Eaton® 93E Integrated Accessory Cabinet-Tie and Bypass

30IAC-T and 60IAC-T
30IAC-B and 60IAC-B
30IAC-TB and 60IAC-TB
Wallmount Bypass
Installation and Operation Manual

Powering Business Worldwide

Eaton® 93E Integrated Accessory Cabinet-Tie and Bypass

30IAC-T and 60IAC-T
30IAC-B and 60IAC-B
30IAC-TB and 60IAC-TB
Wallmount Bypass
Installation and Operation Manual

Powering Business Worldwide

IMPORTANT SAFETY INSTRUCTIONS SAVE THESE INSTRUCTIONS

This manual contains important instructions that you should follow during installation and maintenance of the UPS and batteries. Please read all instructions before operating the equipment and save this manual for future reference.

CONSIGNES DE SÉCURITÉ IMPORTANTES CONSERVER CES INSTRUCTIONS

Ce manuel comporte des instructions importantes que vous êtes invité à suivre lors de toute procédure d'installation et de maintenance des batteries et de l'onduleur. Veuillez consulter entièrement ces instructions avant de faire fonctionner l'équipement et conserver ce manuel afin de pouvoir vous y reporter ultérieurement.

Table of Contents

SECTION 2 — OPERATION

SECTION 3 — WALL MOUNT MAINTENANCE BYPASS

List of Figures

This page intentionally left blank.

List of Tables

This page intentionally left blank.

Chapter 1 Introduction

The Eaton® Integrated Accessory Cabinets (IACs) are designed for use with the 93E 30 kVA and 60 kVA UPS. The IACs provide parallel tie, maintenance bypass, or parallel tie with maintenance bypass functions with the configurable features, enabling adaptation and expansion without costly electrical rework.

The IACs are housed in single free-standing cabinets with safety shields behind the doors for hazardous voltage protection. Mechanical lug input terminals located at the back of the cabinet reduce installation time. The cabinets match the UPS cabinet in style and color.

NOTE Startup and operational checks must be performed by an authorized Eaton Customer Service Engineer, or the warranty terms specified on page W-1 become void. This service is offered as part of the sales contract for the UPS. Contact an Eaton service representative in advance (usually a two-week notice is required) to reserve a preferred startup date.

1.1 Features

The following descriptions provide a brief overview of the IACs:

- Integrated Accessory Cabinet-Tie (IAC-T) – Module Output Breakers (MOB) 1 through 4 enable up to four UPSs to be paralleled together for increased capacity and/or redundant capability.
- Integrated Accessory Cabinet-Bypass (IAC-B) – Three breaker configuration (used with single-feed systems): Maintenance Bypass (MBP) and Maintenance Isolation (MIS) breakers, and a Bypass Input Breaker (BIB) enable power to completely bypass the UPS. The UPS can then be safely serviced or replaced without interrupting power to critical systems.
- Integrated Accessory Cabinet-Bypass (IAC-B) – Four breaker configuration (used with dual-feed systems): Maintenance Bypass (MBP) and Maintenance Isolation (MIS) breakers, and a Bypass Input Breaker (BIB) enable power to completely bypass the UPS. A Rectifier Input Breaker (RIB) provides a convenient method for removing power from the UPS when using the maintenance bypass to supply the load. The UPS can then be safely serviced or replaced without interrupting power to critical systems.
- Integrated Accessory Cabinet-Tie and Bypass (IAC-TB) – MOB 1 and MOB 2 enable two UPSs to be paralleled together for increased capacity and/or redundant capability. MBP and MIS breakers enable power to completely bypass the UPS externally, allowing the UPS can then be safely serviced or replaced without interrupting power to critical systems.

Figure 1-1 shows the Eaton 93E 30IACs and Eaton 93E 60IACs.

1.2 Installation Features

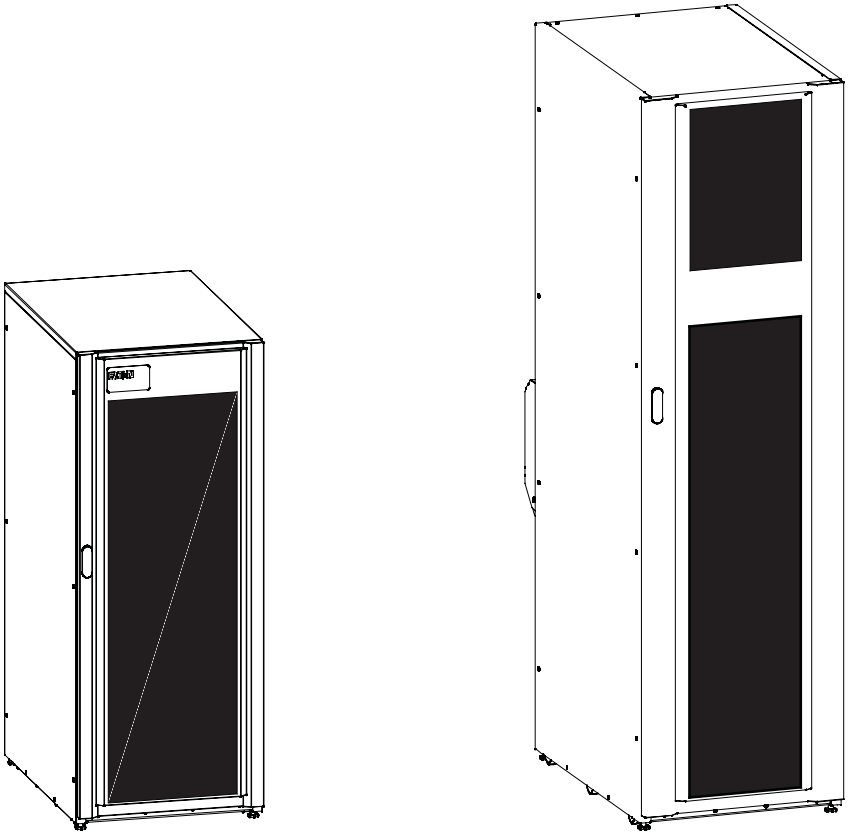
The IACs are designed to be installed in line-up-and-match or standalone configurations. In line-up-and-match configurations input power wiring may be routed external to the cabinet using conduit or the power terminal wiring channel assembly may be utilized to pass wiring between adjacent cabinets. In standalone configurations power wiring is routed using external conduit. Connections are made to easily accessible terminals at the back of the cabinet.

In single UPS systems, line-up-and-match IACs are installed to the left of the UPS. In parallel systems, line-up-and-match IACs are centered between the UPSs. See Figure 1-2 and Figure 1-3 for line-up-and-match configuration views.

Non-adjacent installation of IACs requires the use of fixed mounting brackets to anchor the cabinet to the floor.

1.3 IAC-T Side Car Cabinet

Parallel systems with three and four UPSs and utilizing the power terminal wiring channel require a Side Car Cabinet (SCC) for each additional UPS to route wiring to the associated UPS.



93E 30IAC-T, IAC-B, or IAC-TB

93E 60IAC-T, IAC-B, or IAC-TB

Figure 1-1. Eaton 93E 30IACs and Eaton 93E 60IACs

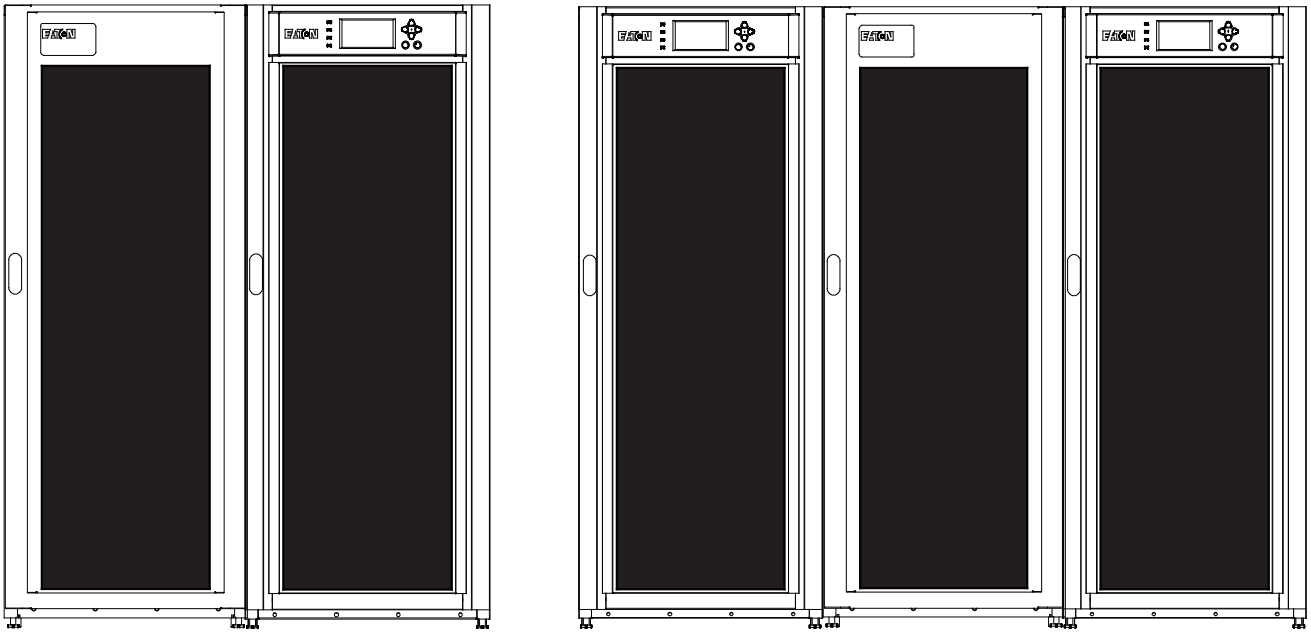


Figure 1-2. Eaton 93E 30 kVA UPS and Eaton 93E 30IAC

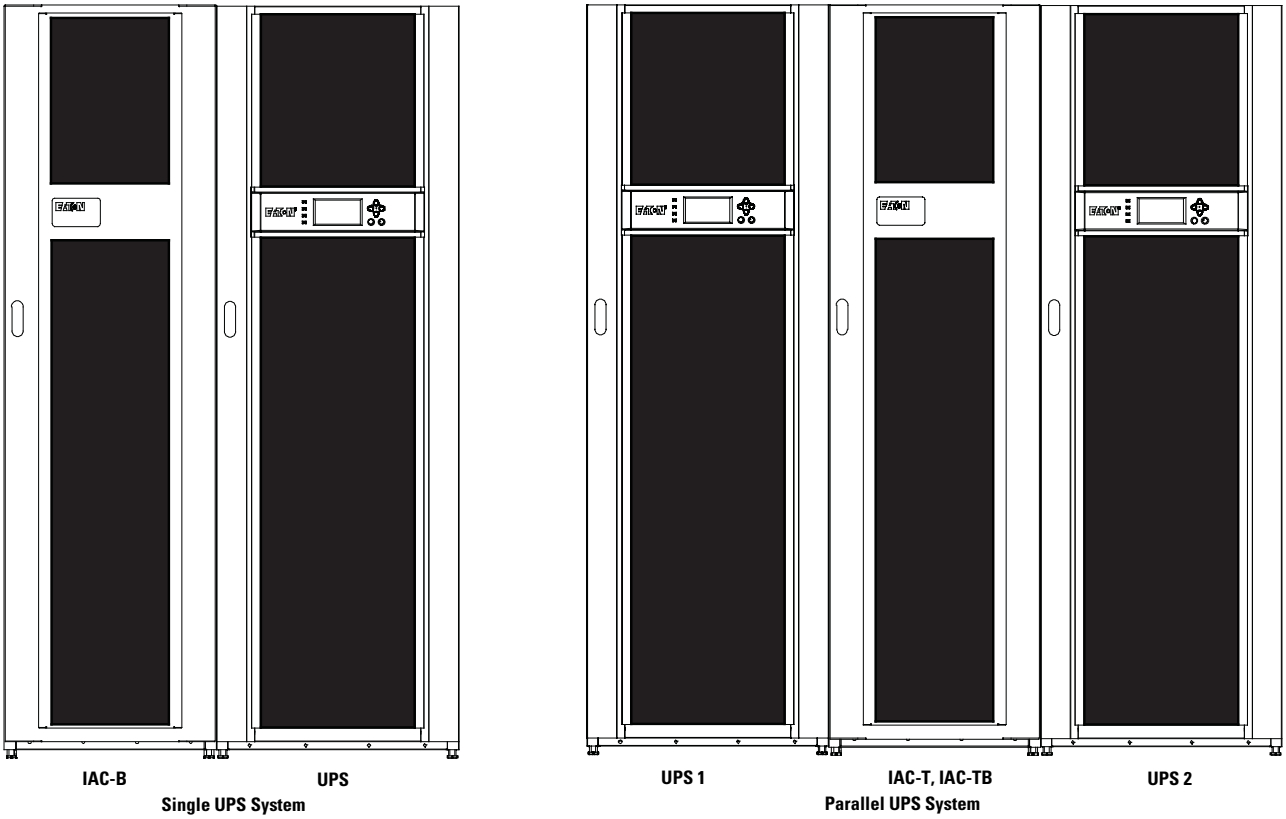


Figure 1-3. Eaton 93E 60 kVA UPS and Eaton 93E 60IAC

1.4 Model Configurations

The following model configurations are available:

- 93E 30IAC-T and 93E 60IAC-T
  - Contains four MOBs with auxiliary contacts
- 93E 30IAC-B and 93E 60IAC-B
  - Three breaker configuration – contains a MBP with auxiliary contacts, a MIS, and a BIB
  - Four breaker configuration – contains a MBP with auxiliary contacts, a MIS, a BIB, and a RIB
- 93E 30IAC-TB and 93E 60IAC-TB
  - Contains two MOBs, a MBP with auxiliary contacts, and a MIS

1.5 Wall-Mounted Maintenance Bypass Panel

The maintenance bypass breaker in the panel can be used to bypass the UPS during maintenance or servicing, providing wrap-around bypass for UPS service without shutting down the load.

1.6 Using This Manual

This manual describes how to install the IACs and is divided into chapters. Read and understand the procedures described to ensure trouble-free installation and operation.

Read through each procedure before beginning the procedure. Perform only those procedures that apply to the UPS system being installed or operated.

1.7 Conventions Used in This Manual

This manual uses these type conventions:

- **Bold type** highlights important concepts in discussions, key terms in procedures, and menu options, or represents a command or option that you type or enter at a prompt.
- Italic type highlights notes and new terms where they are defined.
- `Screen type` represents information that appears on the screen or LCD.

Icon	Description
Note	Information notes call attention to important features or instructions.
[Keys]	Brackets are used when referring to a specific key, such as [Enter] or [Ctrl].

In this manual, the term UPS refers only to the UPS cabinet and its internal elements. The term UPS system refers to the entire power protection system – the UPS cabinet, an external battery system, and options or accessories installed.

The term line-up-and-match refers to accessory cabinets that are physically located adjacent to the UPS. The term standalone refers to accessory cabinets that are located separate from the UPS.

1.8 Symbols, Controls, and Indicators

The following are examples of symbols used on the UPS or accessories to alert you to important information:

RISK OF ELECTRIC SHOCK - Observe the warning associated with the risk of electric shock symbol.

CAUTION: REFER TO OPERATOR'S MANUAL - Refer to your operator's manual for additional information, such as important operating and maintenance instructions.

This symbol indicates that you should not discard the UPS or the UPS batteries in the trash. This product contains sealed, lead-acid batteries and must be disposed of properly. For more information, contact your local recycling/reuse or hazardous waste center.

This symbol indicates that you should not discard waste electrical or electronic equipment (WEEE) in the trash. For proper disposal, contact your local recycling/reuse or hazardous waste center.

1.9 For More Information

Refer to the *Eaton 93E UPS (20-30 kVA, 208/220V) Installation and Operation Manual* or *Eaton 93E UPS (40-60 kVA, 208/220V) Installation and Operation Manual* for the following additional information:

- UPS, optional components, and accessory installation instructions, including site preparation, planning for installation, and wiring and safety information. Detailed illustrations of cabinets and optional accessories with dimensional and connection point drawings are provided.
- UPS operation, including UPS controls, functions of the UPS, standard features and optional accessories, procedures for starting and stopping the UPS, and information about maintenance and responding to system events.
- Communication capabilities of the UPS system.

Refer to the *Eaton 93E Integrated Accessory Cabinet-Distribution Installation and Operation Manual* for the following additional information:

- Installation instructions, including site preparation, planning for installation, wiring and safety information, and detailed illustrations of cabinets with dimensional and connection point drawings
- Operation, including breakers, standard features and optional accessories, procedures for using the tie and bypass functions, and information about maintenance

Refer to the *Eaton 93E Integrated Transformer Cabinet Installation Manual* for the following additional information:

- Installation instructions, including site preparation, planning for installation, wiring and safety information, and detailed illustrations of cabinets with dimensional and connection point drawings

Visit www.eaton.com/powerquality or contact an Eaton service representative for information on how to obtain copies of these manuals.

1.10 Getting Help

If help is needed with any of the following:

- Scheduling initial startup
- Regional locations and telephone numbers
- A technical question about any of the information in this manual
- A question this manual does not answer

Please call the Customer Reliability Center at:

United States:	**1-800-843-9433**
Canada:	**1-800-461-9166 ext 260**
All other countries:	**Call your local service representative**

Please use the following e-mail address for manual comments, suggestions, or to report an error in this manual:

E-ESSDocumentation@eaton.com

Chapter 2 Safety Warnings

IMPORTANT SAFETY INSTRUCTIONS SAVE THESE INSTRUCTIONS

This manual contains important instructions that should be followed during installation and maintenance of the UPS system and batteries. Read all instructions before operating the equipment and save this manual for future reference.

The UPS system is designed for industrial or computer room applications, and contains safety shields behind the door and front panels. However, the UPS system is a sophisticated power system and should be handled with appropriate care.

DANGER

This UPS system contains LETHAL VOLTAGES. All repairs and service should be performed by AUTHORIZED SERVICE PERSONNEL ONLY. There are NO USER SERVICEABLE PARTS inside the UPS.

WARNING

- The UPS system is powered by its own energy source (batteries). The output terminals may carry live voltage even when the UPS is disconnected from an AC source.
- To reduce the risk of fire or electric shock, install this UPS system in a temperature and humidity controlled, indoor environment, free of conductive contaminants. Ambient temperature must not exceed 30°C (86°F). Do not operate near water or excessive humidity (95% maximum). The system is not intended for outdoor use.
- As a result of the connected loads high leakage current is possible. Connection to earth ground is required for safety and proper product operation. Do not check UPS system operation by any action that includes removal of the earth (ground) connection with loads attached.
- Ensure all power is disconnected before performing installation or service.
- ELECTRIC ENERGY HAZARD. Do not attempt to alter any UPS system or battery wiring or connectors. Attempting to alter wiring can cause injury.
- Failure to anchor the cabinet could lead to injury or death. To reduce this risk, the distribution, tie, and bypass cabinets must be secured to the building floor or to an adjacent 93E system cabinet.

CAUTION

- Installation or servicing should be performed by qualified service personnel knowledgeable of UPS and battery systems, and required precautions. Keep unauthorized personnel away from equipment. Consider all warnings, cautions, and notes before installing or servicing equipment.
- Keep the Accessory cabinet doors closed and front panels installed to ensure proper cooling airflow and to protect personnel from dangerous voltages inside the unit.
- Do not install or operate the UPS system close to gas or electric heat sources.
- The operating environment should be maintained within the parameters stated in this manual.
- Keep surroundings uncluttered, clean, and free from excess moisture.
- Observe all DANGER, CAUTION, and WARNING notices affixed to the inside and outside of the equipment.

Section 1
Installation

Chapter 3 Installation Plan and Unpacking

This chapter includes planning and unpacking for the following Integrated Accessory Cabinets (IACs):

- Integrated Accessory Cabinet-Tie (IAC-T)
- Integrated Accessory Cabinet-Bypass (IAC-B)
- Integrated Accessory Cabinet-Tie and Bypass (IAC-TB)
- Side Car Cabinet (SCC)

Use the following basic sequence of steps to install any of the Eaton 93E 30 or 93E 60 IACs:

1. Create an installation plan for the IACs.
2. Prepare your site for the IACs.
3. Inspect and unpack the IACs.
4. Unload and install the IACs, and wire the system.
5. Complete the Installation Checklist.
6. Have authorized service personnel perform preliminary operational checks and start up the system.

NOTE Startup and operational checks must be performed by an authorized Eaton Customer Service Engineer, or the warranty terms specified on page W-1 become void. This service is offered as part of the sales contract for the UPS. Contact an Eaton service representative in advance (usually a two-week notice is required) to reserve a preferred startup date.

3.1 Creating an Installation Plan

Before installing the IACs, read and understand how this manual applies to the system being installed. Use the procedures and illustrations in this section to create a logical plan for installing the IACs. This section contains the following information:

- Physical features and requirements, including dimensions
- Power wiring installation notes
- Location of conduit and wire entry landing plates
- Location of power terminals

3.2 Preparing the Site

For the UPS system to operate at peak efficiency, the installation site should meet the environmental parameters outlined in this manual. If the UPS system is to be operated at an altitude higher than 1500m (5000 ft), contact an Eaton service representative for important information about high altitude operation. The operating environment must meet the weight, clearance, and environmental requirements specified for the applicable accessory cabinet.

3.2.1 Environmental and Installation Considerations

The UPS system installation, including the IACs, must meet the following guidelines:

- The system must be installed on a level floor suitable for computer or electronic equipment.
- The system must be installed in a temperature and humidity controlled indoor area free of conductive contaminants.

Failure to follow guidelines may void your warranty.

The IAC operating environment must meet the weight requirements shown in Table 3-1 and the size requirements shown in Figure 3-1 through Figure 3-8. Dimensions are in millimeters (inches).

Table 3-1. IAC Weights

		Weight kg (lb)	
Model	**Shipping**	**Installed**	**Point Loading**
Eaton 93E 30IAC-T	129 (285)	104 (230)	6 at 17.3 (38.3)
Eaton 93E 30IAC-B	133 (292)	108 (237)	6 at 18 (39.5)
Eaton 93E 30IAC-TB	173 (381)	148 (326)	6 at 24.7 (54.3)
Eaton 93E 60IAC-T	184 (405)	159 (350)	6 at 26.5 (58.3)
Eaton 93E 60IAC-B	176 (389)	151 (334)	6 at 25.2 (55.7)
Eaton 93E 60IAC-TB	232 (511)	207 (456)	6 at 34.5 (76.0)
Eaton 93E 30SC	65 (143)	41 (90)	Not Applicable
Eaton 93E 60SC	81 (178)	56 (124)	Not Applicable

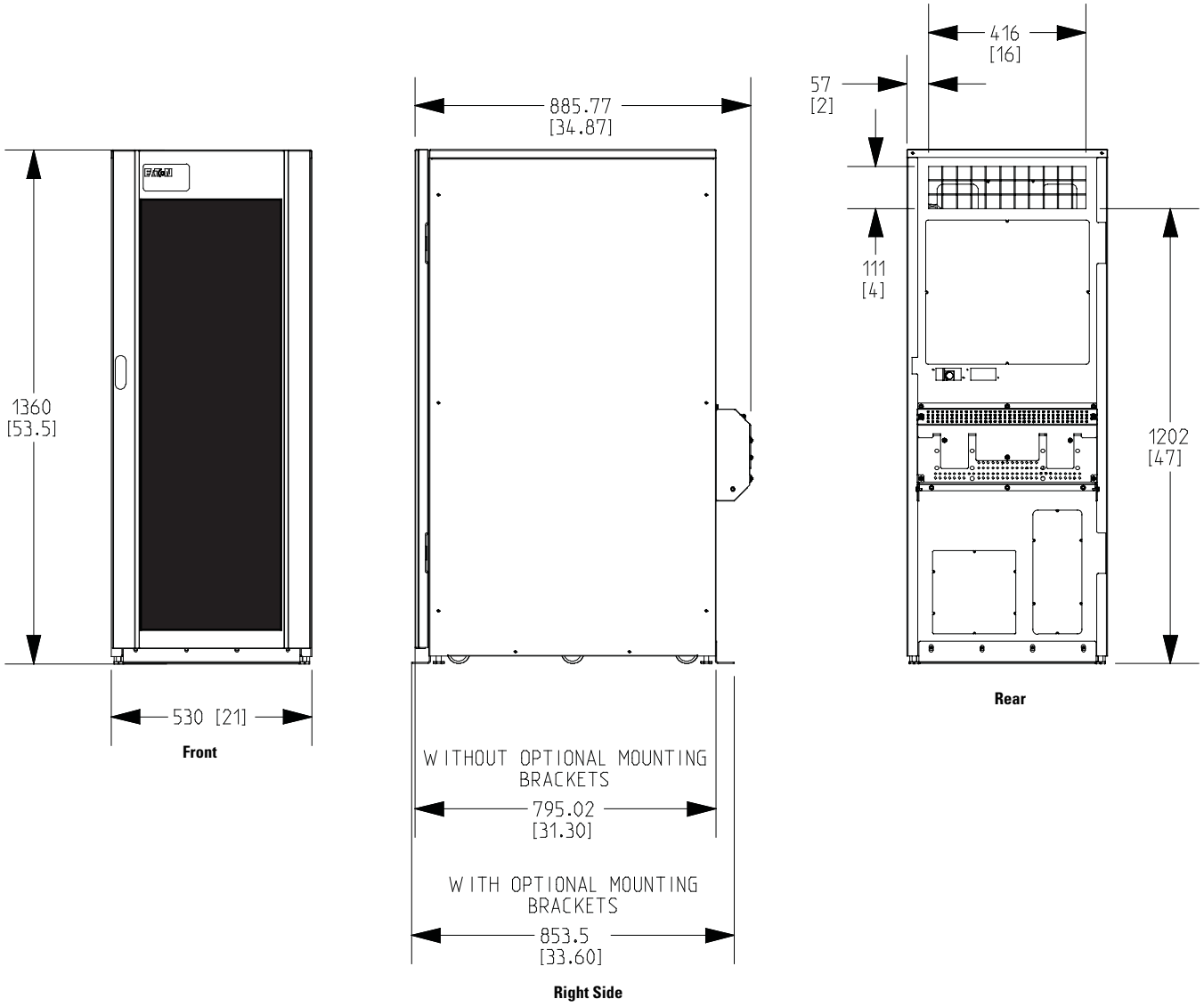
The IACs uses convection cooling to regulate internal component temperature. Air inlets are in the front of the cabinet and outlets are in the back of the cabinet. Allow clearance in front of and in back of the cabinet for proper air circulation. The clearances required around the IACs are shown in Table 3-2.

Table 3-2. IAC Clearances

From Top of Cabinet	None Required
From Front of Cabinet	914.4 mm (36") working space
From Back of Cabinet	914.4 mm (36") working space
From Right Side of Cabinet	None Required
From Left Side of Cabinet	None Required

The basic environmental requirements for operation of the IACs are:

- Recommended Operating Range: 15–25°C (59–77°F)
- Maximum Relative Humidity: 95%, noncondensing



Dimensions are in millimeters [inches]

Figure 3-1. 93E 30IAC-T, 93E 30IAC-B, and 93E 30IAC-TB Cabinet Dimensions (Front, Right Side, and Rear Views)

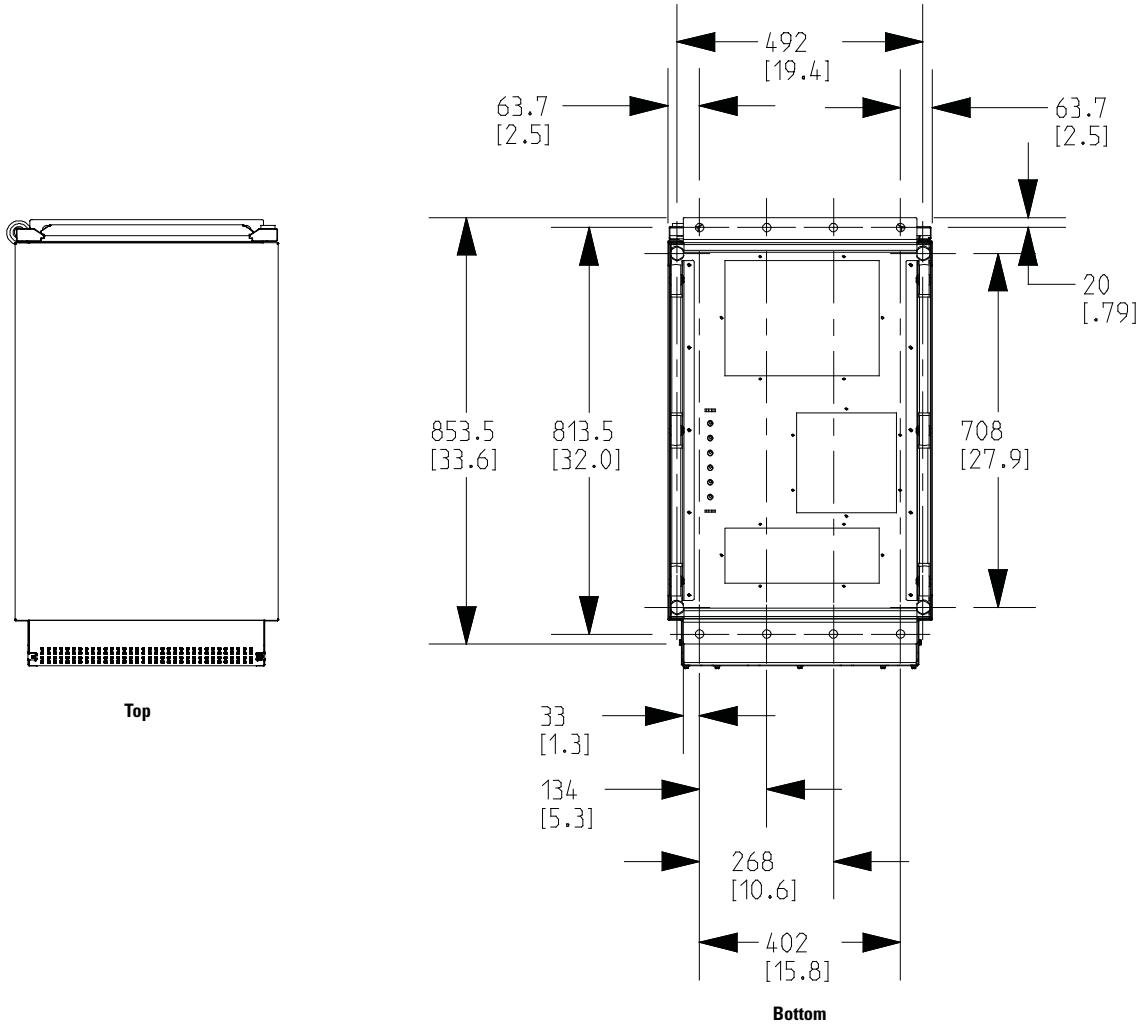
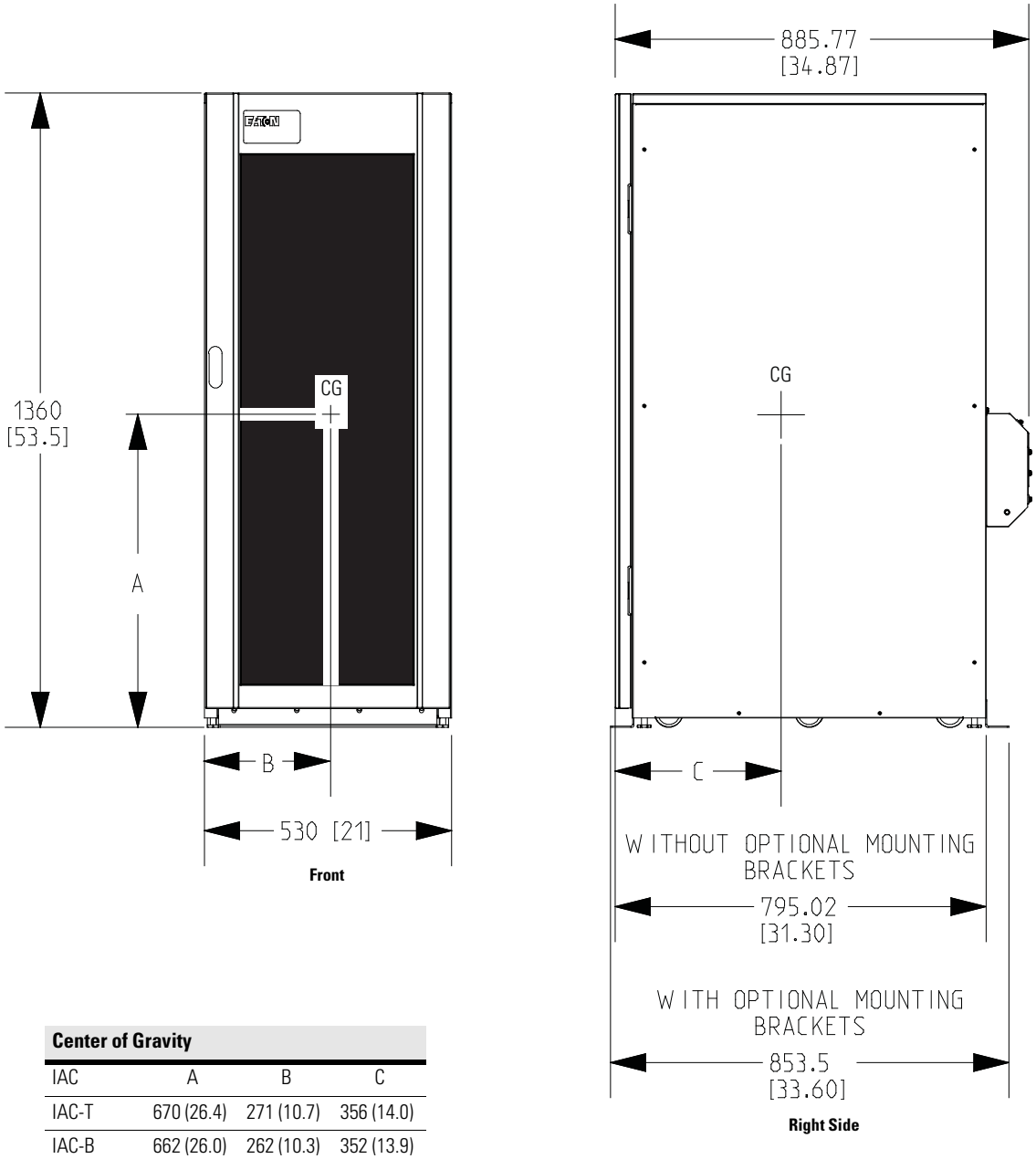
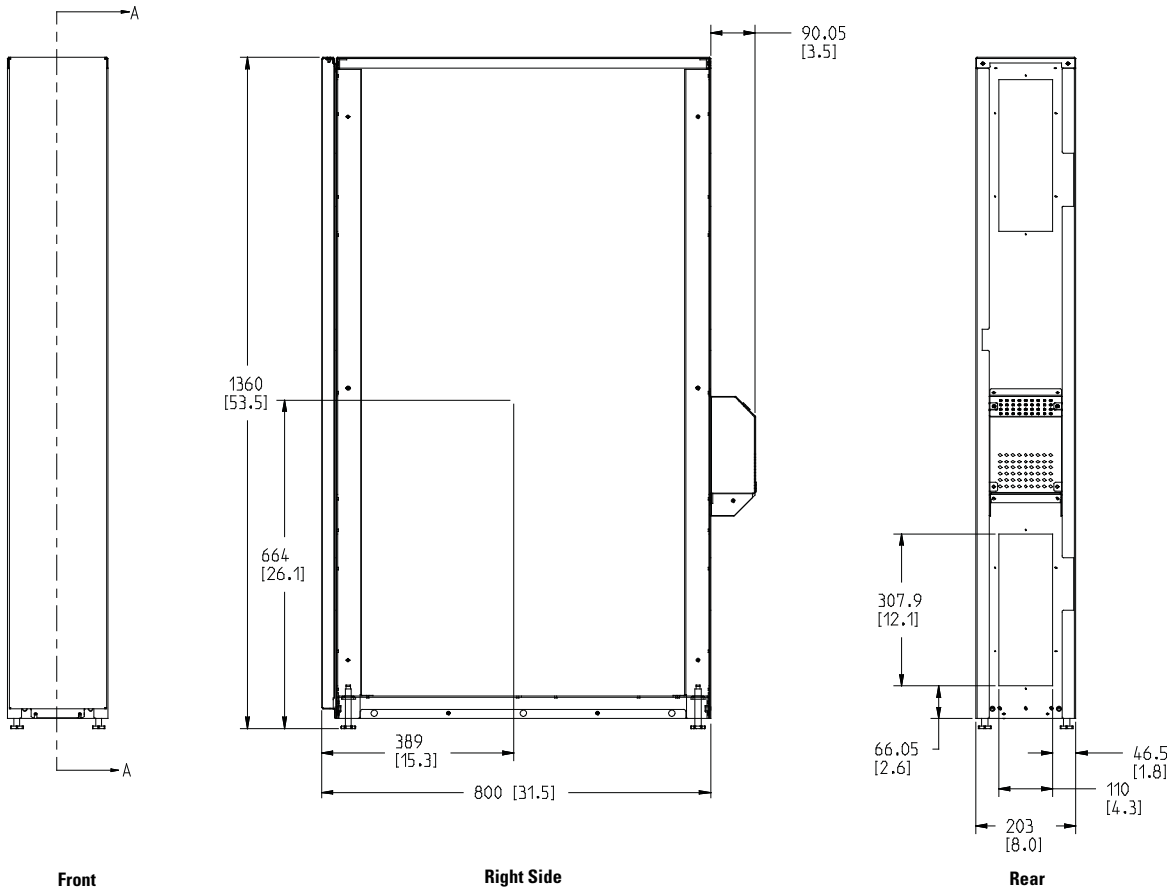


Figure 3-2. 93E 30IAC-T, 93E 30IAC-B, and 93E 30IAC-TB Dimensions (Top and Bottom Views)



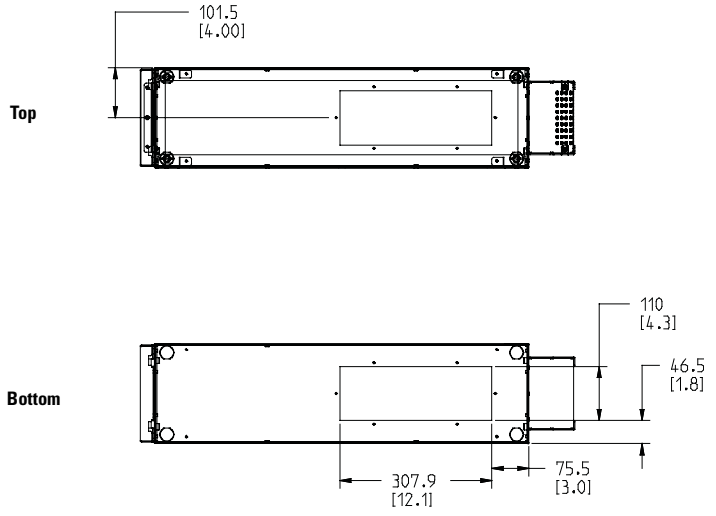
Center of Gravity			
IAC	A	B	C
IAC-T	670 (26.4)	271 (10.7)	356 (14.0)
IAC-B	662 (26.0)	262 (10.3)	352 (13.9)
IAC-TB	670 (26.4)	265 (10.4)	346 (13.6)

Figure 3-3. 93E 30IAC-T, 93E 30IAC-B, and 93E 30IAC-TB Center of Gravity



Dimensions are in millimeters [inches]

