above, please call your field service representative.

2.2. DC START-UP

If your UPS was not configured at the factory, please refer to Set Type in the Installation section of this manual. The steps below apply to units with Bypass and units without Bypass.

1. Make sure that the UPS is OFF (all indicators are OFF).
2. Open the output breaker (CB3) and close the battery breaker (CB2).

CAUTION:

Do not push the DC Start button if AC input is available.

3. Push the DC START switch (S3) and hold for 1-2 seconds.
4. The BATTERY and BYPASS lights flash as the Rectifier turns on. After approximately 15 seconds, the BYPASS and NORMAL lights flash as the Inverter turns on.

If you have a basic front panel, all the indicator lights will go off when the UPS is ready for power to be supplied to the load.

If you have the digital front panel, choose MENU SELECT and UPS STATUS. The UPS Status will read OUTPUT BREAKER OPEN when the UPS is ready for power to be supplied to the load.

6. Close the output breaker (CB3).
7. Push the HORN SILENCE button. The UPS status will not change unless DC under voltage is sensed or the utility returns.

2.3. SYSTEM SHUTDOWN

WITHOUT BYPASS

1. Hold the UPS OFF button; HORN sounds for 3 seconds. The NORMAL light will go OFF.
2. Open the Output Breaker and the Battery Breaker (if supplied) to ensure that all power is removed from the protected equipment.

WITH BYPASS

1. Hold the UPS OFF button until the unit transfers to Bypass; the BYPASS light will illuminate and the HORN will sound.
2. Open the Output Breaker (BYPASS light goes out) and the Battery Breaker (if supplied) to ensure that all power is removed from the protected equipment.

2.4. MODES OF OPERATION

Normal Mode

The system NORMAL light will be illuminated during Normal operation. If Automatic Bypass is installed and the utility goes out of specified limits, the NORMAL light will flash. At this time Bypass is not available.

On Battery Mode

When the utility fails and the unit transfers to ON BATTERY, the NORMAL light will go OFF, the BATTERY light will illuminate and the HORN will sound. Press the HORN button to silence the horn. The BATTERY light will flash and the HORN will sound again when there is approximately one minute of battery time remaining. When the battery time has run out the BATTERY light will go OFF and you no longer have power.

Overload

The OVERLOAD light will illuminate solid when the system goes into an overload condition and the HORN will sound. Push the HORN button to silence the HORN. If you do not have the Automatic Bypass option, the unit will shut down. If you do have Automatic Bypass, it transfers to BYPASS on an overload.

Bypass Mode (only available with Automatic Bypass option)

To switch to Bypass, hold the OFF button for 3 seconds. The NORMAL light will go off and the BYPASS light will be illuminated.

HORN and LIGHTS Test

Press the HORN button for 4 seconds to test the lights. Lights will remain lit for 4 seconds. If everything is normal, they will go out for 4 seconds. If there is a problem, one or more of the lights will remain on. Continue to hold for a total of 12 seconds to test the horn.

3. OPTIONS

This chapter gives you information for the following options:

- Bypass Plus
- Extended Battery Cabinets
- Input Line Cords
- Output Power Distribution
- Digital Front Panel Display
- Communications Interface
- LAN Relay Interface
- Local Emergency Power Off
- Remote Emergency Power Off
- Hardwired Input/Output Module

3.1. BYPASS PLUS

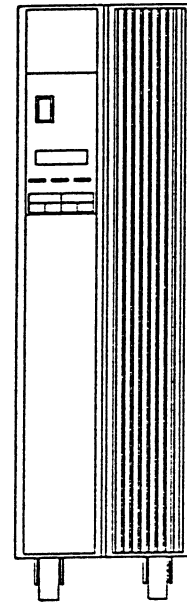
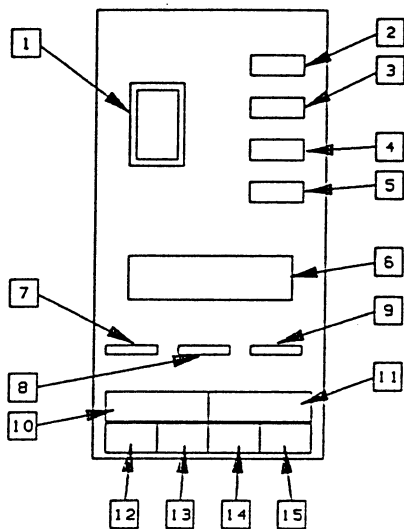
The UPS Bypass Plus is actually two features in one; Automatic Bypass and Maintenance Bypass.

3.1.1 Automatic Bypass

The UPS automatically transfers the protected equipment directly to the utility AC power, provided the bypass source is available. This can occur due to one of the following conditions:

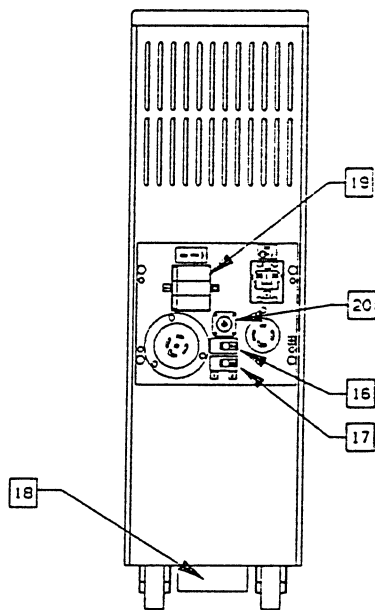
- Load current is between 106% - 124% of rating for 10 minutes, 125% - 149% for 30 seconds or 150%-299% for 10 cycles.
- UPS internal temperature exceeds safe operating range.
- UPS output falls outside specified limits of voltage.
- Input current exceeds specified limits.
- Load current inrush (surge) exceeds peak current capability.

After output overload failure or input current failure, return to Normal mode must be done manually. Automatic return to Normal mode occurs when any other condition clears. The UPS will make three attempts to auto-start. If auto-start fails, the UPS will remain in Bypass.



FRONT VIEW

- | | | | |
|---|-----------------------------------|----|---------------|
| 1 | EMERGENCY POWER OFF | 9 | UPS OFF |
| 2 | NORMAL INDICATOR LIGHT (GREEN) | 10 | MENU BUTTON |
| 3 | BYPASS INDICATOR LIGHT (YELLOW) | 11 | SELECT BUTTON |
| 4 | BATTERY INDICATOR LIGHT (YELLOW) | 12 | ← BUTTON |
| 5 | OVERLOAD INDICATOR LIGHT (YELLOW) | 13 | → BUTTON |
| 6 | DISPLAY | 14 | ↑ BUTTON |
| 7 | HORN SILENCE | 15 | ↓ BUTTON |
| 8 | UPS ON | | |



REAR VIEW

- | | |
|----|--------------------------------|
| 16 | MAINTENANCE BYPASS SWITCH (S1) |
| 17 | INPUT NEUTRAL SWITCH (S2) |
| 18 | COMMUNICATIONS CONNECTORS |
| 19 | BATTERY BREAKER |
| 20 | REPO CONNECTOR |

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FIGURE 3-1 LOCATION OF OPTIONS/DIGITAL FRONT PANEL DISPLAY

3.1.2 Maintenance Bypass

While in Maintenance Bypass your protected equipment is powered from the utility AC power. The switch prevents any load interruptions while in Maintenance Bypass. This allows for servicing of the UPS.

The Maintenance Bypass switch (S1) is located in the rear of the UPS (refer to Figure 3-1). Be sure that the Main Load breaker is ON (closed).

DANGER:
HIGH VOLTAGE: This equipment is always live. User must remove utility power by external means.

CAUTION:
Failure to follow instructions will result in load power interruption.

CAUTION:
When operating in Maintenance Bypass, your equipment will not be protected from power outages.

1. Transfer to Bypass (hold the OFF button for 3 seconds).
2. Turn the Maintenance Bypass switch (S1) from 1 to 2.
3. Perform maintenance tasks.
4. Turn Maintenance Bypass switch (S1) from 2 to 1 and wait 3 seconds.
5. Turn the UPS ON.

3.2. EXTENDED BATTERY CABINETS

For increased back-up time, add extended optional battery cabinet(s). These must be installed by authorized service personnel only.

3.3. INPUT LINE CORD PLUGS

The UPS comes with a NEMA L21-30P on the unit. We currently offer three different line cord plugs; NEMA L21-30P, NEMA L14-30P and NEMA L6-30P.

3.4. OUTPUT POWER DISTRIBUTION

We offer combinations of output circuit breakers and receptacles to accommodate world class needs. The following domestic types are available:

5-15R2, 1 pole 15 A breaker
L6-20R, 2 pole 20 A breaker
L14-30R, 2 pole 30 A breaker
5-20R2, 1 pole 20 A breaker
L5-20R, 1 pole 20 A breaker
L5-30R, 1 pole 30 A breaker
L6-20R, 2 pole 30 A breaker
6-15R, 2 pole 15 A breaker
L6-15R, 2 pole 15 A breaker
L14 - 21R, 2 pole 20 A breaker
L5-15R2, 1 pole 15 A breaker

3.5. DIGITAL FRONT PANEL DISPLAY

The UPS Digital Front Panel Display allows you to set up your unit and monitor the UPS status.

Main Menu

UPS Status

Meters

Alarm Queue

Active Alarms

Battery Data

S.W. Versions

System Set-Up

password

System Set-Up

Select Type

H.W. Modules

Sync Range

Adju Out Volts

COMM Set-Up

Relay Set-Up

Set Language

Set Time & Date

Contrast Adj

Horn Volume

Cir Alarm Que

Set User PW

Digital Front Panel Display Menu

3.5.1 Basic Operation

Menu key - returns to previous menu level

Select key - selects an item in the menu

UP or DOWN arrow keys - changes position within the menus, status screen or event queue.

RIGHT or LEFT arrow keys - shows possible device settings in menus or scrolls screen messages.

3.5.2 Explanation of Menu Items

Graphic displays of all menus can be found beginning on page 3-9.

MAIN MENU

UPS Status

Displays the number of currently active alarms and the following UPS Status conditions:

Output Brkr Open - Output breaker is open and UPS is not supplying power to the load.

UPS Off - Rectifier and Inverter OFF

UPS On Bypass - Bypass is supplying power to the load

UPS On - Rectifier or Inverter ON but not supplying load

Rectifier Ramping Up - Rectifier has been started and is ramping

Inverter Ramping Up - Inverter has been started and is ramping

Syncing To Bypass - Inverter has ramped, but load is still On Bypass

System Normal - Inverter supplying load (Bypass available)

UPS On Battery - UPS is On Battery

Load On Inverter - Inverter supplying load (no Bypass)

Inverter Overload - Overload condition indicated from Inverter

Rectifier Overload - Overload condition indicated from Rectifier

Meters Menu

Displays system meter values obtained through the Serial Communications network or calculated from the values obtained through the network. Use the UP and DOWN arrow keys to view metered values; use the MENU key to return to the MAIN MENU.

Values displayed are: Input Voltage (each phase and line to line), Output Voltage (each phase and line to line), DC Input Voltage, Average Battery Voltage, DC Link Voltage, Inverter Frequency, Input Frequency, Heat Sink Temperature, Power Supply Temperature. The Load Currents (each phase) and Output kVA are shown as bar graphs, with each block representing 10% of capacity. The present time and date are displayed in the mm/dd/yy; hh:mm:ss.s format.

Alarm Queue

Displays the 200 most recent alarms and events in chronological order (most recent first). Use the RIGHT and LEFT arrow keys to scroll the screen and view entire description. Use the UP and DOWN arrow keys to scroll through the queue.

Active Alarms

Displays all active alarms.

Battery Data

If the UPS is running with normal utility, the battery charge is displayed. If the UPS is running On Battery, the amount of battery time remaining bar chart is displayed. Each block on the bar chart represents 10% of the total time. This calculation assumes a constant load on the UPS. If external batteries are selected, the battery voltage is displayed.

Software Versions

Displays the software versions for the front panel, Inverter and Rectifier.

System Set-up

Refer to the authorization sheet in the front of this manual for the password. User-set password must be entered to access System Set-Up options. After entering a valid password, the System Set-Up menu will be displayed. Use the arrow keys to enter the password.

SYSTEM SET-UP

Allows you to set up your UPS. From the SYSTEM SETUP menu, use the MENU key to return to the MAIN MENU. When altering settings under the SYSTEM SETUP menu, the SELECT key will save a change and the MENU key will abort, leaving the setting as it was. An asterisk (*) displayed on the left side indicates the presently selected item.

Select Type

Allows you to select the output voltage, output phase and output frequency type for the UPS. The UPS kVA rating is displayed here for information only; it cannot be changed. Use the UP and DOWN arrow keys to change categories. Use the RIGHT and LEFT arrow keys to display all options for each category. Press the SELECT key to save an option. In this item, the MENU key returns to the previous menu but does not abort changes.

The UPS must be OFF and the output breaker must be open in order to change the type setting. If this is NOT the case, you may view, but not change, the type setting. For a newly selected type, the change takes effect when you use the MENU key to exit the Select Type menu.

H.W. Modules

Allows you to view and change the present system hardware configuration. Entries are: Bypass Installed, Number of Output Phases, Inverter Installed, Rectifier Installed, Shunt Trip Breaker Installed, Comm Board Installed, Front Interface Board Installed and Modem Installed. All items can be modified by the user except for the state of Bypass Installed and the number of Output Phases. Use the UP and DOWN arrow keys to view the entries. Use the RIGHT and LEFT arrow keys to view other settings.

The UPS must be off and the output breaker must be open in order to change the H.W. Modules setting. If this is NOT the case, you may view, but not change, the H.W. Modules. For a newly selected value, press the MENU key to exit the H.W. Modules menu before turning the unit ON.

Sync Range

Allows you to select the deviation of the utility frequency from the nominal Inverter frequency. The Inverter will track the utility within the range entered here. If the utility is outside of range, the Inverter operates at nominal frequency.

The UPS must be off and the output breaker must be open in order to change the Line Sync Range setting. If this is NOT the case, you may view, but not change, the type setting. For a newly selected value, press the MENU key to exit the Sync Range menu before turning the unit ON.

Adj Out Volts

Allows you to adjust the output voltage to within $\pm 5\%$ of the nominal output voltage. Use the UP arrow key to increase the percentage or the DOWN arrow key to decrease the percentage. The changes are made in real-time and remain in effect after exiting the Adjust Output Volts screen. The MENU key does not abort changes in this screen.

Comm Set-up

Allows you to set up the serial port for communication with a terminal and printer or in a computer mode. The Output Modes are: ASCII Computer, BINARY Computer, Terminal, Printer, and BTM. The I/O

Port must have the following parameters set up correctly to establish and maintain communications: Baud Rate, Data Size, Hardware Handshake, Software Handshake and Parity. Three standard sets of I/O Port parameters are available for Modem, 2-Wire Terminal (no handshaking) and Terminal with Software Handshake. All I/O Port parameters can be customized. Use the UP and DOWN arrow keys to view the list of set up parameters. Use the RIGHT and LEFT arrow keys to view other settings.

Relay Setup

Allows you to display and change the LAN Relay Interface configuration. Standard configurations include: AS/400[®], Novell[®], AT&T and "Default 1". In addition, all relays can be customized.

Set Language

Allows you to select a language for the display. You have a choice of English, French, German, Portuguese and Spanish. Use the UP and DOWN arrow keys to view the options.

Set Time & Date

Allows you to set the time and date. Use the RIGHT and LEFT arrow keys to change the group (minutes to hours, etc.). Use the UP and DOWN arrow keys to change the numbers.

Horn Volume

Two volume settings are available for the UPS horn: Loud and Soft. Use the LEFT or RIGHT arrow key to view the setting. SELECT sets the horn volume.

Clear Alarm Queue

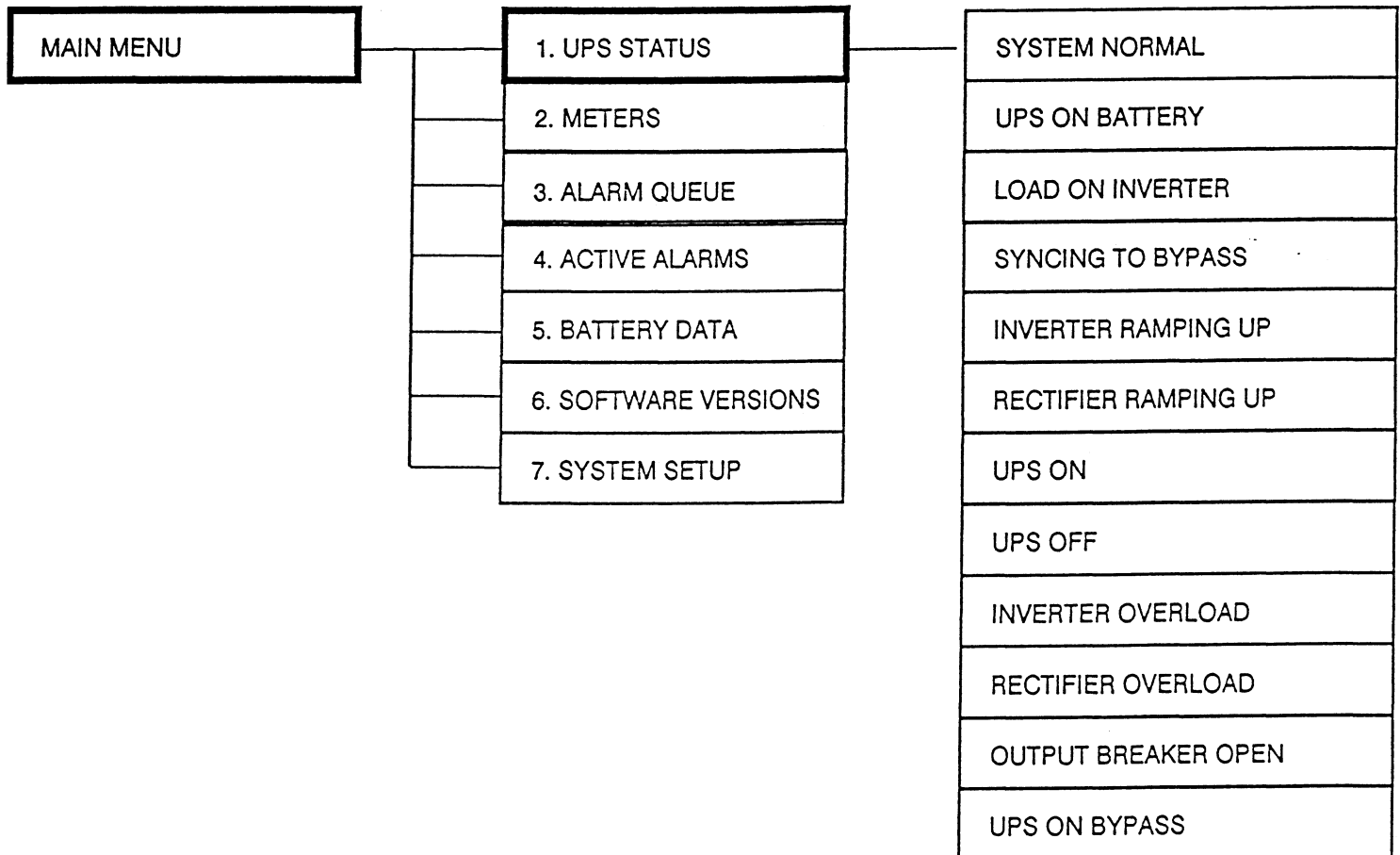
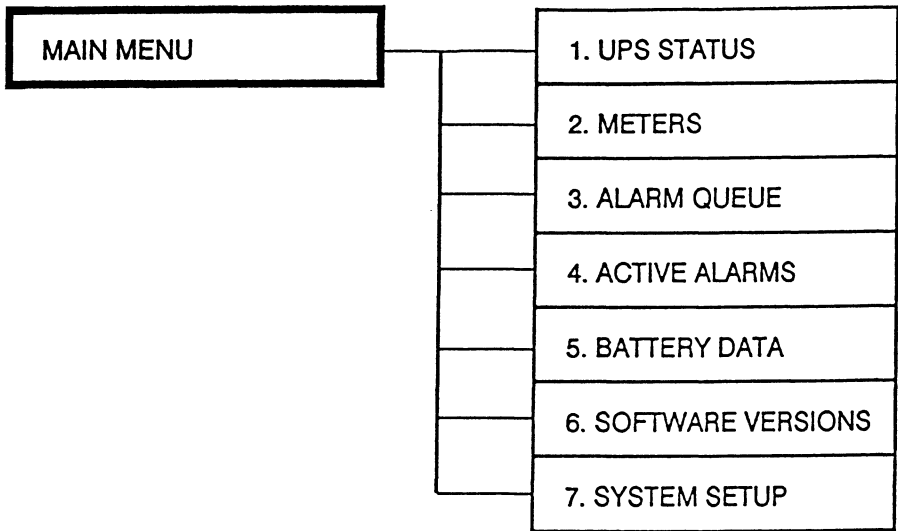
Allows you to completely empty the alarm queue of all listed alarms. Press the SELECT key to empty the queue.

Set User PW

Allows you to modify the user password that grants access to the System Set-up menu. Upon entry to this screen all 'A' s will be displayed, use the arrow keys to scroll the letters of the password. To save the password you MUST press the SELECT key.

Battery Config

Allows you to set your battery configuration on set up system for custom batteries.



MAIN MENU

- 1. UPS STATUS
- 2. METERS
- 3. ALARM QUEUE
- 4. ACTIVE ALARMS
- 5. BATTERY DATA
- 6. SOFTWARE VERSIONS
- 7. SYSTEM SETUP

- INPUT VOLTS (L-N)
- INPUT VOLTS (L-L)
- OUTPUT VOLTS (L-N)
- OUTPUT VOLTS (L-L)
- DC INPUT VOLTS
- BATTERY VOLTS
- DC LINK VOLTS
- INVERTER FREQUENCY
- INPUT FREQUENCY
- OUTPUT KVA
- PHASE A LOAD
- PHASE B LOAD
- TIME & DATE

MAIN MENU

- 1. UPS STATUS
- 2. METERS
- 3. ALARM QUEUE
- 4. ACTIVE ALARMS
- 5. BATTERY DATA
- 6. SOFTWARE VERSIONS
- 7. SYSTEM SETUP

SEQUENCE #, DATE, TIME
DESCRIPTION OF ALARM
-
-
-
-
-
FOR 200 MOST RECENT
ALARMS AND EVENTS
76 POSSIBLE ALARMS
AND EVENTS

DESCRIPTION OF ALARM
-
-
-
FOR ALL ACTIVE ALARMS
67 POSSIBLE ALARM
CONDITIONS

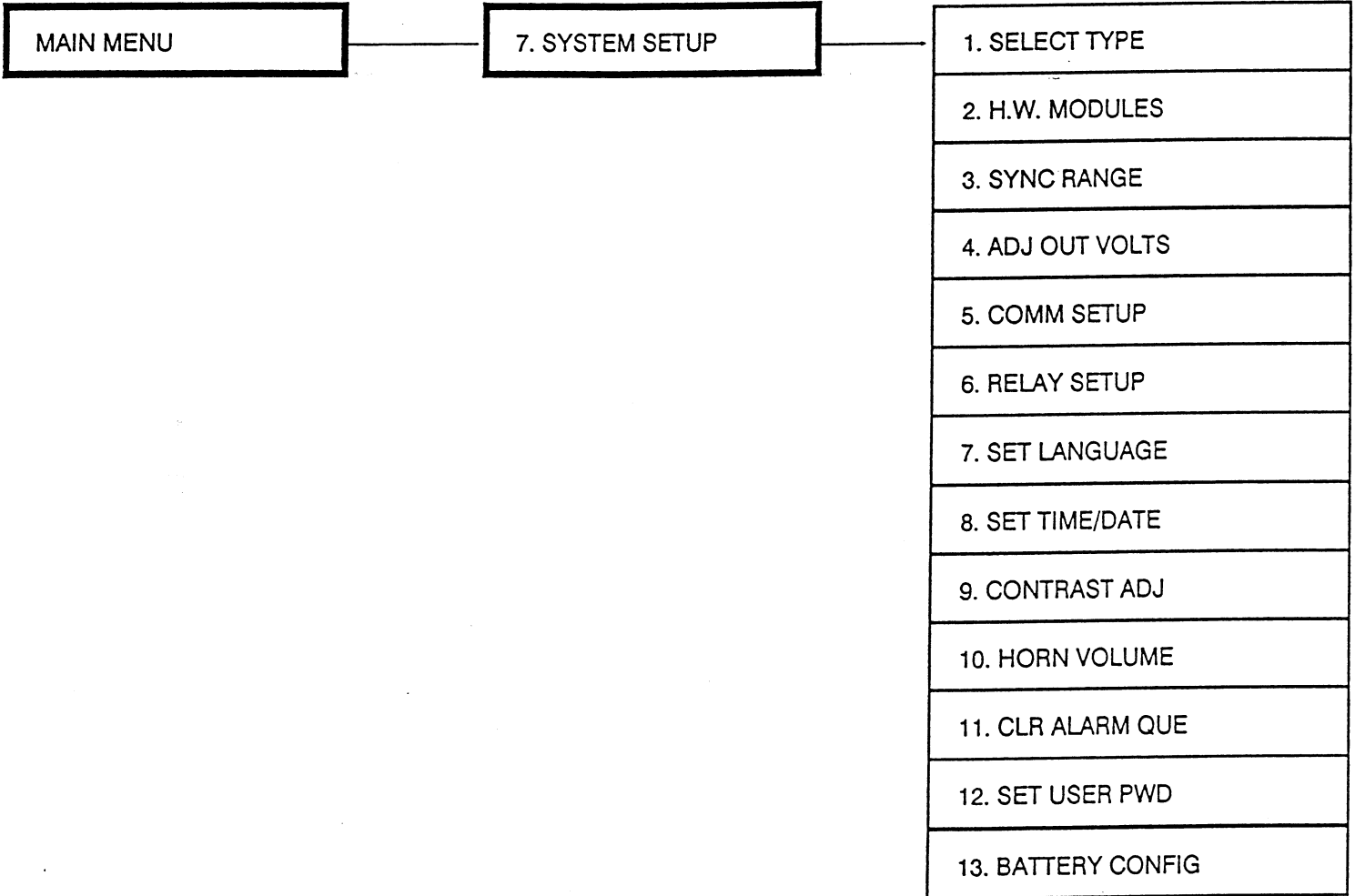
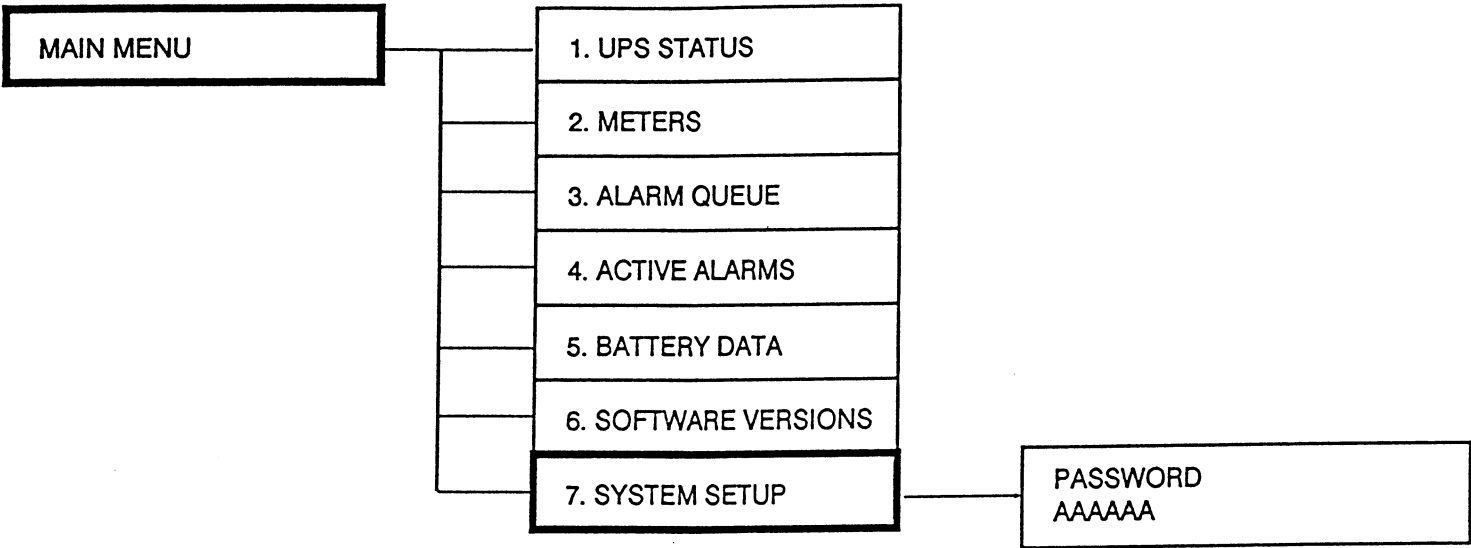
MAIN MENU

- 1. UPS STATUS
- 2. METERS
- 3. ALARM QUEUE
- 4. ACTIVE ALARMS
- 5. BATTERY DATA
- 6. SOFTWARE VERSIONS
- 7. SYSTEM SETUP

IF NOT ON BATTERY:
BATTERY % CHARGE
BAR GRAPH (10% INC.)

IF ON BATTERY:
BATTERY TIME
REMAINING
BAR GRAPH (10% INC. OF
MAX TIME FOR SYS)

FRONT PANEL	XX.XX
INVERTER	XX.XX
RECTIFIER	XX.XX



7. SYSTEM SETUP

- 1. SELECT TYPE
- 2. H.W. MODULES
- 3. SYNC RANGE
- 4. ADJ OUT VOLTS
- 5. COMM SETUP
- 6. RELAY SETUP
- 7. SET LANGUAGE
- 8. SET TIME/DATE
- 9. CONTRAST ADJ
- 10. HORN VOLUME
- 11. CLR ALARM QUE
- 12. SET USER PWD
- 13. BATTERY CONFIG

OUTPUT VOLTAGE:(L-N)
 100 V
 105 v
 110 V
 115 V
 120 V
 125 V

OUTPUT FREQUENCY
 50 HZ
 60 HZ

OUTPUT PHASE
 120°
 180°
 240°

7. SYSTEM SETUP

- 1. SELECT TYPE
- 2. H.W. MODULES
- 3. SYNC RANGE
- 4. ADJ OUT VOLTS
- 5. COMM SETUP
- 6. RELAY SETUP
- 7. SET LANGUAGE
- 8. SET TIME/DATE
- 9. CONTRAST ADJ
- 10. HORN VOLUME
- 11. CLR ALARM QUE
- 12. SET USER PWD
- 13. BATTERY CONFIG

BYPASS INSTALLED Y/N
 # OUTPUT PHASES 2
 INVERTER INST? Y
 RECTIFIER INST? Y
 COMM BOARD INST? Y/N

↑ ↓ TO CHANGE VALUE
 SELECT TO SAVE

7. SYSTEM SETUP

- 1. SELECT TYPE
- 2. H.W. MODULES
- 3. SYNC RANGE
- 4. ADJ OUT VOLTS
- 5. COMM SETUP
- 6. RELAY SETUP
- 7. SET LANGUAGE
- 8. SET TIME/DATE
- 9. CONTRAST ADJ
- 10. HORN VOLUME
- 11. CLR ALARM QUE
- 12. SET USER PWD
- 13. BATTERY CONFIG

LINE SYNC RANGE

+/- 0.5 HZ
 +/- 1.0 HZ
 +/- 1.5 HZ
 +/- 2.0 HZ
 +/- 2.5 HZ
 +/- 3.0 HZ

← → TO CHANGE VALUE
 SELECT TO SAVE

7. SYSTEM SETUP

- 1. SELECT TYPE
- 2. H.W. MODULES
- 3. SYNC RANGE
- 4. ADJ OUT VOLTS
- 5. COMM SETUP
- 6. RELAY SETUP
- 7. SET LANGUAGE
- 8. SET TIME/DATE
- 9. CONTRAST ADJ
- 10. HORN VOLUME
- 11. CLR ALARM QUE
- 12. SET USER PWD
- 13. BATTERY CONFIG

XXX VOLTS -Y%

↑ ↓ TO CHANGE VALUE
 -5% TO +5%
 AUTOMATICALLY SAVED

7. SYSTEM SETUP

- 1. SELECT TYPE
- 2. H.W. MODULES
- 3. SYNC RANGE
- 4. ADJ OUT VOLTS
- 5. COMM SETUP**
- 6. RELAY SETUP
- 7. SET LANGUAGE
- 8. SET TIME/DATE
- 9. CONTRAST ADJ
- 10. HORN VOLUME
- 11. CLR ALARM QUE
- 12. SET USER PWD
- 13. BATTERY CONFIG

- 1. OUTPUT MODE
PRINTER
TERMINAL
BINARY COMPUTER
ASCII COMPUTER
- 2. I/O PORT SETUP
SW HANDSHAKE TERM
2-WIRE TERMINAL
- 3. CUSTOMIZE I/O
BAUD RATE: 2400, 4800, 9600,
19200
DATA SIZE: 7, 8 BITS
HARDWARE HANDSHAKE: ON, OFF
SOFTWARE HANDSHAKE: ON, OFF
PARITY: ODD, EVEN, NONE

7. SYSTEM SETUP

- 1. SELECT TYPE
- 2. H.W. MODULES
- 3. SYNC RANGE
- 4. ADJ OUT VOLTS
- 5. COMM SETUP
- 6. RELAY SETUP**
- 7. SET LANGUAGE
- 8. SET TIME/DATE
- 9. CONTRAST ADJ
- 10. HORN VOLUME
- 11. CLR ALARM QUE
- 12. SET USER PWD
- 13. BATTERY CONFIG

- 1. DISPLAY CURRENT RELAY
- 2. AS/400
- 3. NOVELL
- 4. AT&T
- 5. DEFAULT 1
- 6. CUSTOM

7. SYSTEM SETUP

- 1. SELECT TYPE
- 2. H.W. MODULES
- 3. SYNC RANGE
- 4. ADJ OUT VOLTS
- 5. COMM SETUP
- 6. RELAY SETUP
- 7. SET LANGUAGE**
- 8. SET TIME/DATE
- 9. CONTRAST ADJ
- 10. HORN VOLUME
- 11. CLR ALARM QUE
- 12. SET USER PWD
- 13. BATTERY CONFIG