Figure 3-4. 93E 30SC Cabinet Dimensions (Front, Right Side, and Rear Views)



Dimensions are in millimeters [inches]

Figure 3-5. 93E 30SC Cabinet Dimensions (Top and Bottom Views)

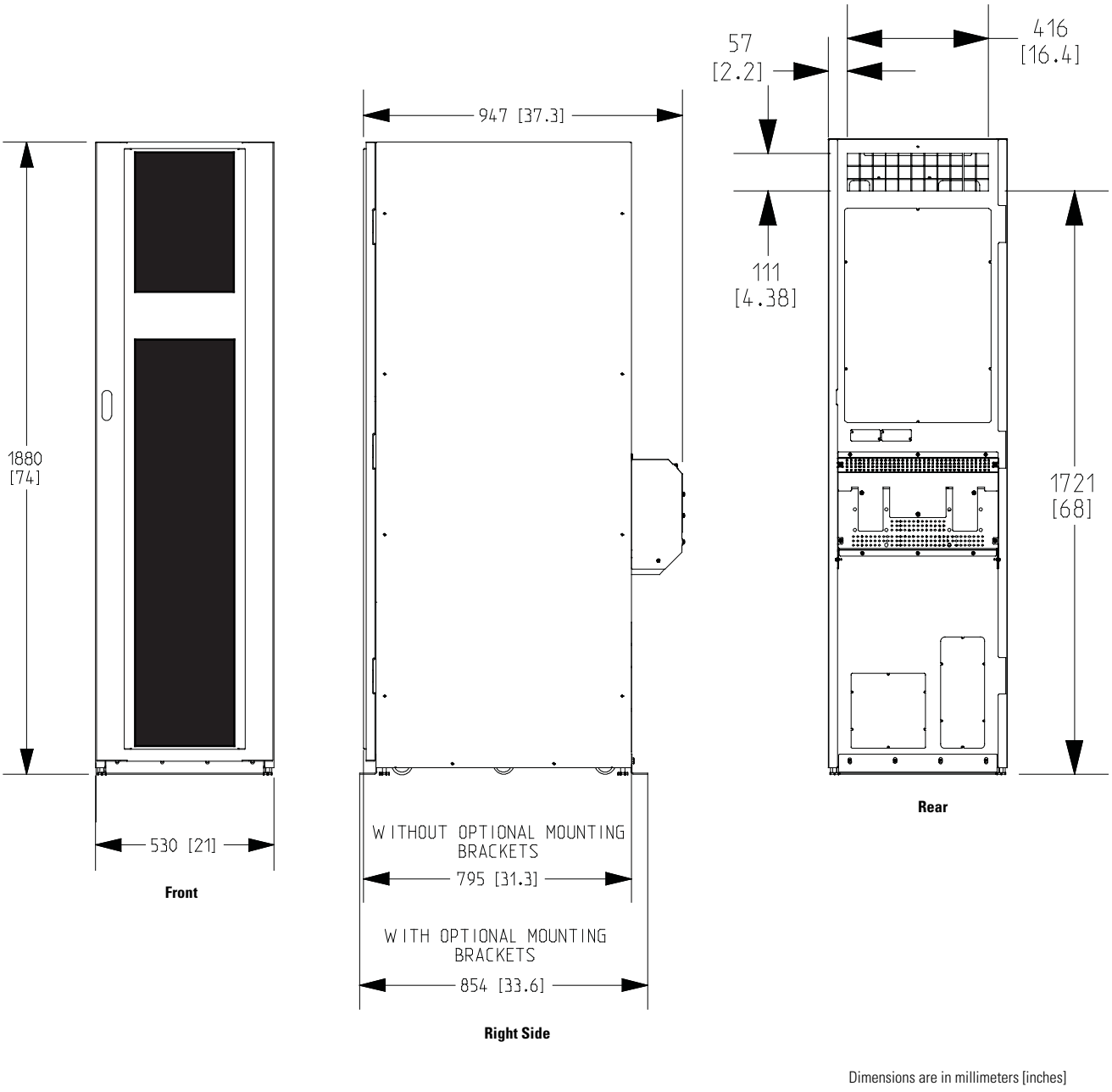
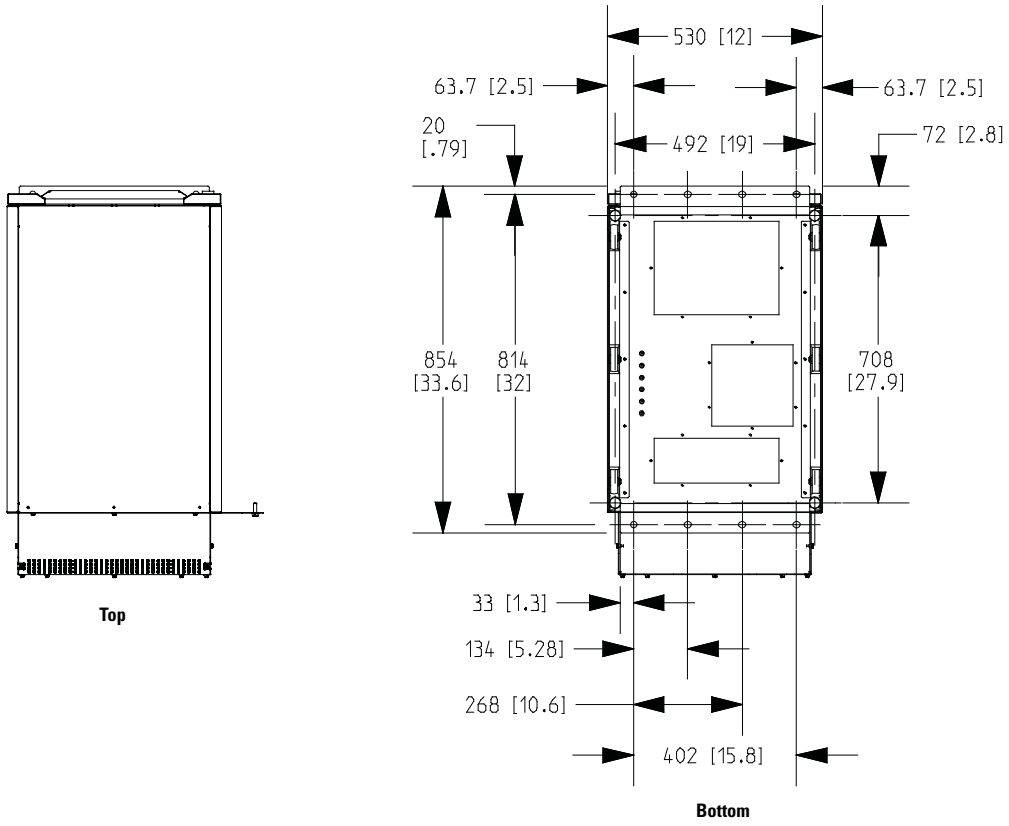
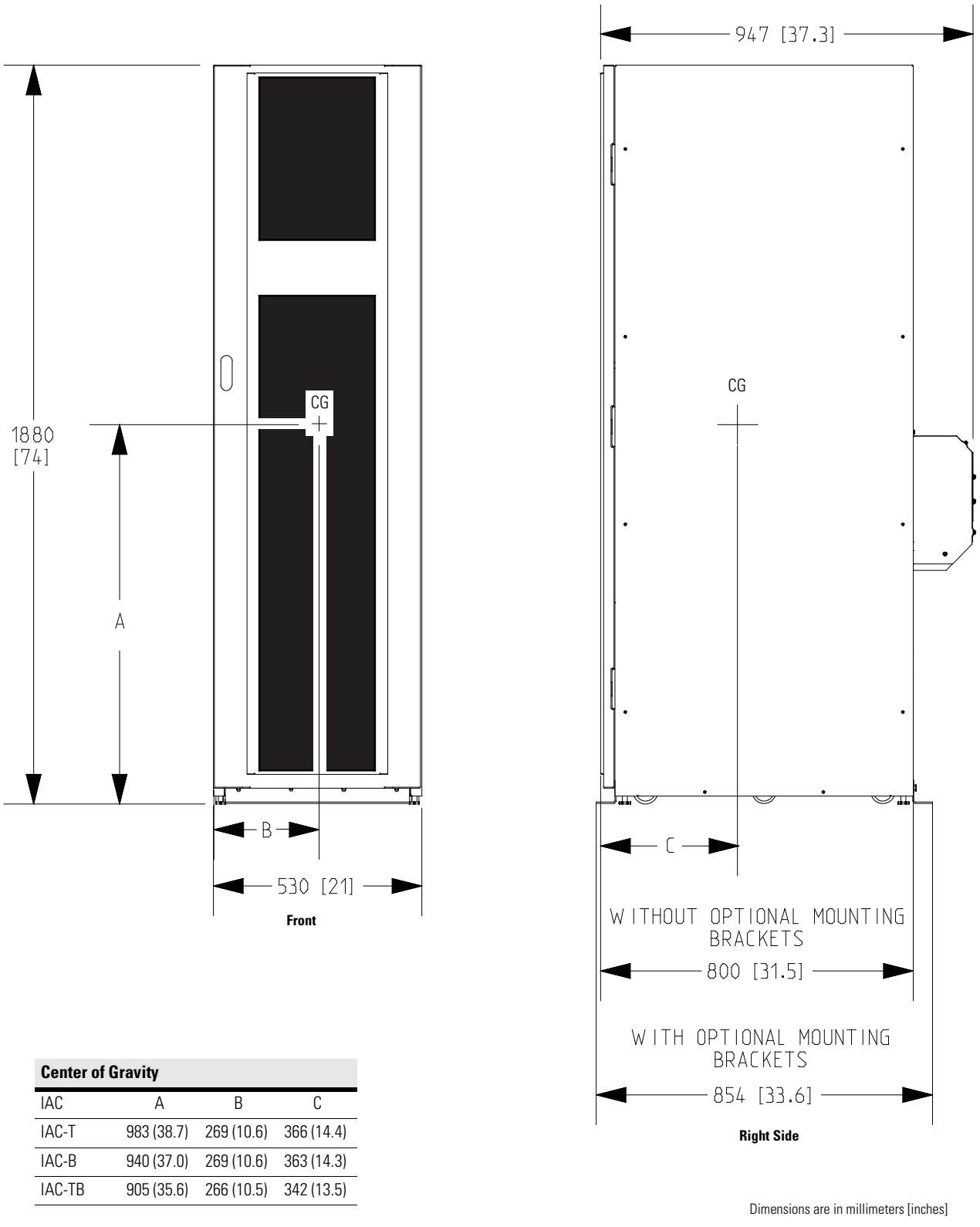


Figure 3-6. 93E 60IAC-T, 93E 60IAC-B, 93E 60IAC-TB Cabinet Dimensions (Front, Right Side, and Rear Views)



Dimensions are in millimeters [inches]

Figure 3-7. 93E 60IAC-T, 93E 60IAC-B, 93E 60IAC-TB Dimensions (Top and Bottom Views)



Center of Gravity			
IAC	A	B	C
IAC-T	983 (38.7)	269 (10.6)	366 (14.4)
IAC-B	940 (37.0)	269 (10.6)	363 (14.3)
IAC-TB	905 (35.6)	266 (10.5)	342 (13.5)

Dimensions are in millimeters [inches]

Figure 3-8. 93E 60IAC-T, 93E 60IAC-B, 93E 60IAC-TB Center of Gravity

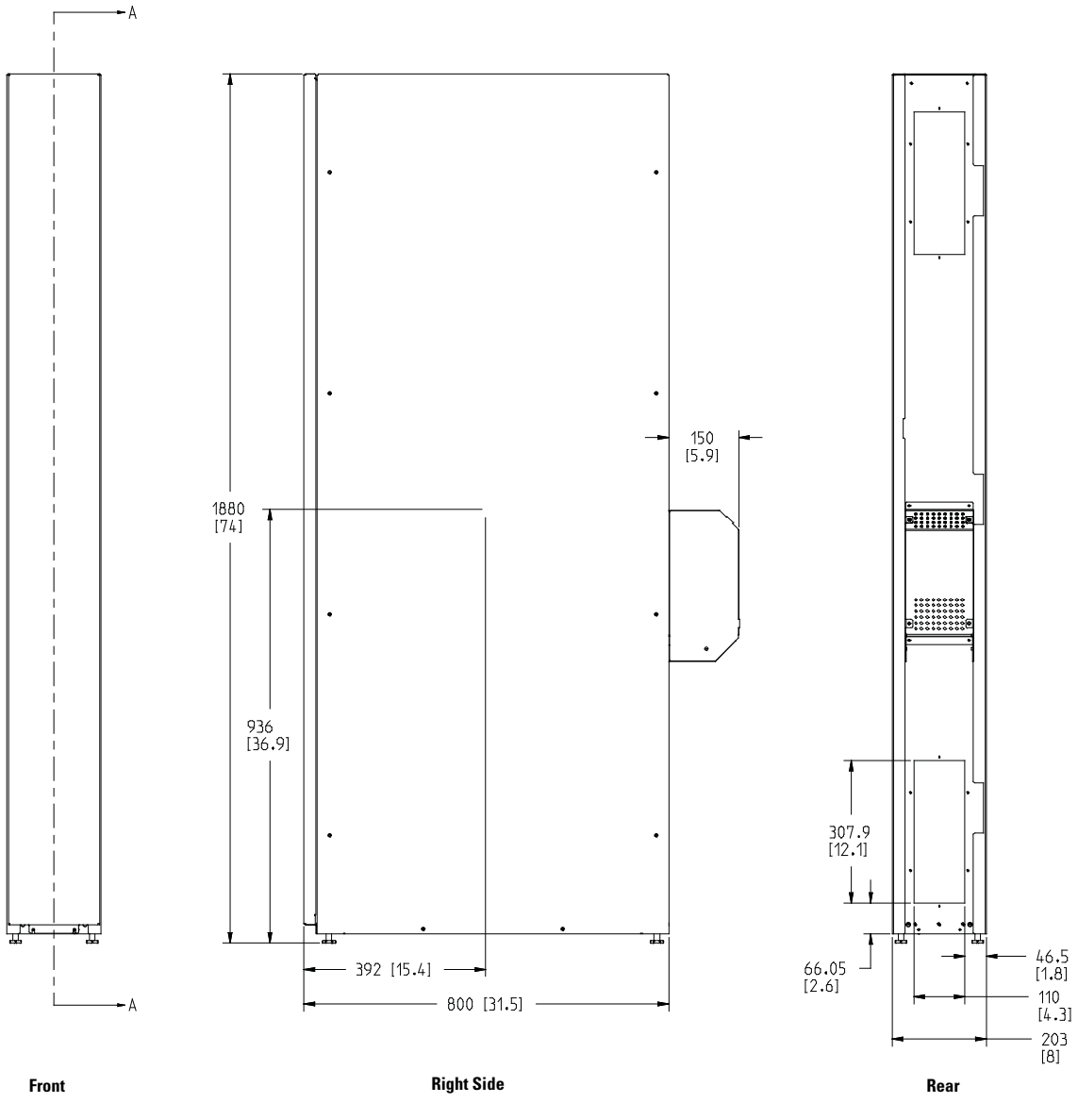
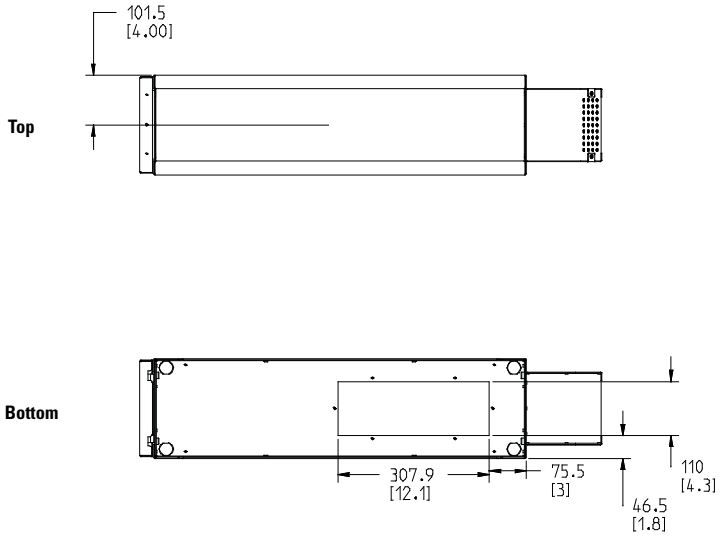


Figure 3-9. 93E 60SC Cabinet Dimensions (Front, Right Side, and Rear Views)



Dimensions are in millimeters [inches]

Figure 3-10. 93E 60SC Cabinet Dimensions (Top and Bottom Views)

3.2.2 IAC Power Wiring Preparation

Read and understand the following notes while planning and performing the installation:

WARNING

As a result of the connected loads high leakage current is possible. Connection to earth ground is required for safety and proper product operation. Do not check IAC operation by any action that includes removal of the earth (ground) connection with loads attached.

- Refer to national and local electrical codes for acceptable external wiring practices.
- Material and labor for external wiring requirements are to be provided by the customer.
- For external wiring, use 90°C copper wire. Wire sizes listed in Table 3-6 are for copper wiring only. If wire is run in an ambient temperature greater than 30°C, higher temperature wire and/or larger size wire may be necessary. Wire sizes are based on using the specified breakers.
- Wire ampacities are chosen from Table 310-16 of the National Electrical Code® (NEC®). Specification is for copper wire with a 90°C rating.
- Refer to NEC Article 250 and local codes for proper grounding practices.
- Per NEC Article 300-20(a), all three-phase conductors must be run in the same conduit. Neutral and ground must be run in the same conduit as the phase conductors.
- Phase rotation must be clockwise starting with phase A (rotation A,B,C).
- Conduit is to be sized to accommodate one neutral conductor the same size as the phase conductor and one ground conductor. If two neutral conductors or an oversized neutral conductor are to be installed, size the conduit to accommodate the extra wire or size.
- Refer to the appropriate Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9 for UPS cabinet conduit and terminal specifications and locations.
- The term line-up-and-match refers to accessory cabinets that are physically located adjacent to the UPS. The term standalone refers to accessory cabinets that are located separate from the UPS.

For Integrated Accessory Cabinet-Tie (IAC-T) external power wiring requirements, including the minimum AWG size of external wiring, seeTable 3-3 or Table 3-4. Wire sizes listed are for copper wiring only.

Table 3-3. External Power Wiring Requirements for the Eaton 93E 30IAC-T and 93E 60IAC-T – 2+0 and 2+1 Parallel Configurations

		Units	Rating 60 Hz	
Basic Unit Rating		kVA	30	60
Input/Output Voltage		Volts	208/208	208/208
AC Input from each UPS Full Load Current from each UPS (3) Phases, (1) Neutral, (1) Ground	**A**	Maximum Amps	83	167
Minimum Conductor Size (Phase A, B, and C) Number per Phase		AWG or kcmil (each)	1/0 (1)	250 (1)
Minimum Conductor Size (Neutral) Number per Phase	—	AWG or kcmil (each)	1/0 (2)	250 (2)
Minimum Conductor Size (Ground) Number per Phase	—	AWG or kcmil (each)	#6 (1)	#4 (1)
AC Output to Critical Load Full Load Current (3) Phases, (1) Neutral, (1) Ground	**B**	Maximum Amps	166	334
Minimum Conductor Size (Phase A, B, and C) Number per Phase		AWG or kcmil (each)	1/0 (2)	250 (2)
Minimum Conductor Size (Neutral) Number per Phase	—	AWG or kcmil (each)	1/0 (4)	250 (4)
Building and Load Ground Minimum Conductor Size (Ground) Number per Phase	—	AWG or kcmil (each)	#4 (1)	#2 (1)

NOTE Callout letters **A** and **B** map to Figure 5-1.

Table 3-4. External Power Wiring Requirements for the Eaton 93E 30IAC-T and 93E 60IAC-T – 3+0 and 3+1 Parallel Configurations

		Units	Rating 60 Hz	
Basic Unit Rating		kVA	30	60
Input/Output Voltage		Volts	208/208	208/208
AC Input from each UPS Full Load Current from each UPS (3) Phases, (1) Neutral, (1) Ground	**A**	Maximum Amps	83	167
Minimum Conductor Size (Phase A, B, and C) Number per Phase		AWG or kcmil (each)	1/0 (1)	250 (1)
Minimum Conductor Size (Neutral) Number per Phase	—	AWG or kcmil (each)	1/0 (2)	250 (2)
Minimum Conductor Size (Ground) Number per Phase	—	AWG or kcmil (each)	#6 (1)	#2 (1)
AC Output to Critical Load Full Load Current (3) Phases, (1) Neutral, (1) Ground	**B**	Maximum Amps	249	501
Minimum Conductor Size (Phase A, B, and C) Number per Phase		AWG or kcmil (each)	1/0 (3)	250 (3)
Minimum Conductor Size (Neutral) Number per Phase	—	AWG or kcmil (each)	1/0 (6)	250 (6)
Building and Load Ground Minimum Conductor Size (Ground) Number per Phase	—	AWG or kcmil (each)	#3 (1)	1/0 (1)

NOTE Callout letters **A** and **B** map to Figure 5-1.

For Integrated Accessory Cabinet-Bypass (IAC-B) external power wiring requirements, including the minimum AWG size of external wiring, see Table 3-5 or Table 3-6. Wire sizes listed are for copper wiring only.

Table 3-5. External Power Wiring Requirements for the Eaton 93E 30IAC-B and 93E 60IAC-B – Three Breaker Maintenance Bypass

		Units	Rating 60 Hz	
Basic Unit Rating		kVA	30	60
Input/Output Voltage		Volts	208/208	208/208
AC Input to Maintenance Bypass (3) Phases, (1) Neutral, (1) Ground	**A**	Maximum Amps (Single-Feed) Maximum Amps (Dual-Feed)	96 83	185 167
Minimum Conductor Size (Phase A, B, and C) Number per Phase		AWG or kcmil (each)	1/0 (1)	250 (1)
Minimum Conductor Size (Neutral) Number per Phase	—	AWG or kcmil (each)	1/0 (2)	250 (2)
AC Output from BIB to UPS Bypass (3) Phases, (1) Neutral, (1) Ground	**B**	Maximum Amps (Single-Feed) Maximum Amps (Dual-Feed)	96 83	185 167
Minimum Conductor Size (Phase A, B, and C) Number per Phase		AWG or kcmil (each)	1/0 (1)	250 (1)
Minimum Conductor Size (Neutral) Number per Phase	—	AWG or kcmil (each)	1/0 (2)	250 (2)
AC Input to MIS from UPS Output (3) Phases, (1) Neutral, (1) Ground	**C**	Maximum Amps	83	167
Minimum Conductor Size (Phase A, B, and C) Number per Phase		AWG or kcmil (each)	1/0 (1)	250 (1)
Minimum Conductor Size (Neutral) Number per Phase	—	AWG or kcmil (each)	1/0 (2)	250 (2)
AC Output to Critical Load (3) Phases, (1) Neutral, (1) Ground	**D**	Maximum Amps	83	167
Minimum Conductor Size (Phase A, B, and C) Number per Phase		AWG or kcmil (each)	1/0 (1)	250 (1)
Minimum Conductor Size (Neutral) Number per Phase	—	AWG or kcmil (each)	1/0 (2)	250 (2)
Building, Load, and Inter-Cabinet Ground Minimum Conductor Size (Ground) Number per Phase	—	AWG or kcmil (each)	#6 (1)	#2 (1)

NOTE Callout letters **A**, **B, C,** and **D** map to Figure 5-2 (3-Breaker Version).

Table 3-6. External Power Wiring Requirements for the Eaton 93E 30IAC-B and 93E 60IAC-B – Four Breaker Maintenance Bypass

		Units	Rating 60 Hz	
Basic Unit Rating		kVA	30	60
Input/Output Voltage		Volts	208/208	208/208
AC Input to Maintenance Bypass (3) Phases, (1) Neutral, (1) Ground	**A**	Maximum Amps	83	167
Minimum Conductor Size (Phase A, B, and C) Number per Phase		AWG or kcmil (each)	1/0 (1)	250 (1)
Minimum Conductor Size (Neutral) Number per Phase	—	AWG or kcmil (each)	1/0 (2)	250 (2)
AC Input to RIB (3) Phases, (1) Neutral, (1) Ground	**B**	Maximum Amps	96	185
Minimum Conductor Size (Phase A, B, and C) Number per Phase		AWG or kcmil (each)	1/0 (1)	250 (1)
Minimum Conductor Size (Neutral) Number per Phase	—	AWG or kcmil (each)	1/0 (2)	250 (2)
AC Output from RIB to UPS Rectifier (3) Phases, (1) Neutral, (1) Ground	**C**	Maximum Amps	96	185
Minimum Conductor Size (Phase A, B, and C) Number per Phase		AWG or kcmil (each)	1/0 (1)	250 (1)
Minimum Conductor Size (Neutral) Number per Phase	—	AWG or kcmil (each)	1/0 (2)	250 (2)
AC Output from BIB to UPS Bypass (3) Phases, (1) Neutral, (1) Ground	**D**	Maximum Amps	83	167
Minimum Conductor Size (Phase A, B, and C) Number per Phase		AWG or kcmil (each)	1/0 (1)	250 (1)
Minimum Conductor Size (Neutral) Number per Phase	—	AWG or kcmil (each)	1/0 (2)	250 (2)
AC Input to MIS from UPS Output (3) Phases, (1) Neutral, (1) Ground	**E**	Maximum Amps	83	167
Minimum Conductor Size (Phase A, B, and C) Number per Phase		AWG or kcmil (each)	1/0 (1)	250 (1)
Minimum Conductor Size (Neutral) Number per Phase	—	AWG or kcmil (each)	1/0 (2)	250 (2)
AC Output to Critical Load (3) Phases, (1) Neutral, (1) Ground	**F**	Maximum Amps	83	167
Minimum Conductor Size (Phase A, B, and C) Number per Phase		AWG or kcmil (each)	1/0 (1)	250 (1)
Minimum Conductor Size (Neutral) Number per Phase	—	AWG or kcmil (each)	1/0 (2)	250 (2)
Building, Load, and Inter-Cabinet Ground Minimum Conductor Size (Ground) Number per Phase	—	AWG or kcmil (each)	#6 (1)	#2 (1)

NOTE Callout letters **A**, **B, C, D, E, and F** map to Figure 5-2 (4-Breaker Version).

For Integrated Accessory Cabinet-Tie and Bypass (IAC-TB) external power wiring requirements, including the minimum AWG size of external wiring, see Table 3-7 or Table 3-8. Wire sizes listed are for copper wiring only.

Table 3-7. External Power Wiring Requirements for the Eaton 93E 30IAC-TB and 93E 60IAC-TB – 1+1 Parallel Configuration with Maintenance Bypass

		Units	Rating 60 Hz	
Basic Unit Rating		kVA	30	60
Input/Output Voltage		Volts	208/208	208/208
AC Input from each UPS Full Load Current from each UPS (3) Phases, (1) Neutral, (1) Ground	**A**	Maximum Amps	83	167
Minimum Conductor Size (Phase A, B, and C) Number per Phase		AWG or kcmil (each)	1/0 (1)	250 (1)
Minimum Conductor Size (Neutral) Number per Phase	—	AWG or kcmil (each)	1/0 (2)	250 (2)
Minimum Conductor Size (Ground) Number per Phase	—	AWG or kcmil (each)	#6 (1)	#2 (1)
AC Input to Maintenance Bypass (3) Phases, (1) Neutral, (1) Ground	**B**	Maximum Amps	83	167
Minimum Conductor Size (Phase A, B, and C) Number per Phase		AWG or kcmil (each)	1/0 (1)	250 (1)
Minimum Conductor Size (Neutral) Number per Phase	—	AWG or kcmil (each)	1/0 (2)	250 (2)
AC Output to Critical Load Full Load Current (3) Phases, (1) Neutral, (1) Ground	**C**	Maximum Amps	83	167
Minimum Conductor Size (Phase A, B, and C) Number per Phase		AWG or kcmil (each)	1/0 (1)	250 (1)
Minimum Conductor Size (Neutral) Number per Phase	—	AWG or kcmil (each)	1/0 (2)	250 (2)
Building, Load, and Inter-Cabinet Ground Minimum Conductor Size (Ground) Number per Phase	—	AWG or kcmil (each)	#6 (1)	#2 (1)

NOTE Callout letters **A**, **B,** and **C** map to Figure 5-3.

Table 3-8. External Power Wiring Requirements for the Eaton 93E 30IAC-TB and 93E 60IAC-TB – 2+0 Parallel Configuration with Maintenance Bypass

		Units	Rating 60 Hz	
Basic Unit Rating		kVA	30	60
Input/Output Voltage		Volts	208/208	208/208
AC Input from each UPS Full Load Current from each UPS (3) Phases, (1) Neutral, (1) Ground	**A**	Maximum Amps	83	167
Minimum Conductor Size (Phase A, B, and C) Number per Phase		AWG or kcmil (each)	1/0 (1)	250 (1)
Minimum Conductor Size (Neutral) Number per Phase	—	AWG or kcmil (each)	1/0 (2)	250 (2)
Minimum Conductor Size (Ground) Number per Phase	—	AWG or kcmil (each)	#6 (1)	#2 (1)
AC Input to Maintenance Bypass (3) Phases, (1) Neutral, (1) Ground	**B**	Maximum Amps	166	334
Minimum Conductor Size (Phase A, B, and C) Number per Phase		AWG or kcmil (each)	1/0 (2)	250 (2)
Minimum Conductor Size (Neutral) Number per Phase		AWG or kcmil (each)	1/0 (4)	250 (4)
AC Output to Critical Load Full Load Current (3) Phases, (1) Neutral, (1) Ground	**C**	Maximum Amps	166	334
Minimum Conductor Size (Phase A, B, and C) Number per Phase		AWG or kcmil (each)	1/0 (2)	250 (2)
Minimum Conductor Size (Neutral) Number per Phase	—	AWG or kcmil (each)	1/0 (4)	250 (4)
Building and Load Ground Minimum Conductor Size (Ground) Number per Phase	—	AWG or kcmil (each)	#4 (1)	#2 (1)

NOTE Callout letters **A**, **B,** and **C** map to Figure 5-3

The power wiring terminals are pressure terminations, UL and CSA rated at 90°C. See Table 3-9 or Table 3-10 for IAC-T external input power cable terminations.

Figure 4-11 and Figure 4-12 or Figure 4-14 and Figure 4-15 show the location of the IAC-T power cable terminals.

Table 3-9. External Input Power Cable Terminations for the Eaton 93E 30IAC-T – 2+0, 2+1, 3+0, and 3+1 Parallel Configurations

Terminal Function	Terminal	Function	Number and Size of Pressure Termination (AWG or kcmil)	Tightening Torque Nm (lb in)	Size Screw and Type
AC Input to MOB 1 from UPS 1	MOB1–2A	Phase A	1 – #14–3/0	5.6 (50)	Slotted
	MOB1–4B	Phase B	1 – #14–3/0	5.6 (50)	Slotted
	MOB1–6C	Phase C	1 – #14–3/0	5.6 (50)	Slotted
	MOB1–N	Neutral	2 – #14– 1/0	5.6 (50)	Slotted
	TBG	Ground	2 – #14– 1/0	5.6 (50)	Slotted
AC Input to MOB 2 from UPS 2	MOB2–2A	Phase A	1 – #14–3/0	5.6 (50)	Slotted
	MOB2–4B	Phase B	1 – #14–3/0	5.6 (50)	Slotted
	MOB2–6C	Phase C	1 – #14–3/0	5.6 (50)	Slotted
	MOB2–N	Neutral	2 – #14– 1/0	5.6 (50)	Slotted
	TBG	Ground	2 – #14– 1/0	5.6 (50)	Slotted
AC Input to MOB 3 from UPS 3 (if installed)	MOB3–2A	Phase A	1 – #14–3/0	5.6 (50)	Slotted
	MOB3–4B	Phase B	1 – #14–3/0	5.6 (50)	Slotted
	MOB3–6C	Phase C	1 – #14–3/0	5.6 (50)	Slotted
	MOB3–N	Neutral	2 – #14– 1/0	5.6 (50)	Slotted
	TBG	Ground	2 – #14– 1/0	5.6 (50)	Slotted
AC Input to MOB 4 from UPS 4 (if installed)	MOB4–2A	Phase A	1 – #14–3/0	5.6 (50)	Slotted
	MOB4–4B	Phase B	1 – #14–3/0	5.6 (50)	Slotted
	MOB4–6C	Phase C	1 – #14–3/0	5.6 (50)	Slotted
	MOB4–N	Neutral	2 – #14– 1/0	5.6 (50)	Slotted
	TBG	Ground	2 – #14– 1/0	5.6 (50)	Slotted
AC Output to Critical Load (2+0 and 2+1)	Load A	Phase A	4 – #14–1/0	5.6 (50)	Slotted
	Load B	Phase B	4 – #14–1/0	5.6 (50)	Slotted
	Load C	Phase C	4 – #14–1/0	5.6 (50)	Slotted
	Load N	Neutral	6 – #14–1/0	5.6 (50)	Slotted
AC Output to Critical Load (3+0 and 3+1)	Load A	Phase A	4 – #14–1/0	5.6 (50)	Slotted
	Load B	Phase B	4 – #14–1/0	5.6 (50)	Slotted
	Load C	Phase C	4 – #14–1/0	5.6 (50)	Slotted
	Load N	Neutral	6 – #14–1/0	5.6 (50)	Slotted
Building and Load Ground	TBG	Ground	4 – #14–1/0	5.6 (50)	Slotted

Table 3-10. External Input Power Cable Terminations for the Eaton 93E 60IAC-T – 2+0, 2+1, 3+0, and 3+1 Parallel Configurations

Terminal Function	Terminal	Function	Number and Size of Pressure Termination (AWG or kcmil)	Tightening Torque Nm (lb in)	Size Screw and Type
AC Input to MOB 1 from UPS 1	MOB1–2A	Phase A	1 – #4–350	5.6 (50)	Slotted
	MOB1–4B	Phase B	1 – #4–350	5.6 (50)	Slotted
	MOB1–6C	Phase C	1 – #4–350	5.6 (50)	Slotted
	MOB1–N	Neutral	2 – #6–250	42 (375)	5/16" Hex
	TBG	Ground	2 – #14– 1/0	5.6 (50)	Slotted
AC Input to MOB 2 from UPS 2	MOB2–2A	Phase A	1 – #4–350	5.6 (50)	Slotted
	MOB2–4B	Phase B	1 – #4–350	5.6 (50)	Slotted
	MOB2–6C	Phase C	1 – #4–350	5.6 (50)	Slotted
	MOB2–N	Neutral	2 – #6–250	42 (375)	5/16" Hex
	TBG	Ground	2 – #14– 1/0	5.6 (50)	Slotted
AC Input to MOB 3 from UPS 3 (if installed)	MOB3–2A	Phase A	1 – #4–350	5.6 (50)	Slotted
	MOB3–4B	Phase B	1 – #4–350	5.6 (50)	Slotted
	MOB3–6C	Phase C	1 – #4–350	5.6 (50)	Slotted
	MOB3–N	Neutral	2 – #6–250	42 (375)	5/16" Hex
	TBG	Ground	2 – #14– 1/0	5.6 (50)	Slotted
AC Input to MOB 4from UPS 4 (if installed)	MOB4–2A	Phase A	1 – #4–350	5.6 (50)	Slotted
	MOB4–4B	Phase B	1 – #4–350	5.6 (50)	Slotted
	MOB4–6C	Phase C	1 – #4–350	5.6 (50)	Slotted
	MOB4–N	Neutral	2 – #6–250	42 (375)	5/16" Hex
	TBG	Ground	2 – #14– 1/0	5.6 (50)	Slotted
AC Output to Critical Load (2+0 and 2+1)	Load A	Phase A	4 – #2–600	42 (375)	1/2" Hex
	Load B	Phase B	4 – #2–600	42 (375)	1/2" Hex
	Load C	Phase C	4 – #2–600	42 (375)	1/2" Hex
	Load N	Neutral	8 – #2– 600	42 (375)	1/2" Hex
AC Output to Critical Load (3+0 and 3+1)	Load A	Phase A	4 – #2–600	42 (375)	1/2" Hex
	Load B	Phase B	4 – #2–600	42 (375)	1/2" Hex
	Load C	Phase C	4 – #2–600	42 (375)	1/2" Hex
	Load N	Neutral	8 – #2– 600	42 (375)	1/2" Hex
Building and Load Ground	TBG	Ground	4 – #14– 1/0	5.6 (50)	Slotted

The power wiring terminals are pressure terminations, UL and CSA rated at 90°C. See Table 3-11 or Table 3-12 for IAC-B external input power cable terminations.

Figure 4-20 and Figure 4-21 or Figure 4-23 and Figure 4-24 show the location of the IAC-B power cable terminals.

Table 3-11. External Input Power Cable Terminations for the Eaton 93E 30IAC-B – Three and Four Breaker Maintenance Bypass

Terminal Function	Terminal	Function	Number and Size of Pressure Termination (AWG or kcmil)	Tightening Torque Nm (lb in)	Size Screw and Type
Source 2 AC Input to RIB (4-breaker version only)	RIB–2	Phase A	1 – #14–3/0	5.6 (50)	Slotted
	RIB–4	Phase B	1 – #14–3/0	5.6 (50)	Slotted
	RIB–6	Phase C	1 – #14–3/0	5.6 (50)	Slotted
	Source 2–N	Neutral	2 – #14–1/0	5.6 (50)	Slotted
Source 1 AC Input to Maintenance Bypass	Source 1–A	Phase A	2 – #14–3/0	5.6 (50)	Slotted
	Source 1–B	Phase B	2 – #14–3/0	5.6 (50)	Slotted
	Source 1–C	Phase C	2 – #14–3/0	5.6 (50)	Slotted
	Source 1–N	Neutral	2 – #14–1/0	5.6 (50)	Slotted
AC Output from RIB to UPS Rectifier (4-breaker version only)	RIB–1	Phase A	1 – #14–3/0	5.6 (50)	Slotted
	RIB–3	Phase B	1 – #14–3/0	5.6 (50)	Slotted
	RIB–5	Phase C	1 – #14–3/0	5.6 (50)	Slotted
	RIB–N	Neutral	2 – #14–1/0	5.6 (50)	Slotted
AC Output from BIB to UPS	BIB–1	Phase A	1 – #14–3/0	5.6 (50)	Slotted
	BIB–3	Phase B	1 – #14–3/0	5.6 (50)	Slotted
	BIB–5	Phase C	1 – #14–3/0	5.6 (50)	Slotted
	BIB–N	Neutral	2 – #14–1/0	5.6 (50)	Slotted
AC Input to MIS from UPS Output	MIS–1	Phase A	1 – #14–3/0	5.6 (50)	Slotted
	MIS–3	Phase B	1 – #14–3/0	5.6 (50)	Slotted
	MIS–5	Phase C	1 – #14–3/0	5.6 (50)	Slotted
	UPS–N	Neutral	2 – #14–1/0	5.6 (50)	Slotted
AC Output to Critical Load	Load A	Phase A	2 – #14–1/0	5.6 (50)	Slotted
	Load B	Phase B	2 – #14–1/0	5.6 (50)	Slotted
	Load C	Phase C	2 – #14–1/0	5.6 (50)	Slotted
	Load N	Neutral	2 – #14–1/0	5.6 (50)	Slotted
Building, Load, and Inter-Cabinet Ground	TBG	Ground	8 – #14– 1/0	5.6 (50)	Slotted

Table 3-12. External Input Power Cable Terminations for the Eaton 93E 60IAC-B – Three and Four Breaker Maintenance Bypass

Terminal Function	Terminal	Function	Number and Size of Pressure Termination (AWG or kcmil)	Tightening Torque Nm (lb in)	Size Screw and Type
Source 2 AC Input to RIB (4-breaker version only)	RIB–2	Phase A	1 – #4–350	5.6 (50)	Slotted
	RIB–4	Phase B	1 – #4–350	5.6 (50)	Slotted
	RIB–6	Phase C	1 – #4–350	5.6 (50)	Slotted
	Source 2–N	Neutral	2 – #6–250	42 (375)	5/16" Hex
Source 1 AC Input to Maintenance Bypass	Source 1–A	Phase A	2 – #4–350	5.6 (50)	Slotted
	Source 1–B	Phase B	2 – #4–350	5.6 (50)	Slotted
	Source 1–C	Phase C	2 – #4–350	5.6 (50)	Slotted
	Source 1–N	Neutral	2 – #2– 600	42 (375)	1/2" Hex
AC Output from RIB to UPS Rectifier (4-breaker version only)	RIB–1	Phase A	1 – #4–350	5.6 (50)	Slotted
	RIB–3	Phase B	1 – #4–350	5.6 (50)	Slotted
	RIB–5	Phase C	1 – #4–350	5.6 (50)	Slotted
	RIB–N	Neutral	2 – #6–250	42 (375)	5/16" Hex
AC Output from BIB to UPS	BIB–1	Phase A	1 – #4–350	5.6 (50)	Slotted
	BIB–3	Phase B	1 – #4–350	5.6 (50)	Slotted
	BIB–5	Phase C	1 – #4–350	5.6 (50)	Slotted
	BIB–N	Neutral	2 – #2– 600	42 (375)	1/2" Hex
AC Input to MIS from UPS Output	MIS–1	Phase A	1 – #4–350	5.6 (50)	Slotted
	MIS–3	Phase B	1 – #4–350	5.6 (50)	Slotted
	MIS–5	Phase C	1 – #4–350	5.6 (50)	Slotted
	UPS–N	Neutral	2 – #2– 600	42 (375)	1/2" Hex
AC Output to Critical Load	Load A	Phase A	4 – #2– 600	42 (375)	1/2" Hex
	Load B	Phase B	4 – #2– 600	42 (375)	1/2" Hex
	Load C	Phase C	4 – #2– 600	42 (375)	1/2" Hex
	Load N	Neutral	2 – #2– 600	42 (375)	1/2" Hex
Building, Load, and Inter-Cabinet Ground	TBG	Ground	8 – #14– 1/0	5.6 (50)	Slotted

The power wiring terminals are pressure terminations, UL and CSA rated at 90°C. See Table 3-13, Table 3-14, Table 3-15, or Table 3-16 for IAC-TB external input power cable terminations.

Figure 4-26, Figure 4-27, and Figure 4-28 or Figure 4-30, Figure 4-31, and Figure 4-32 show the location of the IAC-TB power cable terminals.

Table 3-13. External Input Power Cable Terminations for the Eaton 93E 30IAC-TB – 1+1 Parallel Configuration with Maintenance Bypass

Terminal Function	Terminal	Function	Number and Size of Pressure Termination (AWG or kcmil)	Tightening Torque Nm (lb in)	Size Screw and Type
AC Input to MOB 1 from UPS 1	MOB1–2A	Phase A	1 – #14–3/0	5.6 (50)	Slotted
	MOB1–4B	Phase B	1 – #14–3/0	5.6 (50)	Slotted
	MOB1–6C	Phase C	1 – #14–3/0	5.6 (50)	Slotted
	MOB1–N	Neutral	2 – #14– 1/0	5.6 (50)	Slotted
	TBG	Ground	2 – #14– 1/0	5.6 (50)	Slotted
AC Input to MOB 2 from UPS 2	MOB2–2A	Phase A	1 – #14–3/0	5.6 (50)	Slotted
	MOB2–4B	Phase B	1 – #14–3/0	5.6 (50)	Slotted
	MOB2–6C	Phase C	1 – #14–3/0	5.6 (50)	Slotted
	MOB2–N	Neutral	2 – #14– 1/0	5.6 (50)	Slotted
	TBG	Ground	2 – #14– 1/0	5.6 (50)	Slotted
AC Input to Maintenance Bypass	MBP–1	Phase A	1 – #14–3/0	5.6 (50)	Slotted
	MBP–2	Phase B	1 – #14–3/0	5.6 (50)	Slotted
	MBP–3	Phase C	1 – #14–3/0	5.6 (50)	Slotted
	MBP–N	Neutral	4 – #14– 1/0	5.6 (50)	Slotted
AC Output to Critical Load	Load A	Phase A	2 – #14– 1/0	5.6 (50)	Slotted
	Load B	Phase B	2 – #14– 1/0	5.6 (50)	Slotted
	Load C	Phase C	2 – #14– 1/0	5.6 (50)	Slotted
	Load N	Neutral	4 – #14– 1/0	5.6 (50)	Slotted
Building and Load Ground	TBG	Ground	4 – #14– 1/0	5.6 (50)	Slotted

Table 3-14. External Input Power Cable Terminations for the Eaton 93E 30IAC-TB – 2+0 Parallel Configuration with Maintenance Bypass

Terminal Function	Terminal	Function	Number and Size of Pressure Termination (AWG or kcmil)	Tightening Torque Nm (lb in)	Size Screw and Type
AC Input to MOB 1 from UPS 1	MOB1–2A	Phase A	1 – #14–3/0	5.6 (50)	Slotted
	MOB1–4B	Phase B	1 – #14–3/0	5.6 (50)	Slotted
	MOB1–6C	Phase C	1 – #14–3/0	5.6 (50)	Slotted
	MOB1–N	Neutral	2 – #14– 1/0	5.6 (50)	Slotted
	TBG	Ground	2 – #14– 1/0	5.6 (50)	Slotted
AC Input to MOB 2 from UPS 2	MOB2–2A	Phase A	1 – #14–3/0	5.6 (50)	Slotted
	MOB2–4B	Phase B	1 – #14–3/0	5.6 (50)	Slotted
	MOB2–6C	Phase C	1 – #14–3/0	5.6 (50)	Slotted
	MOB2–N	Neutral	2 – #14– 1/0	5.6 (50)	Slotted
	TBG	Ground	2 – #14– 1/0	5.6 (50)	Slotted
AC Input to Maintenance Bypass	MBP–1	Phase A	1 – #4–350	5.6 (50)	Slotted
	MBP–2	Phase B	1 – #4–350	5.6 (50)	Slotted
	MBP–3	Phase C	1 – #4–350	5.6 (50)	Slotted
	MBP–N	Neutral	4 – #2– 600	5.6 (50)	Slotted
AC Output to Critical Load	Load A	Phase A	2 – #14– 1/0	5.6 (50)	Slotted
	Load B	Phase B	2 – #14– 1/0	5.6 (50)	Slotted
	Load C	Phase C	2 – #14– 1/0	5.6 (50)	Slotted
	Load N	Neutral	4 – #14– 1/0	5.6 (50)	Slotted
Building and Load Ground	TBG	Ground	4 –#14– 1/0	5.6 (50)	Slotted

Table 3-15. External Input Power Cable Terminations for the Eaton 93E 60IAC-TB – 1+1 Parallel Configuration with Maintenance Bypass

Terminal Function	Terminal	Function	Number and Size of Pressure Termination (AWG or kcmil)	Tightening Torque Nm (lb in)	Size Screw and Type
AC Input to MOB 1 from UPS 1	MOB1–2A	Phase A	1 – #4–350	5.6 (50)	Slotted
	MOB1–4B	Phase B	1 – #4–350	5.6 (50)	Slotted
	MOB1–6C	Phase C	1 – #4–350	5.6 (50)	Slotted
	MOB1–N	Neutral	2 – #6–250	42 (375)	5/16" Hex
	TBG	Ground	2 – #14– 1/0	5.6 (50)	Slotted
AC Input to MOB 2 from UPS 2	MOB2–2A	Phase A	1 – #4–350	5.6 (50)	Slotted
	MOB2–4B	Phase B	1 – #4–350	5.6 (50)	Slotted
	MOB2–6C	Phase C	1 – #4–350	5.6 (50)	Slotted
	MOB2–N	Neutral	2 – #6–250	42 (375)	5/16" Hex
	TBG	Ground	2 – #14– 1/0	5.6 (50)	Slotted
AC Input to Maintenance Bypass	MBP–1	Phase A	1 – #4–350	5.6 (50)	Slotted
	MBP–2	Phase B	1 – #4–350	5.6 (50)	Slotted
	MBP–3	Phase C	1 – #4–350	5.6 (50)	Slotted
	MBP–N	Neutral	4 – #2– 600	42 (375)	1/2" Hex
AC Output to Critical Load	Load A	Phase A	4 – #2–600	42 (375)	1/2" Hex
	Load B	Phase B	4 – #2–600	42 (375)	1/2" Hex
	Load C	Phase C	4 – #2–600	42 (375)	1/2" Hex
	Load N	Neutral	4 – #2– 600	42 (375)	1/2" Hex
Building and Load Ground	TBG	Ground	4 – #14– 1/0	5.6 (50)	Slotted

Table 3-16. External Input Power Cable Terminations for the Eaton 93E 60IAC-TB – 2+0 Parallel Configuration with Maintenance Bypass

Terminal Function	Terminal	Function	Number and Size of Pressure Termination (AWG or kcmil)	Tightening Torque Nm (lb in)	Size Screw and Type
AC Input to MOB 1 from UPS 1	MOB1–2A	Phase A	1 – #4–350	5.6 (50)	Slotted
	MOB1–4B	Phase B	1 – #4–350	5.6 (50)	Slotted
	MOB1–6C	Phase C	1 – #4–350	5.6 (50)	Slotted
	MOB1–N	Neutral	2 – #6–250	42 (375)	5/16" Hex
	TBG	Ground	2 – #14– 1/0	5.6 (50)	Slotted
AC Input to MOB 2 from UPS 2	MOB2–2A	Phase A	1 – #4–350	5.6 (50)	Slotted
	MOB2–4B	Phase B	1 – #4–350	5.6 (50)	Slotted
	MOB2–6C	Phase C	1 – #4–350	5.6 (50)	Slotted
	MOB2–N	Neutral	2 – #6–250	42 (375)	5/16" Hex
	TBG	Ground	2 – #14– 1/0	5.6 (50)	Slotted
AC Input to Maintenance Bypass	MBP–1	Phase A	2 – #2– 500	42 (375)	3/8" Hex
	MBP–2	Phase B	2 – #2– 500	42 (375)	3/8" Hex
	MBP–3	Phase C	2 – #2– 500	42 (375)	3/8" Hex
	MBP–N	Neutral	4 – #2– 600	42 (375)	1/2" Hex
AC Output to Critical Load	Load A	Phase A	4 – #2– 600	42 (375)	1/2" Hex
	Load B	Phase B	4 – #2– 600	42 (375)	1/2" Hex
	Load C	Phase C	4 – #2– 600	42 (375)	1/2" Hex
	Load N	Neutral	4 – #2– 600	42 (375)	1/2" Hex
Building and Load Ground	TBG	Ground	4 – #14– 1/0	5.6 (50)	Slotted

3.2.3 IAC Interface Wiring Preparation

Control wiring for features and options should be connected at the customer interface terminal blocks located inside the IAC.

WARNING

Do not directly connect relay contacts to the mains related circuits. Reinforced insulation to the mains is required.

Read and understand the following notes while planning and performing the installation:

- Use Class 1 wiring methods (as defined by the NEC) for interface wiring up to 30V. The wire should be rated for 24V, 1A minimum.
- Use Class 2 wiring methods (as defined by the NEC) for interface wiring from 30V to 600V. The wire should be rated for 600V, 1A minimum. 12 AWG maximum wire size.
- Use twisted-pair wires for each input and return or common.
- All interface wiring and conduit is to be supplied by the customer.
- Interface wiring can be installed using conduit between cabinets or by routing wiring through the power terminal cover base wiring channels.
- Install the interface wiring in separate conduit from the power wiring.

3.3 Inspecting and Unpacking the IACs

The cabinet is shipped bolted to a wooden pallet and covered with outer protective packaging material (see Figure 3-11).

NOTE Startup and operational checks must be performed by an authorized Eaton Customer Service Engineer, or the warranty terms specified on page W-1 become void. This service is offered as part of the sales contract for the UPS. Contact an Eaton service representative in advance (usually a two-week notice is required) to reserve a preferred startup date.

WARNING

The IACs are heavy (see Table 3-1). If unpacking and unloading instructions are not closely followed, the cabinet may tip and cause serious injury.

1. Carefully inspect the outer packaging for evidence of damage during transit.

CAUTION

Do not install a damaged cabinet. Report any damage to the carrier and contact an Eaton service representative immediately.

NOTE For the following step, verify that the forklift or pallet jack is rated to handle the weight of the cabinet (see Table 3-1 for cabinet weight).

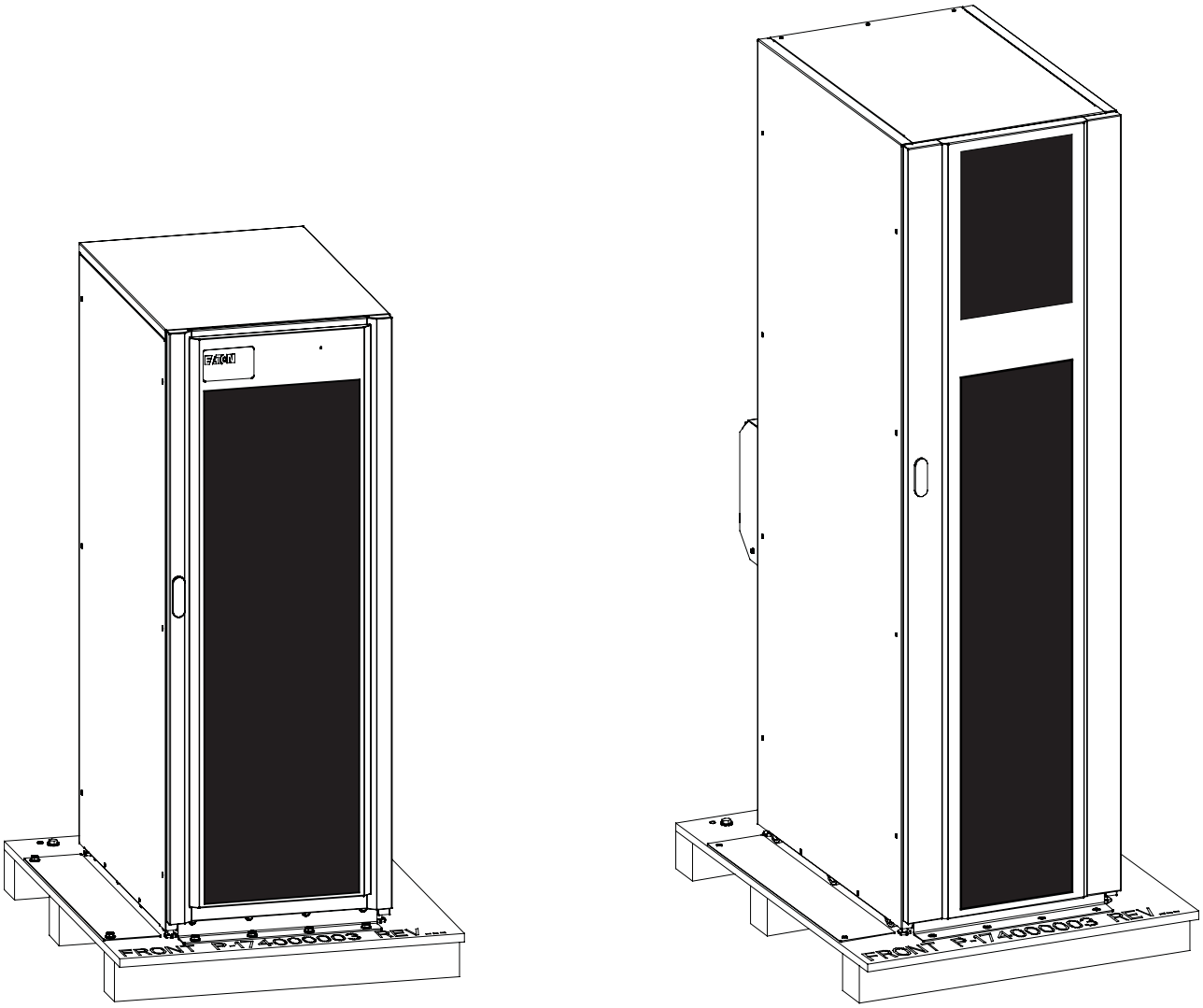
2. Use a forklift or pallet jack to move the packaged cabinet to the installation site, or as close as possible, before unpacking. If possible, move the cabinet using the pallet. Insert the forklift or pallet jack forks between the supports on the bottom of the pallet (see Figure 3-3 or Figure 3-8) for the IACs center of gravity measurements).

CAUTION

Do not tilt the IACs more than 10° from vertical or the cabinets may tip over.

3. Set the pallet on a firm, level surface, allowing a minimum clearance of 3m (10 ft) on each side for removing the cabinet from the pallet.
4. Remove the protective packaging material from the cabinet and recycle in a responsible manner. Retain the parts kit box packed at the top of the cabinet.
5. Inspect the contents for any evidence of physical damage, and compare each item with the Bill of Lading. If damage has occurred or shortages are evident, contact an Eaton service representative immediately to determine the extent of the damage and its impact on further installation.

NOTE While waiting for installation, protect the unpacked cabinet from moisture, dust, and other harmful contaminants. Failure to store and protect the IACs properly may void your warranty.



93E 30IAC-T, IAC-B, and IAC-TB

93E 60IAC-T, IAC-B, and IAC-TB

Figure 3-11. Eaton 93E 30IAC-T and Eaton 93E 60IAC-T as Shipped on Pallet

This page intentionally left blank.

Chapter 4 Installation

This chapter includes planning and unpacking for the following Integrated Accessory Cabinets (IACs):

- Integrated Accessory Cabinet-Tie (IAC-T)
- Integrated Accessory Cabinet-Bypass (IAC-B)
- Integrated Accessory Cabinet-Tie and Bypass (IAC-TB)
- Side Car Cabinet (SCC)

4.1 Preliminary Installation Information

WARNING

Installation should be performed only by qualified personnel knowledgeable of batteries and the required precautions.

Refer to the following while installing the IACs:

- Chapter 3 for cabinet dimensions, equipment weight, wiring and terminal data, and installation notes.
- Do not tilt the cabinets more than ±10° during installation.

4.2 Unloading the IAC from the Pallet

The IAC is bolted to a wooden pallet supported by wood skids.

WARNING

The IACs are heavy (see Table 3-1). If unpacking and unloading instructions are not closely followed, the cabinet may tip and cause serious injury.

CAUTION

- Do not tilt cabinet more than 10° from vertical.
- Lift the cabinets only with a forklift or damage may occur.
- Ensure a minimum of 10 feet behind the IAC for unloading. The area behind the IAC must be unobstructed.
- The unloading floor must be smooth, with no cracks or large seams to prevent a smooth rolloff of the cabinet.

NOTE 1 The IACs uses inline wheels, not swivel casters. When moving the IACs, move the cabinet in straight lines as much as possible, minimizing turns.

NOTE 2 For the following steps, verify that the forklift or pallet jack is rated to handle the weight of the cabinet (see Table 3-1 for cabinet weights).

4.2.1 Unloading the 30IAC-T, 30IAC-B, or 30IAC-TB

To remove the pallet:

1. If not already accomplished, use a forklift or pallet jack to move the IAC to the installation area, or as close as possible, before unloading from the pallet. Insert the forklift or pallet jack forks between the supports on the bottom of the pallet (see Figure 3-3) for the IAC cabinet center of gravity measurements).
2. Open the front door (see Figure 4-1) by lifting the latch from the bottom, turning to the right (counterclockwise), and swinging the door open.
3. If the leveling feet are not fully retracted, turn all four leveling feet until they are retracted into the cabinet.
4. Remove four bolts securing the front shipping bracket to the cabinet and four bolts securing the bracket to the pallet (see Figure 4-1). Remove the front shipping bracket. If installing the cabinet permanently, retain the shipping bracket and securing hardware for later use.
5. Remove four bolts securing the rear shipping bracket to the cabinet and four bolts securing the bracket to the pallet (see Figure 4-2). Remove the rear shipping bracket. If installing the cabinet permanently, retain the shipping bracket and securing hardware for later use.
6. Close the door and secure the latch before rolling the cabinet from the pallet.

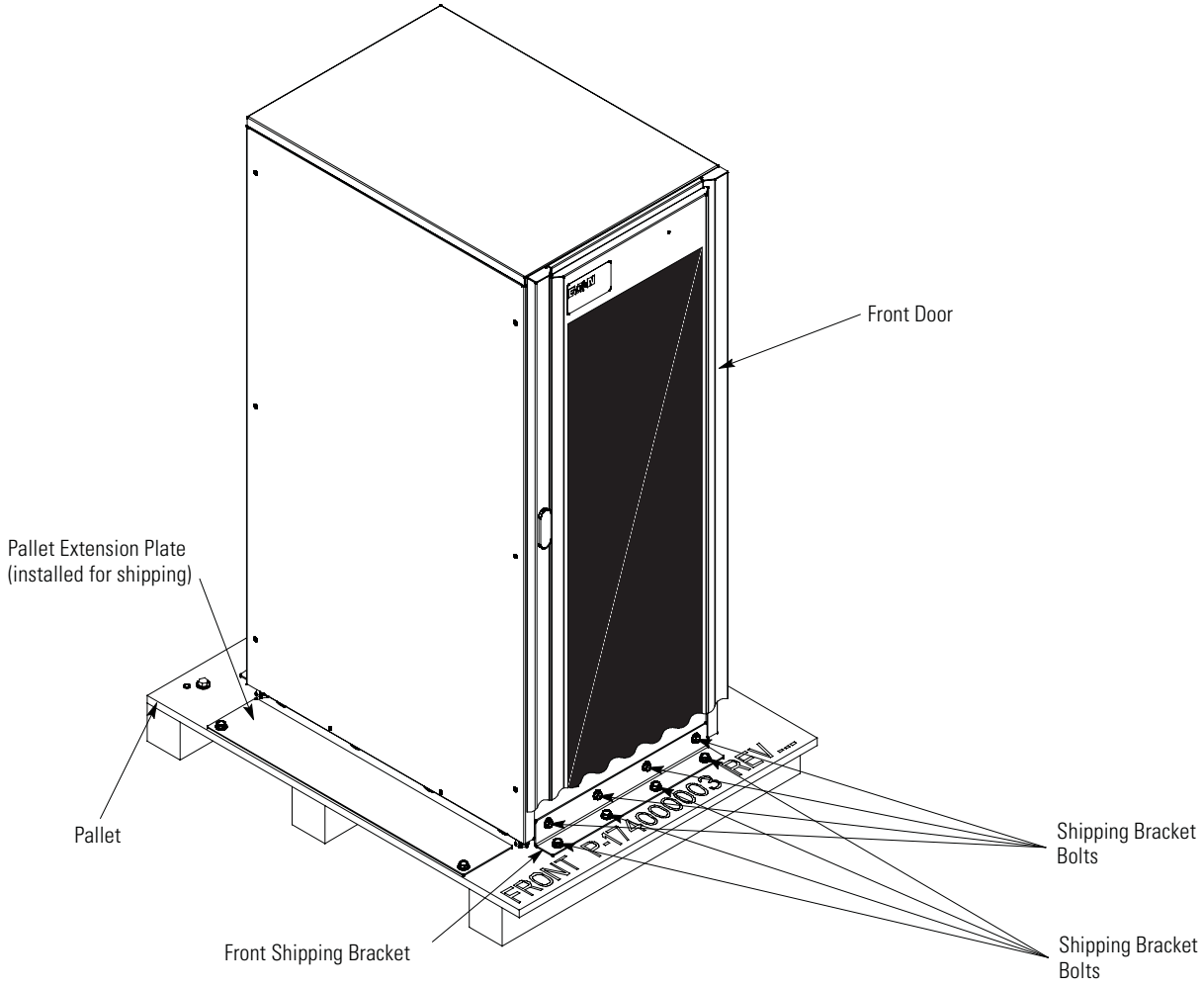


Figure 4-1. Removing the Front Shipping Bracket – 93E 30IAC

7. Remove three bolts securing the removable skid (see Figure 4-2).
8. Remove two bolts securing the pallet extension plate to the pallet and remove the plate (see Figure 4-1). Retain the plate and bolts for use in Step 9.
9. Install the pallet extension plate onto the rear of the pallet using the retained bolts (see Figure 4-3). Use mounting holes provided in the pallet (see Figure 4-2).
10. If necessary, use a forklift or pallet jack between the supports on the bottom of the pallet to lift the pallet by approximately 3 mm (1/8") and remove the skid (see Figure 4-2).

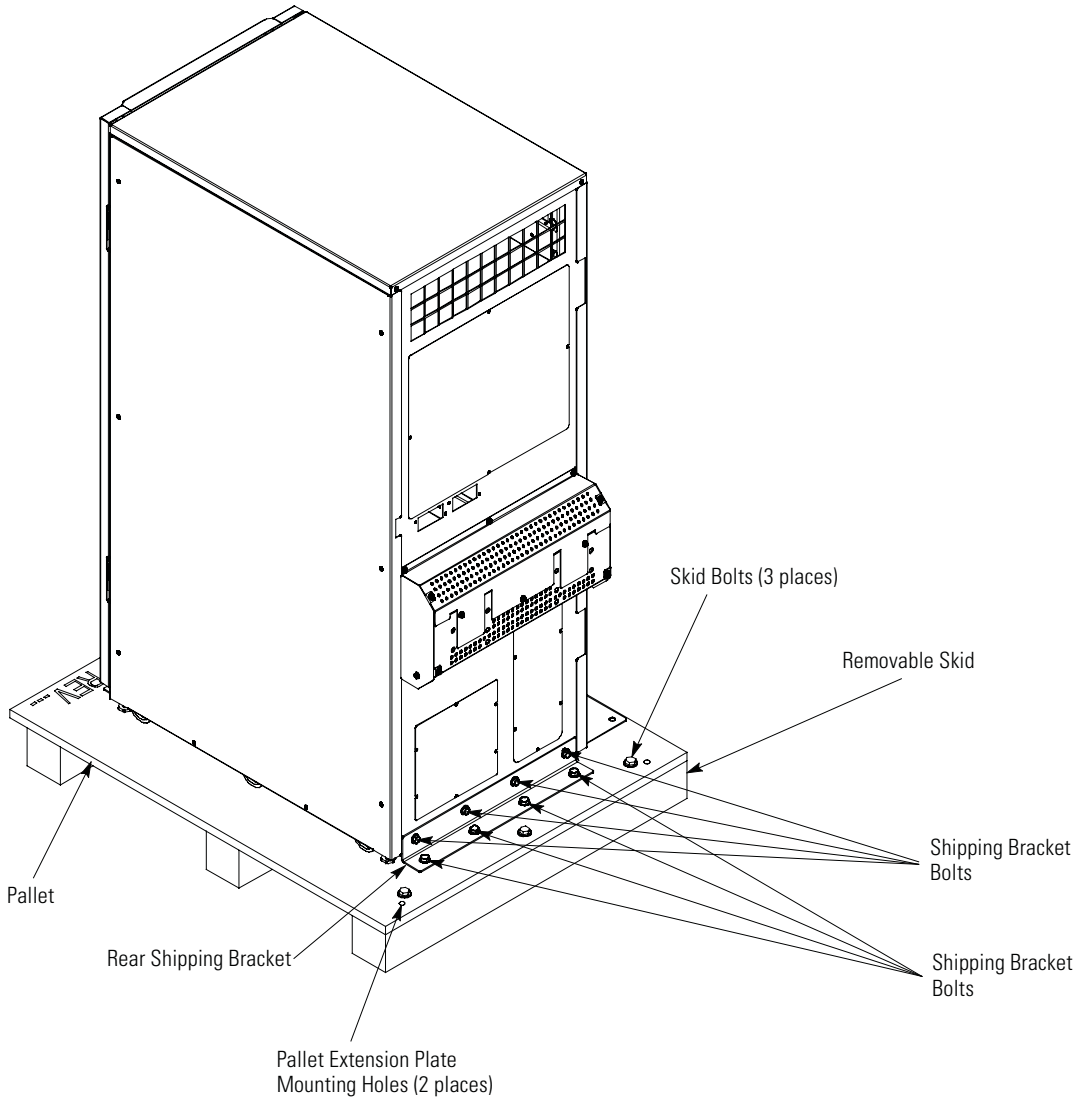


Figure 4-2. Removing the Rear Shipping Bracket – 93E 30IAC

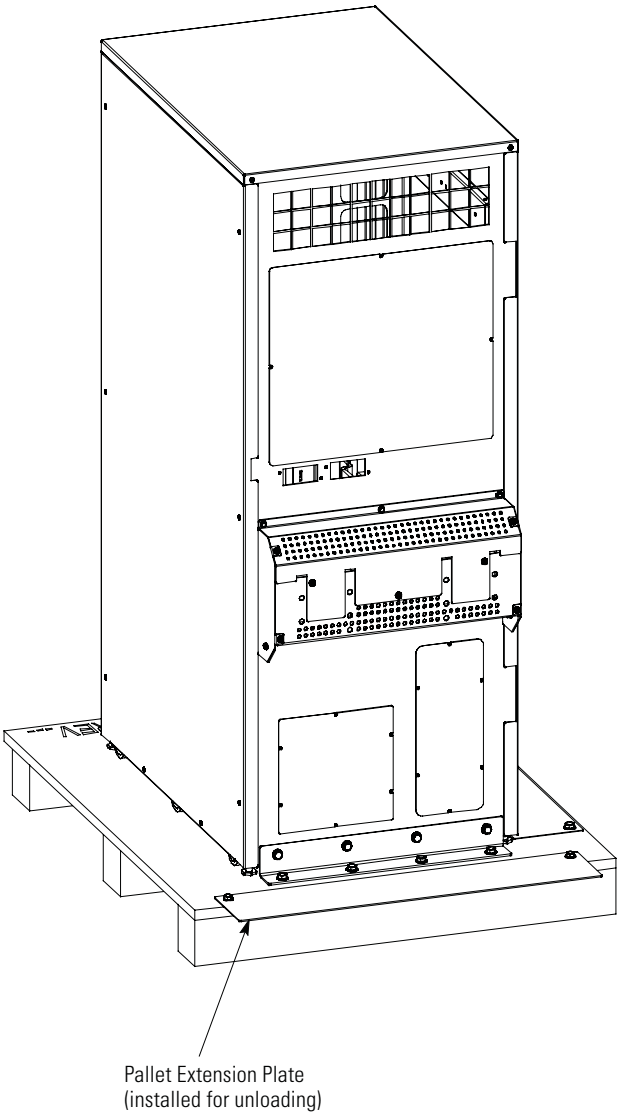


Figure 4-3. Installing the Pallet Extension Plate – 93E 30IAC

NOTE 1 In the following step the pallet tilts and acts as a ramp once the cabinet is rolled beyond the center of the pallet.

NOTE 2 The pallet extension may bend when the pallet is tilted, but will continue to provide a smooth transition to the floor.

WARNING

Do not stand directly in front of or behind the pallet while unloading the cabinet. If unloading instructions are not closely followed, the cabinet may cause serious injury.

11. Slowly roll the cabinet toward the rear of the pallet. Once the pallet tilts, continue rolling the cabinet down the pallet until the cabinet is clear of the pallet.
12. Roll the IAC to the final installation location on the right side of the UPS cabinet making sure the doors are flush with each other.
13. If installing the cabinet permanently, retain the shipping brackets and hardware; otherwise, recycle the pallet and shipping brackets in a responsible manner.

NOTE Use leveling feet only to level and lock the cabinet in place. Using the leveling feet to raise the cabinet may result in serious injury to personnel or damage to the cabinet.

14. Secure the IAC in position by lowering the leveling feet until the cabinet is not resting on the casters and the cabinet is level.

WARNING

Failure to anchor the cabinet could lead to injury or death. To reduce this risk, the IAC must be secured to the building floor or to an adjacent 93E system cabinet.

15. If permanently mounting the IAC, proceed to Step 16; otherwise, continue to Step 19.
16. Using the retained hardware, reinstall the shipping brackets removed in Steps 7 and 5 to the front and rear of the IAC with the angle facing outward (see Figure 4-1 and Figure 4-2).
17. Secure the cabinet to the floor with customer-supplied hardware.
18. Proceed to Step 20.
19. Install cabinet bracket between the IAC and the adjacent cabinet (see Figure 4-4).
20. Proceed to paragraph 4.4.

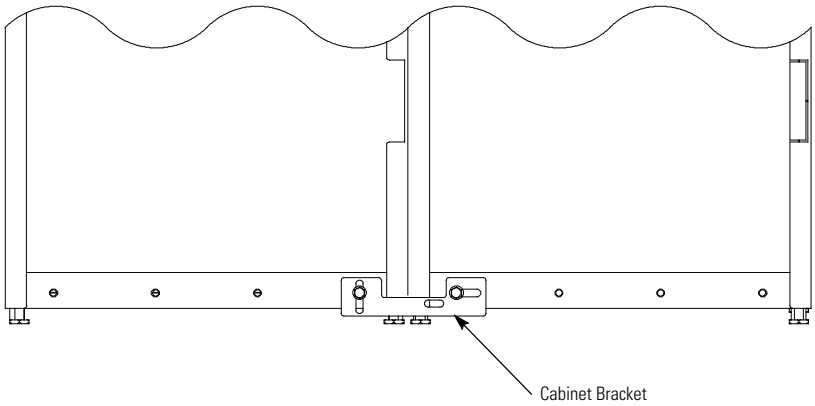


Figure 4-4. Cabinet Bracket

4.2.2 Unloading the 60IAC-T, 60IAC-B, or 60IAC-TB

To remove the pallet:

1. If not already accomplished, use a forklift or pallet jack to move the IAC to the installation area, or as close as possible, before unloading from the pallet. Insert the forklift or pallet jack forks between the supports on the bottom of the pallet (see Figure 3-8 for the IAC cabinet center of gravity measurements).
2. Open the front door (see Figure 4-5) by lifting the latch from the bottom, turning to the right (counterclockwise), and swinging the door open.
3. If the leveling feet are not fully retracted, turn all four leveling feet until they are retracted into the cabinet.
4. Remove four bolts securing the front shipping bracket to the cabinet and four bolts securing the bracket to the pallet (see Figure 4-5). Remove the front shipping bracket. If installing the cabinet permanently, retain the shipping bracket and securing hardware for later use.
5. Remove four bolts securing the rear shipping bracket to the cabinet and four bolts securing the bracket to the pallet (see Figure 4-6). Remove the rear shipping bracket. If installing the cabinet permanently, retain the shipping bracket and securing hardware for later use.
6. Close the door and secure the latch before rolling the cabinet from the pallet.
7. Remove three bolts securing the removable skid (see Figure 4-6).
8. Remove two bolts securing the pallet extension plate to the pallet and remove the plate (see Figure 4-5). Retain the plate and bolts for use in Step 9.
9. Install the pallet extension plate onto the rear of the pallet using the retained bolts (see Figure 4-7). Use mounting holes provided in the pallet (see Figure 4-6).
10. If necessary, use a forklift or pallet jack between the supports on the bottom of the pallet to lift the pallet by approximately 3 mm (1/8") and remove the skid (see Figure 4-6).