SET LANGUAGE FOR MENUS
AND RS-232 COMMUNICATION

ENGLISH
FRENCH
SPANISH
GERMAN
PORTUGUESE

↑ ↓ TO CHANGE VALUE
SELECT TO SAVE

7. SYSTEM SETUP

- 1. SELECT TYPE
- 2. H.W. MODULES
- 3. SYNC RANGE
- 4. ADJ OUT VOLTS
- 5. COMM SETUP
- 6. RELAY SETUP
- 7. SET LANGUAGE
- 8. SET TIME/DATE**
- 9. CONTRAST ADJ
- 10. HORN VOLUME
- 11. CLR ALARM QUE
- 12. SET USER PWD
- 13. BATTERY CONFIG

Date Format
MM/DD/YY
DD/MM/YY
HH.MM.SS

← → TO CHANGE POSITION
↑ ↓ TO CHANGE VALUE
SELECT TO SAVE

7. SYSTEM SETUP

- 1. SELECT TYPE
- 2. H.W. MODULES
- 3. SYNC RANGE
- 4. ADJ OUT VOLTS
- 5. COMM SETUP
- 6. RELAY SETUP
- 7. SET LANGUAGE
- 8. SET TIME/DATE
- 9. CONTRAST ADJ
- 10. HORN VOLUME
- 11. CLR ALARM QUE
- 12. SET USER PWD
- 13. BATTERY CONFIG

↑ ↓ TO ADJUST CONTRAST
SELECT TO SAVE

VOLUME SETTING
LOUD
SOFT

← → TO CHANGE VALUE
SELECT TO SAVE

7. SYSTEM SETUP

- 1. SELECT TYPE
- 2. H.W. MODULES
- 3. SYNC RANGE
- 4. ADJ OUT VOLTS
- 5. COMM SETUP
- 6. RELAY SETUP
- 7. SET LANGUAGE
- 8. SET TIME/DATE
- 9. CONTRAST ADJ
- 10. HORN VOLUME
- 11. CLR ALARM QUE
- 12. SET USER PWD
- 13. BATTERY CONFIG

SELECT TO CLEAR
ALARM/EVENT HISTORY
QUEUE

SET PASSWORD
AAAAAA

← → TO CHANGE POSITION
↑ ↓ TO CHANGE VALUE
SELECT TO SAVE

7. SYSTEM SETUP

- 1. SELECT TYPE
- 2. H.W. MODULES
- 3. SYNC RANGE
- 4. ADJ OUT VOLTS
- 5. COMM SETUP
- 6. RELAY SETUP
- 7. SET LANGUAGE
- 8. SET TIME/DATE
- 9. CONTRAST ADJ
- 10. HORN VOLUME
- 11. CLR ALARM QUE
- 12. SET USER PWD
- 13. BATTERY CONFIG**

Custom DCUV selections
available for custom
battery only.

Custom DCUV

- 1.67 volts/cells
- 1.68 volts/cells
- 1.69 volts/cells
- 1.70 volts/cells
- 1.71 volts/cells
- 1.72 volts/cells
- 1.73 volts/cells
- 1.74 volts/cells
- 1.75 volts/cells
- 1.76 volts/cells
- 1.77 volts/cells
- 1.78 volts/cells
- 1.79 volts/cells
- 1.80 volts/cells
- 1.81 volts/cells
- 1.82 volts/cells
- 1.83 volts/cells
- 1.84 volts/cells
- 1.85 volts/cells

↑ ↓ TO CHANGE VALUE
SELECT TO SAVE

- No Battery
- Custom Battery
- Internal Only
- 1 EBC2
- 2 EBC2's
- 3 EBC2's
- 5 EBC2's
- 1 EBC1 & 1 EBC2
- 2 EBC1 & 1 EBC2
- 1 EBC1 & 2 EBC2's
- 1 EBC1
- 2 EBC1's
- 3 EBC1's
- 1 EBC18
- 2 EBC18's
- 3 EBC18's
- 4 EBC18's

↑ ↓ TO CHANGE VALUE
SELECT TO SAVE

3.6. COMMUNICATIONS INTERFACE

RS232 Interface or RS422 Interface

Both interfaces provide you with either full RS232 or RS422/RS423/RS485 communications. They have selectable baud rates of 2400, 4800, 9600 or 19.2 K and operate in the following modes:

Terminal Mode: This mode provides an alternate user interface to the UPS' running data through an ANSI x3.64 compatible terminal such as a VT100. The displayed data is user selectable via a menu screen. When a data screen is selected it is continuously updated to reflect the state of the UPS. The following options are available from the Menu Screen: Alarm/Event Queue, Active Alarms, Meters Screen, Mimic Screen, Battery Data and Set Time & Date.

Printer Mode: This provides a way for the user to get a hardcopy of the alarm messages in the alarm history queue. After selection, Printer Mode scans the current alarm history queue and prints all the alarm entries which have not yet been printed. Subsequent alarms are printed as they occur. Options exist to reprint the alarm queue and to print all active alarms, metered data or machine configuration.

ASCII Computer Mode: This mode outputs information that reflects the state of the UPS. Using the factory available protocol, you can write software to interface with the information provided by the Digital Front Panel Display.

Binary Computer Mode: This mode also outputs information that reflects the state of the UPS; you can write software to interface with it. In addition, this computer mode allows the system to operate remotely by sending the UPS control commands.

3.7. LAN RELAY INTERFACE

The LAN Relay Interface is set up through the Digital Front Panel Display. It has programmable relays for Novell[®] and Banyan[®] networks and for the IBM[®] AS/400[®]. These relays are also customer programmable.

3.8. LOCAL EMERGENCY POWER OFF (EPO)

This option disconnects the protected equipment from all power sources by opening the UPS battery circuit breaker CB2 and the output circuit breaker CB3. The EPO does not disconnect the UPS from the input AC power source.

To operate, press the Emergency Power Off (EPO) button located on the front panel of the UPS. Refer to Figure 3-1 for location.

Note that after the EPO button is depressed, the internal logic power supply will be on if AC power is present at the UPS input.

3.9. REMOTE EMERGENCY POWER OFF (REPO)

This option is a wall-mounted, push-button switch supplied by the customer. When activated, the REPO switch initiates a local EPO and the protected equipment is disconnected from all power sources. Functionally, when the REPO switch is activated the UPS responds identically as when the local EPO button is depressed. Refer to the previous section for a description of the local EPO.

Refer to customer drawing #110712170, located in the back of this manual, for the REPO terminal block connections.

The switch, junction box, conduit and all external wiring is customer supplied. REPO switch minimum ratings are 120V and 135mA.

CAUTION:

The REPO wires are at high voltage potential (120V). Refer to local electrical codes for appropriate installation.

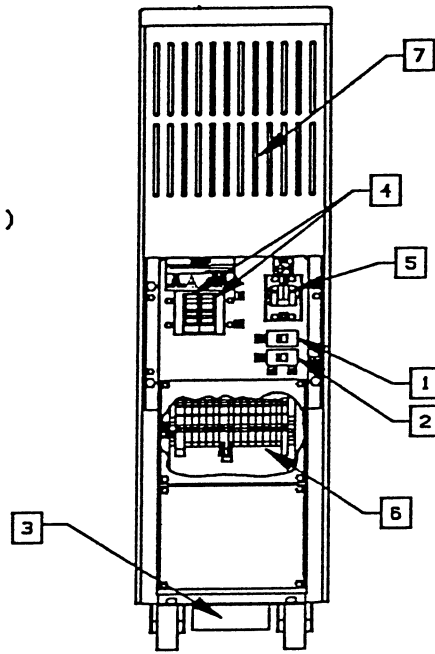
3.10. HARDWIRED INPUT/OUTPUT MODULE

This option allows hardwired input and output connections to the equipment. Domestic or International grounding may be configured with this option. Refer to customer drawings 110719029 and 110712170.

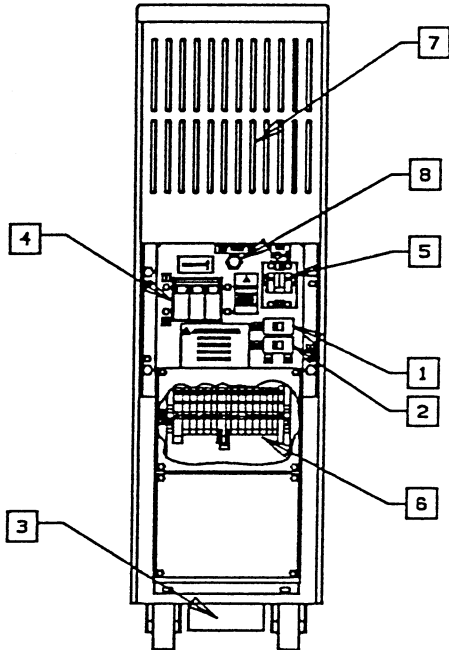
3.10.1 DC START FOR HARDWIRED INPUT/OUTPUT MODULE

This option allows you to start-up the UPS using energy from the batteries. Refer to Figure 3-2. It is only available in the hardwired input/output module, with Domestic or International grounding configurations. Refer to customer drawings #110719029 and #11071170 for installation instructions.

- 1 MAINTENANCE BYPASS SWITCH (S1)
- 2 INPUT NEUTRAL SWITCH (S2)
- 3 COMMUNICATIONS CONNECTORS
- 4 BATTERY FUSES
- 5 OUTPUT BREAKER
- 6 HARDWIRED TERMINAL BOARD
- 7 AIR EXHAUST



REAR VIEW



- 1 MAINTENANCE BYPASS SWITCH (S1)
- 2 INPUT NEUTRAL SWITCH (S2)
- 3 COMMUNICATIONS CONNECTORS
- 4 BATTERY BREAKER
- 5 OUTPUT BREAKER
- 6 HARDWIRED TERMINAL BOARD
- 7 AIR EXHAUST
- 8 DC START SWITCH (S3)
OPTIONAL

REAR VIEW

199001000_1

FIGURE 3-2 REAR VIEW OF UPS WITH HARDWIRED OPTION

4. INSTALLATION

4.1. INTRODUCTION

This entire section contains **IMPORTANT SAFETY INSTRUCTIONS**. Please **SAVE THESE INSTRUCTIONS**.

Now that you have unpacked your UPS according to the instructions located on the outside of the box, you are ready to install it. The installation procedure for the unit is quite easy but does require that you go through the steps (sections) in the order in which they appear in this section. Also, we will periodically be referring you to the customer drawings which are located in the back of the operators manual.

We recommend that you read through the entire section before you begin the actual installation. This will give you an idea of what to expect.

4.2. SITE PREPARATION

For optimum efficiency, be sure that your site conforms to the environmental specifications as listed below and to the requirements indicated on customer drawing #110719029 located in the back of the operators manual.

ENVIRONMENT

Operating: 0° to 40° C

Humidity: 5 to 95% (non-condensing)

4.3. PHYSICAL INSTALLATION

<p>CAUTION: Risk of electrical shock. Installation of battery cabinets must be done by authorized service personnel.</p>

The following instructions assume that you have already removed the unit and the battery cabinets from the pallets according to the unloading instructions on the outside of the cabinet box. If your UPS will be connected to a remote battery provided by others disregard all references to battery cabinets in this section and go to Section 5 **REMOTE BATTERIES** for wiring instructions.

1. Roll the cabinet(s) to the operating site.

2. If you have one or two extended battery cabinets (optional), refer to customer drawing #110719031, located in the back of the operators manual, and follow the cabinet joining instructions on that drawing.

Once you have completed the physical installation of all your cabinets, go to the next section to install the battery fuses.

For hardwired units or seismic installation, steps 3 through 9 must be completed.

3. Remove the mounting plates from the pallets (refer to View 1 on Figure 4-1).

4. A seismic installation of the UPS requires that the mounting plates be bolted to the floor. Refer to Figure 4-2 for a detailed drill and mounting pattern.

5. If a seismic installation is not required, it is not necessary to bolt the mounting plates to the floor. Position them at the final installation location.

6. Roll the cabinets on to the mounting plates as shown in View 3.

7. Using the two 5/16" bolts you took out when unloading each cabinet, bolt each cabinet to the mounting plate as shown in View 3.

8. Join the cabinets together as shown in the Cabinet Joining section on customer drawing #110719031 if required.

9. Follow the instructions on customer drawing #110719031 to complete installation of the battery cabinet(s).

CAUTION: For Hardwired Units Only

The UPS and Battery Cabinet must be secured to their mounting plates to prevent them from moving once installation is complete. Failure to do so will violate safety rules and will result in the unit losing its safety agency approvals.

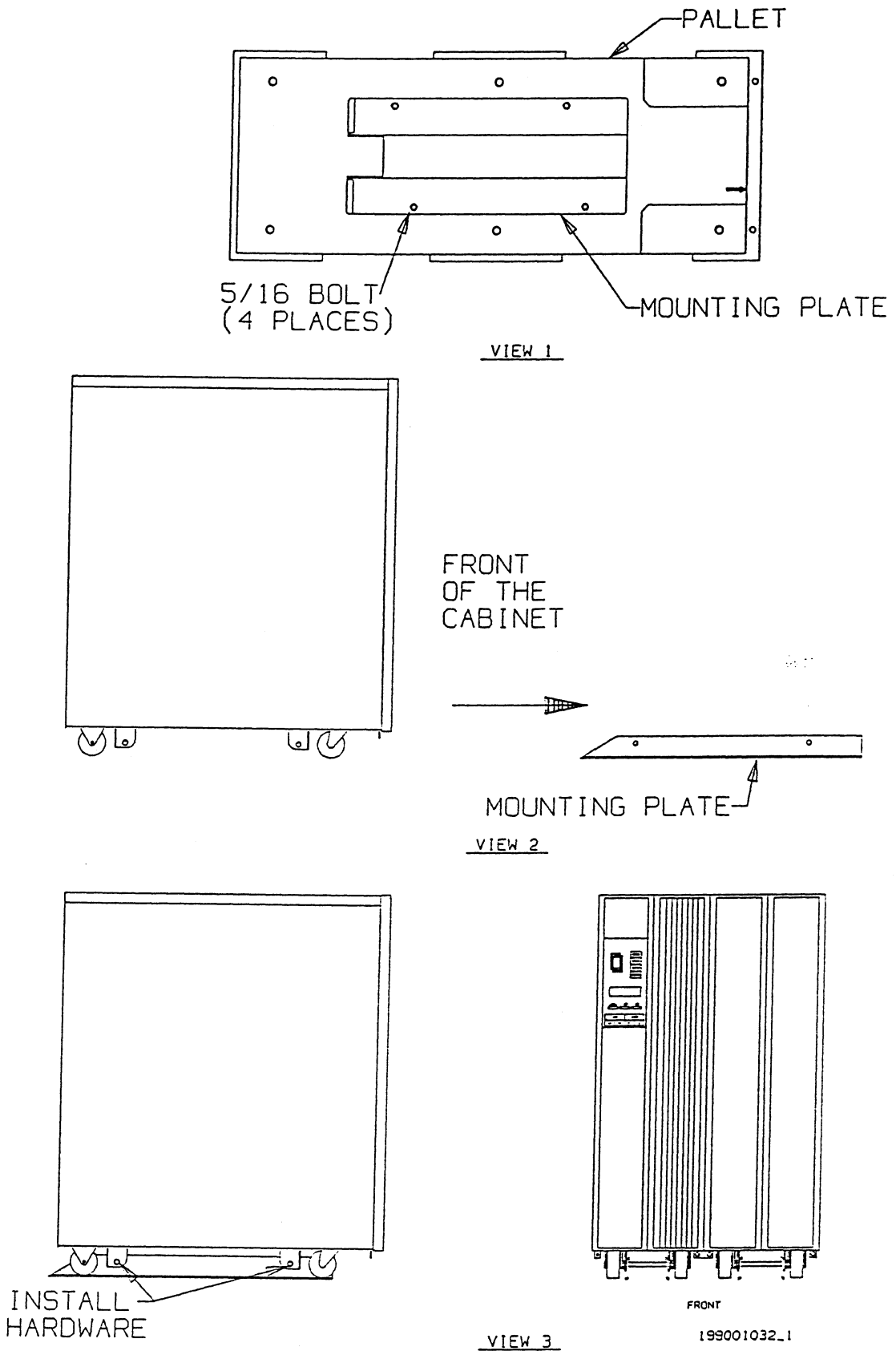
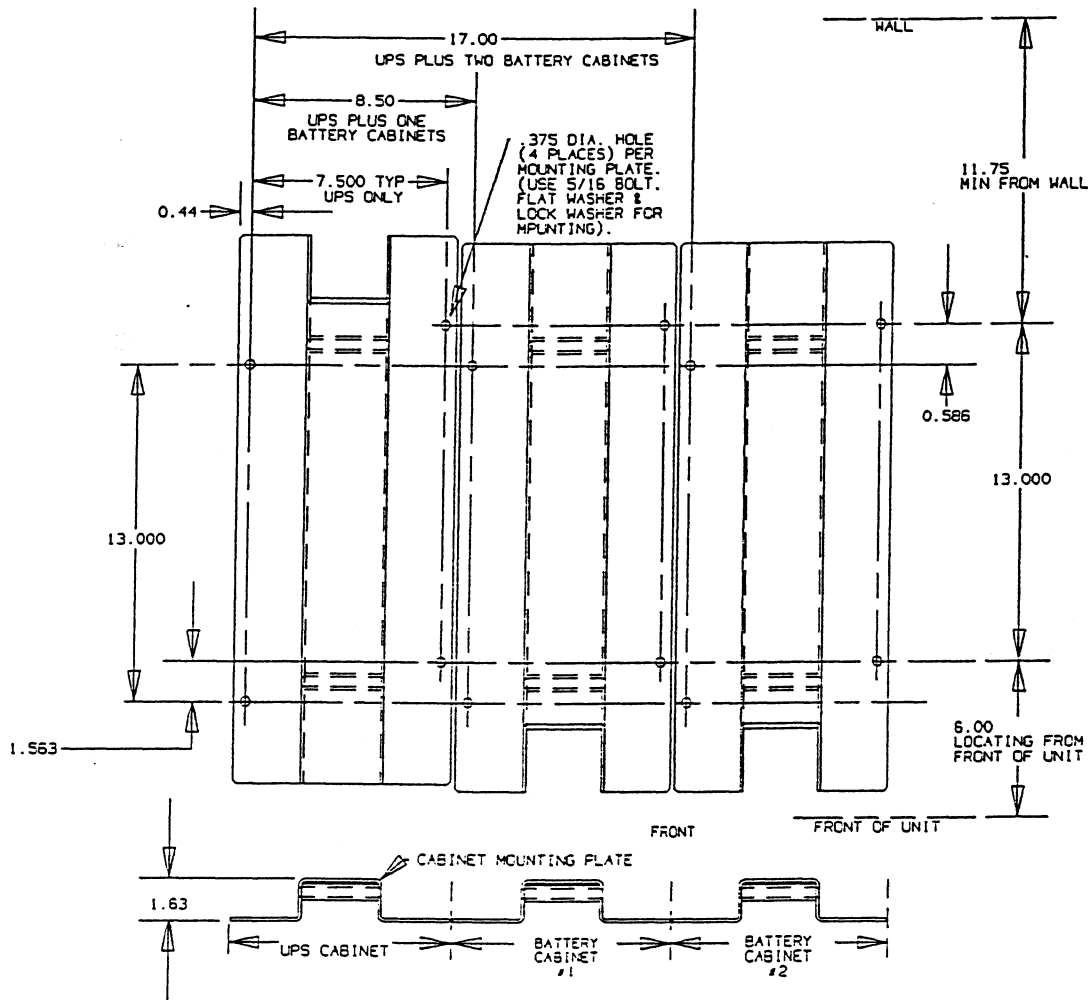


FIGURE 4-1 SECURING THE MOUNTING PLATE & CABINET



MATERIAL: 11 G_a (.120") COLD ROLLED STEEL

CABINET MOUNTING AND DRILL PATTERN FOR SEISMIC INSTALLATION

199001033_1

FIGURE 4-2 MOUNTING PATTERN

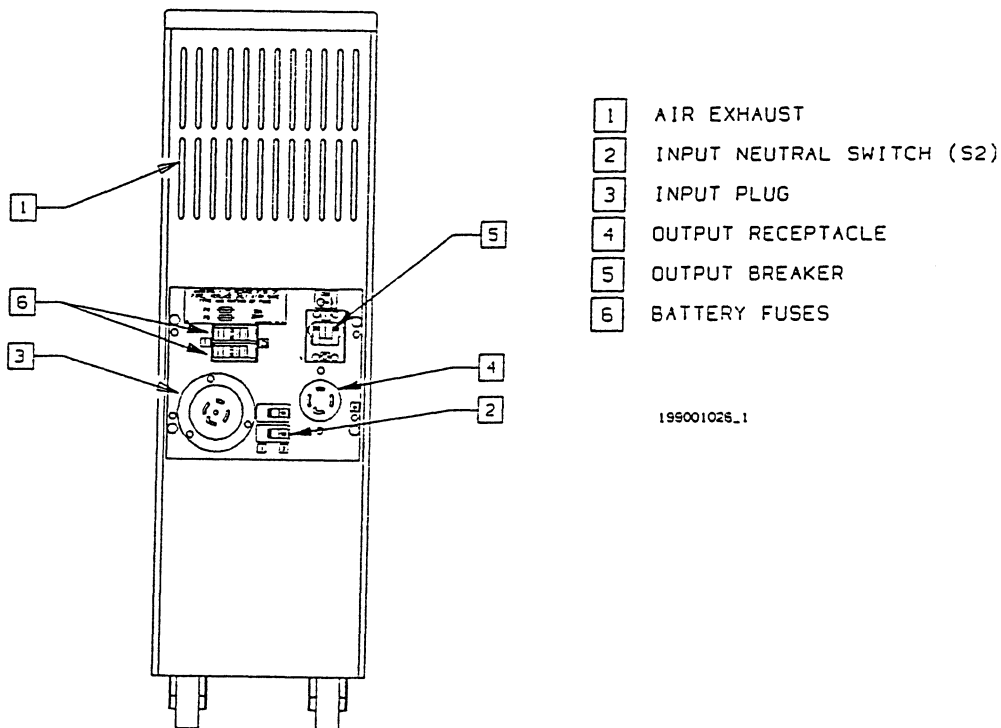
4.4. INSTALLING THE BATTERY FUSES

Before you install the battery fuses you need to find out if you have a standard unit or one with the EPO/REPO options.

4.4.1 Standard Unit

1. Locate the two fuses that were shipped with the UPS. They are in the cloth bag on the output breaker in the rear of the UPS.
2. Remove the bag and the fuses.
3. Refer to Figure 4-3 and locate the fuse holders in the rear of the UPS.
4. For each fuse, open the fuse holder and insert the fuse.
5. Close each fuse holder.
6. Double check to ensure that you have removed the cloth bag from the breaker.

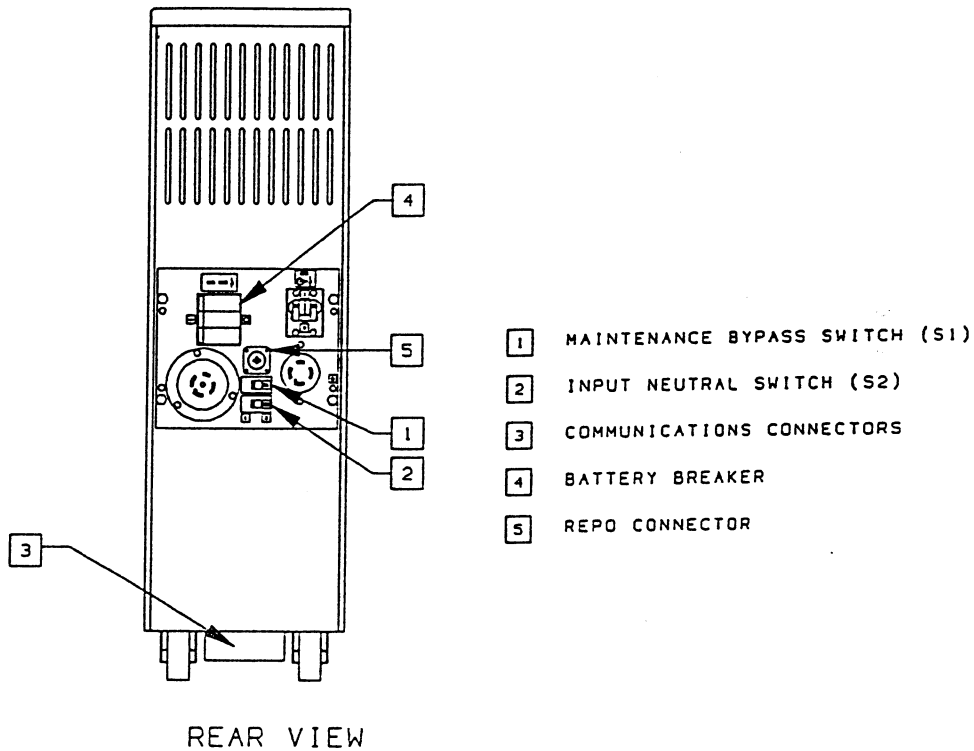
Now that you have installed the battery fuses, go to the next section to install your options.



199001026_1

REAR VIEW

FIGURE 4-3 REAR VIEW OF UPS WITHOUT OPTIONS



199001028_1

FIGURE 4-4 REAR VIEW OF UPS WITH OPTIONS

4.4.2 UPS with EPO and/or REPO Options

1. Refer to Figure 4-4 to locate the battery breaker.
2. Close (position 1) the battery breaker.

Now that you have located and closed the battery breaker, go to the next section to install your options.

4.5. INSTALLATION OF OPTIONS

4.5.1 PDM

Refer to customer drawing #110719030, located in the back of the operators manual, for complete instructions to install your PDM.

4.5.2 Extended Battery Cabinets

Refer to customer drawing #110719031, located in the back of the operators manual, for complete instructions to install the Extended Battery Cabinets.

CAUTION:

Risk of electrical shock. Installation of extended battery cabinet must be done by authorized service personnel.

4.5.3 Remote Emergency Power Off (REPO)

This is a wall-mounted, push-button, customer-supplied switch disconnecting the UPS and protected equipment from all AC power sources when activated.

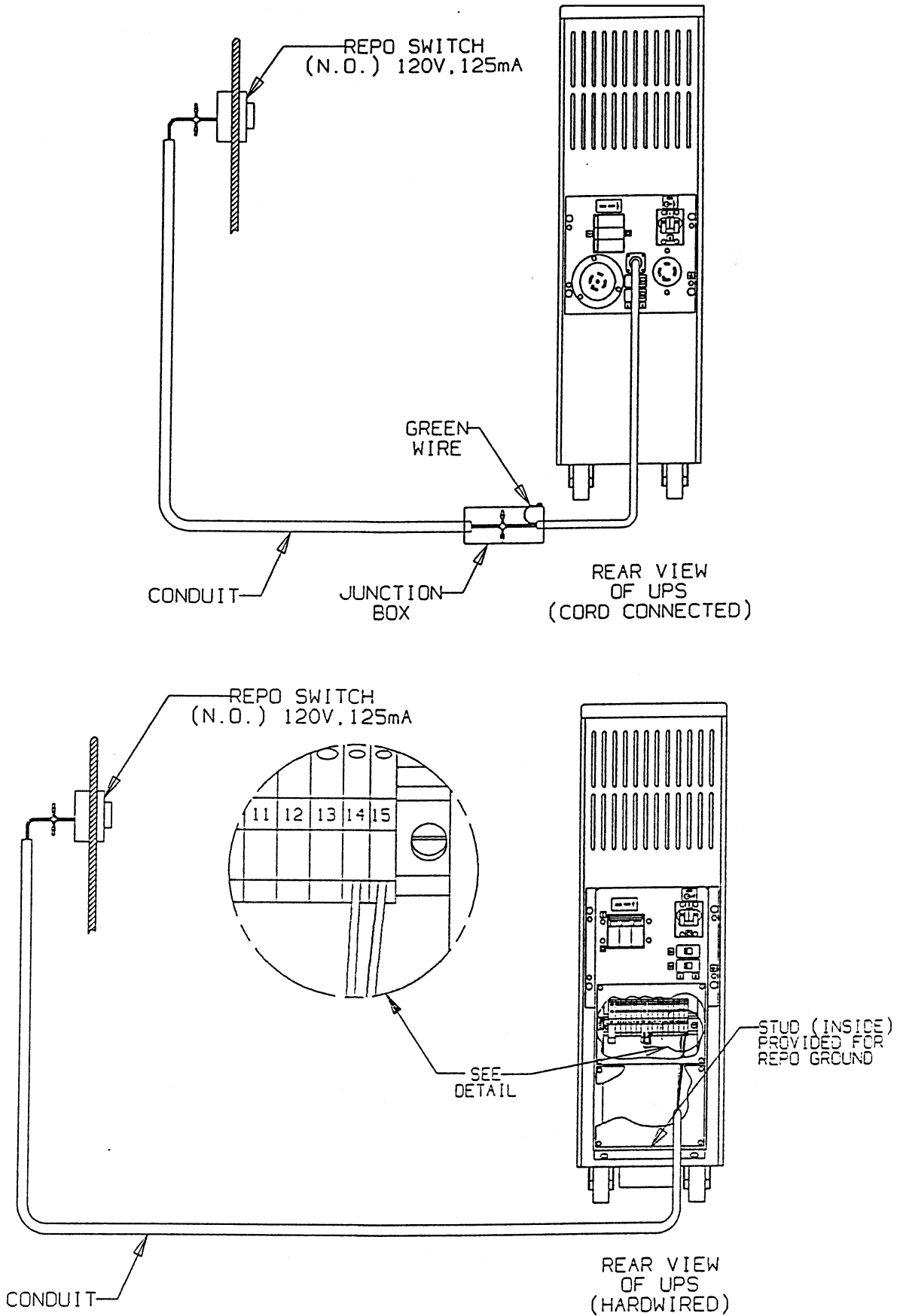
A three wire REPO cord is supplied with the unit. To install, attach the cord to the REPO connector on the rear of the UPS (refer to Figure 4-5). The green wire is a safety ground for the REPO conduit. The EPO function is activated by shorting the black and white wires together.

The switch (which must be a momentary contact switch), junction box, conduit and all external wiring is customer supplied. REPO switch minimum ratings are 120V and 125mA.

CAUTION:

The REPO black and white wires are at high voltage potential (120V). Refer to local electrical codes for appropriate installation.

Now that you have completed the installation of your options, go to the next section to connect the input line cord.



199001007_1

FIGURE 4-5 REPO INSTALLATION

4.6. CONNECTING THE INPUT LINE CORD

In order to connect the UPS you need an input line cord. There are two options here; one, the line cord was shipped with the UPS or two, you must make your own.

4.6.1 Cord Shipped with UPS

The line cord WAS shipped with the UPS and was packaged in the box with the UPS. Locate the line cord and use the following steps to connect it.

1. Plug the cord into an appropriate receptacle at your facility. Refer to customer drawing #110712170, located in the back of the operators manual, for guidelines.

NOTE:

For 120/208 inputs, phase rotation is critical.

2. Locate the input plug in the rear of the UPS using Figure 4- 6.

3. Plug the input line cord into the unit and twist clockwise until it locks.

Now that you have connected the input line cord, go to Section 4.7 to connect your protected equipment and start-up the system.

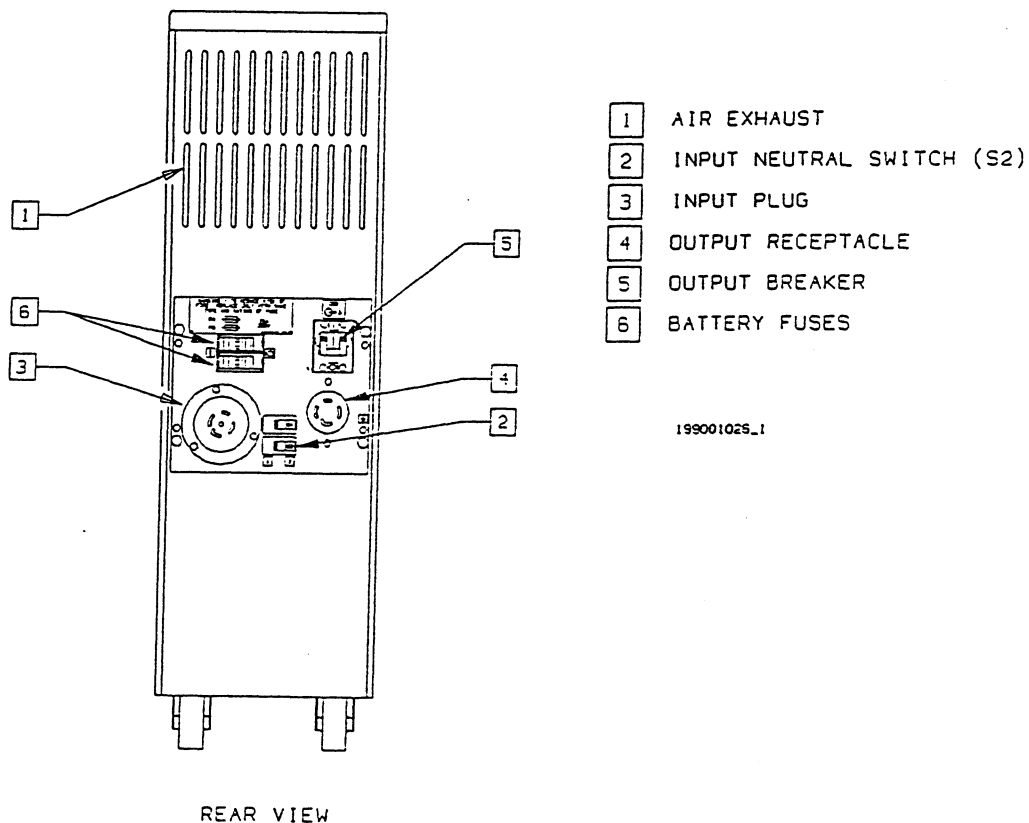


FIGURE 4-6 REAR VIEW OF UPS WITHOUT OPTIONS

4.6.2 Providing Your Own Line Cord

If the unit has a hardwired option, refer to customer drawing 110712170 for proper installation. (Since a line cord WAS NOT shipped with the UPS, follow the steps below using Figure 4-7.)