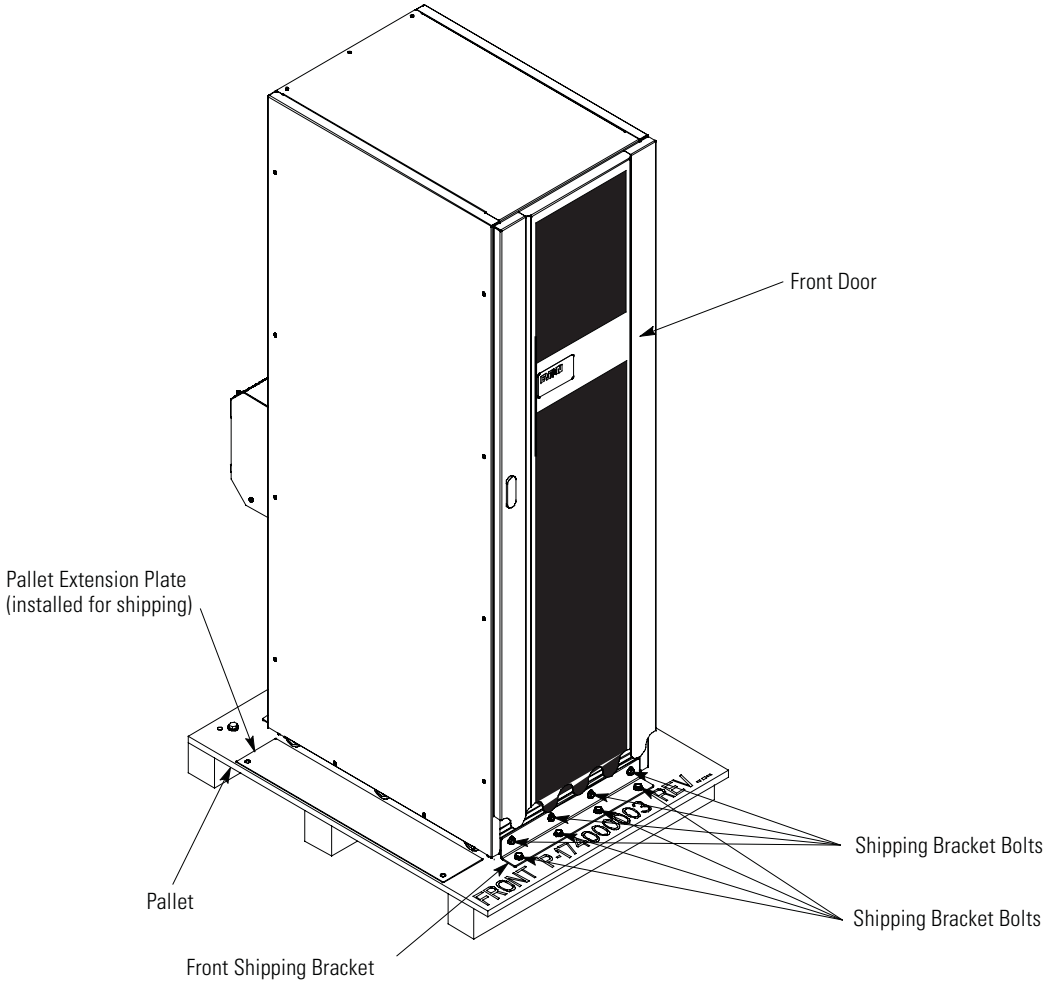


Figure 4-5. Removing the Front Shipping Bracket – 93E 60IAC

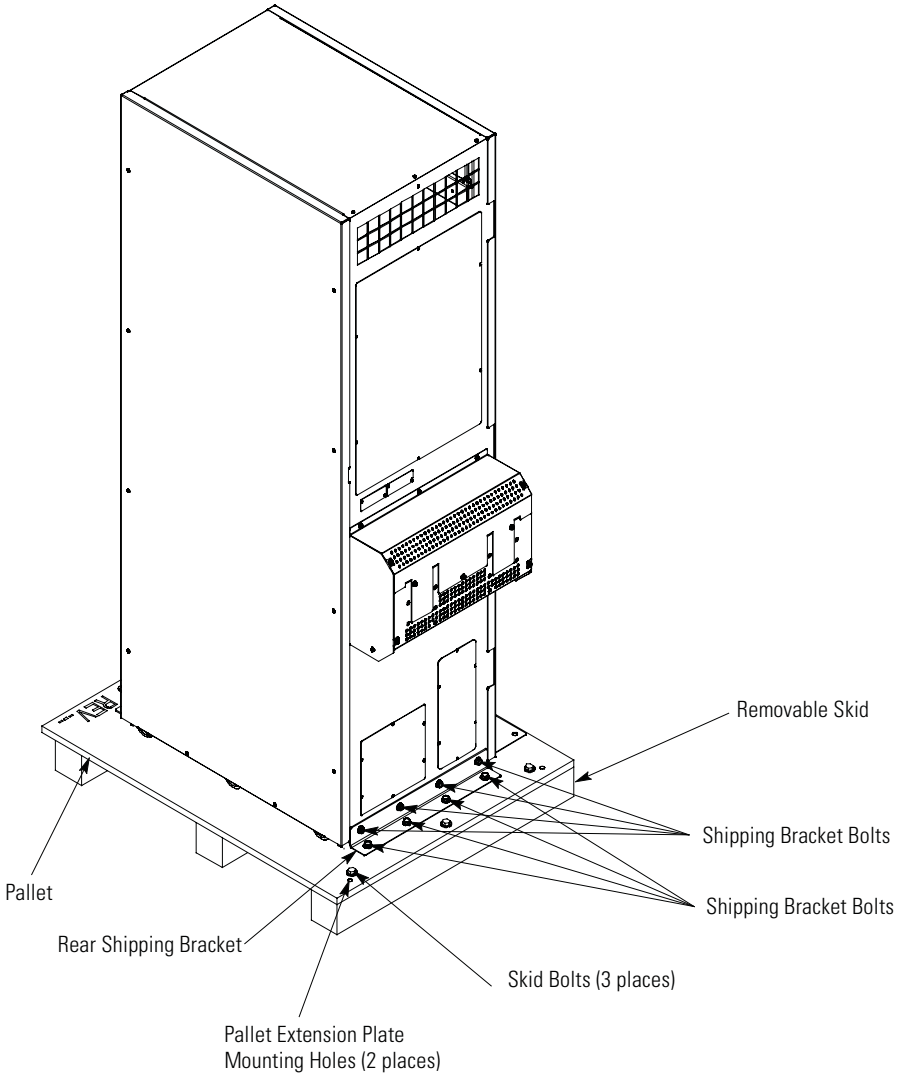


Figure 4-6. Removing the Rear Shipping Bracket – 93E 60IAC

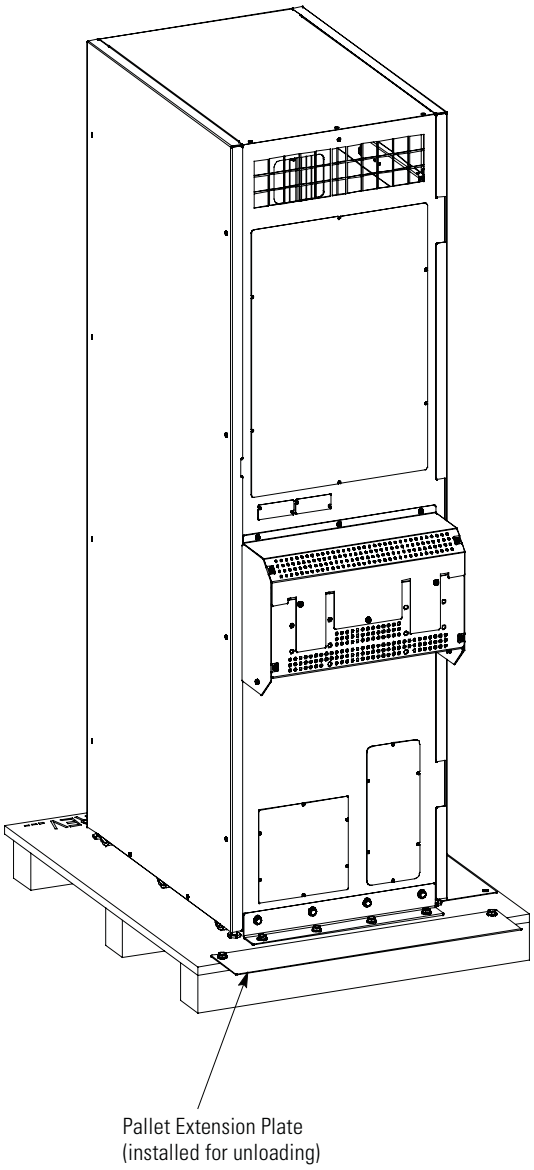


Figure 4-7. Installing the Pallet Extension Plate – 93E 60IAC

NOTE 1 In the following step the pallet tilts and acts as a ramp once the cabinet is rolled beyond the center of the pallet.

NOTE 2 The pallet extension may bend when the pallet is tilted, but will continue to provide a smooth transition to the floor

WARNING

Do not stand directly in front of or behind the pallet while unloading the cabinet. If unloading instructions are not closely followed, the cabinet may cause serious injury.

11. Slowly roll the cabinet toward the rear of the pallet. Once the pallet tilts, continue rolling the cabinet down the pallet until the cabinet is clear of the pallet.
12. Roll the IAC to the final installation location on the right side of the UPS cabinet making sure the doors are flush with each other.
13. If installing the cabinet permanently, retain the shipping brackets and hardware; otherwise, recycle the pallet and shipping brackets in a responsible manner.

NOTE Use leveling feet only to level and lock the cabinet in place. Using the leveling feet to raise the cabinet may result in serious injury to personnel or damage to the cabinet.

14. Secure the IAC in position by lowering the leveling feet until the cabinet is not resting on the casters and the cabinet is level.

WARNING

Failure to anchor the cabinet could lead to injury or death. To reduce this risk, the IAC must be secured to the building floor or to an adjacent 93E system cabinet.

15. If permanently mounting the IAC, proceed to Step 16; otherwise, proceed to Step 19.
16. Using the retained hardware, reinstall the shipping brackets removed in Steps and 5 to the front and rear of the IAC with the angle facing outward (see Figure 4-5 and Figure 4-6).
17. Secure the cabinet to the floor with customer-supplied hardware.
18. Proceed to Step 20.
19. Install cabinet bracket between the IAC and the adjacent cabinet (see Figure 4-4)
20. Proceed to paragraph 4.4.

4.3 Unloading and Installing the Side Car Cabinet

NOTE The SCC is only installed in parallel systems with three and four UPSs when utilizing the power terminal wiring channel. The SCC is used to route input wiring to the associated UPS.

The Side Car Cabinet (SCC) is bolted to a wooden pallet supported by wood skids.

CAUTION

Lift the palleted cabinet only with a forklift or damage may occur.

WARNING

The SCC is heavy (see Table 3-1). Two persons are required to lift the cabinet from the pallet and place the cabinet in position adjacent to the UPS cabinet.

To remove the pallet and install the SCC:

1. If not already accomplished, use a forklift or pallet jack to move the SCC to the installation area, or as close as possible, before unloading from the pallet. Insert the forklift or pallet jack forks between the supports on the bottom of the pallet.
2. Remove and retain one top screw and loosen two bottom screws securing the SCC front panel. Lift the panel straight up to remove it from the panel hanger bracket at the top of the cabinet.
3. Remove two bolts securing the front shipping bracket to the cabinet.
4. Remove two bolts securing the rear shipping bracket to the cabinet.
5. Remove two top and two bottom screws securing the UPS side cover.

NOTE If the UPS position in the line-up is the second UPS from the left, the SCC is mounted on the left side of the UPS. If the UPS position in the line-up is the third UPS from the left, the SCC is mounted on the right side of the UPS.

6. Lift the SCC from the pallet and position adjacent to the UPS cabinet.

NOTE Use the leveling feet to align and support the cabinet.

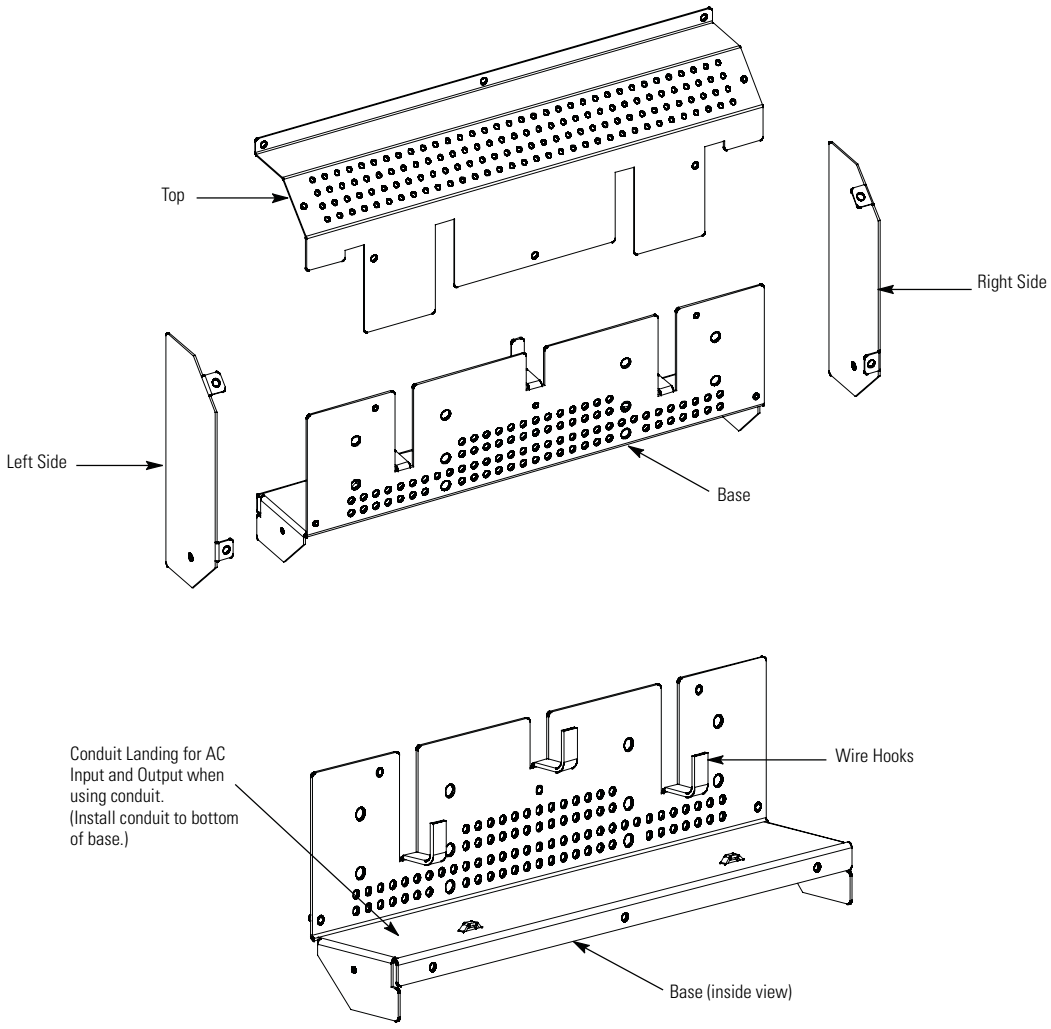
7. Align the SCC and UPS side cover screw holes using the leveling feet.
8. Mount the SCC to the UPS cabinet with four supplied M4 screws. Use the existing UPS side cover screw holes.
9. Reinstall the SCC front panel and secure with retained hardware.
10. Recycle the SCC pallet and shipping brackets in a responsible manner.

4.4 Installing Power Terminal Cover Base

NOTE Wiring can be installed using conduit between cabinets or by routing wiring through the power terminal cover base wiring channels.

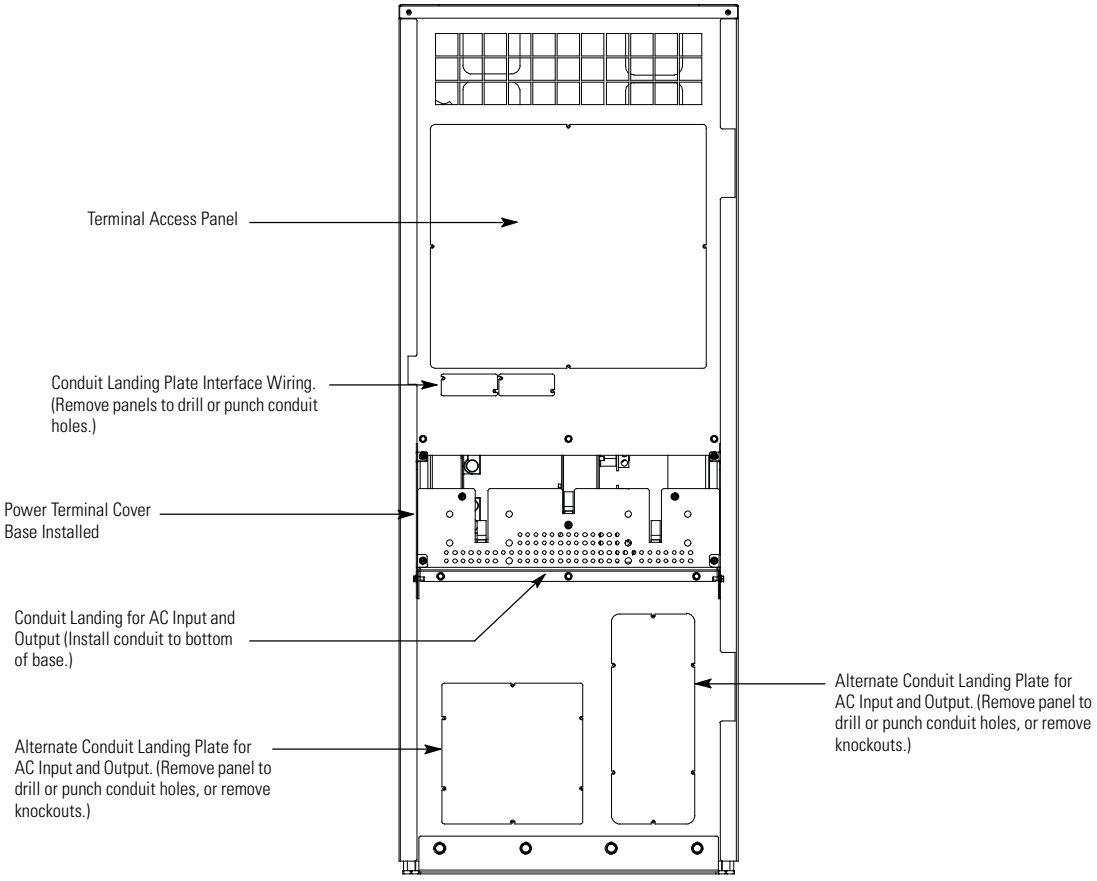
To install the Power Terminal Cover Base:

1. Locate the terminal cover base (see Figure 4-8) from the parts kit.
2. If installing wiring using conduit, continue to Step 3; otherwise, skip to Step 4.
3. Punch or drill holes in the bottom of the power terminal cover base (see Figure 4-8 and Figure 4-9) for the transformer AC input and output conduits.
4. Using the hardware provided, install the terminal cover base to the back panel of the IAC using the existing cabinet screw holes (see Figure 4-9).
5. Proceed to paragraph 4.5.



NOTE Do not install the Power Terminal Cover Left and/or Right Side covers if wiring adjacent cabinets using the power terminal base wiring channel.

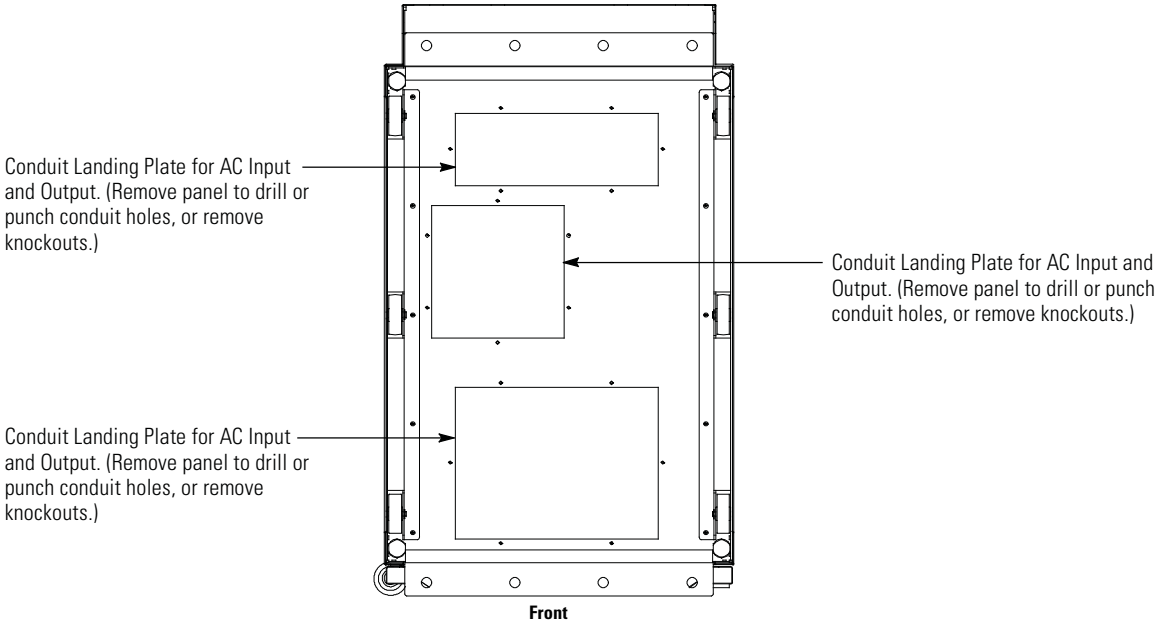
Figure 4-8. IAC Power Terminal Cover Parts



93E IAC Rear View

NOTE The 93E 30IAC is shown. The 93E 60IAC terminal cover base installation and conduit landing plate locations are the same.

Figure 4-9. IAC Power Terminal Cover Base Installation and Rear Conduit Landing Wire Entry Location



NOTE The 93E 30IAC is shown. The 93E 60IAC conduit landing plate locations are the same.

Figure 4-10. IAC Bottom Conduit Landing Wire Entry Location

4.5 Installing IAC-T External Power Wiring

NOTE 1 Wiring can be installed using conduit between cabinets or by routing wiring through the power terminal cover base wiring channels.

NOTE 2 Remove the IAC-T and SCC conduit landing plates to drill or punch conduit holes (see Figure 4-9 or Figure 4-10).

NOTE 3 Refer to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9 for UPS installation procedures.

4.5.1 Two, Three, and Four UPS Installation Using Conduit

To install wiring:

1. If not already open, open the front door (see Figure 4-1 or Figure 4-5) by lifting the latch from the bottom, turning to the right (counterclockwise), and swinging the door open.
2. Remove the screws securing the internal safety shield panel and remove the panel to gain access to the Module Output Breaker (MOB) terminals. Retain the hardware for later use.
3. Remove the screws securing the terminal access panel (see Figure 4-9) and remove the panel to gain access to the output and neutral terminals. Retain the hardware for later use.
4. Punch or drill holes in the bottom of the power terminal cover base on each UPS cabinet for the UPS output conduit. Refer to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9 for UPS cabinet conduit landing location.
5. Install conduit between the UPSs and the IAC-T.
6. Route the UPS output cables (phase A, B, and C, Neutral, and Ground) through the conduit on the back of the UPSs to the IAC-T MOB input terminals. See Figure 4-11 and Figure 4-12 or Figure 4-14 and Figure 4-15 for IAC-T wiring access information and terminal locations. See paragraph 3.2.2, Table 3-3 or Table 3-4 and Table 3-9 or Table 3-10 for IAC-T wiring and termination requirements. Refer to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9 for UPS terminal locations and termination requirements.
7. Connect phase A, B, and C, Neutral, and Ground power wiring at the IAC-T and UPS terminals.
8. Install conduit between the IAC-T and the critical load or Integrated Accesssory Cabinet-Distribution (IAC-D). Refer to the *Eaton 93E Integrated Accessory Cabinet-Distribution Installation and Operation Manual* listed in paragraph 1.9 for conduit and terminal locations and termination requirements.
9. Route the critical load output wiring (phase A, B, and C, Neutral and Ground) through the conduit on the back of the IAC-T to the critical load or IAC-D. See Figure 4-11 or Figure 4-14 for IAC-T terminal locations. See paragraph 3.2.2, Table 3-3 or Table 3-4 and Table 3-9 or Table 3-10 for IAC-T wiring and termination requirements.
10. Connect phase A, B, C, Neutral, and Ground output power wiring at the IAC-T and critical load or IAC-D terminals.
11. Install the power terminal cover top using the provided hardware (see Figure 4-17).
12. Install the power terminal cover right and left sides as appropriate using the provided hardware (see Figure 4-17).
13. Reinstall the internal safety shield panel removed in Step 2.
14. Close the outside door and secure the latch.
15. After the IAC-T is installed and wired, return to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9 to complete the UPS wiring.

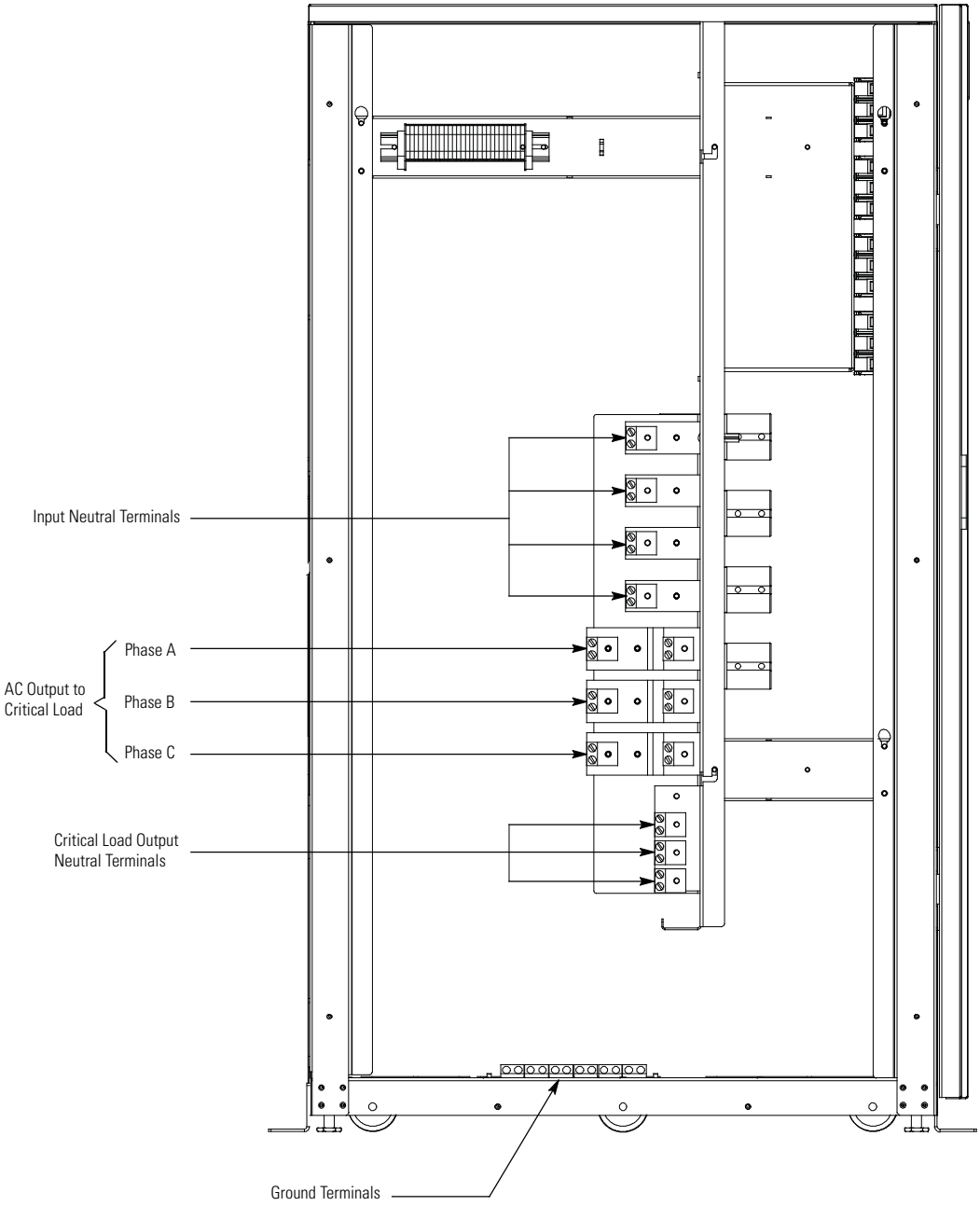


Figure 4-11. Neutral, Ground, and Output Power Terminal Locations – 93E 30IAC-T

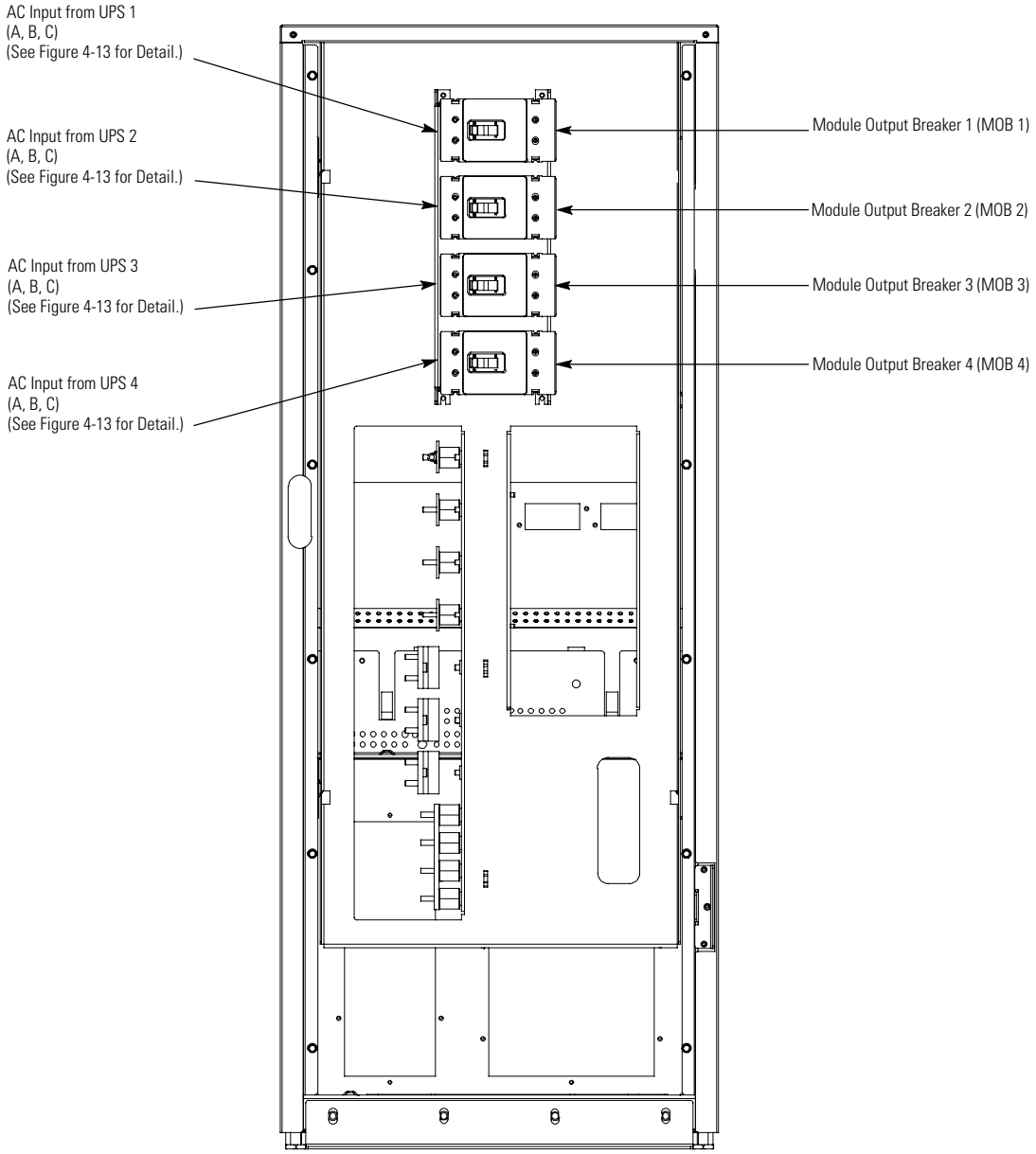


Figure 4-12. MOB Terminal Locations – 93E 30IAC-T

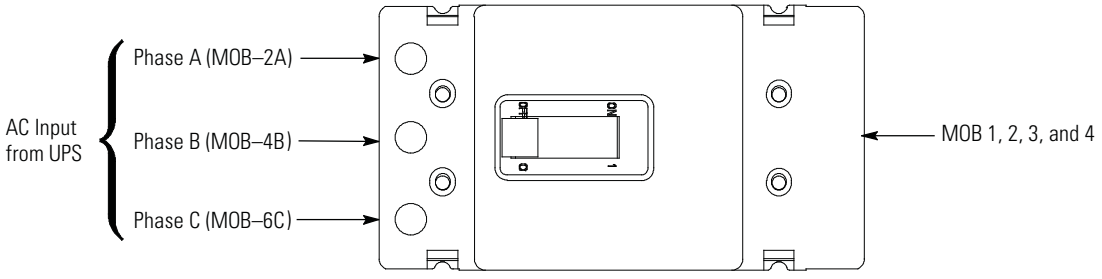


Figure 4-13. MOB Terminal Detail – 93E 30IAC-T and 93E 30IAC-TB

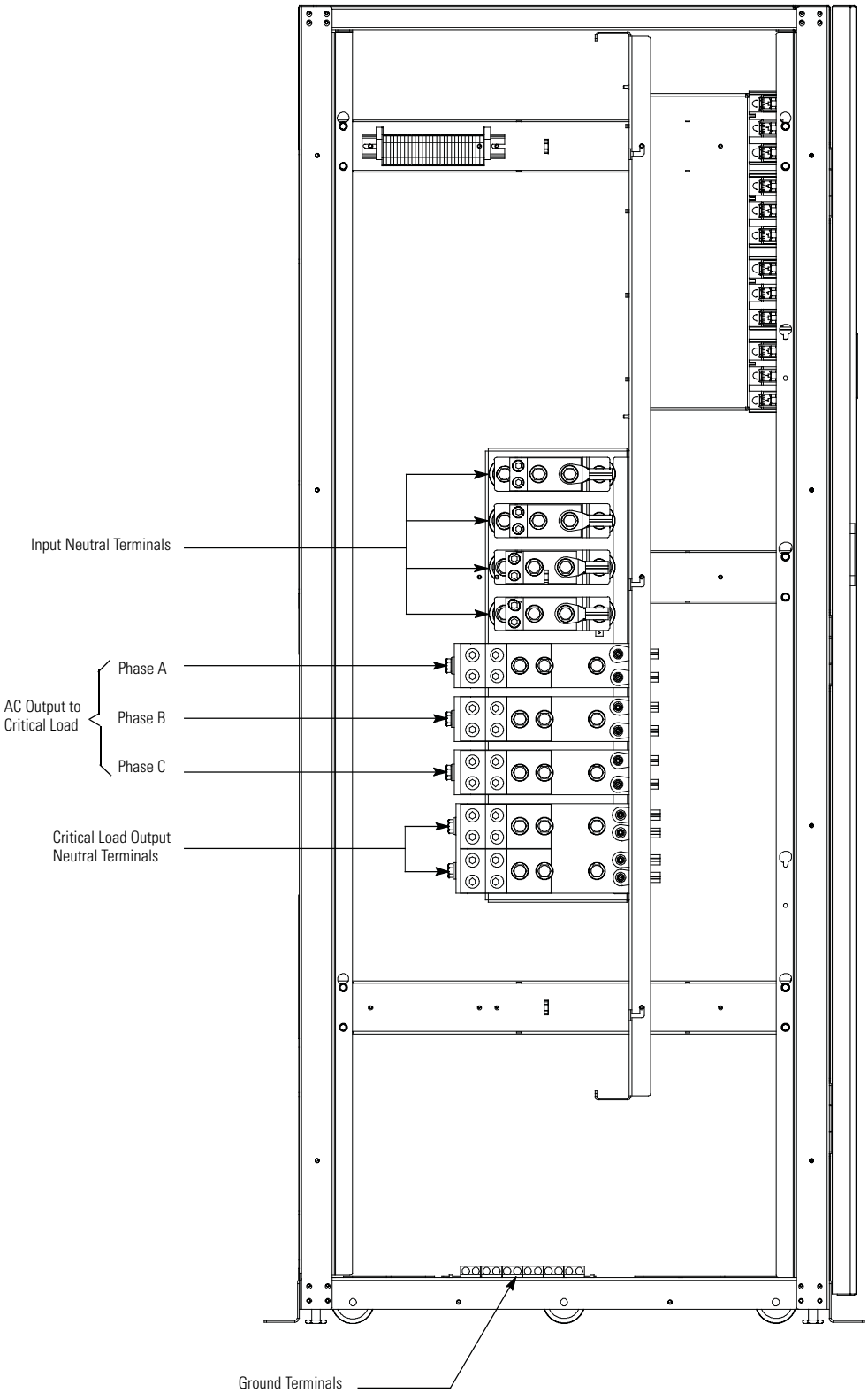


Figure 4-14. Neutral, Ground, and Output Power Terminal Locations – 93E 60IAC-T

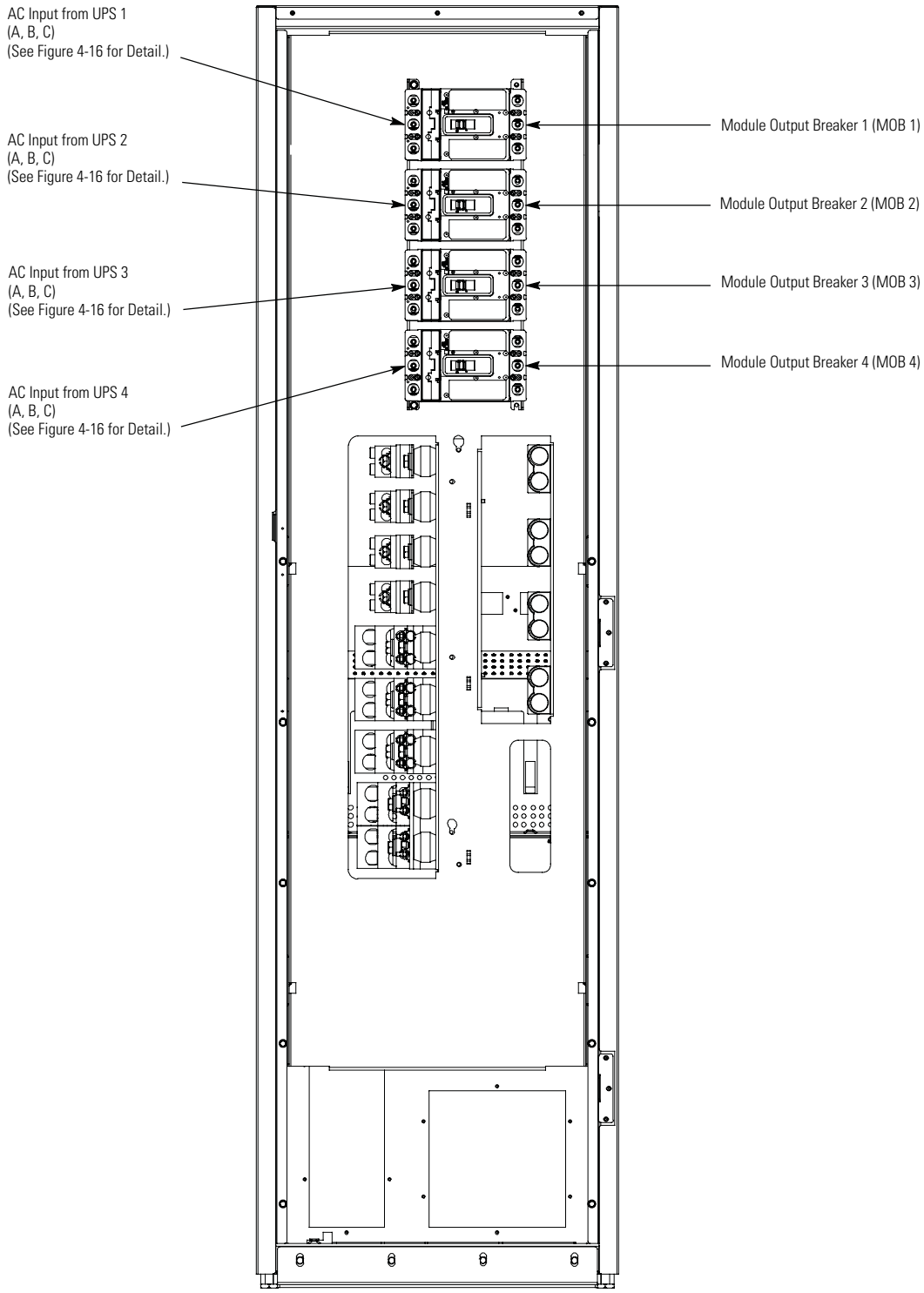


Figure 4-15. MOB Terminal Locations – 93E 60IAC-T

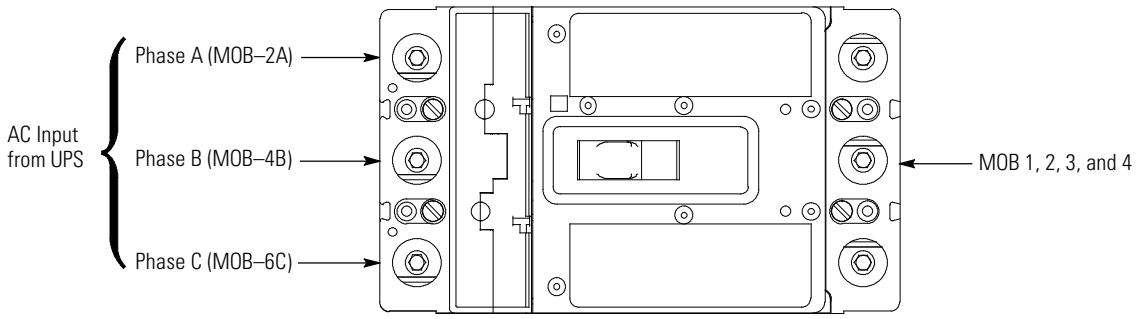
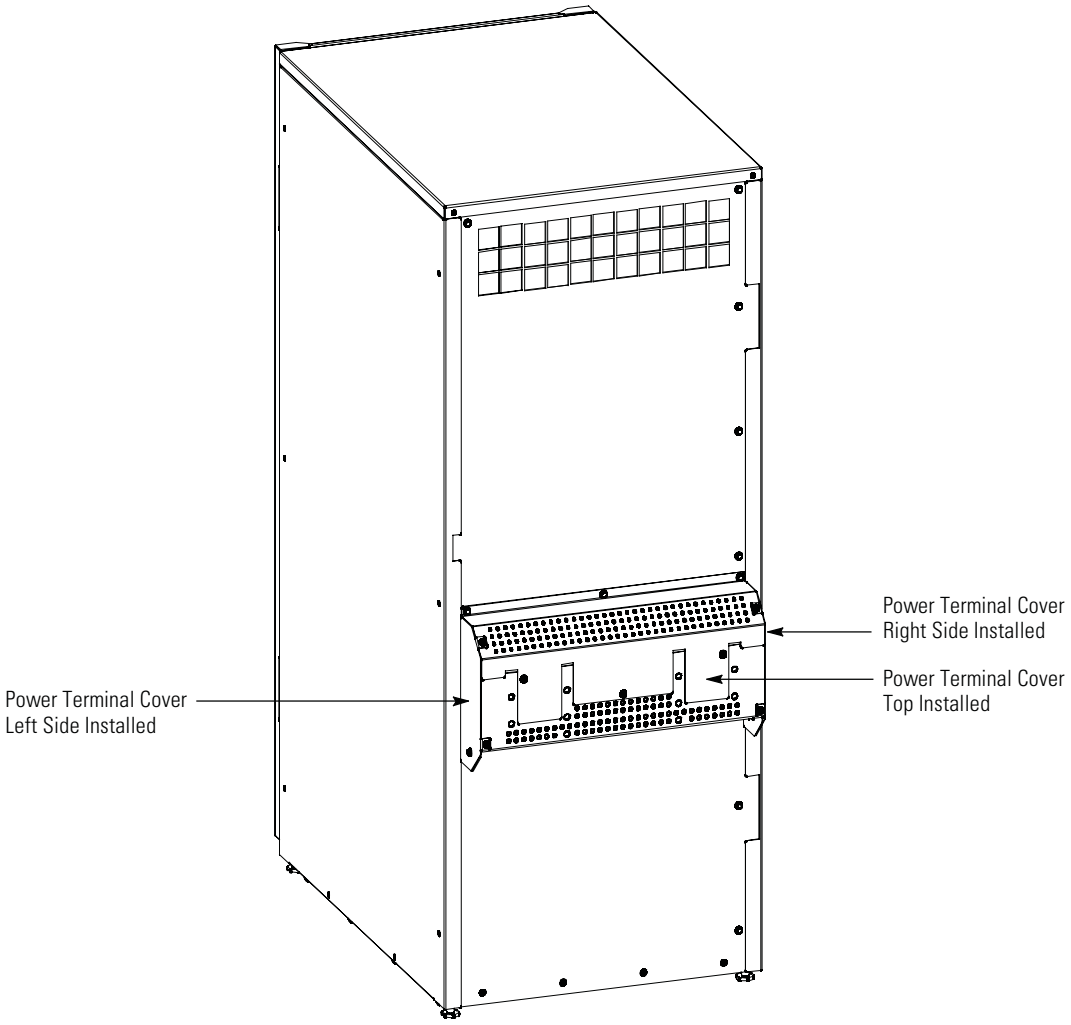


Figure 4-16. MOB Terminal Detail – 93E 60IAC-T



NOTE 1 The 93E 30IAC is shown. The 93E 60IAC installation is the same.