NOTE: The following steps must be performed by a qualified electrician.

1. Refer to customer drawing #110712170 located in the back of the operators manual. Determine which input source (1,2,3 or 4) is available.

2. Select a power cord according to the following UL specifications:

A. The cord must be type SO, G, SJ, SJT, SJE, SJO, SJOO, SJTO, S, ST, SE, SOO, STD, STOO or W.

B. The wire size must be 8 AWG.

C. The number of conductors must be 3 (source 4), 4 (source 1 or 2) or 5 (source 3).

D. The voltage rating must be a least 300 VAC.

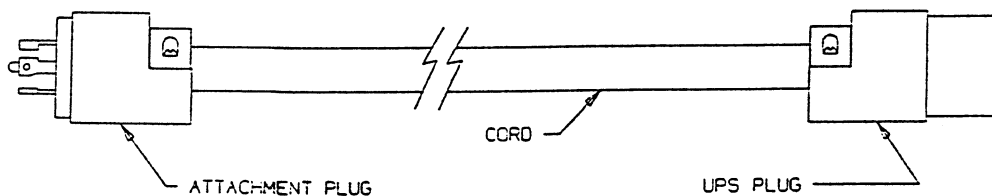
E. The cord should not be longer than 15 feet, not shorter than 6 feet.

3. Select the attachment plug and connector according to the following UL specifications:

A. The UPS plug must be type L21-30R, rated 120/208 VAC, 30 Amps.

B. The attachment plug must be type L14-30P (source 1 or 2), rated 125/250 VAC, 30 Amps or type L21-30P (source 3), rated 120/208 VAC, 30 Amps or type L6-30P (source 4), rated 125/200 VAC, 30 Amps.

NOTE: If you are using a type L6-30P (source 4) and bypass is installed, DO NOT connect line-to-neutral (110, 125, 120 V) on the protected equipment.



199001022_1

FIGURE 4-7 INPUT LINE CORD

4. Follow the Input Power Cord Wire Chart to wire the attachment plug and connector. Refer to the National Electrical Code for acceptable wiring practices.

INPUT POWER CORD WIRE CHART					
		INPUT SOURCE			
FROM	TO	①	②	③	④
X	X	BLACK	BLACK	BLACK	BLACK
Y	Y	RED	RED	RED	RED
Z	Z		ORANGE		
**	NEUTRAL	NEUTRAL	WHITE	WHITE	
***	GROUND	GROUND	GREEN	GREEN	GREEN

** - WIRE TO SILVER TERMINAL ON CONNECTOR
 *** - WIRE TO GREEN TERMINAL ON CONNECTOR

199001023_1

5. Check to ensure that all screws are tightened securely.
6. Plug the cord into an appropriate receptacle at your facility. Refer to customer drawing #110712170, located in the back of the operators manual, for guidelines. NOTE: For 120/208 inputs, phase rotation is critical.
7. Locate the input plug in the rear of the UPS using Figure 4-8.
8. Plug the input line cord into the unit and twist clockwise until it locks.

Now that you have connected the input line cord, go to the next section to connect your protected equipment and start-up the system.

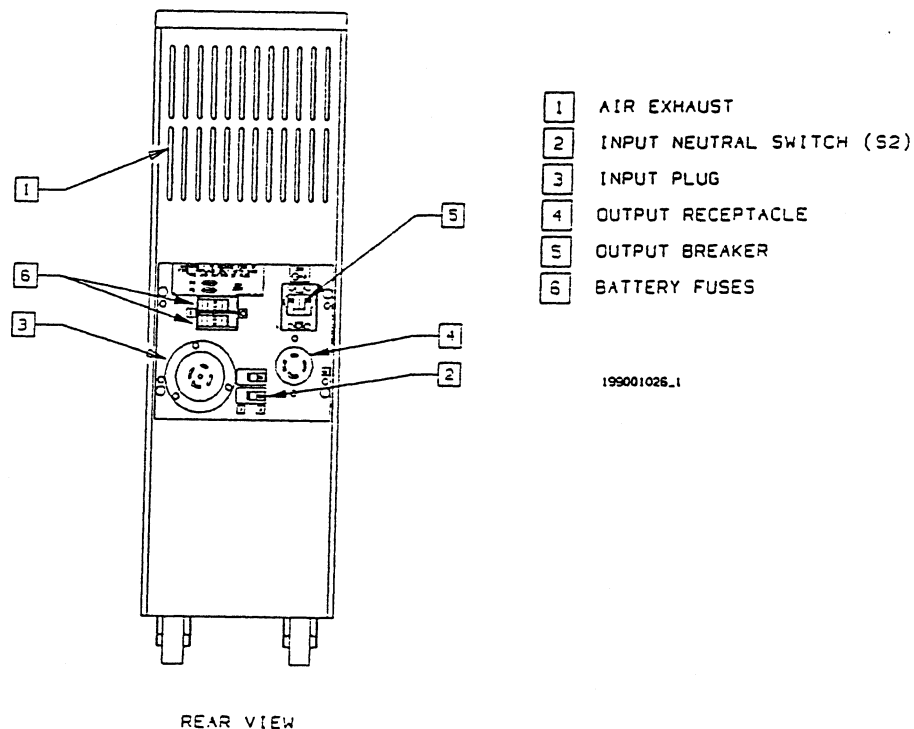


FIGURE 4-8 REAR VIEW OF UPS WITHOUT OPTIONS

4.7. CONNECTING THE PROTECTED EQUIPMENT TO THE UPS AND START-UP

CONGRATULATIONS!!! You have completed the installation of your UPS. You are now ready to connect your protected equipment to the UPS and start-up the system. Please note that once you complete sections 4.7.1 or 4.7.2, you have applied power to your protected equipment.

4.7.1 Standard UPS Without PDM

1. Locate the output receptacle in the rear of the UPS.
2. Plug in your protected equipment to the output receptacle in the main unit.
3. Turn ON (position 1) the UPS main output breaker.

4.7.2 Standard UPS With PDM

1. Locate the appropriate receptacles on the PDM panel and plug in your protected equipment.
2. Turn ON (left position) the PDM breaker(s).
3. Turn ON (position 1) the UPS main output breaker.

4.7.3 To START-UP Your System

1. Go to the back of the UPS. Turn on all back panel breakers (put all toggle switches in the UP or LEFT position). If bypass is installed, the front panel BYPASS indicator will light and bypass power will be available.
2. Press the UPS front panel ON button. The BYPASS and BATTERY lights will flash and then the BYPASS/NORMAL lights will flash for 1 minute.
3. The NORMAL light will be lit solid to indicate UPS power available.
4. If you have any problems with your UPS, refer to the Troubleshooting Guide located in the next section.

4.8. TROUBLESHOOTING CHART

Once you have installed your UPS, if the unit does not perform properly, consult the following chart.

TROUBLESHOOTING CHART		
CONDITION	POSSIBLE CAUSE	ACTION TO TAKE
Unit has power applied but will not start up.		
*bypass light flashing	output type set incorrectly.	reset output voltage, frequency and phasing to match input (see section 4.11 of this manual)
	input wiring not in proper rotation (120/208 only)	have an electrician check the input phase rotation
	S2 is in the incorrect position	verify that S2 is in position 1 (units with input neutral) or S2 is in position 2 (units w/o input neutral)
*no lights on	improper voltage applied to the unit	check the utility input voltage
	output breaker is open	close the output breaker
Unit starts, goes to "NORMAL" then turns off or battery light flashes and horn sounds while UPS is not ON BATTERY	battery fuses not installed	install battery fuses
	battery breaker not closed	close battery breaker

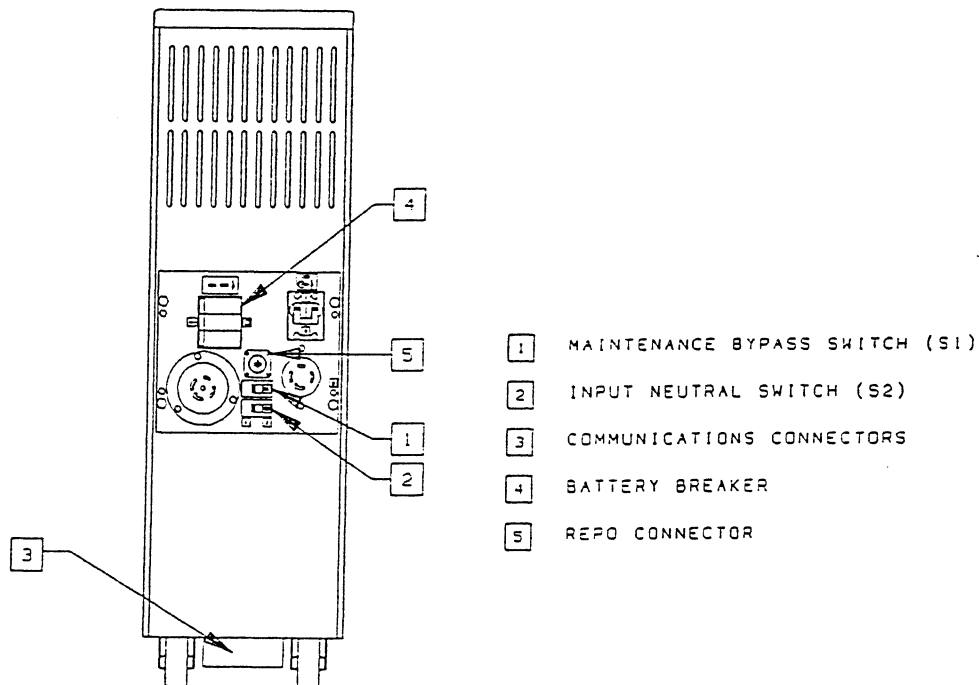
VERY, VERY IMPORTANT PREFACE TO THE FOLLOWING THREE SECTIONS!!!!

Since your UPS was configured at the factory, it is not mandatory that you do the steps in Sections 4.9, 4.10 and 4.11. They are included in this addendum in the event that you may wish to verify or change the input neutral switch, the output configuration or the type.

4.9. CONFIGURING THE INPUT NEUTRAL SWITCH

The Input Neutral Switch was configured at the factory as per your order. To verify or change this setting please refer to the customer drawing #110712170, located in the back of the operators manual, while following the steps below.

1. Locate the Input Neutral Switch (S2) using Figure 4-9.
2. If your UPS uses an input neutral, set S2 to position 1.
3. If your UPS does not use an input neutral, set S2 to position 2.



REAR VIEW

199001028_1

FIGURE 4-9 REAR VIEW OF UPS WITH OPTIONS

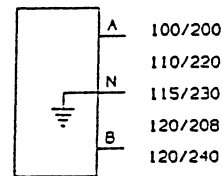
4.10. OUTPUT CONFIGURATION (Hardwired Option Only)

CAUTION:

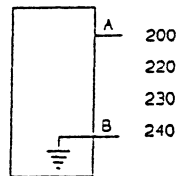
The output configuration jumper must be reconfigured by authorized service personnel.

The output configuration jumper was set at the factory according to your order (for a Split Phase or Single-End Grounded unit).

Should you decide to reconfigure the UPS, refer to customer drawing #110712170, located in the back of the operators manual, for the appropriate configuration and also to Figure 4-10 to configure the jumper.



SPLIT PHASE
CONFIGURATION



SINGLE-END
GROUNDED
CONFIGURATION

199001024-1

FIGURE 4-10 OUTPUT JUMPER

4.11. SET TYPE

The type is set at the factory according to your order. To verify or change the type, follow the appropriate steps below.

One of the main features of your UPS is that it allows you to configure the output voltage, phasing and frequency. Refer to the Set Type instructions that coincide with the appropriate Front Panel on your UPS (Basic; Section 4.11.1 or Digital; Section 4.11.2).

4.11.1 Basic Front Panel

Use Figure 4-11 to locate the lights and buttons on the front of the UPS.

1. Apply AC input power. Front panel lights will come ON and then go OFF. Ensure that the UPS is OFF by checking the Output Breaker (must be OFF) and that all front panel lights will go off in 15 seconds.

2. Depress the HORN SILENCE button and hold while pressing the ON button; after two seconds the NORMAL and OVERLOAD lights will be ON. Release the HORN SILENCE and ON buttons and the NORMAL and OVERLOAD lights will be ON solid.

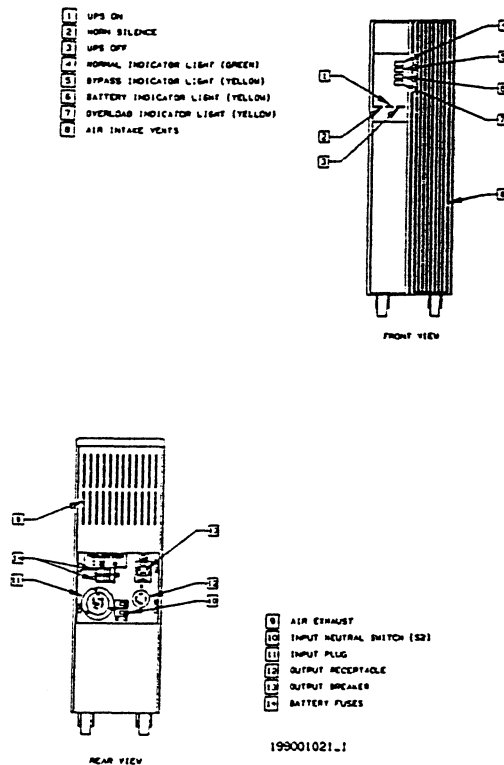


FIGURE 4-11 FRONT VIEW OF UPS WITH BASIC FRONT PANEL

NOTE: If the type setting is correct and you do not want to make any changes, you may abort the process using steps 3 & 4.

3. Depress and hold the HORN SILENCE and OFF buttons until one or more front panel lights flash. The flashing lights indicate current type (refer to Table 1).

4. Release both buttons. The OVERLOAD light will be flashing. You have not changed the type at this point. This is for verification. If you wish to abort and exit now, press HORN SILENCE. If you abort now, go to step 8.

TYPE	CONTROL PANEL INDICATORS			
	NORMAL	BYPASS	BATTERY	OVERLOAD
1	OFF	OFF	OFF	FLASHING
2	OFF	OFF	FLASHING	OFF
3	OFF	OFF	FLASHING	FLASHING
4	OFF	FLASHING	OFF	OFF
5	OFF	FLASHING	OFF	FLASHING
6	OFF	FLASHING	FLASHING	OFF
7	OFF	FLASHING	FLASHING	FLASHING
8	FLASHING	OFF	OFF	OFF
9	FLASHING	OFF	OFF	FLASHING
10	FLASHING	OFF	FLASHING	OFF
15	FLASHING	FLASHING	FLASHING	FLASHING

TABLE 1 UPS TYPE CONTROL PANEL INDICATORS

UPS TYPE CONFIGURATIONS			
TYPE	Frequency Out	Output Voltage	Phase
1	50 Hz	200 or 100/200	180
2	60 Hz	200 or 100/200	180
3	50 Hz	220 or 110/220	180
4	60 Hz	220 or 110/220	180
5	60 Hz	240 or 120/240	180
6	60 Hz	120/208	120
7	50 Hz	230 or 115/230	180
8	50 Hz	240 or 120/240	180
9	50 Hz	208 or 120 / 208	120
10	60 Hz	230 or 115 /230	180
15	For Future Use		

TABLE 2 UPS TYPE CONFIGURATIONS

5. Depress the ON button to go to the next type. Continue to depress the ON button until you have your desired type. To select the type, depress the OFF button.

NOTE: If you make an error by passing your desired type, depress the HORN SILENCE button to abort OR you may continue to depress the ON button and go all the way to Type 10 and then to the UPS OFF state.

6. Once you have selected your desired type, the NORMAL and OVERLOAD lights will be lit solid.

7. Depress the OFF button to go back to the UPS OFF state.

8. Once you have selected your type, wait one minute and then refer to Section 4.10 of this manual to connect and start-up your system.

4.11.2 Digital Front Panel Display

Following is an explanation of the buttons you will use on the Digital Front Panel Display. Locate the buttons using Figure 4-12.

Menu - returns you to the previous menu level

Select - selects (saves) an item in the menu

UP or DOWN arrow keys - changes position within the menus, status or event queue

RIGHT or LEFT arrow keys - shows possible device settings in menus or scrolls screen messages

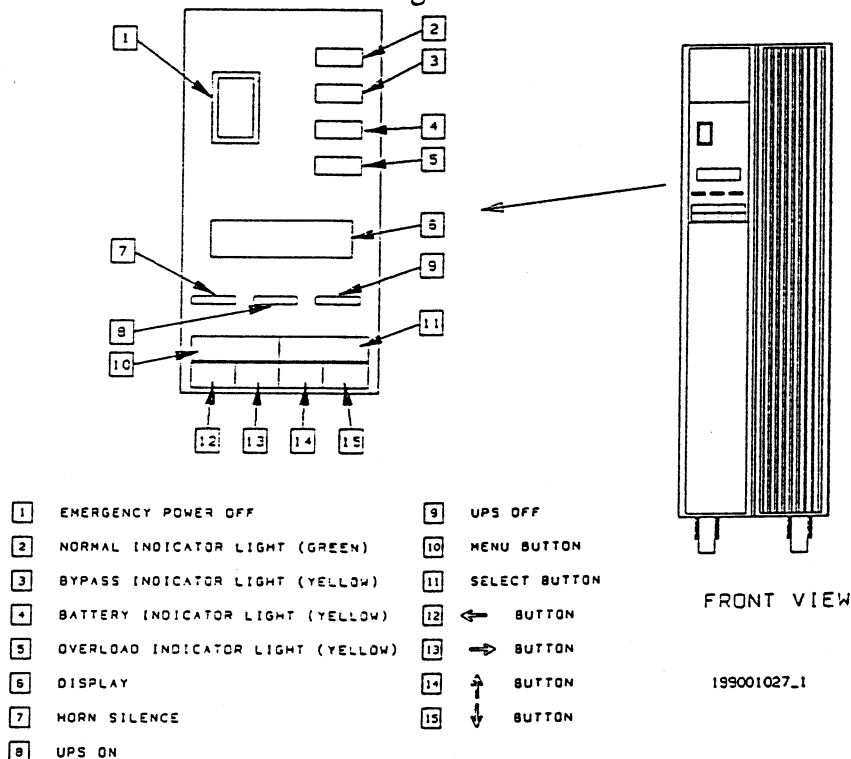


FIGURE 4-12 FRONT VIEW OF UPS WITH DIGITAL FRONT PANEL

NOTE: The correct output type setting for 208 input/output with no neutral (refer to Figure 4-13) is 105/210 at 180 degrees. If an auto-bypass is installed, DO NOT CONNECT LOADS FROM LINE TO NEUTRAL ON THE OUTPUT OF THE UNIT.

If desired, the output voltage can be adjusted down from 210V to 208V. To adjust the output volts to 208V, refer to the directions for Adj Out Volts in this manual (Section 3.5.2).

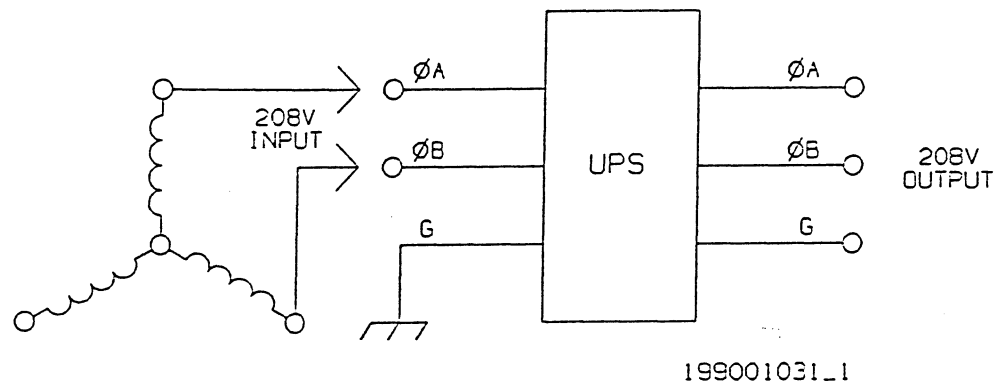


FIGURE 4-13 IN/OUT CONFIGURATION

Follow the steps below to either verify the existing set up or to change one of all of the settings. Please note that you may exit at any time by pressing the MENU key twice.

1. Apply AC input power. Front panel lights will come ON and then go OFF. Ensure that the UPS is OFF by checking the Output Breaker (must be OFF) and that all front panel lights are OFF. You will see the UPS Status displayed.
2. Press the MENU key to get to MAIN MENU 1. UPS Status.
3. Depress the DOWN arrow key to get to MAIN MENU 7. System Set Up. Press the SELECT key. You will see Password AAAAAA.
4. Refer to the Authorization Sheet in the front of the operators manual to locate the default user password. Note that you may change

this password. Contact your field service representative if you have misplaced your password.

5. To enter the password, use the UP and DOWN arrow keys to scroll through the letters and use the RIGHT and LEFT arrow keys to move to another character position.

6. Once you have entered the password, press the SELECT key. The display will now show System Setup 1. Select Type.

7. Press SELECT to get to the Output Voltage option.

NOTE: At this point you can press the DOWN arrow key to scroll through all the menu options. Also, present setting is indicated with an asterisk.

8. To view the possible settings for the Output Voltage option, use the RIGHT and LEFT arrow keys. Once you have your desired setting, press the SELECT key.

9. Press the DOWN arrow key to get to the Output Frequency option. Use the RIGHT and LEFT arrow keys to view the settings. Press the SELECT key at your desired setting.

10. Press the DOWN arrow key to get to the Output Phase option. Use the RIGHT and LEFT arrow keys to view the settings. Press SELECT key at your desired setting.

11. Press the DOWN arrow key to get to the kVA Rating display. This is view only, you cannot change this selection.

12. To return to normal operation, press the MENU key four times then press SELECT once to get back to the UPS Status Screen.

5. REMOTE BATTERIES

5.1. DETERMINING THE BATTERY CAPACITY

If you have a hardwired UPS and do not want to use the internal batteries, DC power can be supplied by remote batteries. We recommend the use of sealed maintenance-free, lead-acid type batteries. This section explains how to determine the battery capacity you need for your UPS.

1. Determine the active load KW and load power factor P.F. of the critical load to be protected by the UPS. KW is calculated from the apparent power KVA and the load power P.F. as:

$$(KW) = (KVA) * P.F.$$

2. Determine the power to be delivered by the battery KW_{Batt} . This takes into account the efficiency of the UPS and can be calculated using the following expression:

$$(KW_{Batt}) = \frac{(KW)}{0.81 - 0.05 * (1 - P.F.)}$$

3. Nominal battery voltage is 240 Vdc (120 cells @ 2.0 Vdc).

4. Determine the desired backup time and the operating temperature.

5. The low-battery shut-down voltage is customer selectable. It can be set between 1.67 Vdc/cell and 1.85 Vdc/cell. Choose a value suitable for your application to size your battery and make sure you set it when you configure the UPS.

6. Follow the battery manufacturer's application notes and charts to calculate the battery capacity necessary for your application.

7. The UPS has a cyclic battery charger (turn-on = 265 Vdc, turn-off = 285 Vdc) that delivers a maximum current of 5 Amps.

5.2. INSTALLATION

CAUTION:

The internal batteries must be disabled by disconnecting each battery plug at the battery tray before connecting remote batteries.

IMPORTANT: Refer to the battery manufacturer's installation manual for battery installation and maintenance instructions.

Refer to customer drawing #110719029 to locate the conduit-sized knockout for remote battery wires. Refer to customer drawing #110712170, located in the back of this manual, for information regarding installation of remote batteries. This includes remote battery terminal block location, tightening torque and size of branch circuit overcurrent protection.

5.3. REMOTE BATTERY CONFIGURATION

Once a remote battery has been installed, the UPS setup needs to be changed. Refer to Section 4.11 System Type before applying power to the unit for the first time. After verifying the System Type, and without removing the AC input power, follow these steps:

1. Depress the MENU key to get to the MAIN MENU 1. UPS Status.
2. Depress the DOWN arrow key to get to MAIN MENU 7. System Setup. Press the SELECT key. You will see Password AAAAAA.
3. Refer to the Authorization Sheet in the front of this manual to locate the default password. Note that you may change this password. Contact your field service representative if you have misplaced your password.
4. To enter the password, use the UP and DOWN arrow keys to scroll through the letters and use the RIGHT and LEFT arrow keys to move to another character position.
5. Once you have entered the password, press the SELECT key. The display will now show System Setup 1. Select Type.
6. Press the DOWN arrow key to scroll to 13. Battery Cfg. Press the SELECT key.
7. Using the UP and DOWN arrow keys, scroll down to "Custom Battery." Press the SELECT key; a "Custom DCUV" menu that allows you to select the low-battery shut-down level will then appear. Using the UP and DOWN arrow keys you can scroll through different options. Press SELECT to choose the desired DCUV level. An asterisk will appear to the left of the newly selected option. NOTE: If the "Custom DCUV" selection does not appear after selecting "Custom Battery," verify that the UPS is off or On Bypass
8. Press the MENU key four times to exit System Setup.

(PDM)
POWER DISTRIBUTION MODULE
INSTALLATION

FIGURE 1

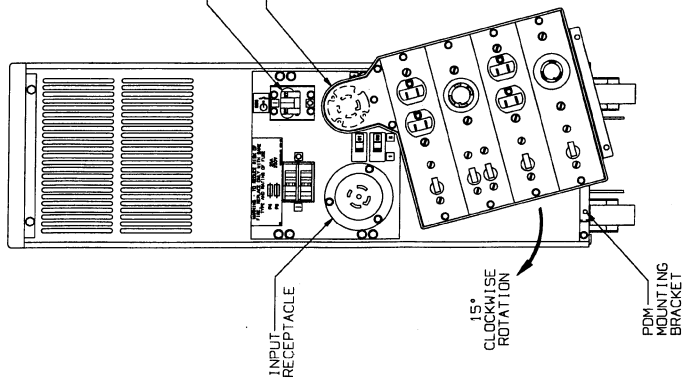
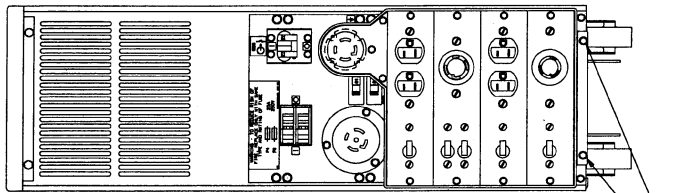


FIGURE 2



CAUTION - RISK OF ELECTRIC SHOCK.
DO NOT REMOVE COVERS, NO USER SERVICE PARTS INSIDE.
REFER SERVICING TO TRAINED SERVICE PERSONNEL.

CAUTION:
THE UPS CONTAINS ITS OWN ENERGY SOURCE (BATTERY). THE OUTPUT RECEPTACLE MAY BE LIVE EVEN WHEN THE UPS IS NOT CONNECTED TO AN AC SUPPLY.

CAUTION: CRITICAL LOAD IS DEENERGIZED DURING THIS INSTALLATION PROCEDURE. SHUT YOUR LOAD DOWN IN AN ORDERLY FASHION BEFORE PERFORMING ANY OF THE FOLLOWING STEPS.

1. PREPARATION OF UPS UNIT FOR POWER DISTRIBUTION MODULE INSTALLATION

- 1.1 PLACE OUTPUT BREAKER IN THE OFF POSITION ('0'). (SEE FIGURE 1)
- 1.2 IF OUTPUT IS CURRENTLY CONNECTED, DISCONNECT OUTPUT CORD AT OUTPUT RECEPTACLE. (SEE FIGURE 1)

2. PDM INSTALLATION INSTRUCTION

- 2.1 BEFORE INSTALLING THE PDM, PLACE ALL CIRCUIT BREAKERS ON THE PDM IN THE OFF (RIGHT) POSITION. REMOVE (2) SCREWS FROM PDM MOUNTING BRACKET.
- 2.2 PLUG THE PDM INTO THE OUTPUT RECEPTACLE AT A 15° ANGLE AS SHOWN IN FIGURE 1. AFTER FULLY ENGAGED INTO THE OUTPUT RECEPTACLE, ROTATE THE PDM 15° CLOCKWISE ALIGNING MOUNTING HOLES AT THE BOTTOM OF THE PDM WITH MOUNTING HOLES LOCATED ON THE MOUNTING BRACKET AS SHOWN IN FIGURE 2. SECURE PDM TO BRACKET USING (2) SCREWS REMOVED IN STEP 2.1.
- 2.3 LOCATE THE APPROPRIATE RECEPTACLES ON THE PDM PANEL AND PLUG IN YOUR PROTECTED EQUIPMENT.
- 2.4 TURN ON (POSITION '1') THE PDM BREAKER(S).
- 2.5 TURN ON (POSITION '1') THE UPS MAIN OUTPUT BREAKER.
- 2.6 REFER TO THE OPERATORS MANUAL FOR OPERATING INSTRUCTIONS.

PDM INSTALLATION KIT INCLUDES:
(1) POWER DISTRIBUTION MODULE (PDM)
TOOLS NEEDED FOR INSTALLATION:
1/4" HEX NUT DRIVER

-SAVE THESE INSTRUCTIONS FOR FUTURE REFERENCE-

EPCOR ELECTRONICS		RELEASED	
DESCRIPTION: PDM INSTALLATION	DATE: 11-14-1981	REVISED ON: 11-14-1981	REVISED BY: []
DESIGNED BY: []	DRIVING: []	DATE: 11-14-1981	BY: []
DRAWN BY: []	DATE: 11-14-1981	CHECKED BY: []	DATE: 11-14-1981
APPROVED BY: []	DATE: 11-14-1981	DATE: 11-14-1981	DATE: 11-14-1981
DATE: 11-14-1981	DATE: 11-14-1981	DATE: 11-14-1981	DATE: 11-14-1981
DATE: 11-14-1981	DATE: 11-14-1981	DATE: 11-14-1981	DATE: 11-14-1981

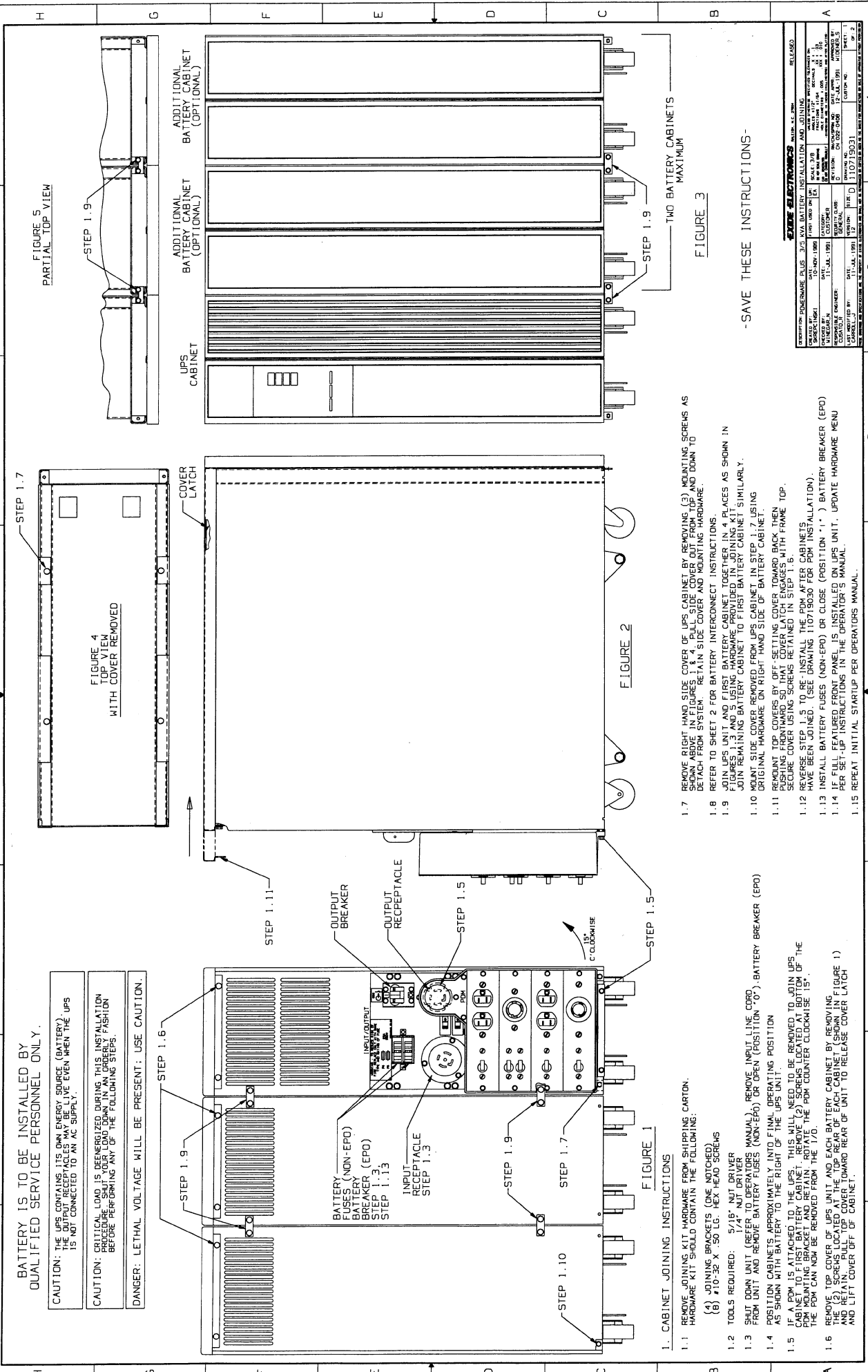


FIGURE 5
PARTIAL TOP VIEW

FIGURE 4
TOP VIEW
WITH COVER REMOVED

FIGURE 2

FIGURE 3

FIGURE 1

BATTERY IS TO BE INSTALLED BY QUALIFIED SERVICE PERSONNEL ONLY.