NOTE 2 Do not install the Power Terminal Cover Left and/or Right Side covers if wiring adjacent cabinets using the power terminal base wiring channel.

Figure 4-17. IAC Power Terminal Cover Installation

4.5.2 Two UPS Installation Using the Wiring Channel

To install wiring:

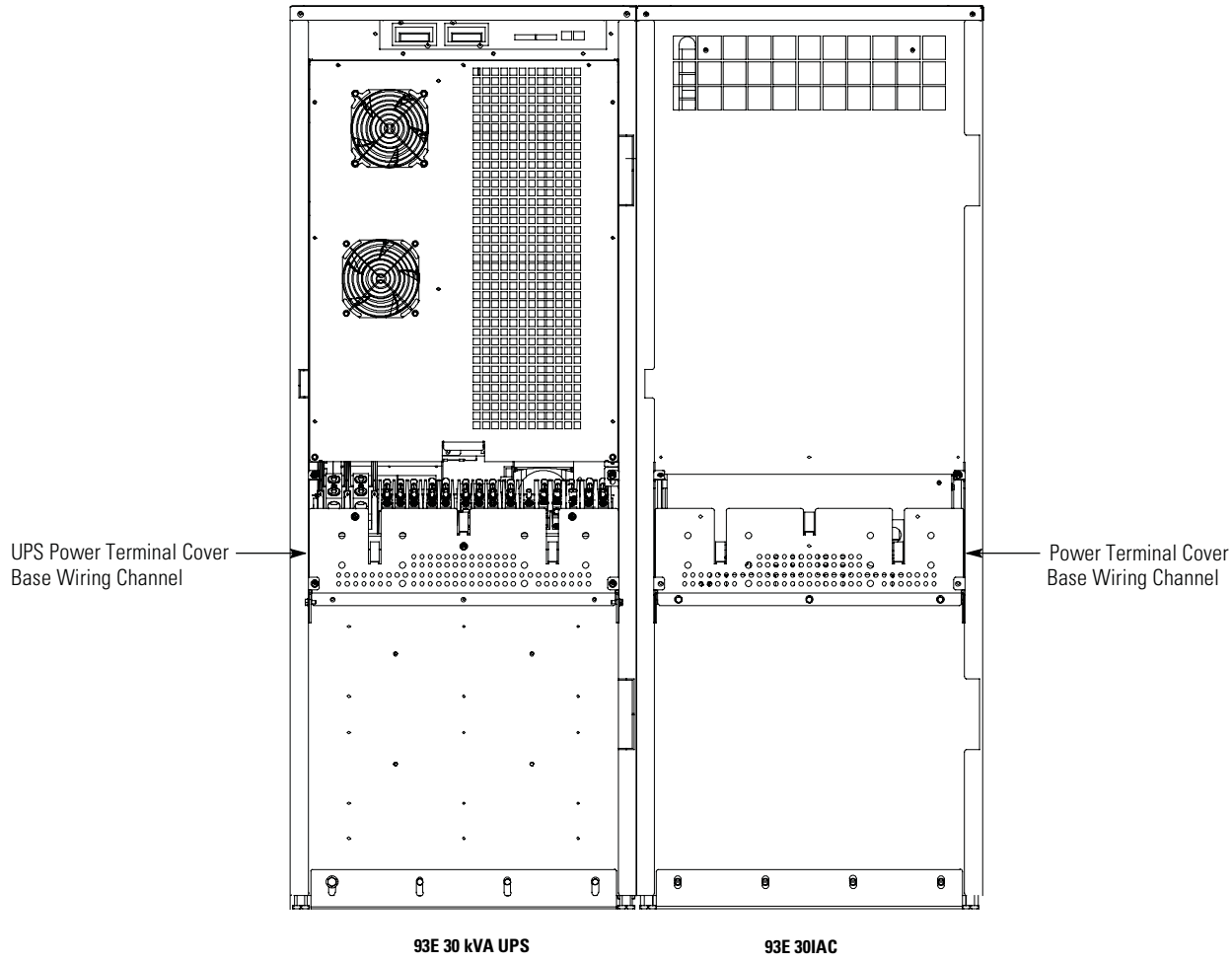
1. If not already open, open the front door (see Figure 4-1 or Figure 4-5) by lifting the latch from the bottom, turning to the right (counterclockwise), and swinging the door open.
2. Remove the screws securing the internal safety shield panel and remove the panel to gain access to the Module Output Breaker (MOB) terminals. Retain the hardware for later use.
3. Remove the screws securing the terminal access panel (see Figure 4-9) and remove the panel to gain access to the output and neutral terminals. Retain the hardware for later use.
4. Route the UPS output cables (phase A, B, and C, Neutral, and Ground) through the power terminal cover base wiring channels (see Figure 4-18) to the IAC-T MOB input terminals. See Figure 4-11 and Figure 4-12 or Figure 4-14 and Figure 4-15 for IAC-T wiring access information and terminal locations. See paragraph 3.2.2, Table 3-3 or Table 3-4 and Table 3-9 or Table 3-10 for IAC-T wiring and termination requirements. Refer to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9 for UPS terminal locations and termination requirements.
5. Connect phase A, B, and C, Neutral, and Ground power wiring at the IAC-T and UPS terminals.
6. If wiring to an IAC-D, continue to Step 7; otherwise, skip to Step 9.
7. Route the critical load output wiring (phase A, B, and C, Neutral and Ground) through the power terminal cover base wiring channels on the back of the IAC-T to the Integrated Accesssory Cabinet-Distribution (IAC-D). See Figure 4-11 or Figure 4-14 for IAC-T terminal locations. See paragraph 3.2.2, Table 3-3 or Table 3-4 and Table 3-9 or Table 3-10 for IAC-T wiring and termination requirements. Refer to the *Eaton 93E Integrated Accessory Cabinet-Distribution Installation and Operation Manual* listed in paragraph 1.9 for conduit and terminal locations and termination requirements.
8. Skip to Step 11.
9. Install conduit between the IAC-T and the critical load.
10. Route the critical load output wiring (phase A, B, and C, Neutral and Ground) through the conduit on the back of the IAC-T to the critical load. See Figure 4-11 or Figure 4-14 for IAC-T terminal locations. See paragraph 3.2.2, Table 3-5 or Table 3-6 and Table 3-11 or Table 3-12 for IAC-T wiring and termination requirements.
11. Connect phase A, B, C, Neutral, and Ground output power wiring at the IAC-T and critical load or IAC-D terminals.
12. Secure the power cables to the power terminal cover base using wire ties after all electrical connections have been completed.
13. Install the power terminal cover tops using the provided hardware (see Figure 4-19).
14. Install the power terminal cover right and left sides as appropriate using the provided hardware (see Figure 4-19).
15. Install the splice cover using the provided hardware (see Figure 4-19).
16. Reinstall the internal safety shield panel removed in Step 2.
17. Close the outside door and secure the latch.
18. After the IAC-T is installed and wired, return to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9 to complete the UPS wiring.

4.5.3 Three and Four UPS Installation Using the Wiring Channel

To install wiring:

1. Punch or drill holes in the SCC conduit landing plate (see Figure 3-9 or Figure 3-10) on each SCC for the UPS input conduit.
2. Route the UPS input cables (phase A, B, and C, Neutral, and Ground) through the conduit and power terminal cover base wiring channel on the back of the SCCs to the UPS input terminals. Refer to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9 for UPS terminal locations and termination requirements.
3. Connect phase A, B, and C, Neutral, and Ground power wiring at the input source and UPS terminals.
4. If not already open, open the front door (see Figure 4-1 or Figure 4-5) by lifting the latch from the bottom, turning to the right (counterclockwise), and swinging the door open.
5. Remove the screws securing the internal safety shield panel and remove the panel to gain access to the Module Output Breaker (MOB) terminals. Retain the hardware for later use.
6. Remove the screws securing the terminal access panel (see Figure 4-9) and remove the panel to gain access to the output and neutral terminals. Retain the hardware for later use.
7. Route the UPS output cables (phase A, B, and C, Neutral, and Ground) through the power terminal cover base wiring channels (see Figure 4-18) to the IAC-T MOB input terminals. See Figure 4-11 and Figure 4-12 or Figure 4-14 and Figure 4-15 for IAC-T wiring access information and terminal locations. See paragraph 3.2.2, Table 3-3 or Table 3-4 and Table 3-9 or Table 3-10 for IAC-T wiring and termination requirements. Refer to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9 for UPS terminal locations and termination requirements.
8. Connect phase A, B, and C, Neutral, and Ground power wiring at the IAC-T and UPS terminals.
9. If wiring to an Integrated Accesssory Cabinet-Distribution (IAC-D), continue to Step 10; otherwise, skip to Step 12.
10. Route the critical load output wiring (phase A, B, and C, Neutral and Ground) through the power terminal cover base wiring channels on the back of the IAC-T to the IAC-D. See Figure 4-11 or Figure 4-14 for IAC-T terminal locations. See paragraph 3.2.2, Table 3-3 or Table 3-4 and Table 3-9 or Table 3-10 for IAC-T wiring and termination requirements. Refer to the *Eaton 93E Integrated Accessory Cabinet-Distribution Installation and Operation Manual* listed in paragraph 1.9 for conduit and terminal locations and termination requirements.
11. Skip to Step 14.
12. Install conduit between the IAC-T and the critical load.
13. Route the critical load output wiring (phase A, B, and C, Neutral and Ground) through the conduit on the back of the IAC-T to the critical load. See Figure 4-11 or Figure 4-14 for IAC-T terminal locations. See paragraph 3.2.2, Table 3-3 or Table 3-4 and Table 3-9 or Table 3-10 for IAC-T wiring and termination requirements.
14. Connect phase A, B, C, Neutral, and Ground output power wiring at the IAC-T and critical load or IAC-D terminals.
15. Secure the power cables to the power terminal cover base using wire ties after all electrical connections have been completed.
16. Install the power terminal cover tops using the provided hardware (see Figure 4-19).
17. Install the power terminal cover right and left sides as appropriate using the provided hardware (see Figure 4-19).

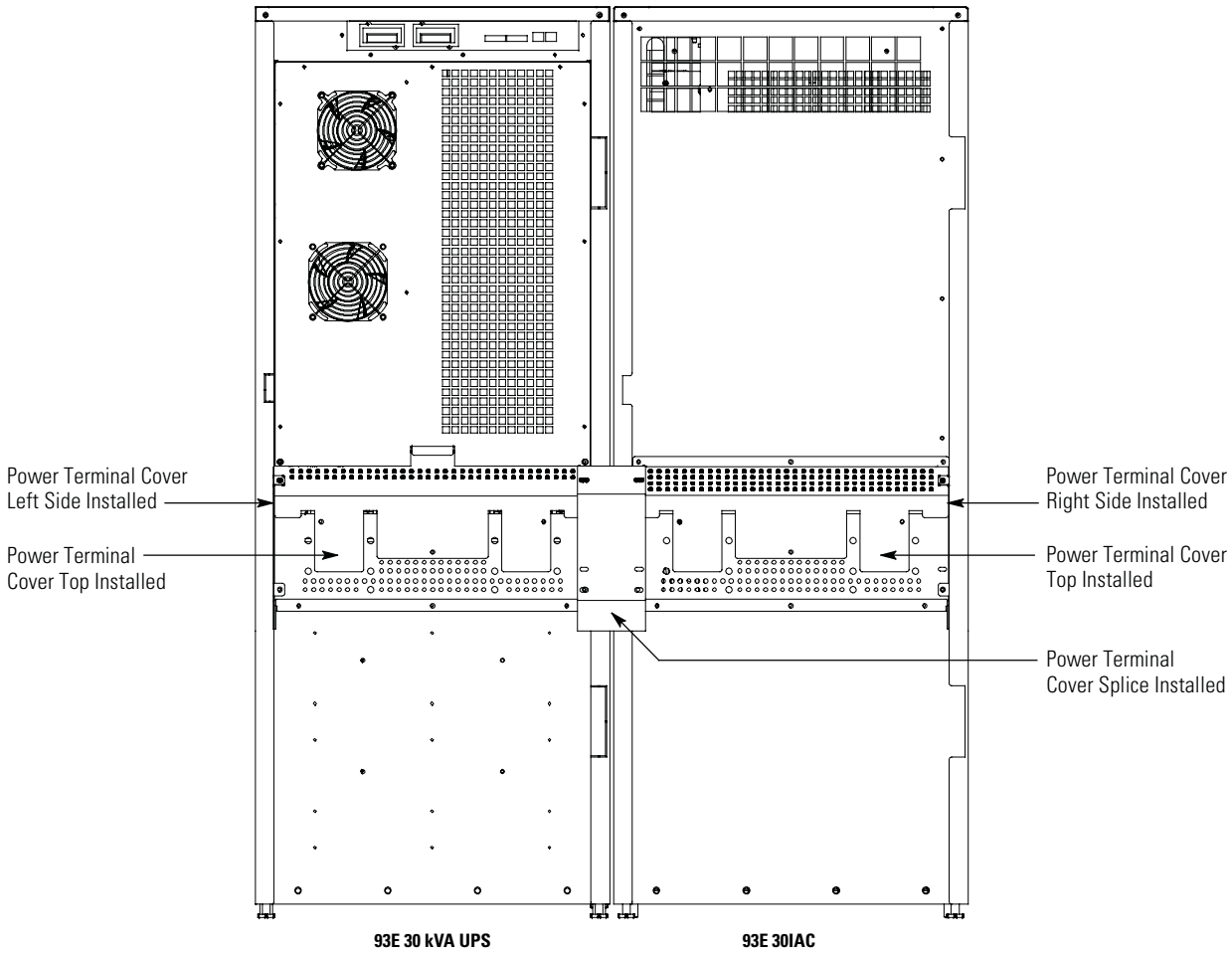
18. Install the splice cover using the provided hardware (see Figure 4-19).
19. Reinstall the internal safety shield panel removed in Step 2.
20. Close the outside door and secure the latch.
21. After the IAC-T is installed and wired, return to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9 to complete the UPS wiring.



NOTE 1 The 93E 30IAC and 93E 30 kVA UPS are shown. The 93E 60IAC and 93E 60 kVA UPS installation is the same.

NOTE 2 The UPS and IAC are shown adjacent, but other installed accessory cabinets may be adjacent in large systems with multiple cabinets. However, the power terminal base wiring channels are the same.

Figure 4-18. IAC and UPS Power Terminal Cover Base Wiring Channel



NOTE 1 The 93E 30IAC and 93E 30 kVA UPS are shown. The 93E 60IAC and 93E 60 kVA UPS installation is the same.

NOTE 2 The UPS and IAC are shown adjacent, but other installed accessory cabinets may be adjacent in large systems with multiple cabinets. However, the cover splice installation is the same.

NOTE 3 Do not install the Power Terminal Cover Left and/or Right Side covers if wiring adjacent cabinets using the power terminal base wiring channel.

Figure 4-19. IAC Power Terminal Cover Top and Splice Installation

4.6 Installing IAC-B External Power Wiring

NOTE 1 Wiring can be installed using conduit between cabinets or by routing wiring through the power terminal cover base wiring channels.

NOTE 2 Remove the IAC-B conduit landing plates to drill or punch conduit holes (see Figure 4-9 or Figure 4-10).

NOTE 3 Refer to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9 for UPS installation procedures.

4.6.1 IAC-B Installation Using Conduit

To install wiring:

1. If not already open, open the front door (see Figure 4-1 or Figure 4-5) by lifting the latch from the bottom, turning to the right (counterclockwise), and swinging the door open.
2. Remove the screws securing the internal safety shield panel and remove the panel to gain access to the Maintenance Isolation Breaker (MIS), Bypass Input Breaker (BIB), and if applicable, Rectifier Input Breaker (RIB) terminals. Retain the hardware for later use.
3. Remove the screws securing the terminal access panel (see Figure 4-9) and remove the panel to gain access to the bypass input, output, and neutral terminals. Retain the hardware for later use.
4. Install conduit between the IAC-B and the bypass and rectifier sources.
5. Route the bypass and rectifier source input cables (phase A, B, and C, Neutral, and Ground) through the conduit on the back of the IAC-B to the IAC-B terminals. See Figure 4-20 and Figure 4-21 or Figure 4-23 and Figure 4-24 for IAC-B wiring access information and terminal locations. See paragraph 3.2.2, Table 3-5 or Table 3-6 and Table 3-11 or Table 3-12 for IAC-B wiring and termination requirements.
6. Connect phase A, B, and C, Neutral, and Ground power wiring at the IAC-B and source terminals.
7. Punch or drill holes in the bottom of the power terminal cover base on the UPS cabinet for the UPS rectifier input and bypass input (if applicable), and output conduit. Refer to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9 for UPS cabinet conduit landing location.
8. Install conduit between the UPS and the IAC-B.
9. Route the UPS rectifier input, bypass input, and output cables (phase A, B, and C, Neutral, and Ground) through the conduit on the back of the UPS to the IAC-B terminals. See Figure 4-20 and Figure 4-21 or Figure 4-23 and Figure 4-24 for IAC-B wiring access information and terminal locations. See paragraph 3.2.2, Table 3-5 or Table 3-6 and Table 3-11 or Table 3-12 for IAC-B wiring and termination requirements. Refer to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9 for UPS terminal locations and termination requirements.
10. Connect phase A, B, and C, Neutral, and Ground power wiring at the IAC-B and UPS terminals.
11. Install conduit between the IAC-B and the critical load or Integrated Accesssory Cabinet-Distribution (IAC-D). Refer to the *Eaton 93E Integrated Accessory Cabinet-Distribution Installation and Operation Manual* listed in paragraph 1.9 for conduit and terminal locations and termination requirements.
12. Route the critical load output wiring (phase A, B, and C, Neutral and Ground) through the conduit on the back of the IAC-B to the critical load or IAC-D. See Figure 4-20 or Figure 4-23 for IAC-B terminal locations. See paragraph 3.2.2, Table 3-5 or Table 3-6 and Table 3-11 or Table 3-12 for IAC-B wiring and termination requirements.
13. Connect phase A, B, C, Neutral, and Ground output power wiring at the IAC-B and critical load or IAC-D terminals.

14. Install the power terminal cover top using the provided hardware (see Figure 4-17).
15. Install the power terminal cover right and left sides as appropriate using the provided hardware (see Figure 4-17).
16. Reinstall the internal safety shield panel removed in Step 2.
17. Close the outside door and secure the latch.
18. After the IAC-B is installed and wired, return to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9 to complete the UPS wiring.

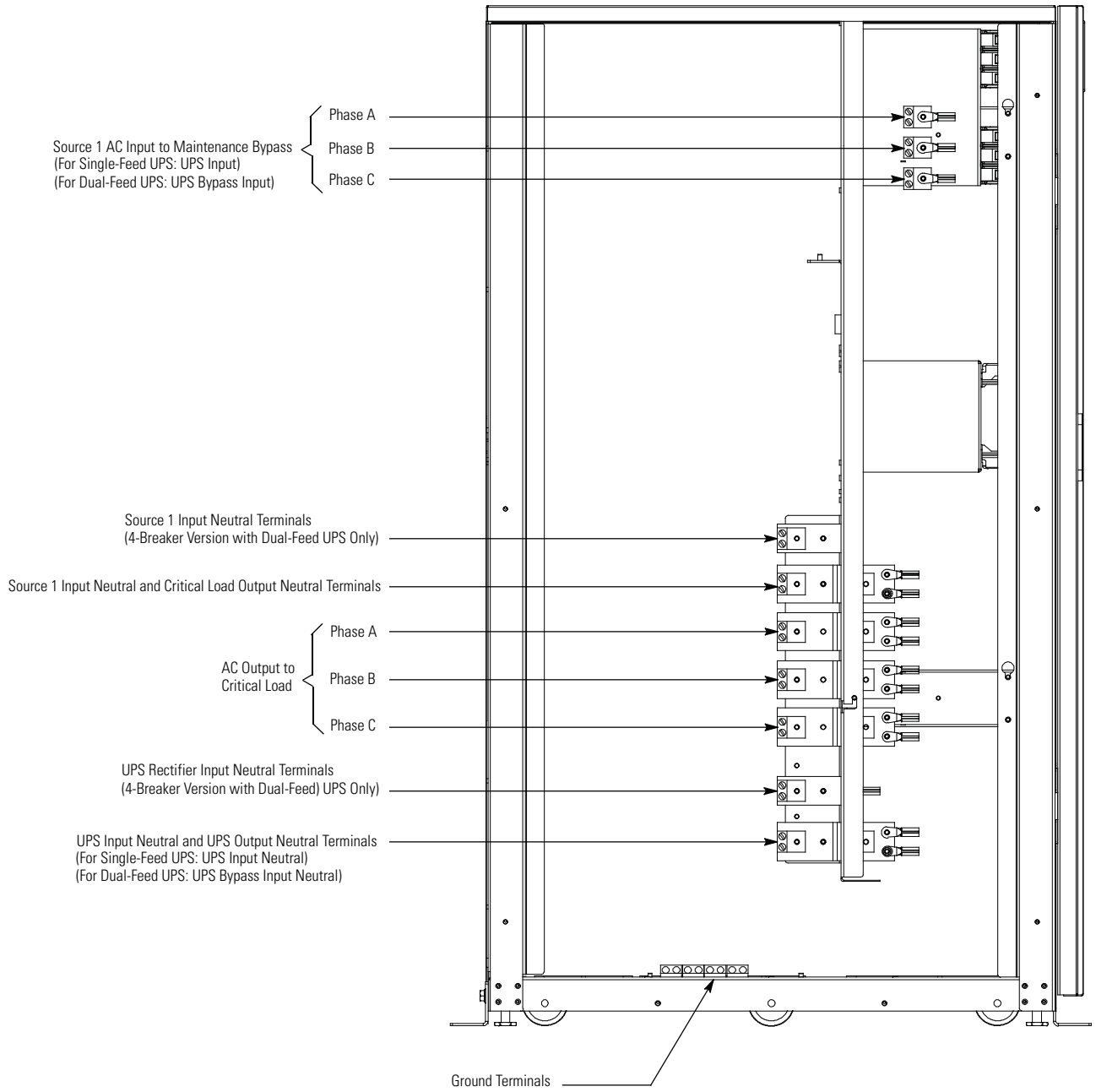


Figure 4-20. Neutral, Ground, and Output Power Terminal Locations – 93E 30IAC-B

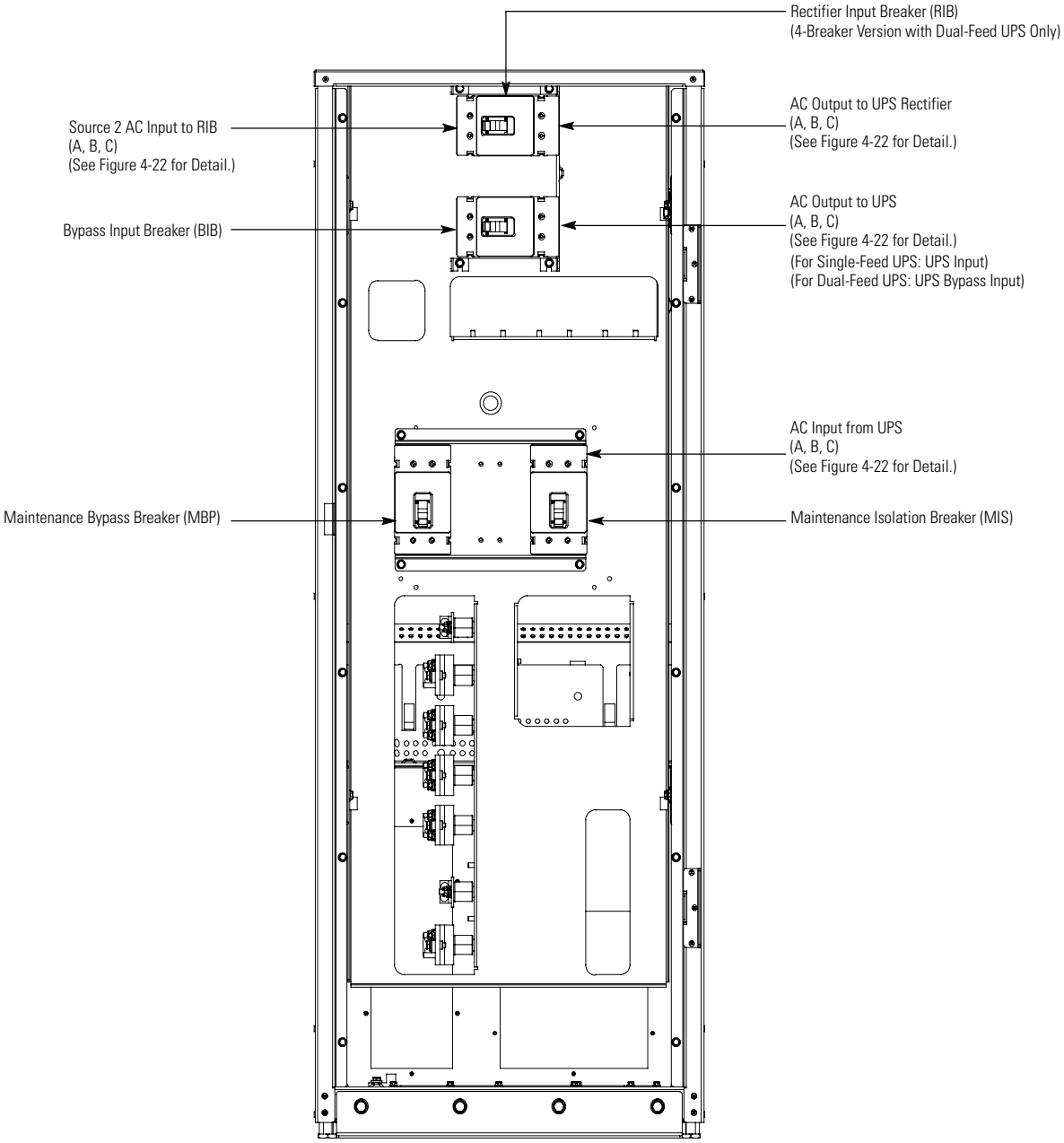


Figure 4-21. RIB, BIB, and MIS Terminal Locations – 93E 30IAC-B

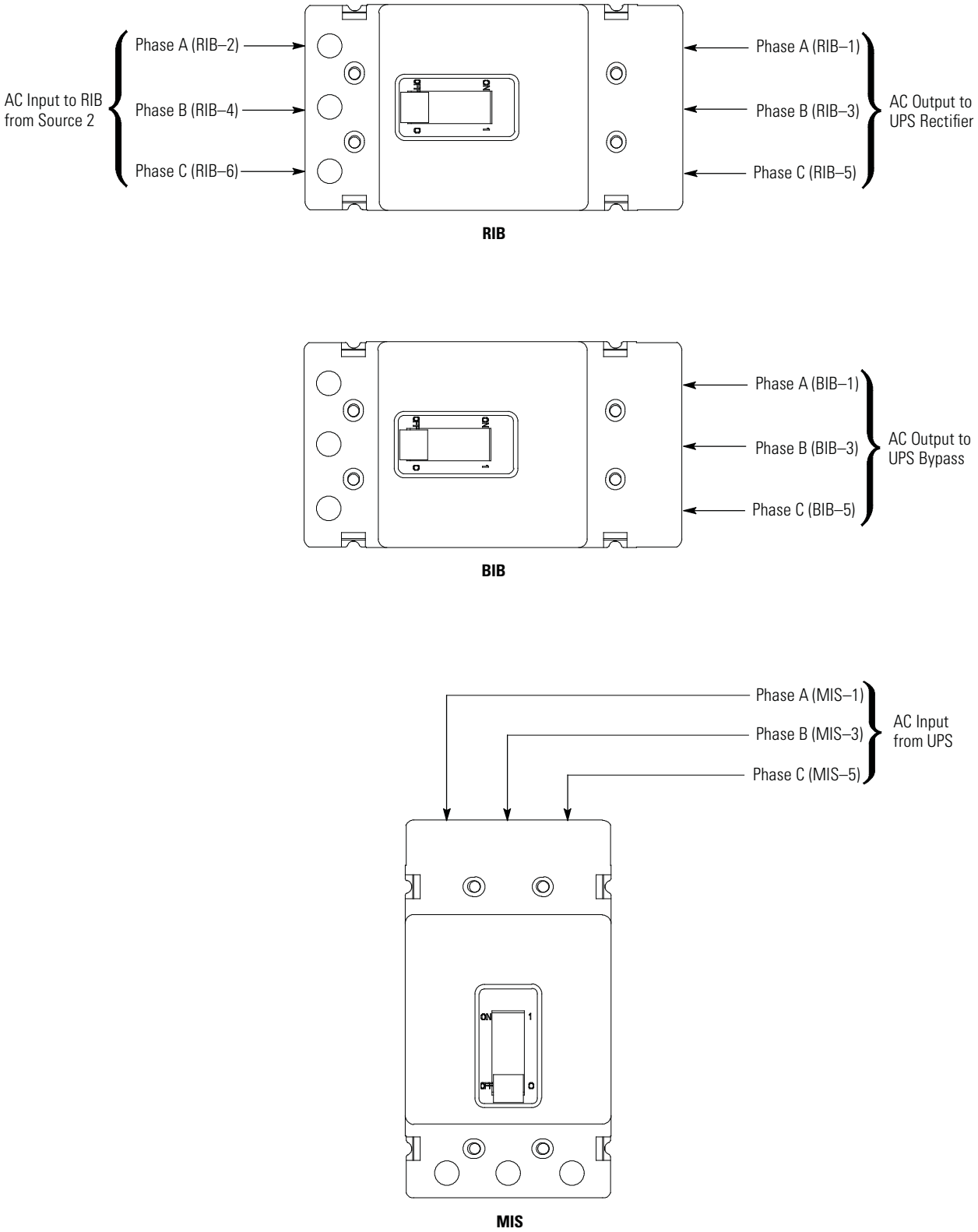


Figure 4-22. RIB, BIB, and MIS Terminal Detail – 93E 30IAC-B

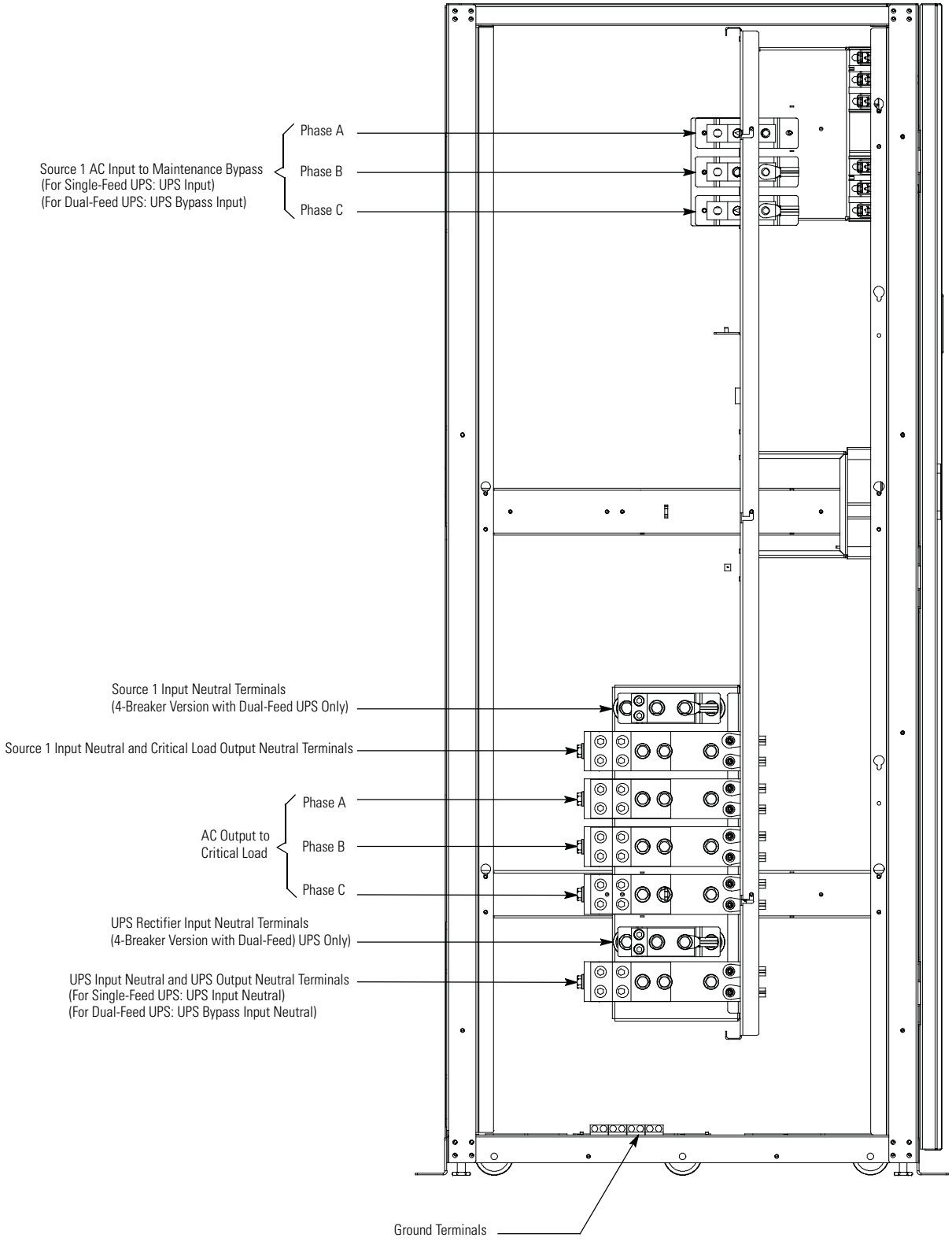


Figure 4-23. Neutral, Ground, and Output Power Terminal Locations – 93E 60IAC-B

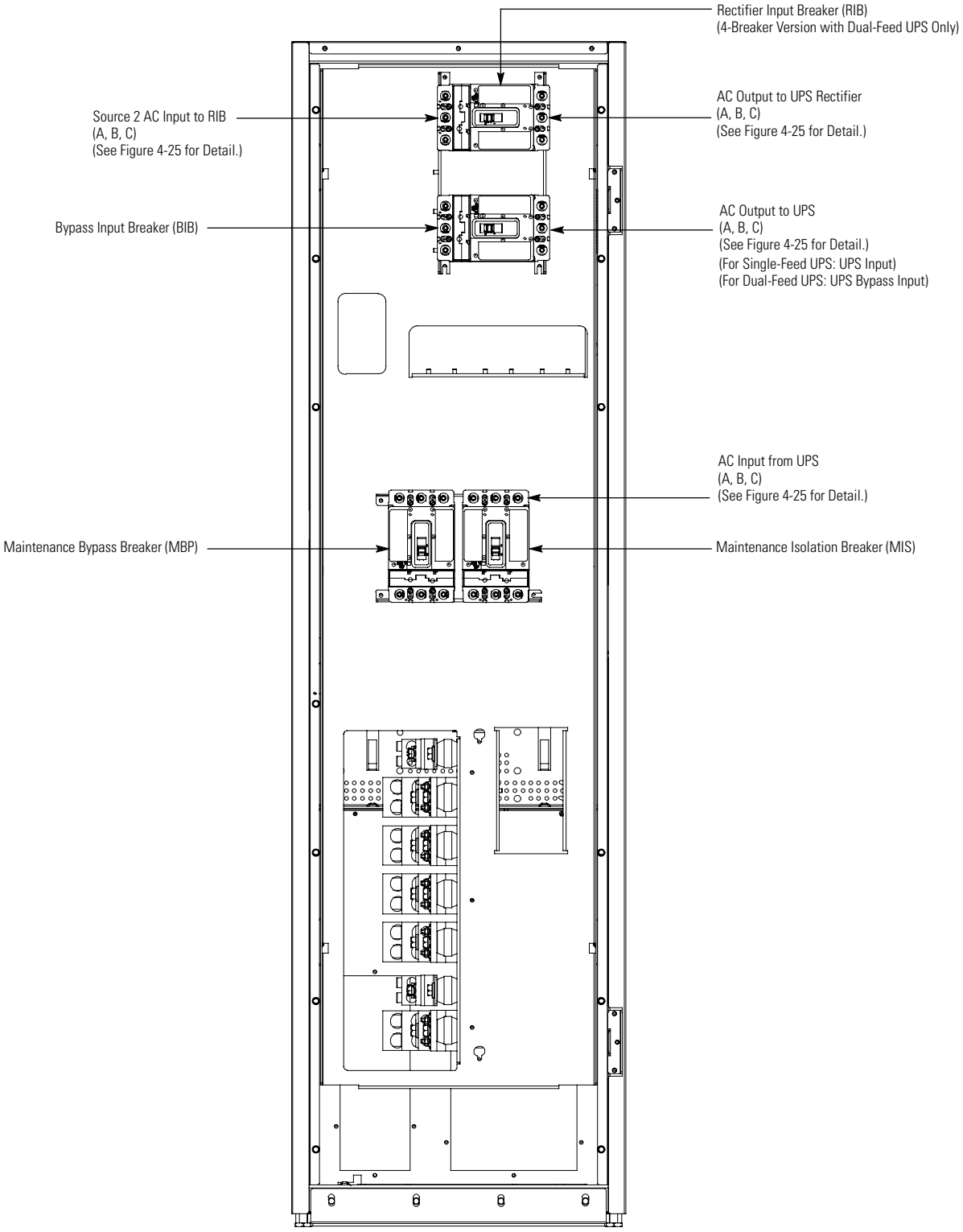


Figure 4-24. RIB, BIB, and MIS Terminal Locations – 93E 60IAC-B

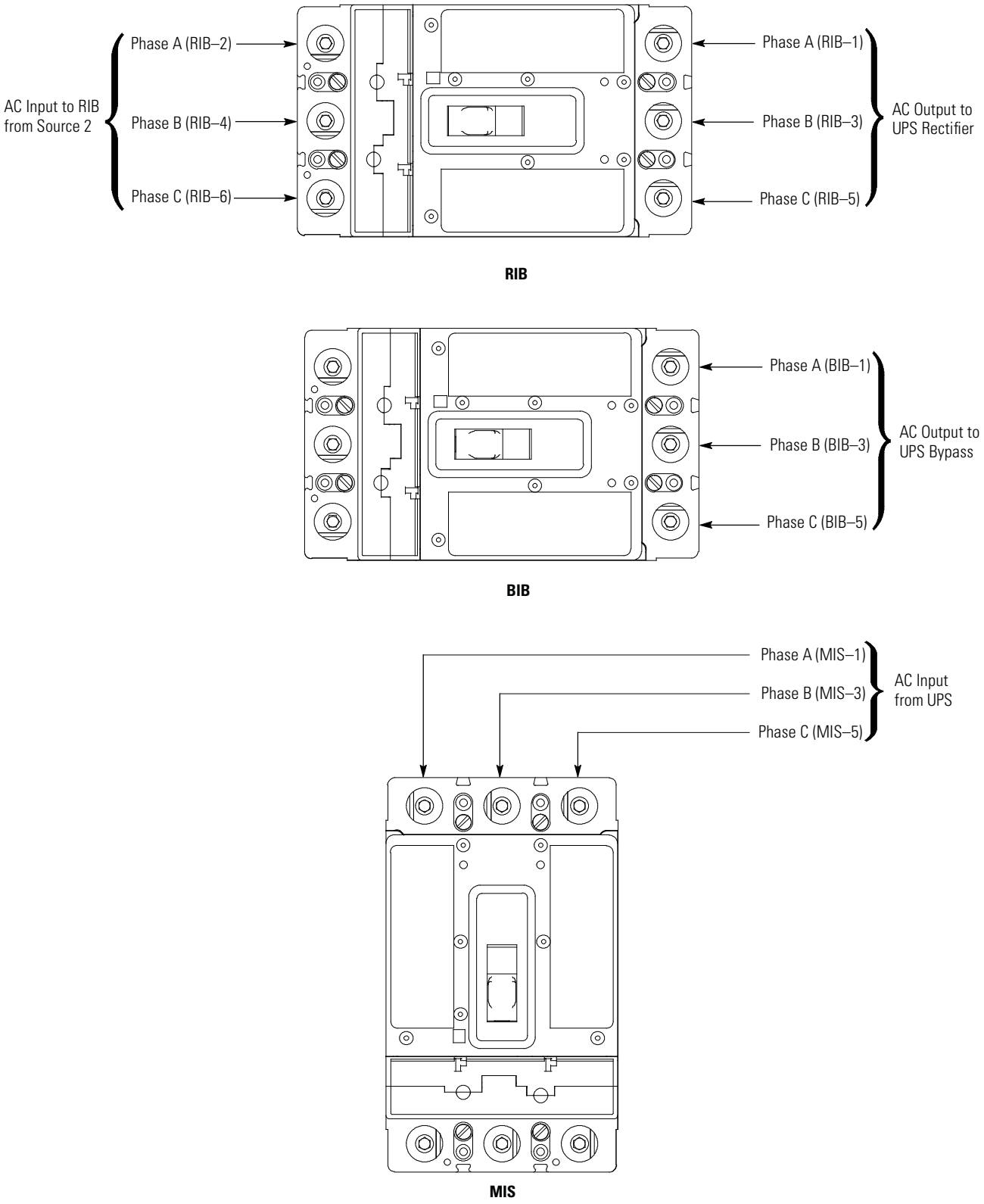


Figure 4-25. RIB, BIB, and MIS Terminal Detail – 93E 60IAC-B

4.6.2 IAC-B Installation Using the Wiring Channel

To install wiring:

1. If not already open, open the front door (see Figure 4-1 or Figure 4-5) by lifting the latch from the bottom, turning to the right (counterclockwise), and swinging the door open.
2. Remove the screws securing the internal safety shield panel and remove the panel to gain access to the Maintenance Isolation Breaker (MIS), Bypass Input Breaker (BIB), and if applicable, Rectifier Input Breaker (RIB) terminals. Retain the hardware for later use.
3. Remove the screws securing the terminal access panel (see Figure 4-9) and remove the panel to gain access to the bypass input, output, and neutral terminals. Retain the hardware for later use.
4. Install conduit between the IAC-B and the bypass and rectifier sources.
5. Route the bypass and rectifier source (RIB) input cables (phase A, B, and C, Neutral, and Ground) through the conduit on the back of the IAC-B to the IAC-B terminals. See Figure 4-20 and Figure 4-21 or Figure 4-23 and Figure 4-24 for IAC-B wiring access information and terminal locations. See paragraph 3.2.2, Table 3-5 or Table 3-6 and Table 3-11 or Table 3-12 for IAC-B wiring and termination requirements.
6. Connect phase A, B, and C, Neutral, and Ground power wiring at the IAC-B and source terminals.
7. Route the UPS rectifier input, bypass input, and output cables (phase A, B, and C, Neutral, and Ground) through the power terminal cover base wiring channels (see Figure 4-18) on the back of the UPS to the IAC-B terminals. See Figure 4-20 and Figure 4-21 or Figure 4-23 and Figure 4-24 for IAC-B wiring access information and terminal locations. See paragraph 3.2.2, Table 3-5 or Table 3-6 and Table 3-11 or Table 3-12 for IAC-B wiring and termination requirements. Refer to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9 for UPS terminal locations and termination requirements.
8. Connect phase A, B, and C, Neutral, and Ground power wiring at the IAC-B and UPS terminals.
9. If wiring to an Integrated Accesssory Cabinet-Distribution (IAC-D), continue to Step 10; otherwise, skip to Step 12.
10. Route the critical load output wiring (phase A, B, and C, Neutral and Ground) through the power terminal cover base wiring channels on the back of the IAC-B to the IAC-D. See Figure 4-20 or Figure 4-23 for IAC-B terminal locations. See paragraph 3.2.2, Table 3-5 or Table 3-6 and Table 3-11 or Table 3-12 for IAC-B wiring and termination requirements. Refer to the *Eaton 93E Integrated Accessory Cabinet-Distribution Installation and Operation Manual* listed in paragraph 1.9 for conduit and terminal locations and termination requirements.
11. Skip to Step 14.
12. Install conduit between the IAC-B and the critical load.
13. Route the critical load output wiring (phase A, B, and C, Neutral and Ground) through the conduit on the back of the IAC-B to the critical load. See Figure 4-20 or Figure 4-23 for IAC-B terminal locations. See paragraph 3.2.2, Table 3-5 or Table 3-6 and Table 3-11 or Table 3-12 for IAC-B wiring and termination requirements.
14. Connect phase A, B, C, Neutral, and Ground output power wiring at the IAC-B and critical load or IAC-D terminals.
15. Secure the power cables to the power terminal cover base using wire ties after all electrical connections have been completed.
16. Install the power terminal cover tops using the provided hardware (see Figure 4-19).
17. Install the power terminal cover right and left sides as appropriate using the provided hardware (see Figure 4-19).

18. Install the splice cover using the provided hardware (see Figure 4-19).
19. Reinstall the internal safety shield panel removed in Step 2.
20. Close the outside door and secure the latch.
21. After the IAC-B is installed and wired, return to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9 to complete the UPS wiring.

4.7 Installing IAC-TB External Power Wiring

NOTE 1 Wiring can be installed using conduit between cabinets or by routing wiring through the power terminal cover base wiring channels.

NOTE 2 Remove the IAC-TB conduit landing plates to drill or punch conduit holes (see Figure 4-9 or Figure 4-10).

NOTE 3 Refer to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9 for UPS installation procedures.

4.7.1 IAC-TB Installation Using Conduit

To install wiring:

1. If not already open, open the front door (see Figure 4-1 or Figure 4-5) by lifting the latch from the bottom, turning to the right (counterclockwise), and swinging the door open.
2. Remove the screws securing the internal safety shield panel and remove the panel to gain access to the Module Output Breaker (MOB) and Maintenance Bypass Breaker (MBP) terminals. Retain the hardware for later use.
3. Remove the screws securing the terminal access panel (see Figure 4-9) and remove the panel to gain access to the output and neutral terminals. Retain the hardware for later use.
4. Install conduit between the IAC-TB and the bypass source.
5. Route the bypass source input cables (phase A, B, and C, Neutral, and Ground) through the conduit on the back of the IAC-TB to the IAC-TB MBP terminals. See Figure 4-26, Figure 4-27, and Figure 4-28 or Figure 4-30, Figure 4-31, and Figure 4-32 for IAC-TB wiring access information and terminal locations. See paragraph 3.2.2, Table 3-7 or Table 3-8 and Table 3-13 or Table 3-14 for IAC-TB wiring and termination requirements.
6. Connect phase A, B, and C, Neutral, and Ground power wiring at the IAC-TB and source terminals.
7. Punch or drill holes in the bottom of the power terminal cover base on each UPS cabinet for the UPS output conduit. Refer to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9 for UPS cabinet conduit landing location.
8. Install conduit between the UPS and the IAC-TB.
9. Route the UPS output cables (phase A, B, and C, Neutral, and Ground) through the conduit on the back of the UPSs to the IAC-TB MOB input terminals. See Figure 4-26, Figure 4-27, and Figure 4-28 or Figure 4-30, Figure 4-31, and Figure 4-32 for IAC-TB wiring access information and terminal locations. See paragraph 3.2.2, Table 3-7 or Table 3-8 and Table 3-13 or Table 3-14 for IAC-TB wiring and termination requirements. Refer to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9 for UPS terminal locations and termination requirements.
10. Connect phase A, B, and C, Neutral, and Ground power wiring at the IAC-TB and UPS terminals.
11. Install conduit between the IAC-TB and the critical load or Integrated Accesssory Cabinet-Distribution (IAC-D). Refer to the *Eaton 93E Integrated Accessory Cabinet-Distribution Installation and Operation Manual* listed in paragraph 1.9 for conduit and terminal locations and termination requirements.

12. Route the critical load output wiring (phase A, B, and C, Neutral and Ground) through the conduit on the back of the IAC-TB to the critical load or IAC-D. See Figure 4-26 or Figure 4-30 for IAC-TB terminal locations. See paragraph 3.2.2, Table 3-7 or Table 3-8 and Table 3-13 or Table 3-14 for IAC-TB wiring and termination requirements.
13. Connect phase A, B, C, Neutral, and Ground output power wiring at the IAC-TB and critical load or IAC-D terminals.
14. Install the power terminal cover top using the provided hardware (see Figure 4-17).
15. Install the power terminal cover right and left sides as appropriate using the provided hardware (see Figure 4-17).
16. Reinstall the internal safety shield panel removed in Step 2.
17. Close the outside door and secure the latch.
18. After the IAC-TB is installed and wired, return to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9 to complete the UPS wiring.

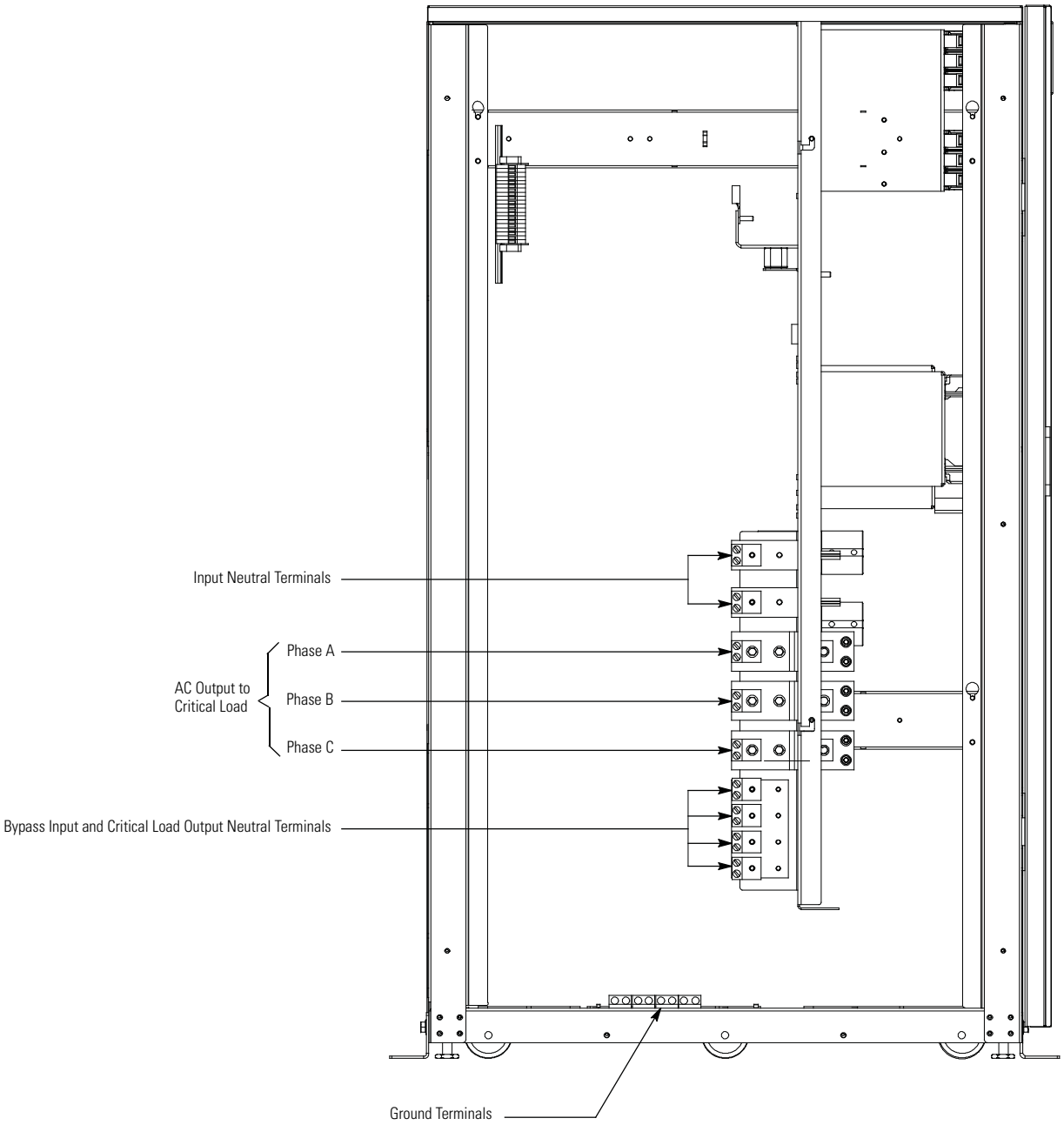


Figure 4-26. Neutral, Ground, and Output Power Terminal Locations – 93E 30IAC-TB

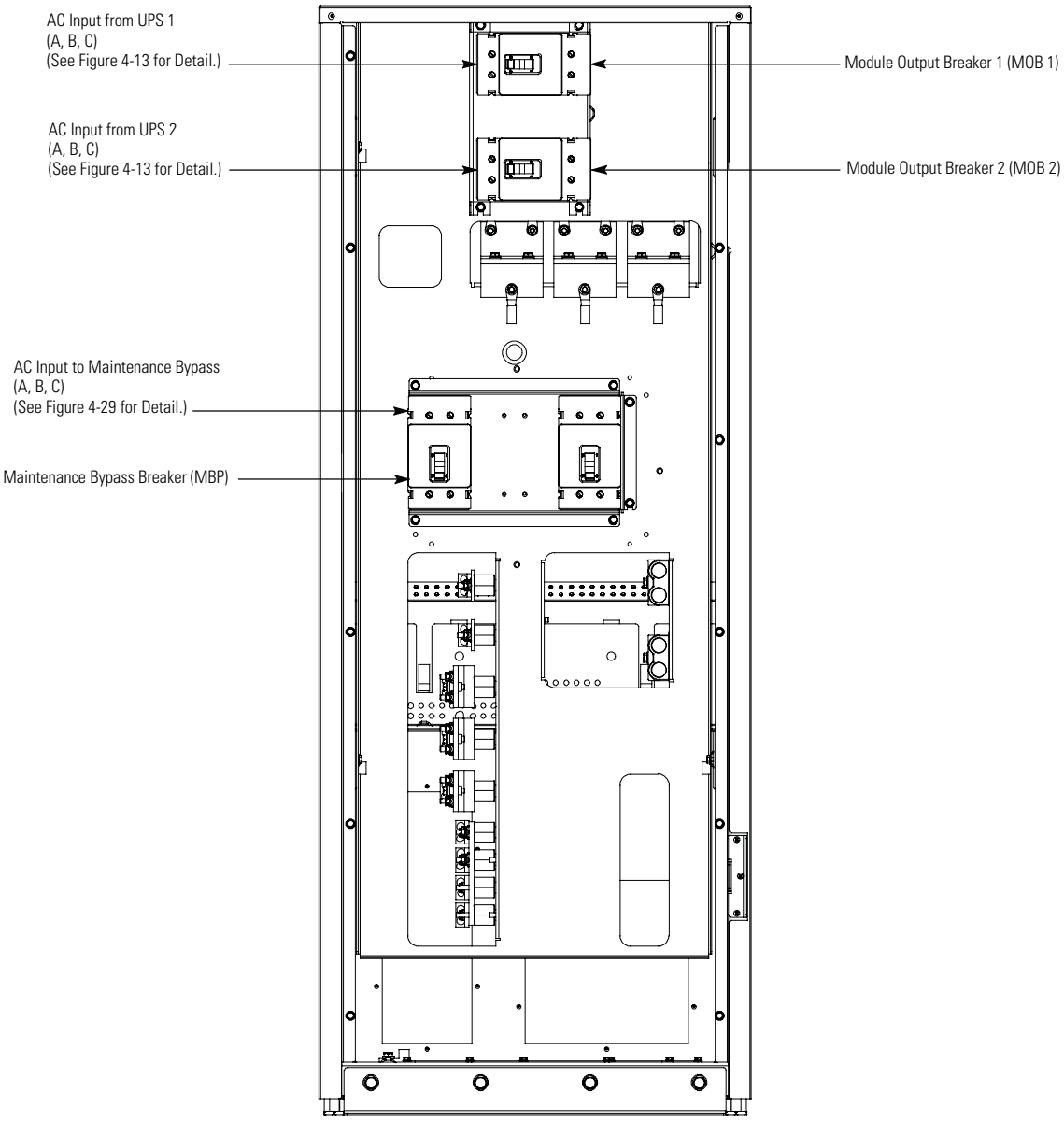


Figure 4-27. MOB and MBP Terminal Locations – 93E 30IAC-TB 1+1 Parallel Configuration

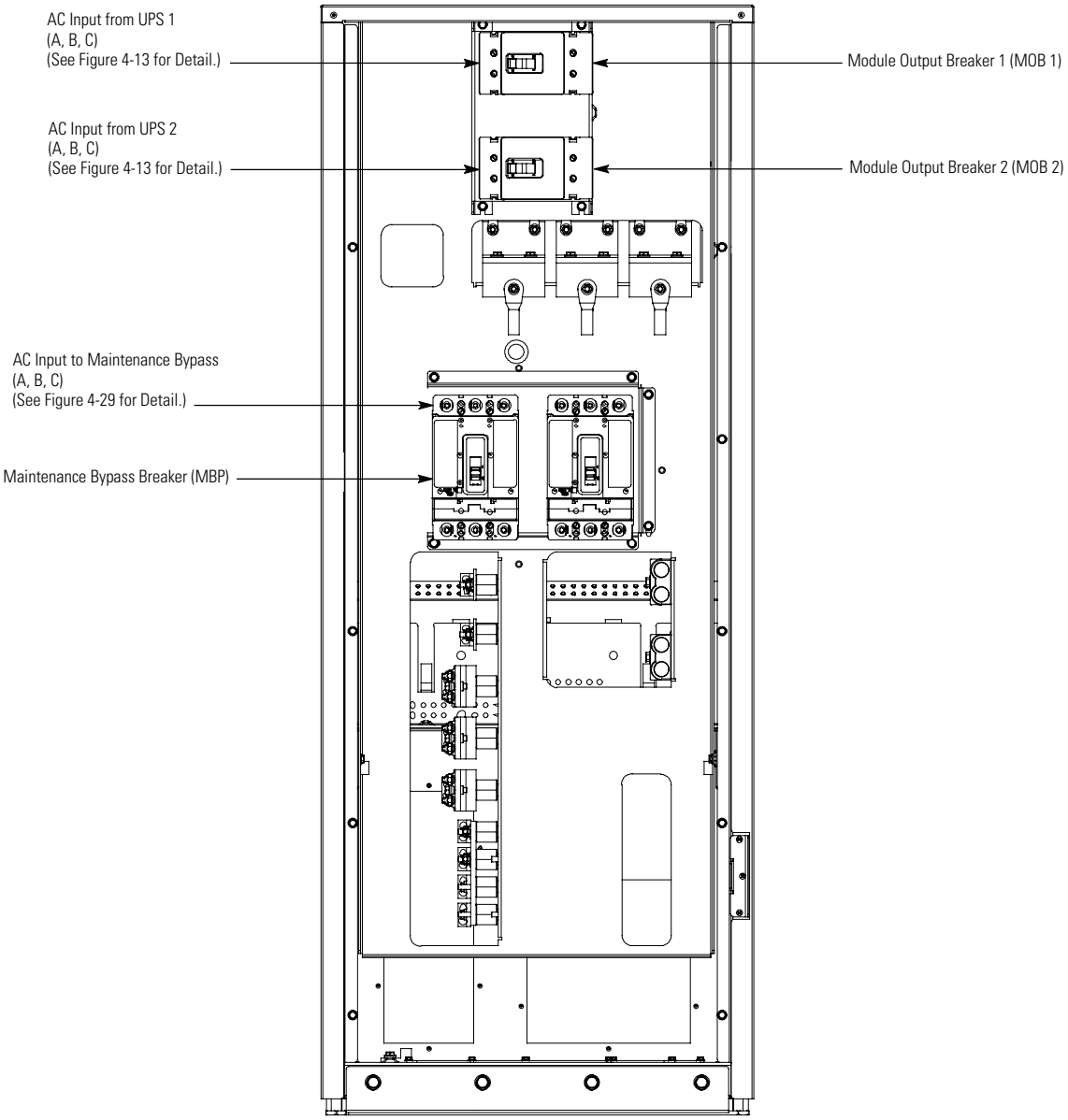
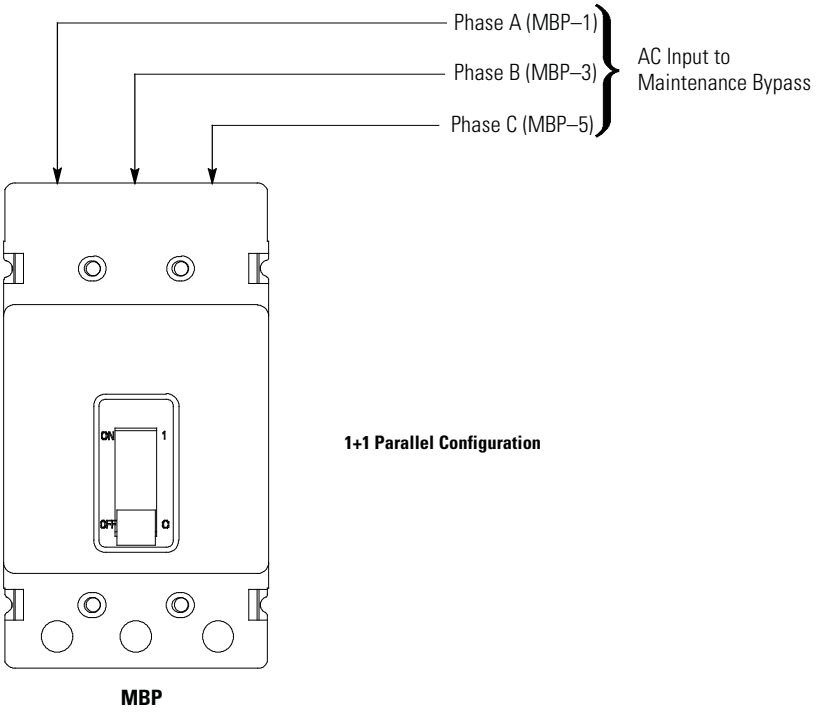


Figure 4-28. MOB and MBP Terminal Locations – 93E 30IAC-TB 2+0 Parallel Configuration



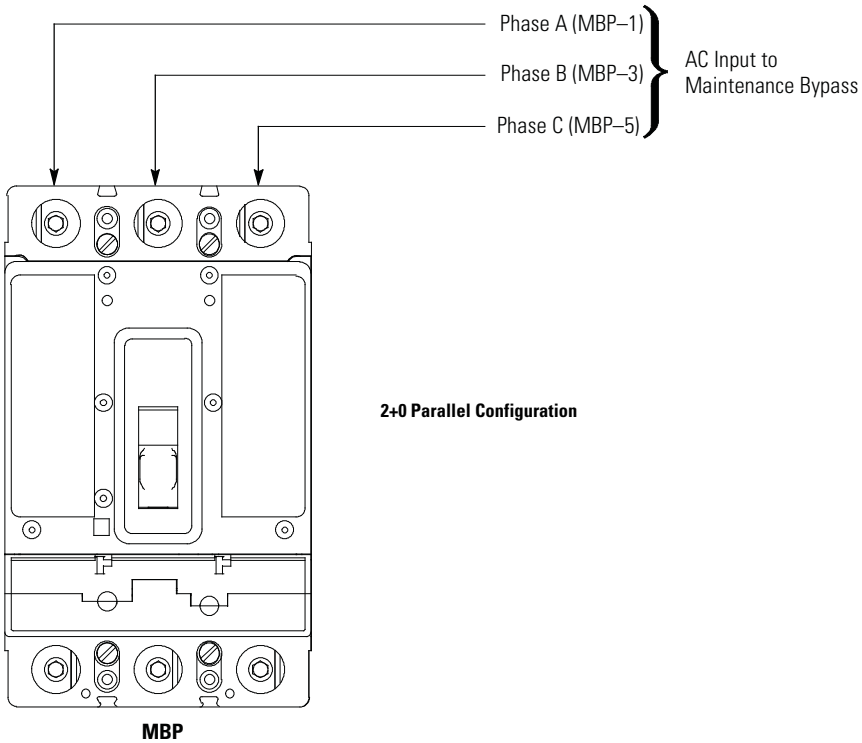


Figure 4-29. MBP Terminal Detail – 93E 30IAC-TB

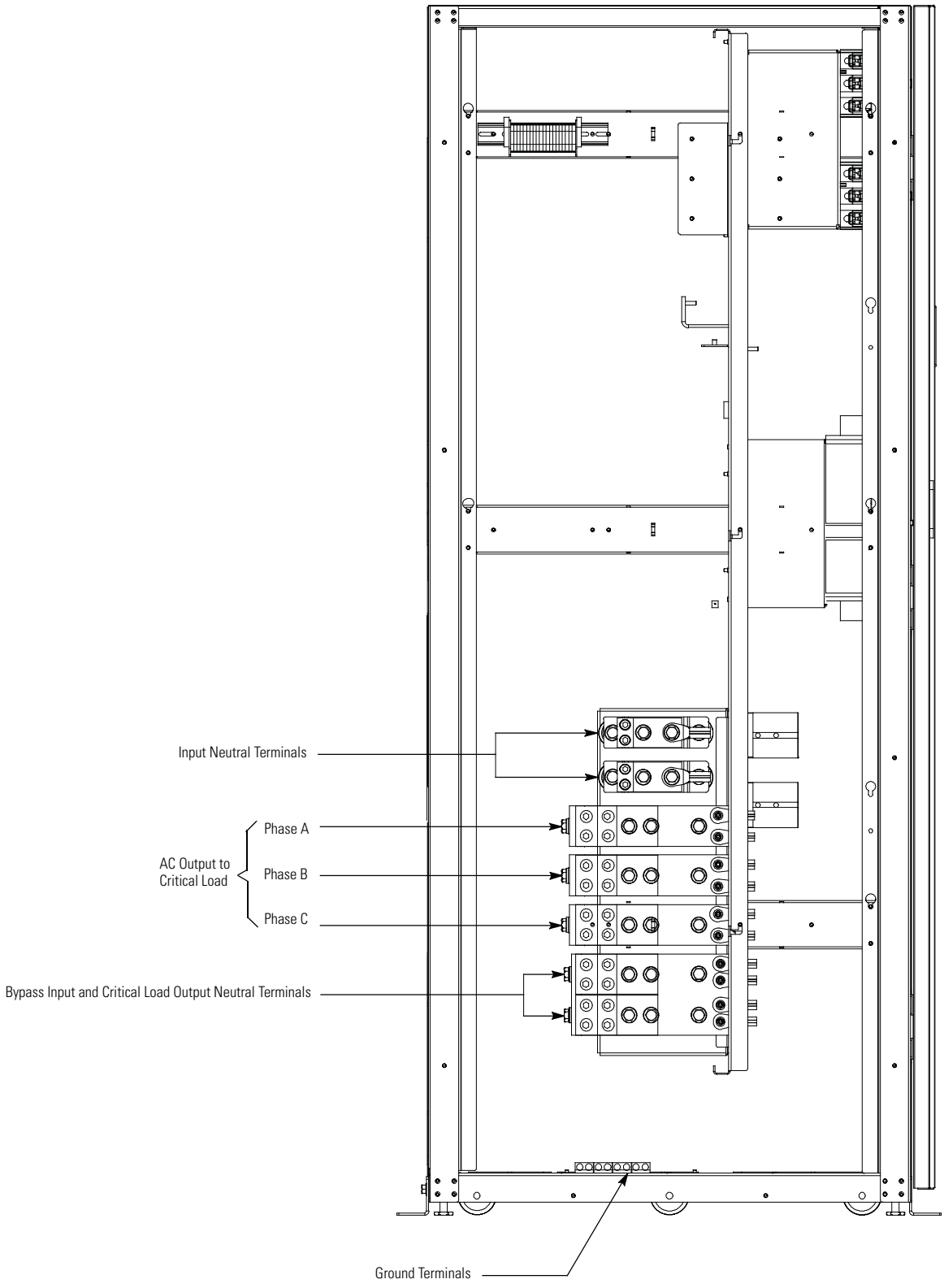


Figure 4-30. Neutral, Ground, and Output Power Terminal Locations – 93E 60IAC-TB

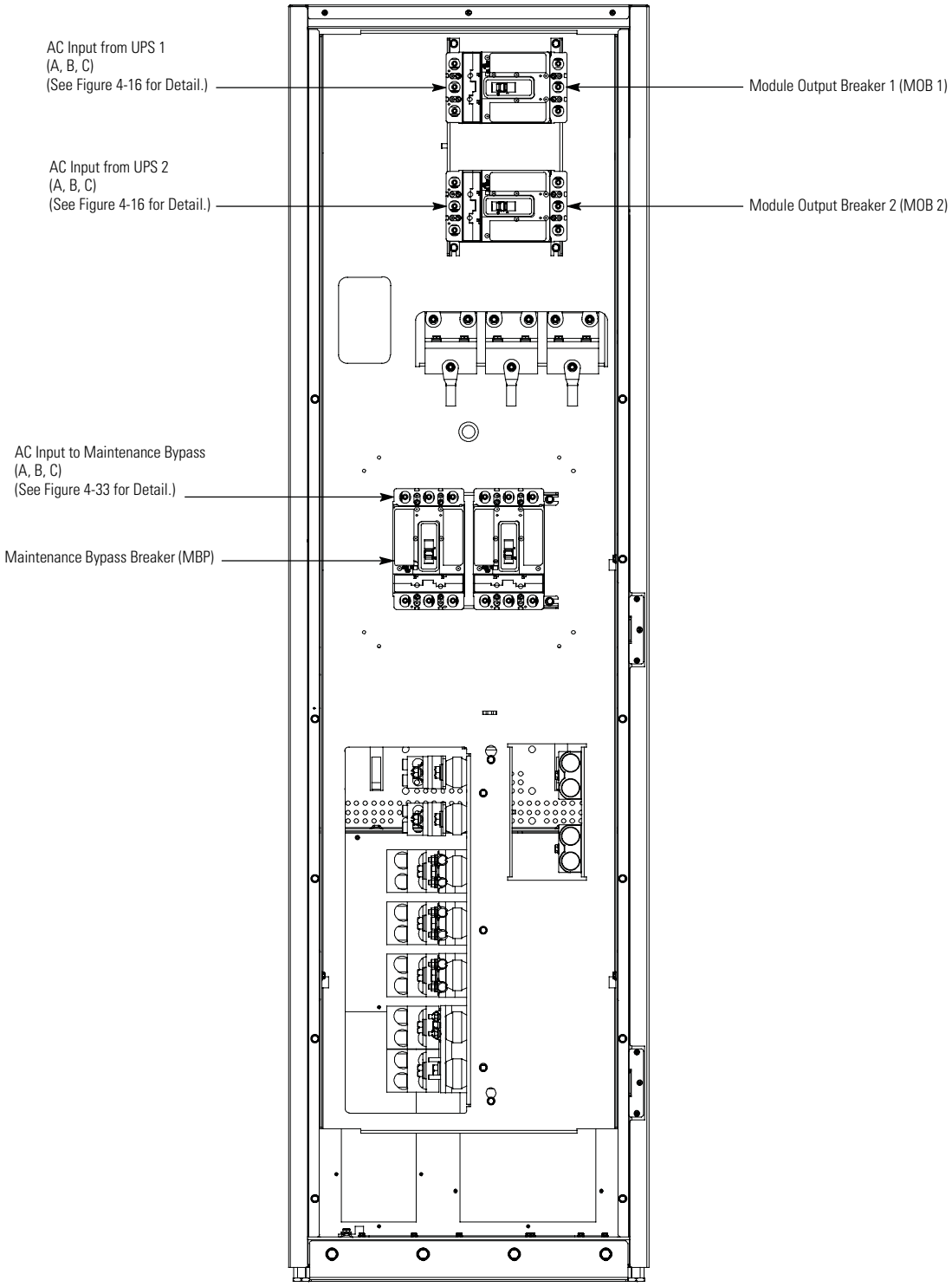


Figure 4-31. MOB and MBP Terminal Locations – 93E 60IAC-TB 1+1 Parallel Configuration

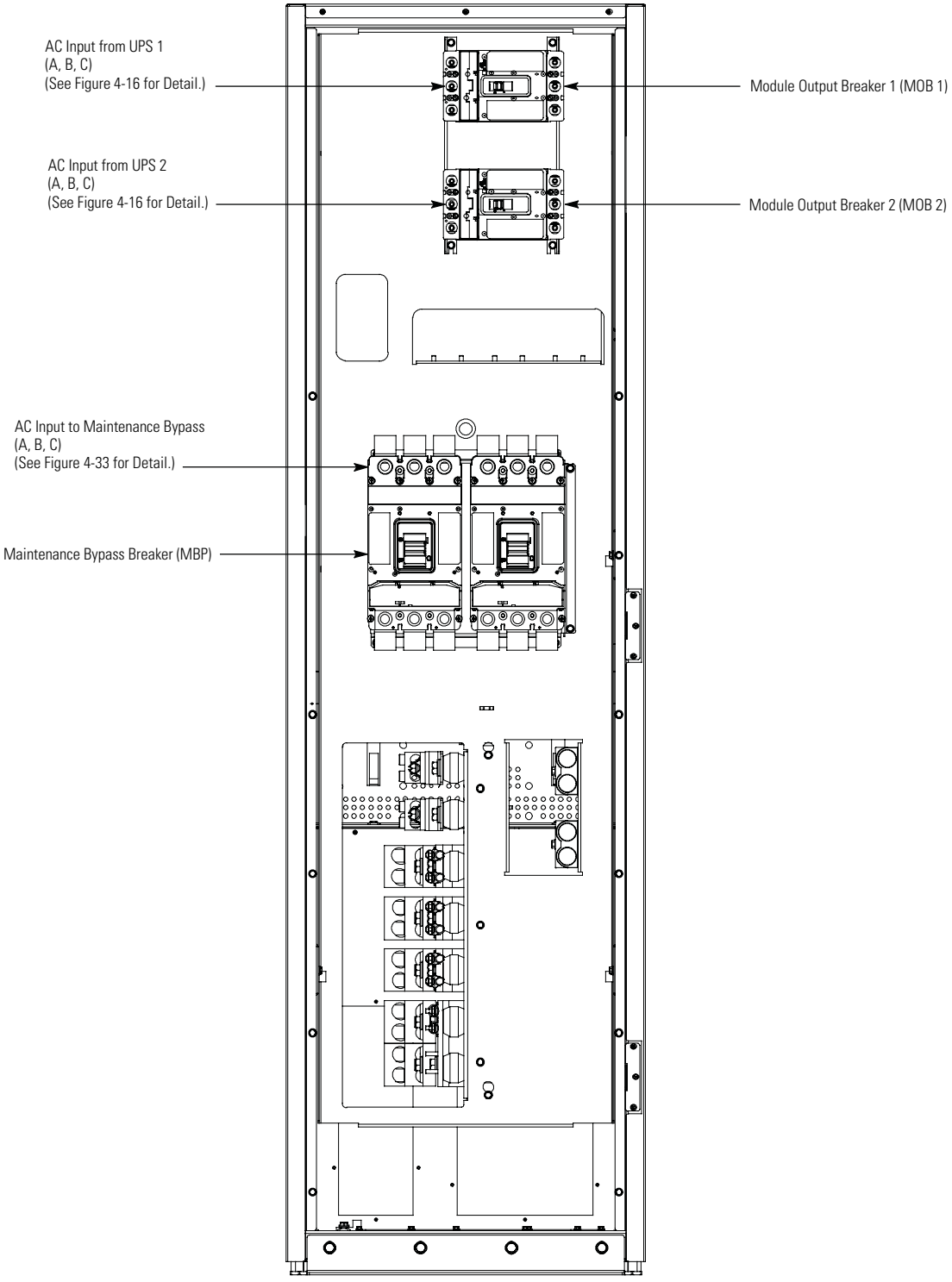


Figure 4-32. MOB and MBP Terminal Locations – 93E 60IAC-TB 2+0 Parallel Configuration

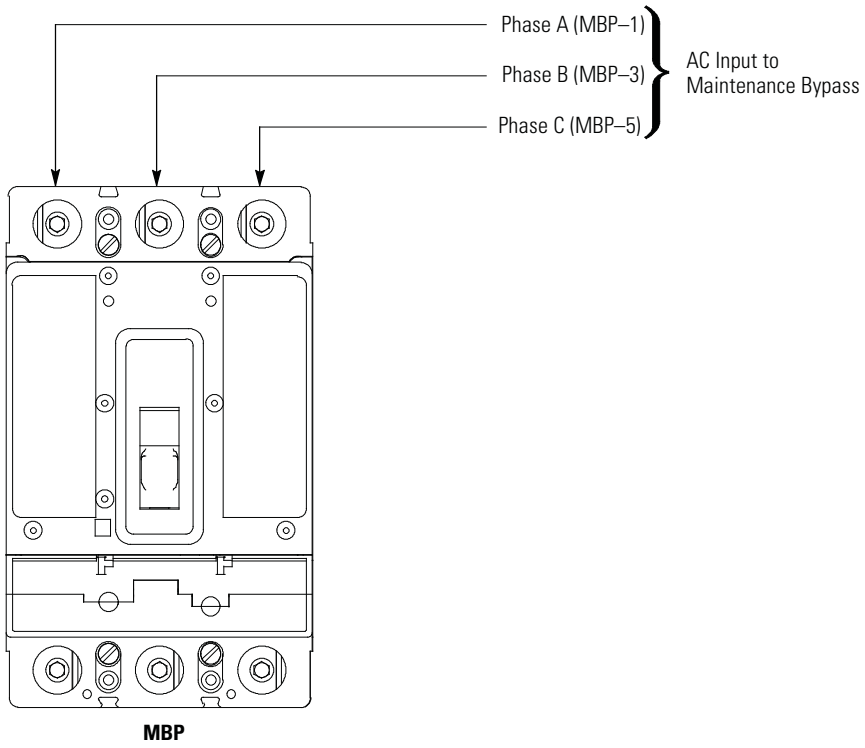


Figure 4-33. MBP Terminal Detail – 93E 60IAC-TB 1+1 Parallel Configuration

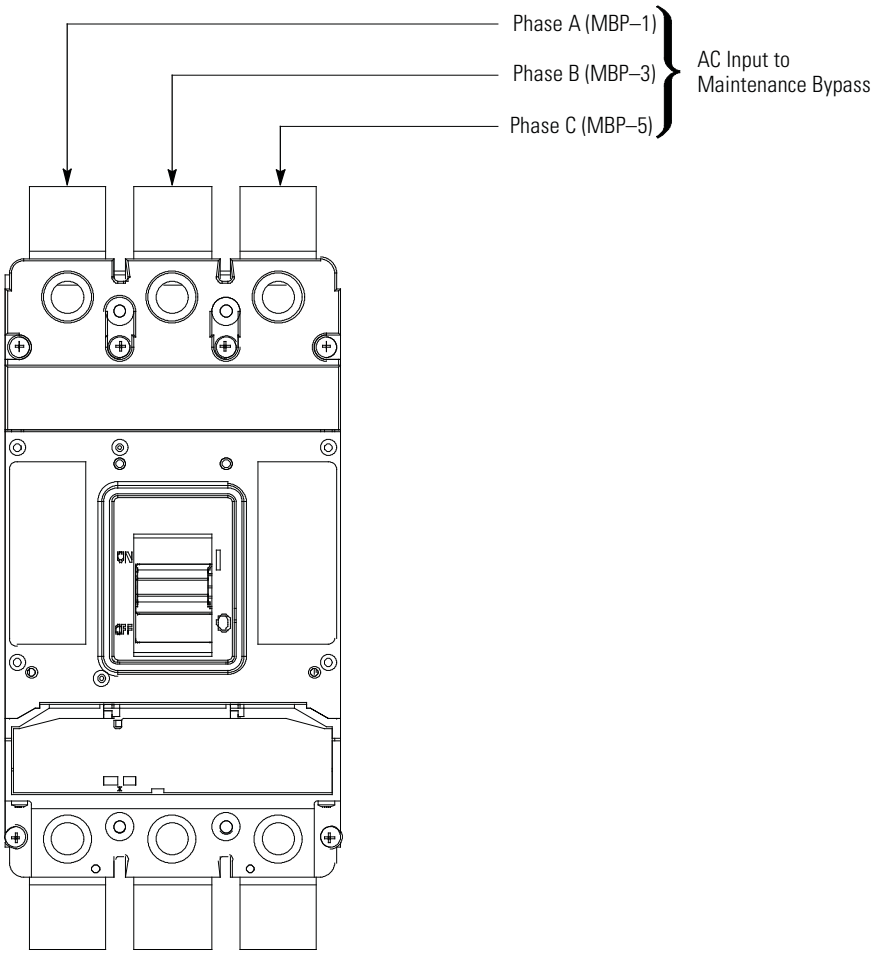


Figure 4-34. MBP Terminal Detail – 93E 60IAC-TB 2+0 Parallel Configuration

4.7.2 IAC-TB Installation Using the Wiring Channel

To install wiring:

1. If not already open, open the front door (see Figure 4-1 or Figure 4-5) by lifting the latch from the bottom, turning to the right (counterclockwise), and swinging the door open.
2. Remove the screws securing the internal safety shield panel and remove the panel to gain access to the Module Output Breaker (MOB) and Maintenance Bypass Breaker (MBP) terminals. Retain the hardware for later use.
3. Remove the screws securing the terminal access panel (see Figure 4-9) and remove the panel to gain access to the output and neutral terminals. Retain the hardware for later use.
4. Install conduit between the IAC-TB and the bypass source.
5. Route the bypass source input cables (phase A, B, and C, Neutral, and Ground) through the conduit on the back of the IAC-TB to the IAC-TB MBP terminals. See Figure 4-26, Figure 4-27, and Figure 4-28 or Figure 4-30, Figure 4-31, and Figure 4-32 for IAC-TB wiring access information and terminal locations. See paragraph 3.2.2, Table 3-7 or Table 3-8 and Table 3-13 or Table 3-14 for IAC-TB wiring and termination requirements.
6. Connect phase A, B, and C, Neutral, and Ground power wiring at the IAC-TB and source terminals.

7. Route the UPS output cables (phase A, B, and C, Neutral, and Ground) through the power terminal cover base wiring channels (see Figure 4-18) on the back of the UPSs to the IAC-TB MOB input terminals. See Figure 4-26, Figure 4-27, and Figure 4-28 or Figure 4-30, Figure 4-31, and Figure 4-32 for IAC-TB wiring access information and terminal locations. See paragraph 3.2.2, Table 3-7 or Table 3-8 and Table 3-13 or Table 3-14 for IAC-TB wiring and termination requirements. Refer to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9 for UPS terminal locations and termination requirements.
8. Connect phase A, B, and C, Neutral, and Ground power wiring at the IAC-TB and UPS terminals.
9. If wiring to an Integrated Accesssory Cabinet-Distribution (IAC-D), continue to Step 10; otherwise, skip to Step 12.
10. Route the critical load output wiring (phase A, B, and C, Neutral and Ground) through the power terminal cover base wiring channels on the back of the IAC-TB to the IAC-D. See Figure 4-26, Figure 4-27, and Figure 4-28 or Figure 4-30, Figure 4-31, and Figure 4-32 for IAC-TB wiring access information and terminal locations. See paragraph 3.2.2, Table 3-7 or Table 3-8 and Table 3-13 or Table 3-14 for IAC-TB wiring and termination requirements. Refer to the *Eaton 93E Integrated Accessory Cabinet-Distribution Installation and Operation Manual* listed in paragraph 1.9 for conduit and terminal locations and termination requirements.
11. Skip to Step 14.
12. Install conduit between the IAC-TB and the critical load.
13. Route the critical load output wiring (phase A, B, and C, Neutral and Ground) through the conduit on the back of the IAC-TB to the critical load. See Figure 4-26 or Figure 4-30 for IAC-TB terminal locations. See paragraph 3.2.2, Table 3-7 or Table 3-8 and Table 3-13 or Table 3-14 for IAC-TB wiring and termination requirements.
14. Connect phase A, B, C, Neutral, and Ground output power wiring at the IAC-TB and critical load or IAC-D terminals.
15. Secure the power cables to the power terminal cover base using wire ties after all electrical connections have been completed.
16. Install the power terminal cover tops using the provided hardware (see Figure 4-19).
17. Install the power terminal cover right and left sides as appropriate using the provided hardware (see Figure 4-19).
18. Install the splice cover using the provided hardware (see Figure 4-19).
19. Reinstall the internal safety shield panel removed in Step 2.
20. Close the outside door and secure the latch.
21. After the IAC-TB is installed and wired, return to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9 to complete the UPS wiring.

4.8 Installing IAC-T Interface Connections

NOTE 1 IAC-T MOB auxiliary contact control interface wiring can be installed using conduit between cabinets or by routing wiring through the power terminal cover base wiring channels.

NOTE 2 If using the power terminal wiring channel, keep interface wiring separate from power wiring or use shielded wire.

NOTE 3 If using conduit, install the control wiring in separate conduit from the power wiring.

NOTE 4 Remove the IAC-T conduit landing plates to drill or punch conduit holes, or remove knockouts in the conduit plate (see Figure 4-9).

To install wiring:

1. Verify the UPS system is turned off and all power sources are removed. Refer to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9, for UPS operating procedures.
2. To locate the appropriate terminals and review the wiring and termination requirements, see paragraph 3.2.3, Figure 4-35, Figure 4-36, Table 4-1, and Table 4-2. Refer to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9, for UPS cabinet terminal locations, termination requirements, and installation instructions.
3. If not already removed, remove the screws securing the terminal access panel (see Figure 4-9) and remove the panel to gain access to the interface terminals. Retain the hardware for later use.
4. If not already removed, remove the hardware securing the power terminal cover top (see Figure 4-8) and remove the cover to gain access to the power terminal wiring channel. Retain the hardware for later use.
5. If using conduit, install conduit between the IAC-T and the UPS cabinet.
6. Route and connect the MOB auxiliary contact wiring from the IAC-T to the UPS cabinet.
7. Reinstall the terminal access panel removed in Step 3.
8. Reinstall the power terminal cover top removed in Step 4.

Table 4-1. IAC-T MOB Interface Terminals

Terminal	Name	Description
TB-01	MOB 1 Aux #1 NO	Not Used
TB-02	MOB 1 Aux #1 Common	Output: Normally Closed (NC) contact used to indicate whether MOB 1 is open. Contacts are closed when MOB 1 is open.
TB-03	MOB 1 Aux #1 NC	
TB-04	MOB 2 Aux #1 NO	Not Used
TB-05	MOB 2 Aux #1 Common	Output: Normally Closed (NC) contact used to indicate whether MOB 2is open. Contacts are closed when MOB 2 is open.
TB-06	MOB 2Aux #1 NC	
TB-07	MOB 3 Aux #1 NO	Not Used
TB-08	MOB 3 Aux #1 Common	Output: Normally Closed (NC) contact used to indicate whether MOB 3is open. Contacts are closed when MOB 3 is open.
TB-09	MOB 3Aux #1 NC	
TB-10	MOB 4 Aux #1 NO	Not Used
TB-11	MOB 4 Aux #1 Common	Output: Normally Closed (NC) contact used to indicate whether MOB 4 is open. Contacts are closed when MOB 4 is open.
TB-12	MOB 4 Aux #1 NC	
TB-13	MOB 1 Aux #2 NO	Output: UPS 1 Pull Chain – Backup control for parallel operation.
TB-14	MOB 2 Aux #2 NO	Output: UPS 2 Pull Chain – Backup control for parallel operation.
TB-15	MOB 3 Aux #2 NO	Output: UPS 3 Pull Chain – Backup control for parallel operation.
TB-16	MOB 4 Aux #2 NO	Output: UPS 4 Pull Chain – Backup control for parallel operation.
TB-17	Pull Chain Common	Output: UPS 1 Pull Chain Common
TB-18	Pull Chain Common	Output: UPS 2 Pull Chain Common
TB-19	Pull Chain Common	Output: UPS 3 Pull Chain Common
TB-20	Pull Chain Common	Output: UPS 4 Pull Chain Common
TB-21	MOB 1 Aux #2 COM	Not Used
TB-22	MOB 2 Aux #2 COM	Not Used
TB-23	MOB 3 Aux #2 COM	Not Used
TB-24	MOB 4 Aux #2 COM	Not Used
TB-25	MOB 1 Aux #2 NC	Not Used
TB-26	MOB 2 Aux #2 NC	Not Used
TB-27	MOB 3 Aux #2 NC	Not Used
TB-28	MOB 4 Aux #2 NC	Not Used

NOTE UPS building alarm signals are customer programmable. Customer interface wiring for the IAC-T MOBs assumes that UPS Building Alarm 2 is programmed to monitor Normally Closed (NC) contacts.

NOTE "Common" indicates connection to common side of isolated relay contact.

Table 4-2. IAC-T Interface Wiring Terminal Block Terminations

Terminal Function	Size of Pressure Termination	Tightening Torque Nm (lb in)	Type Screw	Comments
Auxiliary Contacts	#26–#12	0.4 (3.5) - 0.8 (7.1)	Slotted	Use twisted-pair wires for each input and return or common. Strip wire insulation back 10 millimeters to wire terminal blocks.

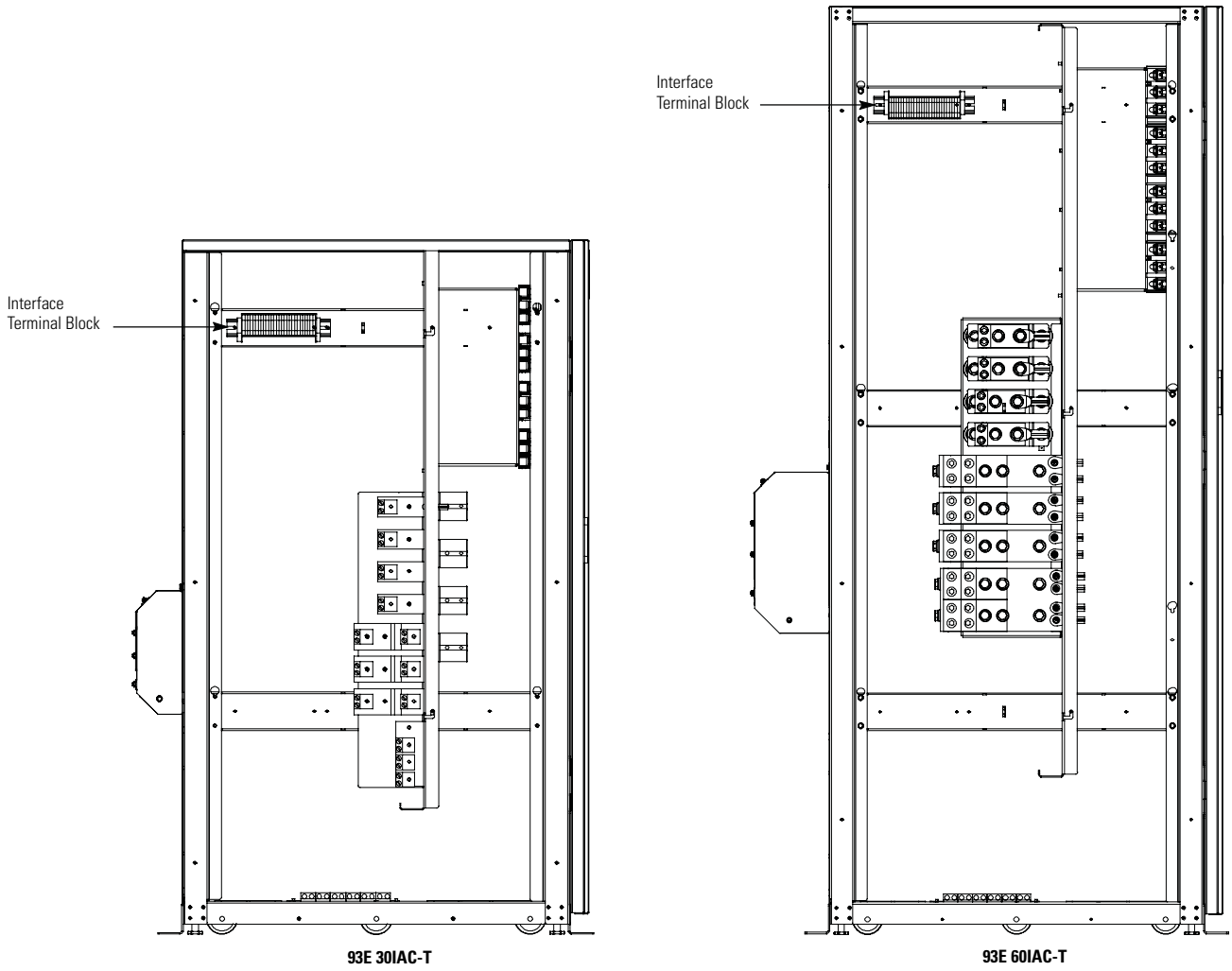
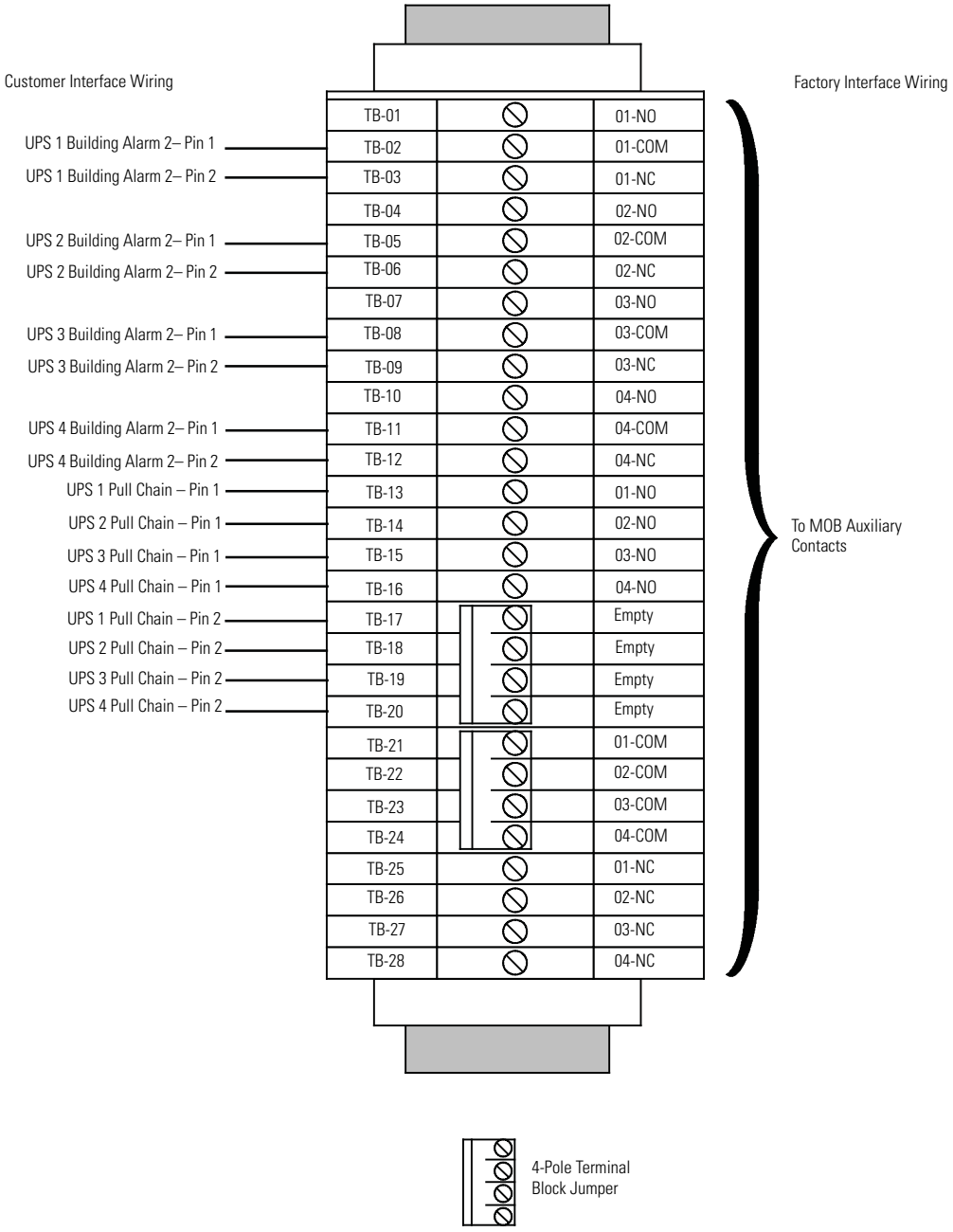


Figure 4-35. IAC-T Interface Terminal Location



NOTE UPS building alarm signals are customer programmable. Customer interface wiring for the IAC-T MOBs assumes that UPS Building Alarm 2 is programmed to monitor Normally Closed (NC) contacts.

Figure 4-36. IAC-T Interface Terminal Detail

4.9 Installing IAC-B Interface Connections

NOTE 1 IAC-B MBP auxiliary contact control interface wiring can be installed using conduit between cabinets or by routing wiring through the power terminal cover base wiring channels.

NOTE 2 If using the power terminal wiring channel, keep interface wiring separate from power wiring or use shielded wire.

NOTE 3 If using conduit, install the control wiring in separate conduit from the power wiring.

NOTE 4 Remove the IAC-B conduit landing plates to drill or punch conduit holes, or remove knockouts in the conduit plate (see Figure 4-9).

To install wiring:

1. Verify the UPS system is turned off and all power sources are removed. Refer to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9, for UPS operating procedures.
2. To locate the appropriate terminals and review the wiring and termination requirements, see paragraph 3.2.3, Figure 4-37, Figure 4-38, Table 4-3, and Table 4-4. Refer to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9, for UPS cabinet terminal locations, termination requirements, and installation instructions.
3. If not already removed, remove the screws securing the terminal access panel (see Figure 4-9) and remove the panel to gain access to the interface terminals. Retain the hardware for later use.
4. If not already removed, remove the hardware securing the power terminal cover top (see Figure 4-8) and remove the cover to gain access to the power terminal wiring channel. Retain the hardware for later use.
5. If using conduit, install conduit between the IAC-B and the UPS cabinet.
6. Route and connect the MBP auxiliary contact wiring from the IAC-B to the UPS cabinet.
7. Reinstall the terminal access panel removed in Step 3.
8. Reinstall the power terminal cover top removed in Step 4.

Table 4-3. IAC-B MBP Interface Terminals

Terminal	Name	Description
TB-01	MBP Aux #1 NO	Output: Normally Open (NO) contact used to indicate whether the MBP is closed and the UPS system is on maintenance bypass. Contacts are closed when the MBP is closed.
TB-02	MBP Aux #1 Common	
TB-03	MBP Aux #1 NC	Not Used

NOTE UPS building alarm signals are customer programmable. Customer interface wiring for the IAC-B MBP assumes that UPS Building Alarm 1 is programmed to monitor Normally Open (NO) contacts.

NOTE "Common" indicates connection to common side of isolated relay contact.

Table 4-4. IAC-B Interface Wiring Terminal Block Terminations

Terminal Function	Size of Pressure Termination	Tightening Torque Nm (lb in)	Type Screw	Comments
Auxiliary Contacts	#26–#12	0.4 (3.5) - 0.8 (7.1)	Slotted	Use twisted-pair wires for each input and return or common. Strip wire insulation back 10 millimeters to wire terminal blocks.

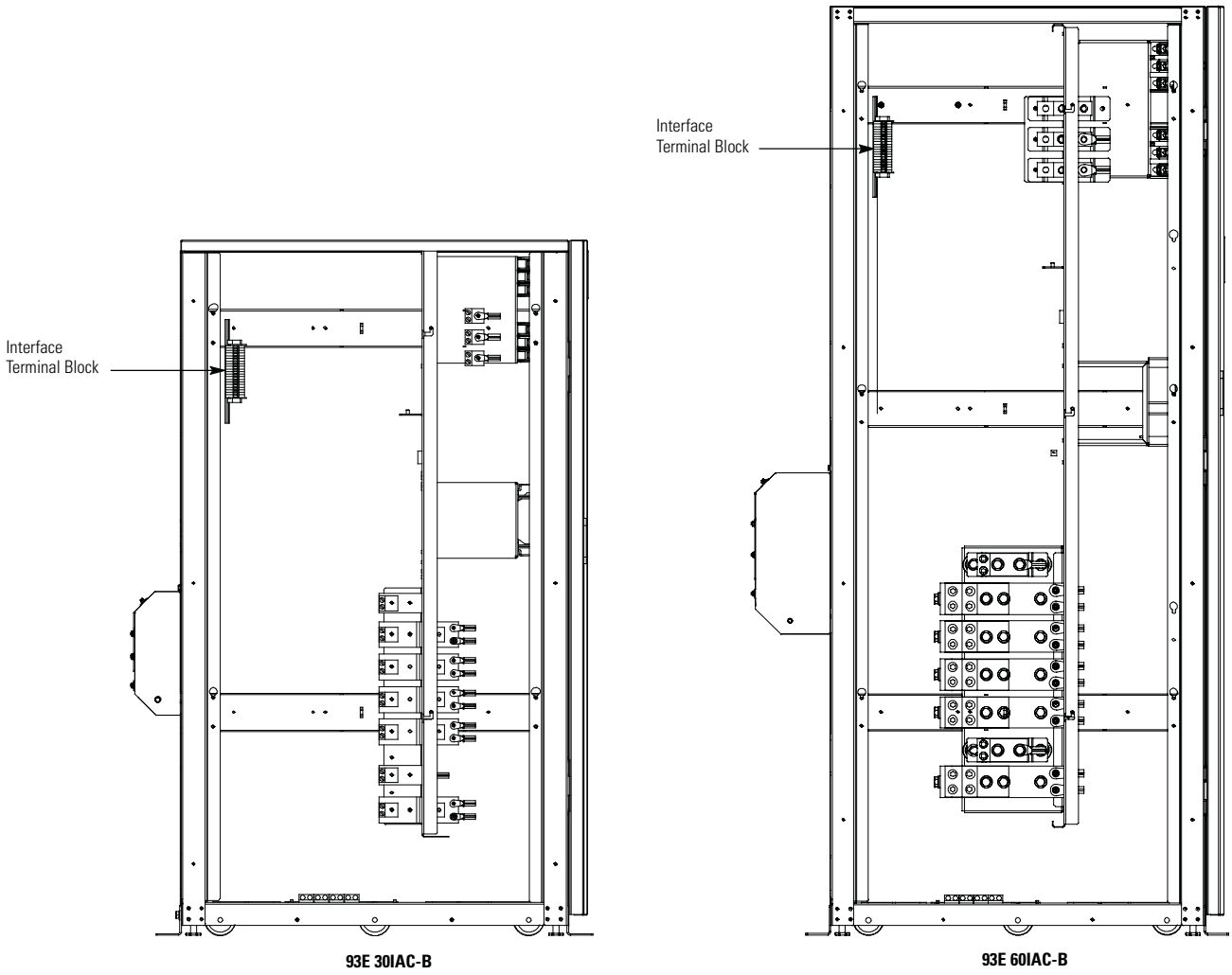
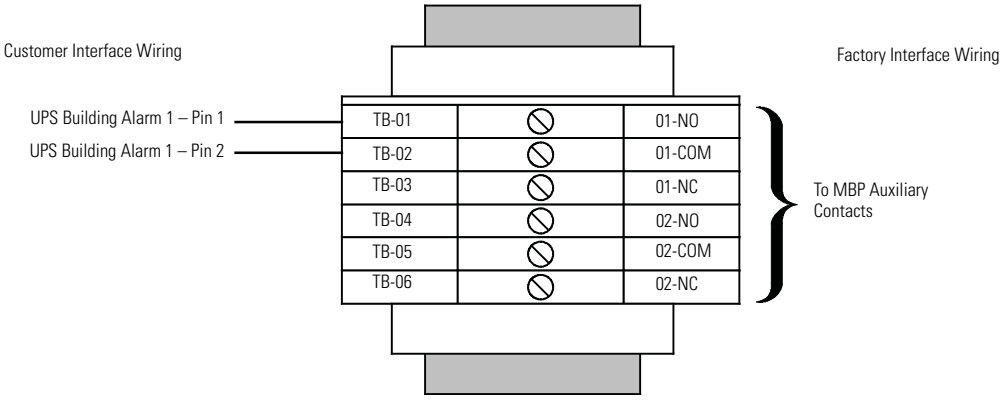


Figure 4-37. IAC-B Interface Terminal Location



NOTE UPS building alarm signals are customer programmable. Customer interface wiring for the IAC-B MBP assumes that UPS Building Alarm 1 is programmed to monitor Normally Open (NO) contacts.

Figure 4-38. IAC-B Interface Terminal Detail

4.10 Installing IAC-TB Interface Connections

NOTE 1 IAC-TB MBP and MOB auxiliary contact control interface wiring can be installed using conduit between cabinets or by routing wiring through the power terminal cover base wiring channels.

NOTE 2 If using the power terminal wiring channel, keep interface wiring separate from power wiring or use shielded wire.

NOTE 3 If using conduit, install the control wiring in separate conduit from the power wiring.

NOTE 4 Remove the IAC-TB conduit landing plates to drill or punch conduit holes, or remove knockouts in the conduit plate (see Figure 4-9).

To install wiring:

1. Verify the UPS system is turned off and all power sources are removed. Refer to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9, for UPS operating procedures.
2. To locate the appropriate terminals and review the wiring and termination requirements, see paragraph 3.2.3, Figure 4-39, Figure 4-40, Table 4-5, and Table 4-6. Refer to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9, for UPS cabinet terminal locations, termination requirements, and installation instructions.
3. If not already removed, remove the screws securing the terminal access panel (see Figure 4-9) and remove the panel to gain access to the interface terminals. Retain the hardware for later use.
4. If not already removed, remove the hardware securing the power terminal cover top (see Figure 4-8) and remove the cover to gain access to the power terminal wiring channel. Retain the hardware for later use.
5. If using conduit, install conduit between the IAC-TB and the UPS cabinet.
6. Route and connect the MBP auxiliary contact wiring from the IAC-TB to the UPS cabinet.
7. Reinstall the terminal access panel removed in Step 3.
8. Reinstall the power terminal cover top removed in Step 4.

Table 4-5. IAC-TB MBP and MOB Interface Terminals

Terminal	Name	Description
TB-01	MBP Aux #1 NO	Output: Normally Open (NO) contact used to indicate whether the MBP is closed and the UPS system is on maintenance bypass. Contacts are closed when the MBP is closed.
TB-02	MBP Aux #1 Common	
TB-03	MBP Aux #1 NC	Not Used
TB-04	MBP Aux #2 NO	Output: Normally Open (NO) contact used to indicate whether the MBP is closed and the UPS system is on maintenance bypass. Contacts are closed when the MBP is closed.
TB-05	MBP Aux #2 Common	
TB-06	MBP Aux #2 NC	Not Used
TB-07	MOB 1 Aux #1 NO	Not Used
TB-08	MOB 1 Aux #1 Common	Output: Normally Closed (NC) contact used to indicate whether MOB 2is open. Contacts are closed when MOB 2 is open.
TB-09	MOB 1 Aux #1 NC	
TB-10	MOB 2 Aux #1 NO	Not Used
TB-11	MOB 2 Aux #1 Common	Output: Normally Closed (NC) contact used to indicate whether MOB 2is open. Contacts are closed when MOB 2 is open.
TB-12	MOB 2 Aux #1 NC	
TB-13	MOB 1 Aux #2 NO	Output: UPS 1 Pull Chain – Backup control for parallel operation
TB-14	MOB 2 Aux #2 NO	Output: UPS 2 Pull Chain – Backup control for parallel operation
TB-15	Pull Chain Common	Output: UPS 1 Pull Chain Common
TB-16	Pull Chain Common	Output: UPS 2 Pull Chain Common
TB-17	MOB 1 Aux #2 COM	Not Used
TB-18	MOB 2 Aux #2 COM	Not Used
TB-19	MOB 1 Aux #2 NC	Not Used
TB-20	MOB 2 Aux #2 NC	Not Used

NOTE UPS building alarm signals are customer programmable. Customer interface wiring for the IAC-TB MBP assumes that UPS Building Alarm 1 is programmed to monitor Normally Open (NO) contacts. Customer interface wiring for the IAC-TB MOBs assumes that UPS Building Alarm 2 is programmed to monitor Normally Closed (NC) contacts.

NOTE "Common" indicates connection to common side of isolated relay contact.

Table 4-6. IAC-TB Interface Wiring Terminal Block Terminations

Terminal Function	Size of Pressure Termination	Tightening Torque Nm (lb in)	Type Screw	Comments
Auxiliary Contacts	#26–#12	0.4 (3.5) - 0.8 (7.1)	Slotted	Use twisted-pair wires for each input and return or common. Strip wire insulation back 10 millimeters to wire terminal blocks.

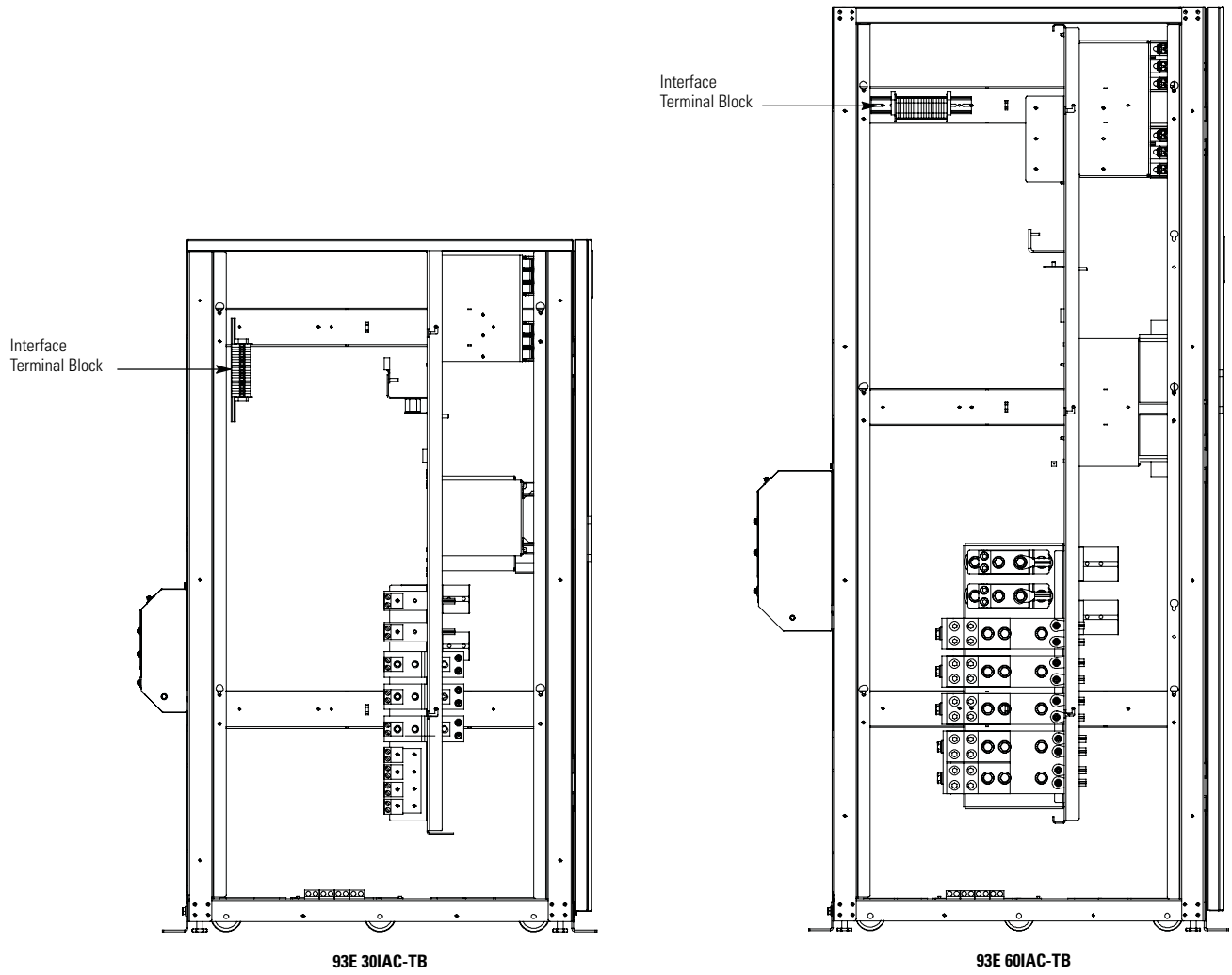
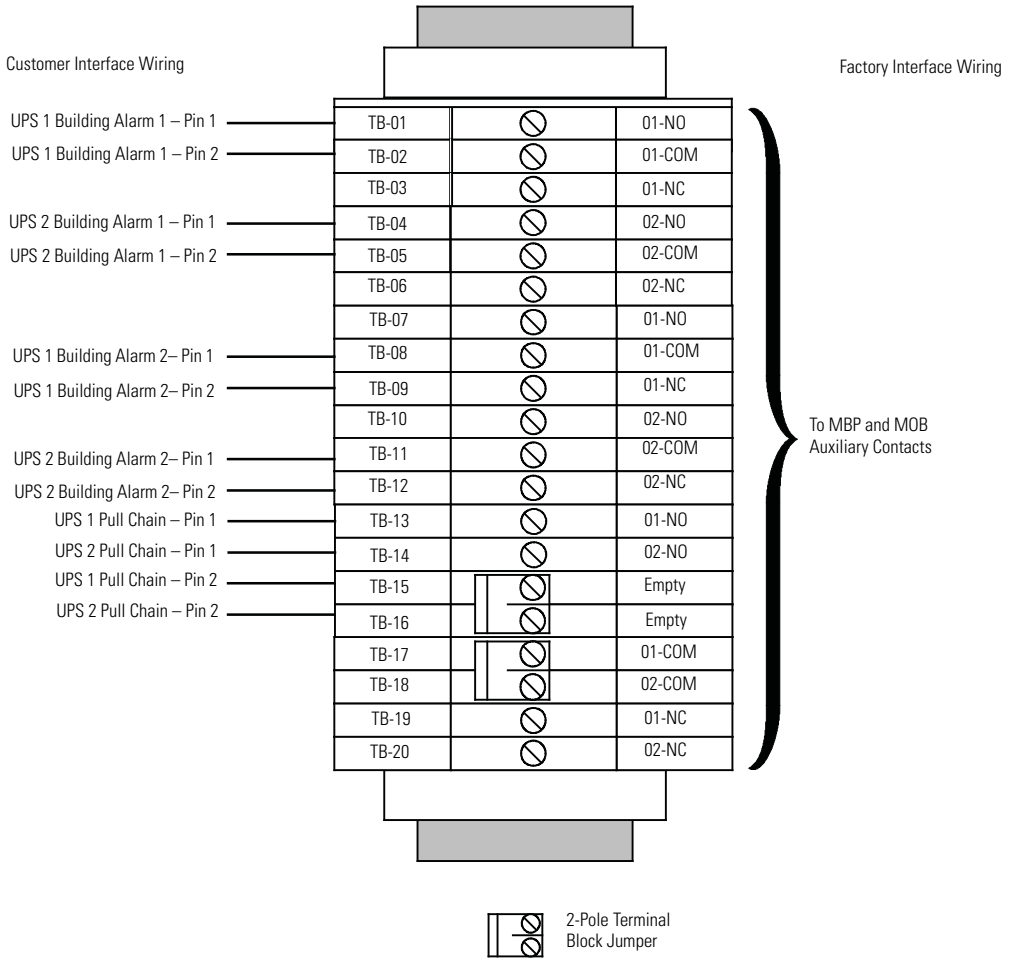


Figure 4-39. IAC-TB Interface Terminal Location



NOTE UPS building alarm signals are customer programmable. Customer interface wiring for the IAC-TB MBP assumes that UPS Building Alarm 1 is programmed to monitor Normally Open (NO) contacts. Customer interface wiring for the IAC-TB MOBs assumes that UPS Building Alarm 2 is programmed to monitor Normally Closed (NC) contacts.

Figure 4-40. IAC-TB Interface Terminal Detail

4.11 Initial Startup

Startup and operational checks must be performed by an authorized Eaton Customer Service Engineer, or the warranty terms specified on page W-1 become void. This service is offered as part of the sales contract for the UPS. Contact an Eaton service representative in advance (usually a two-week notice is required) to reserve a preferred startup date.