CAUTION: THE UPS CONTAINS ITS OWN ENERGY SOURCE (BATTERY). THE OUTPUT RECEPTACLES MAY BE LIVE EVEN WHEN THE UPS IS NOT CONNECTED TO AN AC SUPPLY.

CAUTION: CRITICAL LOAD IS DEENERGIZED DURING THIS INSTALLATION PROCEDURE. SHUT YOUR LOAD DOWN IN AN ORDERLY FASHION BEFORE PERFORMING ANY OF THE FOLLOWING STEPS.

DANGER: LETHAL VOLTAGE WILL BE PRESENT. USE CAUTION.

1. CABINET JOINING INSTRUCTIONS

- 1.1 REMOVE JOINING KIT HARDWARE FROM SHIPPING CARTON. HARDWARE KIT SHOULD CONTAIN THE FOLLOWING:
 - (4) JOINING BRACKETS (ONE NOTCHED)
 - (8) #10-32 X .50 LG. HEX HEAD SCREWS
- 1.2 TOOLS REQUIRED: 5/16" NUT DRIVER
- 1.3 SHUT DOWN UNIT (REFER TO OPERATOR'S MANUAL). REMOVE INPUT LINE CORD FROM UNIT AND REMOVE BATTERY FUSES (NON-EPO) OR OPEN (POSITION "O") BATTERY BREAKER (EPO).
- 1.4 POSITION CABINETS APPROXIMATELY INTO FINAL OPERATING POSITION AS SHOWN WITH BATTERY TO THE RIGHT OF THE UPS UNIT.
- 1.5 IF A PDM IS ATTACHED TO THE UPS, THIS WILL NEED TO BE REMOVED TO JOIN UPS CABINET TO FIRST BATTERY CABINET. REMOVE (2) SCREWS LOCATED AT BOTTOM OF THE PDM MOUNTING BRACKET AND RETAIN. ROTATE THE PDM COUNTER CLOCKWISE 15°. THE PDM CAN NOW BE REMOVED FROM THE UPS.
- 1.6 REMOVE TOP COVER OF UPS UNIT AND EACH BATTERY CABINET BY REMOVING (4) SCREWS. PULL TOP COVER TOWARD REAR OF UNIT TO RELEASE COVER LATCH AND LIFT COVER OFF OF CABINET.

- 1.7 REMOVE RIGHT HAND SIDE COVER OF UPS CABINET BY REMOVING (3) MOUNTING SCREWS AS SHOWN IN DRAWING. RETAIN SIDE COVER AND MOUNTING HARDWARE.
- 1.8 REFER TO SHEET 2 FOR BATTERY INTERCONNECT INSTRUCTIONS.
- 1.9 JOIN UPS UNIT AND FIRST BATTERY CABINET TOGETHER IN 4 PLACES AS SHOWN IN FIGURES 1, 3 AND 5. USING HARDWARE PROVIDED IN JOINING KIT.
- 1.10 MOUNT SIDE COVER REMOVED FROM UPS CABINET IN STEP 1.7 USING ORIGINAL HARDWARE ON RIGHT HAND SIDE OF BATTERY CABINET.
- 1.11 REMOUNT TOP COVER BY OFF-SETTING COVER TOWARD BACK THEN SECURE COVER USING SCREWS RETAINED IN STEP 1.6.
- 1.12 REVERSE STEP 1.5 TO RE-INSTALL THE PDM AFTER CABINETS HAVE BEEN JOINED. (SEE DRAWING 110719030 FOR PDM INSTALLATION).
- 1.13 INSTALL BATTERY FUSES (NON-EPO) OR CLOSE (POSITION "1") BATTERY BREAKER (EPO).
- 1.14 IF FULL FEATURED FRONT PANEL IS INSTALLED ON UPS UNIT, UPDATE HARDWARE MENU PER SET-UP INSTRUCTIONS IN THE OPERATOR'S MANUAL.
- 1.15 REPEAT INITIAL STARTUP PER OPERATOR'S MANUAL.

REMOVE RIGHT HAND SIDE COVER OF UPS CABINET BY REMOVING (3) MOUNTING SCREWS AS SHOWN IN DRAWING. RETAIN SIDE COVER AND MOUNTING HARDWARE.

REFER TO SHEET 2 FOR BATTERY INTERCONNECT INSTRUCTIONS.

JOIN UPS UNIT AND FIRST BATTERY CABINET TOGETHER IN 4 PLACES AS SHOWN IN FIGURES 1, 3 AND 5. USING HARDWARE PROVIDED IN JOINING KIT.

MOUNT SIDE COVER REMOVED FROM UPS CABINET IN STEP 1.7 USING ORIGINAL HARDWARE ON RIGHT HAND SIDE OF BATTERY CABINET.

RE-MOUNT TOP COVER BY OFF-SETTING COVER TOWARD BACK THEN SECURE COVER USING SCREWS RETAINED IN STEP 1.6.

REVERSE STEP 1.5 TO RE-INSTALL THE PDM AFTER CABINETS HAVE BEEN JOINED. (SEE DRAWING 110719030 FOR PDM INSTALLATION).

INSTALL BATTERY FUSES (NON-EPO) OR CLOSE (POSITION "1") BATTERY BREAKER (EPO).

IF FULL FEATURED FRONT PANEL IS INSTALLED ON UPS UNIT, UPDATE HARDWARE MENU PER SET-UP INSTRUCTIONS IN THE OPERATOR'S MANUAL.

REPEAT INITIAL STARTUP PER OPERATOR'S MANUAL.

-SAVE THESE INSTRUCTIONS-

SHAW-WALKER ELECTRONICS				RELEASED			
ORDER NUMBER	110719030	DATE	11-JUL-1991	ORDER NUMBER	110719030	DATE	11-JUL-1991
QUANTITY	1	REVISED BY	WJ	QUANTITY	1	REVISED BY	WJ
DESCRIPTION	UPS CABINET JOINING KIT	APPROVED BY	WJ	DESCRIPTION	UPS CABINET JOINING KIT	APPROVED BY	WJ
DATE	11-JUL-1991	DATE	11-JUL-1991	DATE	11-JUL-1991	DATE	11-JUL-1991
BY	WJ	BY	WJ	BY	WJ	BY	WJ
WORK CENTER	110719030	WORK CENTER	110719030	WORK CENTER	110719030	WORK CENTER	110719030
REV	1	REV	1	REV	1	REV	1
REV	1	REV	1	REV	1	REV	1
REV	1	REV	1	REV	1	REV	1
REV	1	REV	1	REV	1	REV	1
REV	1	REV	1	REV	1	REV	1

BATTERY IS TO BE INSTALLED BY QUALIFIED SERVICE PERSONNEL ONLY.

CAUTION: THE UPS CONTAINS ITS OWN ENERGY SOURCE (BATTERY). THE OUTPUT RECEPTACLES MAY BE LIVE EVEN WHEN THE UPS IS NOT CONNECTED TO AN AC SUPPLY.

CAUTION: CRITICAL LOAD IS DEENERGIZED DURING THIS OPERATION. CRITICAL LOADS MUST BE SHUT DOWN IN AN ORDERLY FASHION BEFORE POWER IS RESTORED TO ANY OF THE FOLLOWING STEPS.

DANGER: LETHAL VOLTAGE WILL BE PRESENT: USE CAUTION.

BATTERY AND UPS CABINET INTERCONNECTION

1. FIND TWO BATTERY INTERCONNECT CONNECTORS TY-WRAPPED TO THE TOP OF THE SECOND BATTERY CABINET. REMOVE ONE OF THE TWO, CUT AND REMOVE TY-WRAP. REMOVE TY-WRAP FROM BATTERY CABINET IS TO BE CONNECTED. CUT AND REMOVE REMAINING TY-WRAP.

TO CONNECT UPS CABINET AND FIRST BATTERY CABINET:

2. PULL CABLE OUT ENOUGH TO ALLOW CONNECTION TO BE MADE TO THE 1/0 MODULE LOCATED AS SHOWN. CONNECT PLUG COMPLETELY AND FIRMLY WITH MATING HALF IN THE 1/0 MODULE.

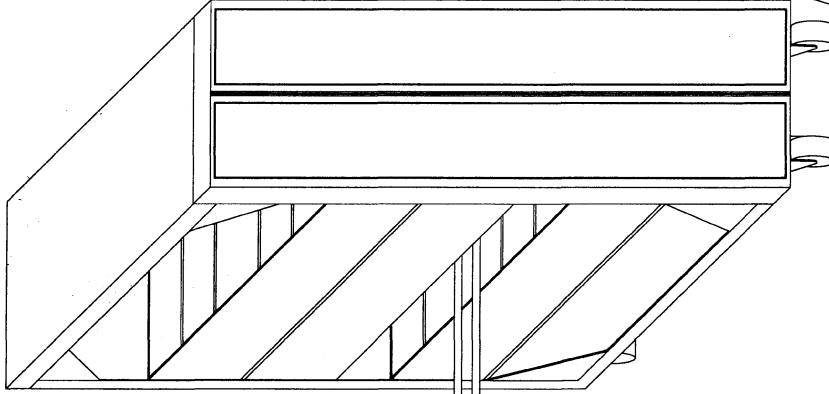
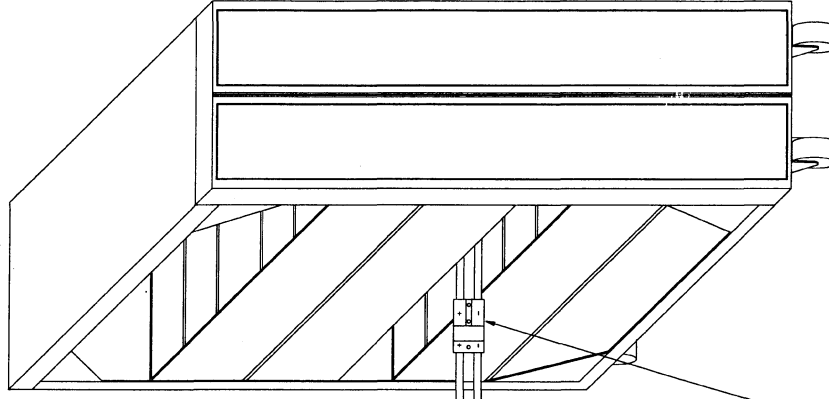
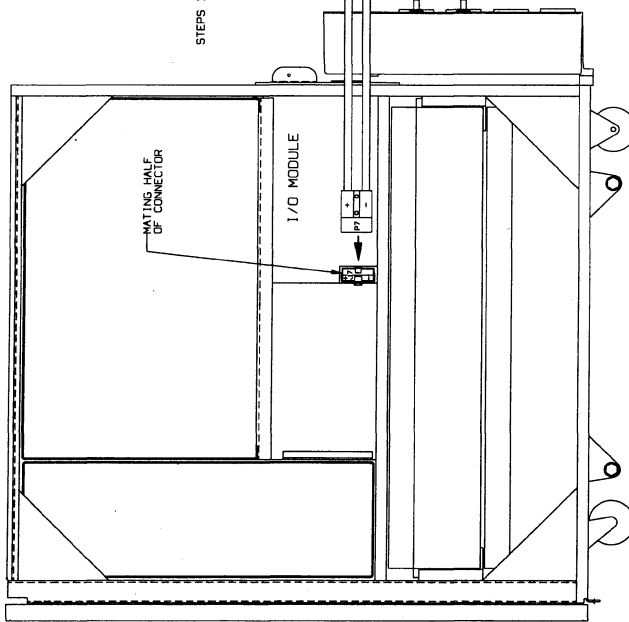
TO CONNECT SECOND BATTERY CABINET:

3. SELECT EITHER ONE OF THE TWO INTERCONNECT CABLES LOCATED IN THE SECOND BATTERY CABINET. CUT AND REMOVE THE TY-WRAP. CONNECT TO MATING HALF IN THE FIRST BATTERY CABINET.

ADDITIONAL BATTERY CABINET (OPTIONAL)

ADDITIONAL BATTERY CABINET (OPTIONAL)

RIGHT SIDE OF UPS CABINET WITH SIDE COVER REMOVED



STEP 3

EXIDE ELECTRONICS MADE IN U.S.A. DESCRIPTION: POWERMATE PLUS 275 KVA BATTERY INSTALLATION AND WIRING		FIRST USED ON: _____ SCALE: 3/8" = 1'-0" DRAWN BY: _____ CHECKED BY: _____ DATE: 11-04-1991 CATEGORY: _____ SECURITY CODE: _____ REVISION: _____ DATE: _____ APPROVED BY: _____ DATE: _____ GENERAL: _____ CUSTOMER NO.: _____ SHEET NO.: _____ OF 2
DRAWING NO.: 110719031 SHEET NO.: _____ OF 2	DATE: 11-04-1991 BY: _____ TITLE: _____ PROJECT NO.: _____ CUSTOMER NO.: _____ SHEET NO.: _____ OF 2	RELEASED

INPUT

SINGLE PHASE
3 WIRE & GROUND
100/200
110/220
115/230
120/240

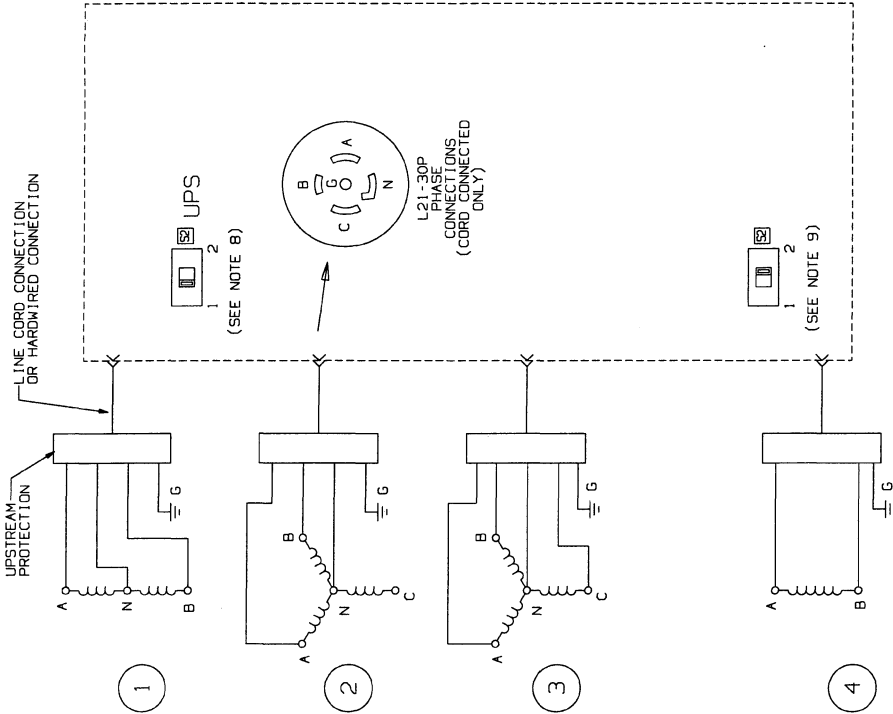
- OR -

SINGLE PHASE
3 WIRE & GROUND
A-B ROTATION
120/208

- OR -

THREE PHASE
4 WIRE & GROUND
A-B-C ROTATION
120/208

- OR -
SINGLE PHASE
2 WIRE & GROUND
200/220/230/240



NOTES:

- 8. CONFIGURATIONS ①, ②, AND ③ REQUIRE S2 TO BE IN POSITION 1. (SEE OPERATORS MANUAL).
- 9. CONFIGURATION ④ REQUIRES S2 TO BE IN POSITION 2.

OUTPUT

SEE NOTES 10 & 11

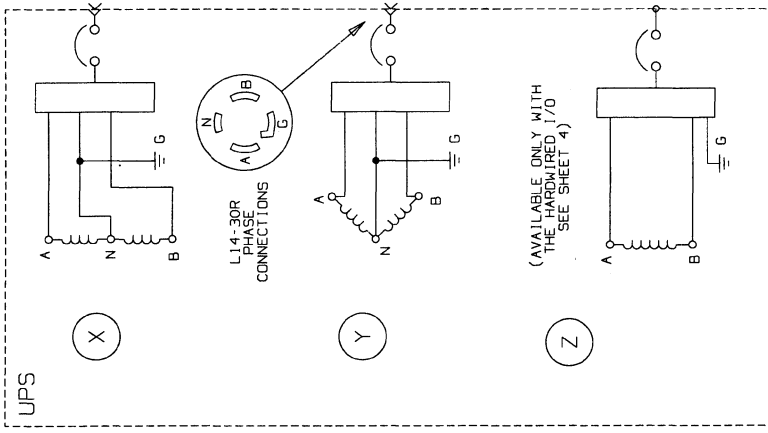
SINGLE PHASE
3 WIRE & GROUND
100/200
110/220
115/230
120/240

- OR -

120/208

- OR -

SINGLE PHASE
2 WIRE & GROUND
200
220
230
240



NOTE: EQUIVALENT CIRCUIT ONLY. UNIT DOES NOT CONTAIN 50/60 HZ OUTPUT TRANSFORMER. 50/60 HZ ISOLATION PROVIDED INTERNALLY.

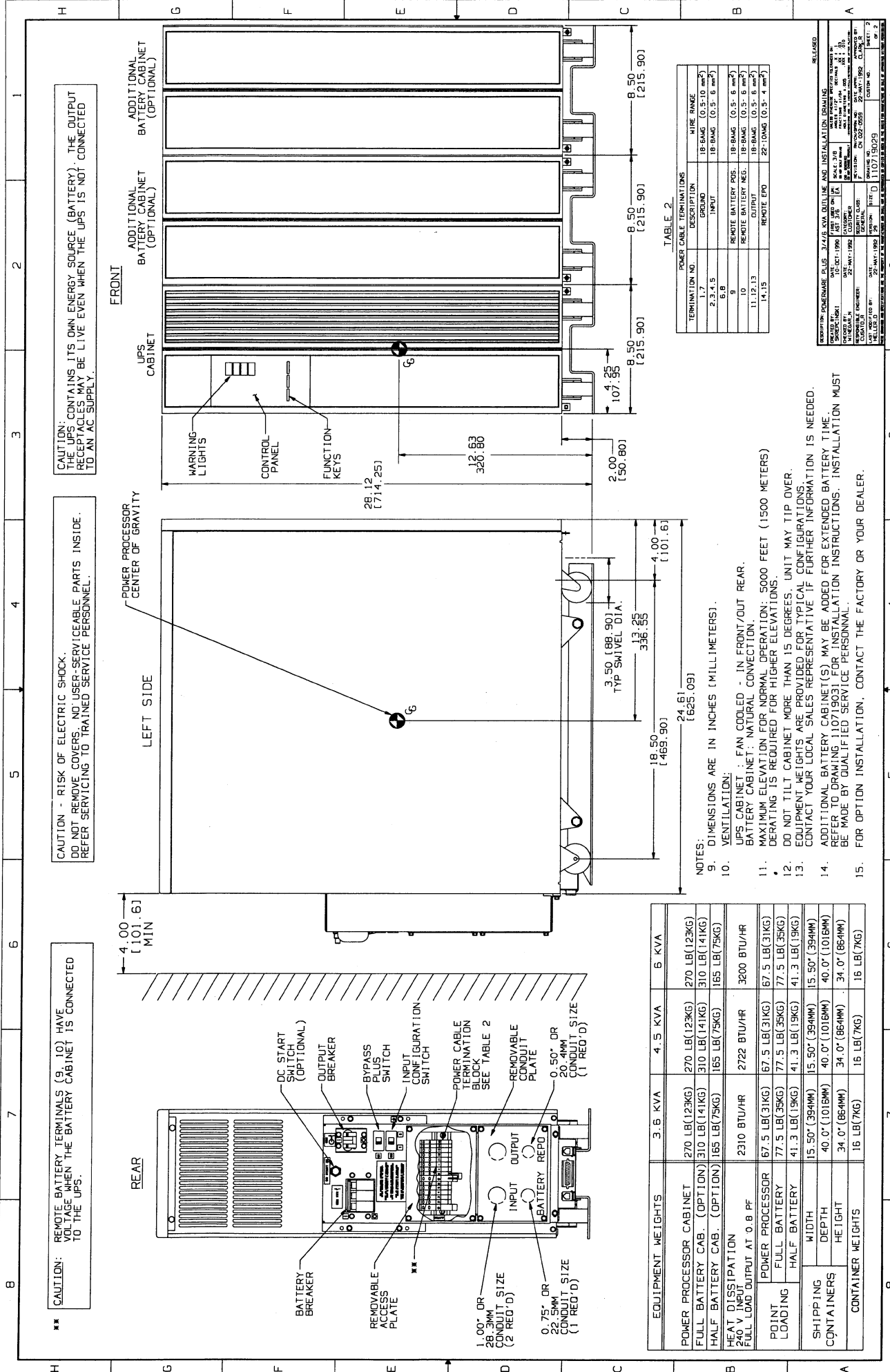
10. OUTPUT IS CONFIGURABLE FROM FRONT PANEL. (SEE OPERATORS MANUAL)

11. FOR BYPASS POSITION, INPUT VOLTAGE, FREQUENCY AND GROUND CONFIGURATION MUST EQUAL OUTPUT VOLTAGE, FREQUENCY AND GROUND CONFIGURATION AND INPUT AND OUTPUT TYPES MUST BE FROM CHART BELOW:

INPUT TYPE	OUTPUT TYPE
1	X
2	Y
3*	Y*
4	Z**

- * NOTE: WHEN UNIT IS ON BYPASS, IT DOES NOT DRAW CURRENT FROM PHASE C.
- ** NOTE: DO NOT CONNECT LOADS TO THE OUTPUT "N" IN THIS CONFIGURATION.

DESIGNED BY	DATE	DESIGNED BY	DATE
WIREMAN	22-MAY-1992	WIREMAN	22-MAY-1992
REVISIONS	DESCRIPTION	REVISIONS	DESCRIPTION
1	INITIAL	1	INITIAL
2	INITIAL	2	INITIAL
3	INITIAL	3	INITIAL
4	INITIAL	4	INITIAL
5	INITIAL	5	INITIAL
6	INITIAL	6	INITIAL
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96	INITIAL	96	INITIAL
97	INITIAL	97	INITIAL
98	INITIAL	98	INITIAL
99	INITIAL	99	INITIAL
100	INITIAL	100	INITIAL



CAUTION: THIS UNIT CONTAINS ITS OWN ENERGY SOURCE (BATTERY). THE OUTPUT RECEPTACLES MAY BE LIVE EVEN WHEN THE UPS IS NOT CONNECTED TO AN AC SUPPLY.

CAUTION - RISK OF ELECTRIC SHOCK.
DO NOT REMOVE COVERS. NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO TRAINED SERVICE PERSONNEL.

**** CAUTION:** REMOTE BATTERY TERMINALS (9, 10) HAVE VOLTAGE WHEN THE BATTERY CABINET IS CONNECTED TO THE UPS.

TABLE 2

TERMINATION NO.	DESCRIPTION	WIRE RANGE
1, 7	GROUND	18-24AWG (0.5-10 mm ²)
2, 3, 4, 5	INPUT	18-24AWG (0.5-6 mm ²)
6, 8	REMOTE BATTERY POS.	18-24AWG (0.5-6 mm ²)
9	REMOTE BATTERY NEG.	18-24AWG (0.5-6 mm ²)
11, 12, 13	REMOTE EPD	22-24AWG (0.3-4 mm ²)

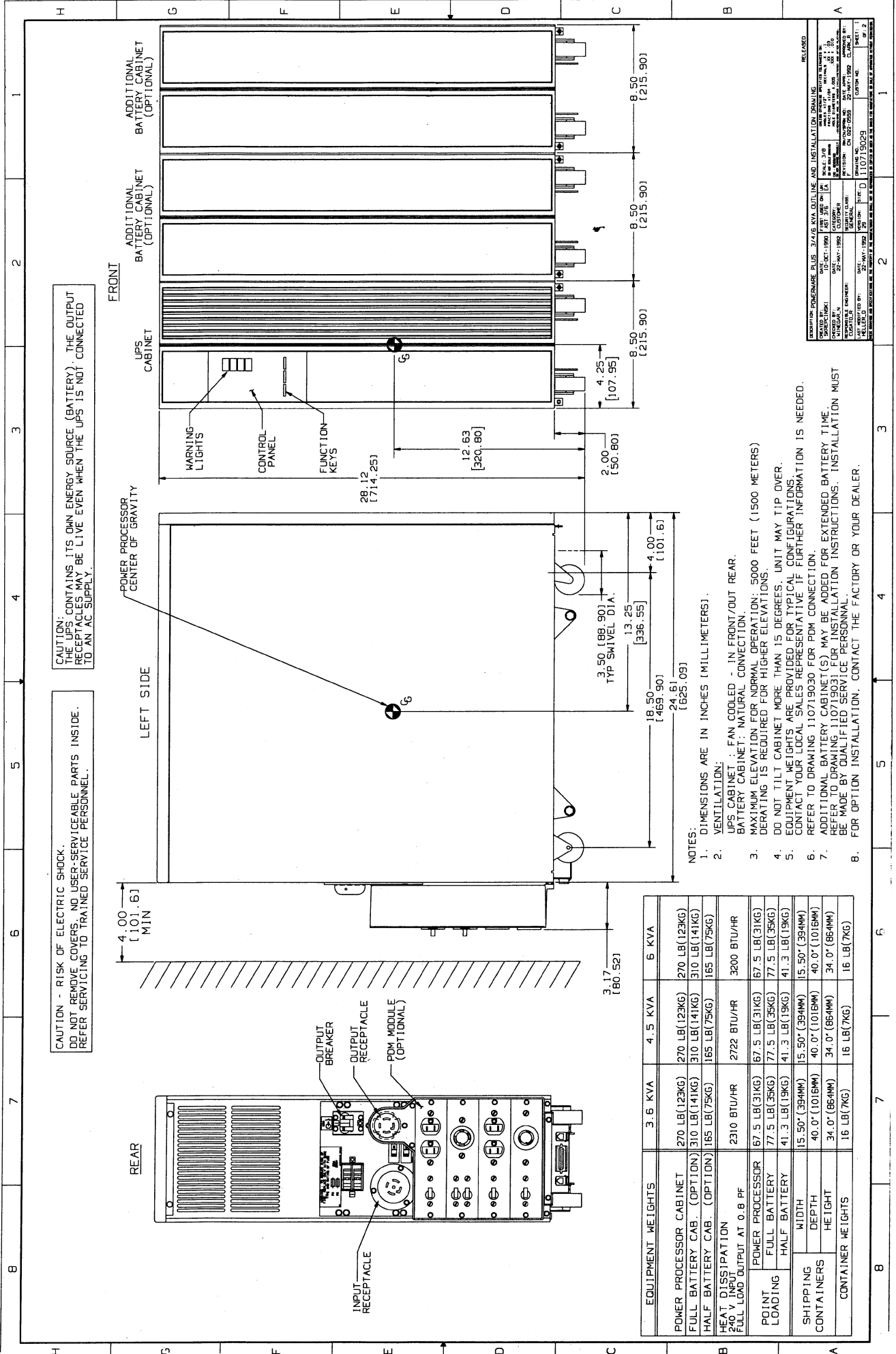
- NOTES:**
- DIMENSIONS ARE IN INCHES (MILLIMETERS).
 - VENTILATION:
UPS CABINET: FAN COOLED * IN FRONT/OUT REAR.
BATTERY CABINET: NATURAL CONVECTION.
DERATING IS REQUIRED FOR HIGHER ELEVATIONS.
 - DO NOT TILT CABINET MORE THAN 15 DEGREES. UNIT MAY TIP OVER.
 - EQUIPMENT WEIGHTS ARE PROVIDED FOR TYPICAL CONFIGURATIONS.
 - MAXIMUM ELEVATION FOR NORMAL OPERATION: 5000 FEET (1500 METERS).
 - ADDITIONAL BATTERY CABINET(S) MAY BE ADDED FOR EXTENDED BATTERY TIME. REFER TO DRAWING 110719031 FOR INSTALLATION INSTRUCTIONS. INSTALLATION MUST BE MADE BY QUALIFIED SERVICE PERSONNEL.
 - FOR OPTION INSTALLATION, CONTACT THE FACTORY OR YOUR DEALER.

EQUIPMENT WEIGHTS	3.6 KVA	4.5 KVA	6 KVA
POWER PROCESSOR CABINET	270 LB (123KG)	270 LB (123KG)	270 LB (123KG)
FULL BATTERY CAB. (OPTION)	310 LB (141KG)	310 LB (141KG)	310 LB (141KG)
HALF BATTERY CAB. (OPTION)	165 LB (75KG)	165 LB (75KG)	165 LB (75KG)
HEAT DISSIPATION 240 V INPUT FULL LOAD OUTPUT AT 0.8 PF	2310 BTU/HR	2722 BTU/HR	3200 BTU/HR
POINT LOADING	67.5 LB (31KG)	67.5 LB (31KG)	67.5 LB (31KG)
FULL BATTERY	77.5 LB (35KG)	77.5 LB (35KG)	77.5 LB (35KG)
HALF BATTERY	41.3 LB (19KG)	41.3 LB (19KG)	41.3 LB (19KG)
WIDTH	15.50" (394MM)	15.50" (394MM)	15.50" (394MM)
DEPTH	40.0" (1016MM)	40.0" (1016MM)	40.0" (1016MM)
HEIGHT	34.0" (864MM)	34.0" (864MM)	34.0" (864MM)
CONTAINER WEIGHTS	16 LB (7KG)	16 LB (7KG)	16 LB (7KG)

REVISIONS

NO.	DATE	DESCRIPTION
1	01-10-1991	ISSUE FOR PRODUCTION
2	05-11-1991	REVISION TO DRAWING
3	07-11-1991	REVISION TO DRAWING
4	07-11-1991	REVISION TO DRAWING
5	07-11-1991	REVISION TO DRAWING
6	07-11-1991	REVISION TO DRAWING
7	07-11-1991	REVISION TO DRAWING
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9	07-11-1991	REVISION TO DRAWING
10	07-11-1991	REVISION TO DRAWING
11	07-11-1991	REVISION TO DRAWING
12	07-11-1991	REVISION TO DRAWING
13	07-11-1991	REVISION TO DRAWING
14	07-11-1991	REVISION TO DRAWING
15	07-11-1991	REVISION TO DRAWING

DESIGNED BY: [Name]
CHECKED BY: [Name]
APPROVED BY: [Name]



REVISIONS

NO.	DATE	DESCRIPTION
1	10-SEP-1990	REV 5/90
2	20-MAY-1992	REV 5/92
3	20-MAY-1992	REV 5/92
4	20-MAY-1992	REV 5/92
5	20-MAY-1992	REV 5/92
6	20-MAY-1992	REV 5/92
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25	20-MAY-1992	REV 5/92
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27	20-MAY-1992	REV 5/92
28	20-MAY-1992	REV 5/92
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50	20-MAY-1992	REV 5/92

DESIGNER: [Name]

CHECKED: [Name]

DATE: 20-MAY-1992

SCALE: 1/8" = 1'-0"

PROJECT: [Project Name]

DRAWING NO.: [Drawing No.]

SHEET: [Sheet No.]

CUSTOMER SUPPORT OPERATIONS

FIELD SERVICE OFFICES

EASTERN REGIONAL HEADQUARTERS MIDATLANTIC DISTRICT OFFICE

1530 Caton Center Drive, Suite A
Baltimore, Maryland 21227
(301)242-2111

ROB PARRISH - REGIONAL MANAGER
Kim Gibson - Service Administrator
Barbara Black - Dispatcher

NORTHEAST DISTRICT OFFICE

100 Ford Road, Building #1
Denville, New Jersey 07834
(201)625-8844

TROY MARTS - DISTRICT MANAGER
Bethanne Sebold - Service Administrator
Joanne Rufft - Dispatcher

SOUTHEASTERN DISTRICT OFFICE

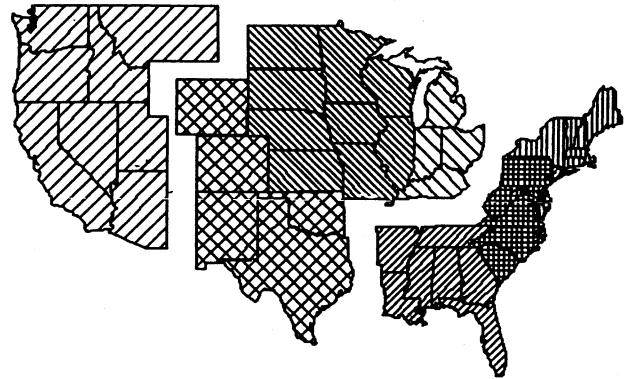
2001 Riverdale Court, Suite 1B
College Park, Georgia 30337
(404)991-1311

WADE CHANDLER - DISTRICT MANAGER
Nancy Parker - Service Administrator
Kathy Wright - Dispatcher

WESTERN REGIONAL HEADQUARTERS

15491 Red Hill Avenue, Suite 100
Tustin, California 92680
(714) 259-9581

WAYMON RANSOM - DISTRICT MANAGER
Helen Oakes - Service Administrator



CENTRAL REGIONAL HEADQUARTERS NORTH CENTRAL DISTRICT OFFICE

Fairview Executive Park
13 Executive Drive, Suite #1
Fairview Heights, Illinois 62208
(618)624-6556

JEFF PITTENGER - REGIONAL MANAGER
BINH PHO - DISTRICT MANAGER
Joann Conaway - Service Administrator
Janet Bender - Dispatcher

CENTRAL EAST DISTRICT OFFICE

21421 Hilltop, Unit #25
Southfield, Michigan 48034
(313)356-5420

CHRIS RODOLFO - DISTRICT MANAGER
Priscilla Horde - Dispatcher

SOUTHWESTERN DISTRICT OFFICE

122 W. Carpenter Freeway
Suite 520, Lock Box 3
Irving, Texas 75039
(214)541-0008

DAN VALENTA - DISTRICT MANAGER
Robin McLeish - Service Administrator
Wendy Wight - Dispatcher

FIELD SERVICE LOCATIONS