4.12 Completing the Installation Checklist

The final step in installing the IAC is completing the following Installation Checklist. This checklist ensures that you have completely installed all hardware, cables, and other equipment. Complete all items listed on the checklist to ensure a smooth installation. Make a copy of the Installation Checklist before filling it out, and retain the original.

After the installation is complete, an Eaton Customer Service Engineer must verify the operation of the UPS system and commission it to support the critical load. The service representative cannot perform any installation tasks other than verifying software and operating setup parameters. Service personnel may request a copy of the completed Installation Checklist to verify all applicable equipment installations have been completed.

NOTE The Installation Checklist MUST be completed prior to starting the UPS system for the first time.

Installation Checklist

- ❑ All packing materials and restraints have been removed from each cabinet.
- ❑ The IAC is installed on a level floor suitable for computer or electronic equipment.
- ❑ The IAC is placed in its installed location.
- ❑ The IAC is secured to the building floor or attached to the adjacent 93E system cabinet with the cabinet bracket.
- ❑ All conduits and cables are properly routed between the IAC and the UPS.
- ❑ All power cables are properly sized and terminated.
- ❑ A ground conductor is properly installed.
- ❑ Interface wiring between the IAC and UPS cabinets is properly installed.
- ❑ All terminal cover plates are installed.
- ❑ Air conditioning equipment is installed and operating correctly.
- ❑ The area around the UPS system is clean and dust-free.
- ❑ Adequate workspace exists around the IAC and other cabinets.
- ❑ Adequate lighting is provided around all IAC and UPS equipment.
- ❑ A 120 Vac service outlet is located within 7.5 meters (25 feet) of the IAC and UPS equipment.
- ❑ Startup and operational checks are performed by an authorized Eaton Customer Service Engineer.

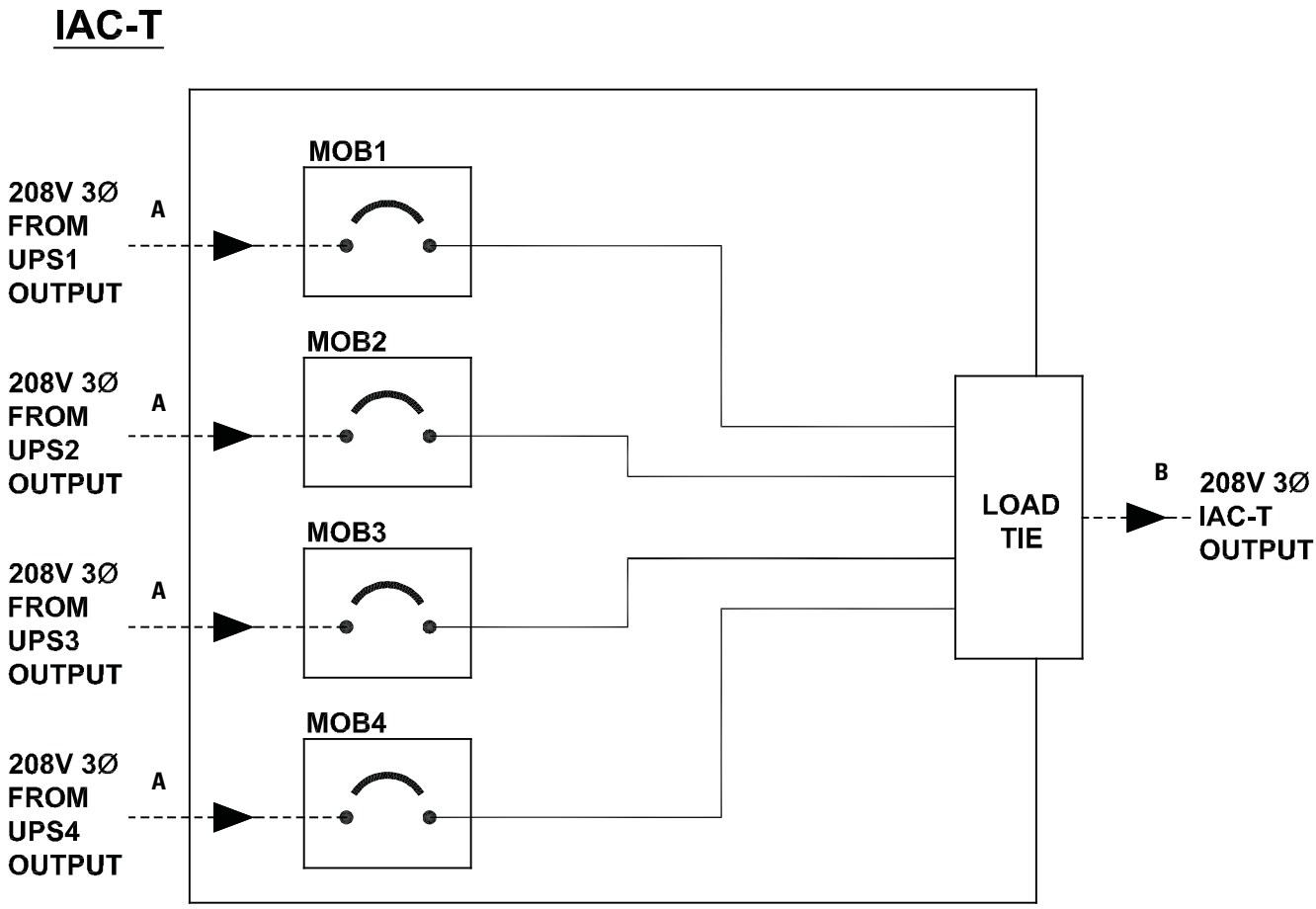
Notes

Section 2
Operation

Chapter 5 Onelines and Schematics

5.1 Onelines

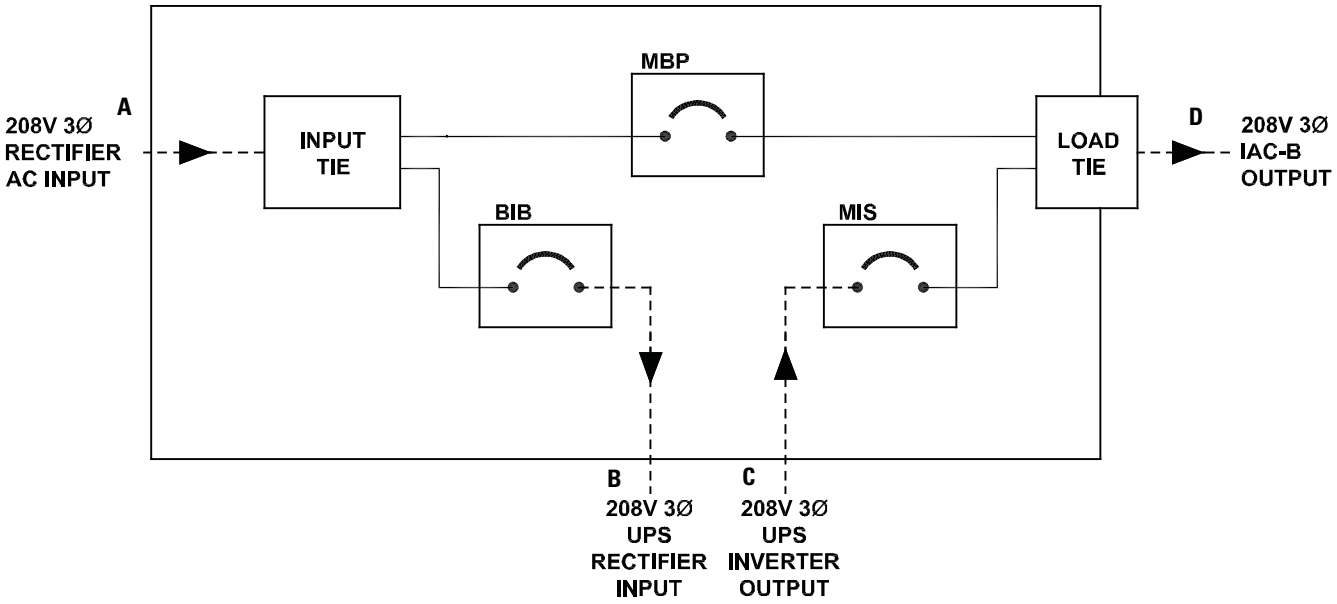
Figure 5-1 through Figure 5-3 show the simplified internal structure of the Integrated Accessory Cabinets (IACs).



NOTE Callout letters **A** and **B** map to Table 3-3 and Table 3-4.

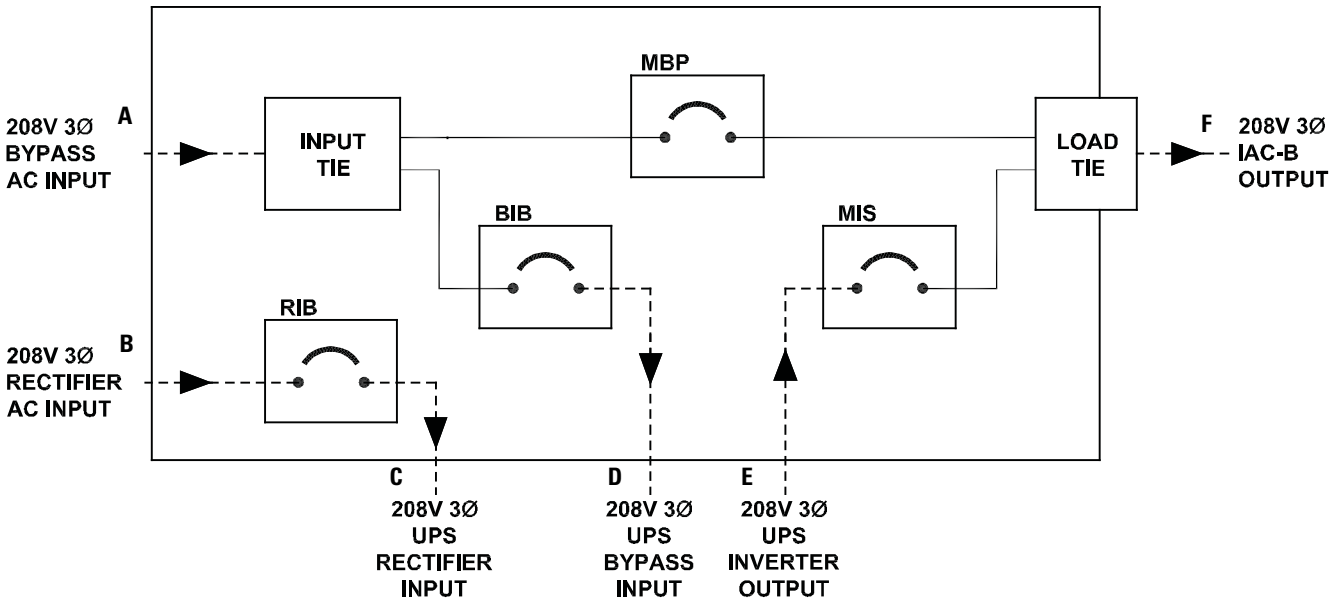
Figure 5-1. Integrated Accessory Cabinet-Tie (IAC-T) Internal Oneline

IAC-B [3-BREAKER VERSION]



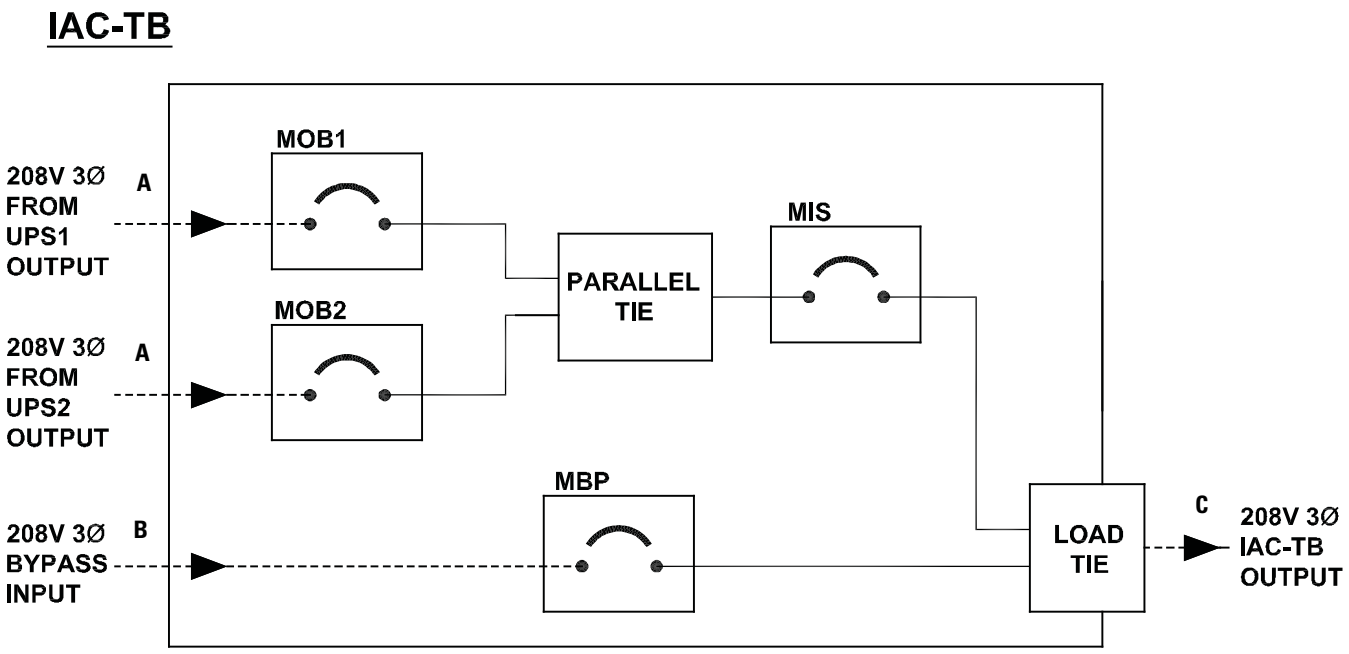
NOTE Callout letters **A**, **B, C,** and **D** map to Table 3-5.

IAC-B [4-BREAKER VERSION]



NOTE Callout letters **A**, **B, C, D, E, and F** map to Table 3-6.

Figure 5-2. Integrated Accessory Cabinet-Bypass (IAC-B) Internal Oneline



NOTE Callout letters **A**, **B,** and **C** map to Table 3-7 and Table 3-8.

Figure 5-3. Integrated Accessory Cabinet-Tie and Bypass (IAC-TB) Internal Oneline

5.2 Schematics

Figure 5-4 through Figure 5-7 show the IAC schematics.

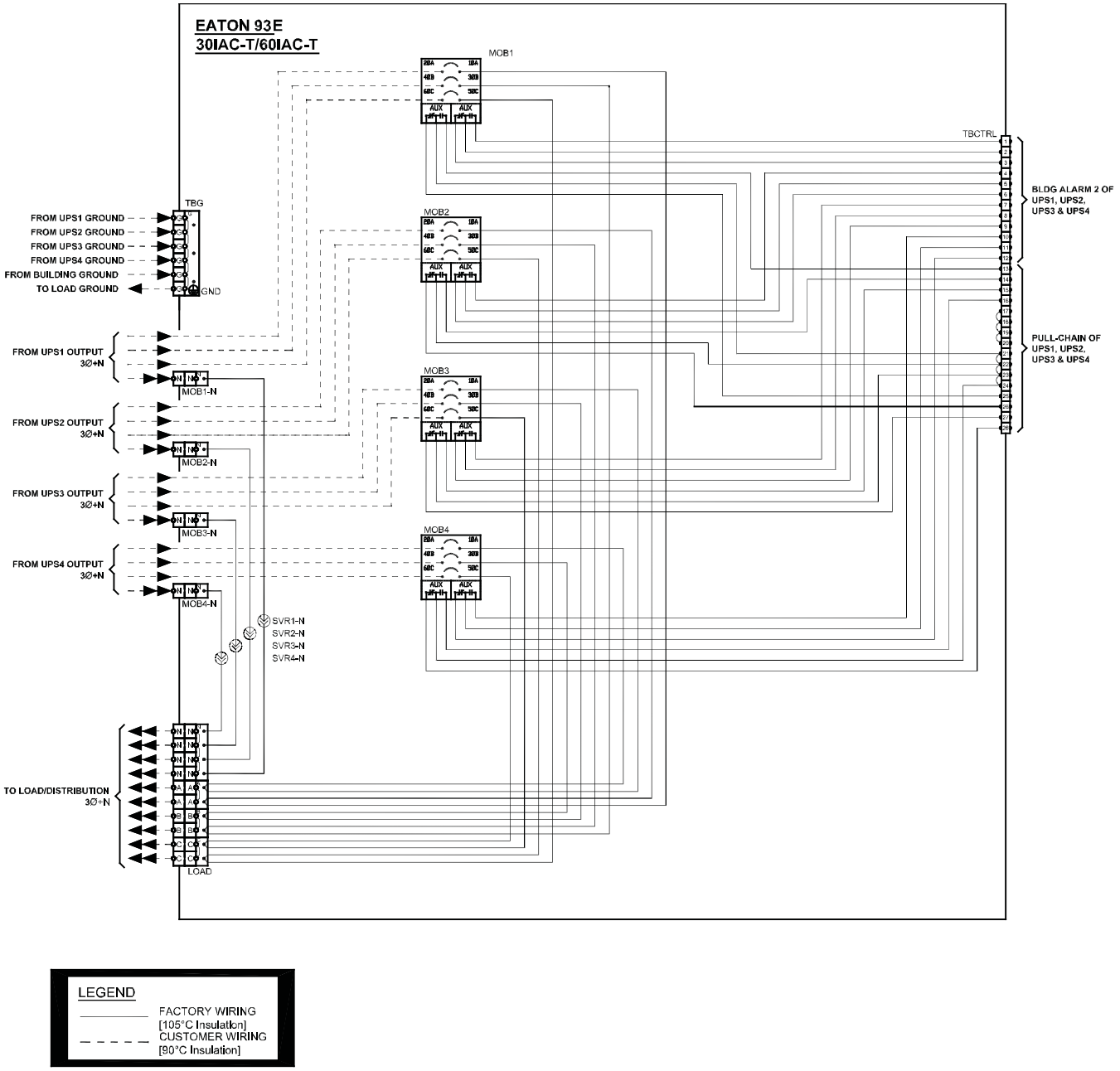


Figure 5-4. Eaton 93E 30IAC-T and 93E 60IAC-T Schematic

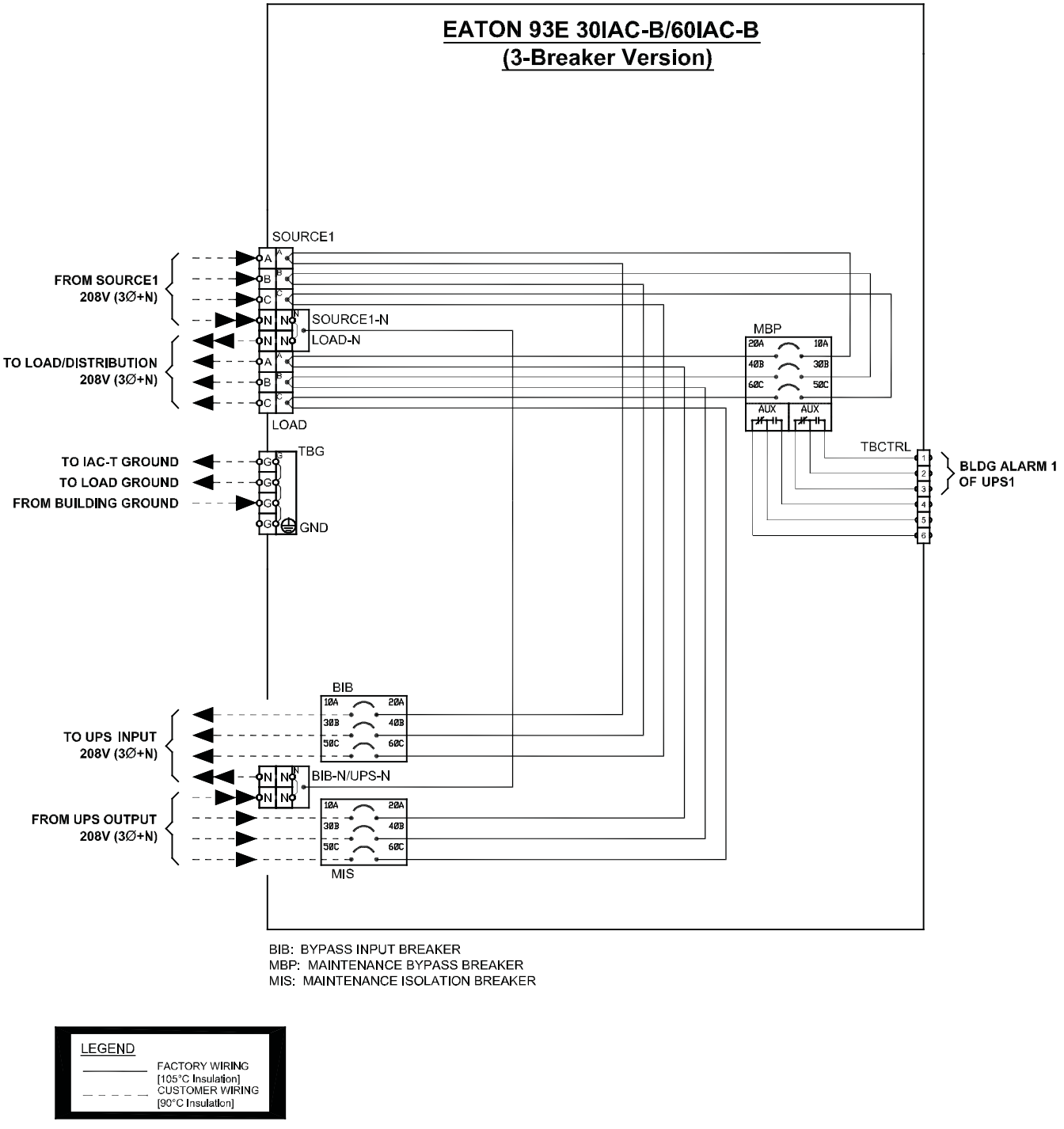


Figure 5-5. Eaton 93E 30IAC-B and 93E 60IAC-B Three-Breaker Schematic

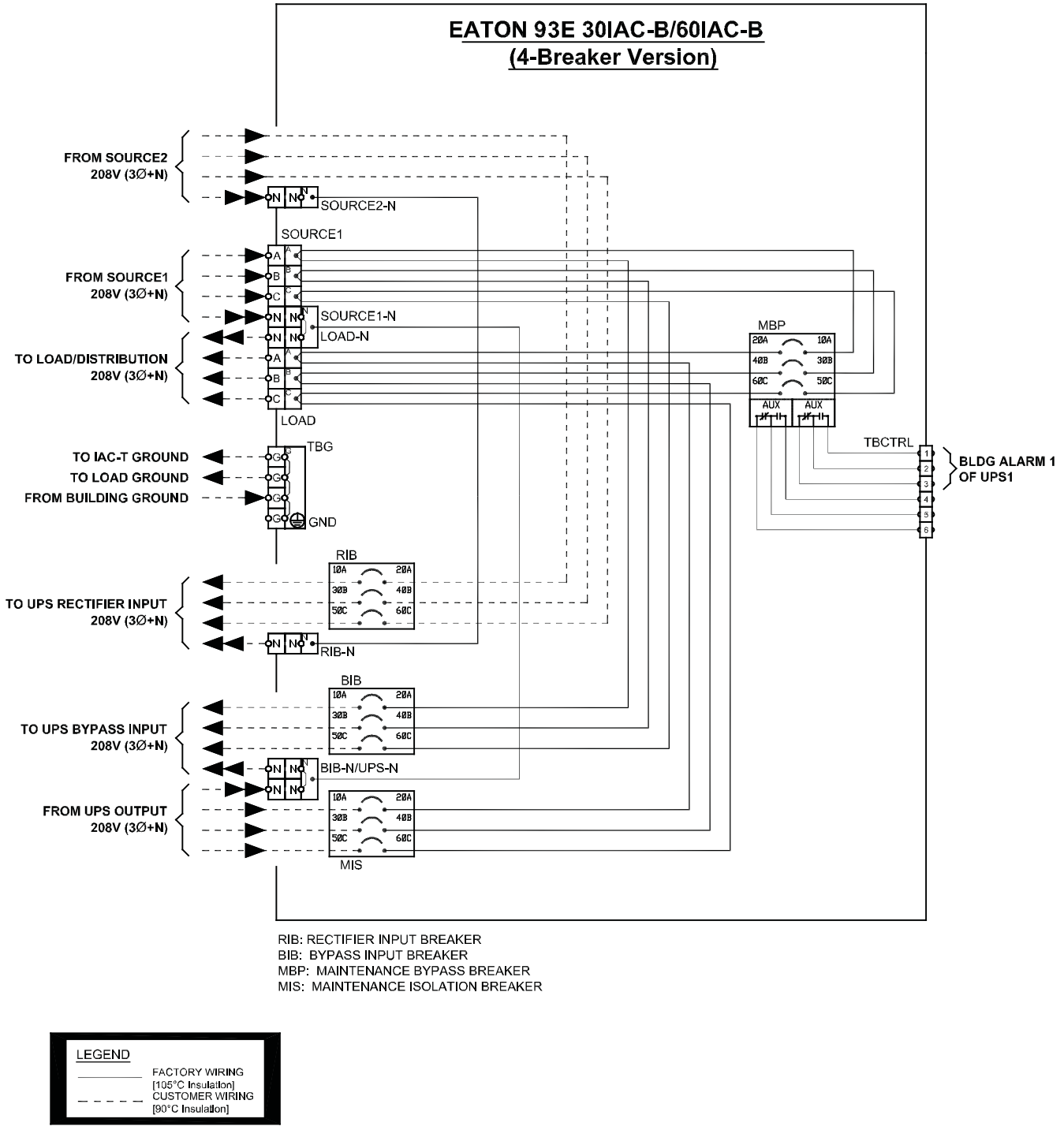


Figure 5-6. Eaton 93E 30IAC-B and 93E 60IAC-B Four-Breaker Schematic

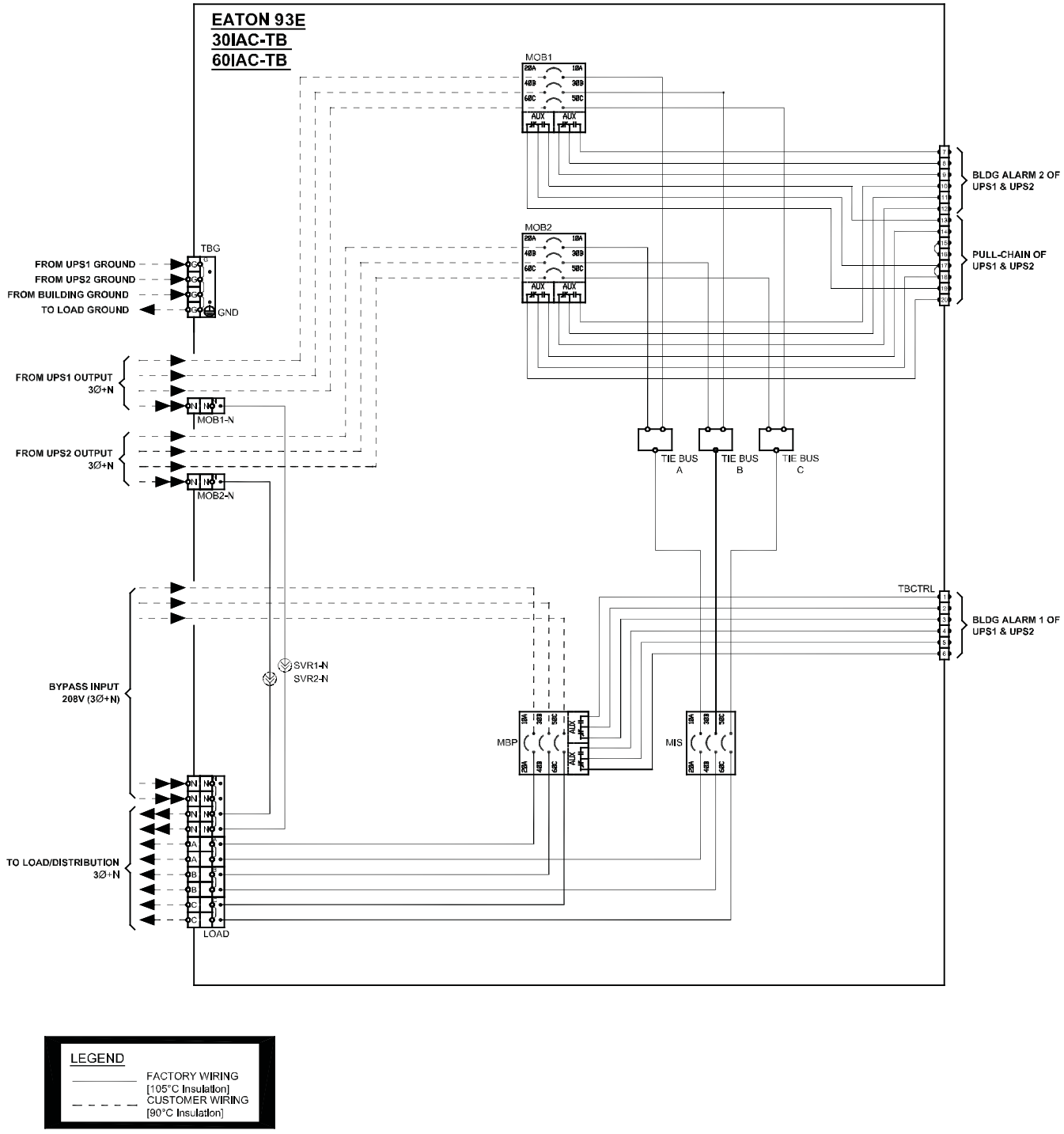


Figure 5-7. Eaton 93E 30IAC-TB and 93E 60IAC-TB Schematic

This page intentionally left blank.

Chapter 6 Integrated Accessory Cabinet Operating Instructions

This section describes how to operate the Integrated Accessory Cabinets (IACs).

NOTE 1 Before using the IACs, ensure all installation tasks are complete and a preliminary startup has been performed by authorized service personnel. The preliminary startup verifies all electrical interconnections to ensure the installation was successful and the system operates properly.

NOTE 2 Read this section of the manual and have thorough knowledge of UPS and IAC operation before attempting to operate any of the controls.

6.1 Integrated Accessory Cabinet-Tie

6.1.1 Circuit Breakers

Figure 6-1 and Figure 6-2 identify and show the location of the circuit breakers in the Integrated Accessory Cabinet-Tie (IAC-T).

The IAC-Ts contain up to four Module Output Breakers (MOBs) to control the output from the UPS modules and enable up to four modules to be paralleled together for redundancy or increased capacity.

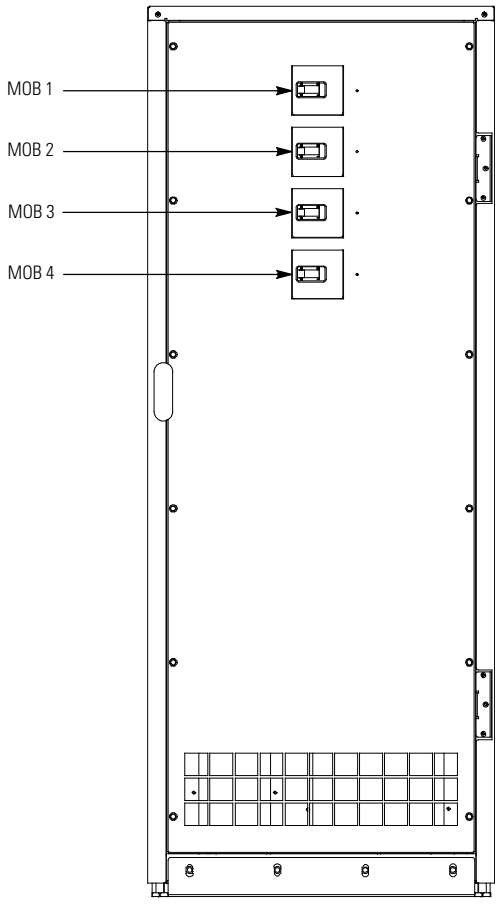


Figure 6-1. 93E 30IAC-T Breakers

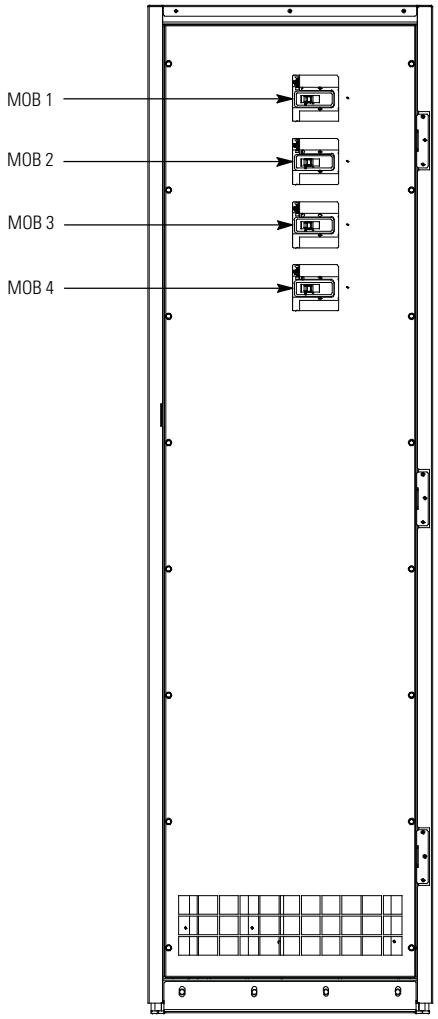


Figure 6-2. 93E 60IAC-T Breakers

6.1.2 Operation – Using the UPS when an IAC-T is Installed

To operate the IAC-T:

1. Open the front door (see Figure 4-1 or Figure 4-5) by lifting the latch from the bottom, turning to the right (counterclockwise), and swinging the door open.
2. Verify that the IAC-T circuit breakers are set as follows (see Figure 6-1 or Figure 6-2 for breaker locations):

MOB 1	**CLOSED**
MOB 2	**CLOSED**
MOB 3 (if installed)	**CLOSED**
MOB 4 (if installed)	**CLOSED**

3. Start the UPS. Refer to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9, for multiple UPS parallel operating procedures.
4. Close the door and secure the latch.

6.2 Integrated Accessory Cabinet-Bypass

6.2.1 Circuit Breakers

Figure 6-3 and Figure 6-4 identify and show the location of the circuit breakers in the Integrated Accessory Cabinet-Bypass (IAC-B). The descriptions provide a brief overview of the IAC-B breaker use.

- **Maintenance Bypass Breaker** – The Maintenance Bypass Breaker (MBP) transfers the load from the UPS output to the bypass input feeder.
- **Maintenance Isolation Breaker** – The Maintenance Isolation Breaker (MIS) isolates the UPS from the bypass feed and the load.
- **Bypass Input Breaker** – The Bypass Input Breaker (BIB) provides a single point of input power control to the UPS on single-feed systems or bypass input power control to the UPS on dual-feed systems. Using the BIB easily removes power from the UPS for servicing.
- **Rectifier Input Breaker** – The optional Rectifier Input Breaker (RIB) (four-breaker version only) provides a single point of rectifier input power control to the UPS on dual-feed systems and easily removes power from the UPS for servicing.

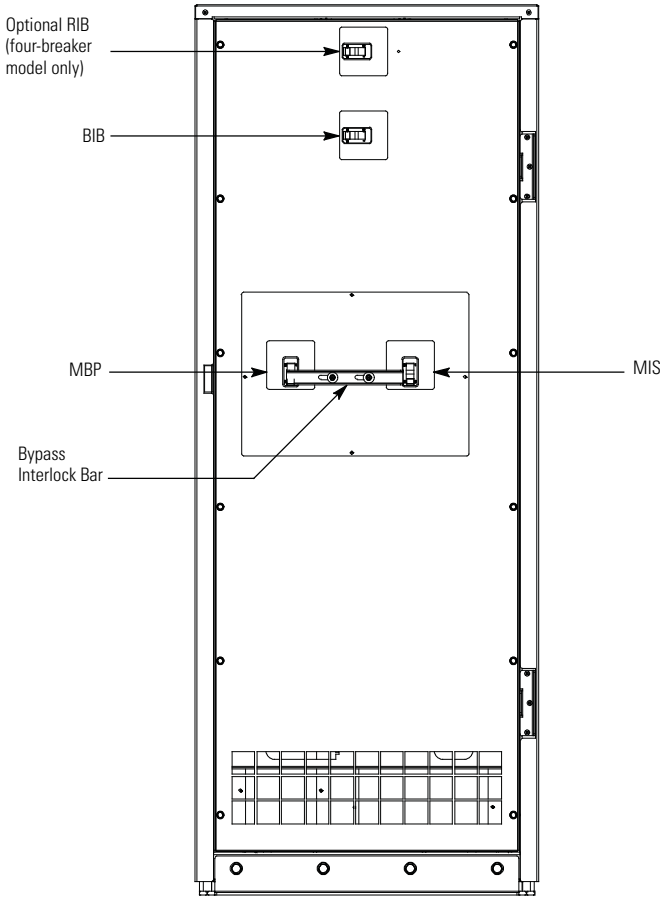


Figure 6-3. 93E 30IAC-B Breakers

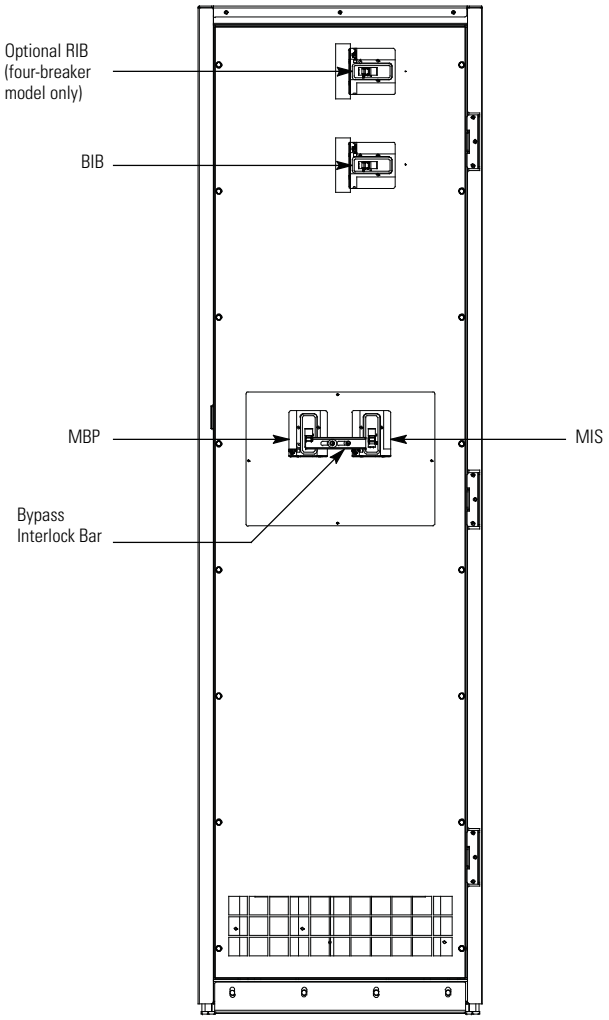


Figure 6-4. 93E 60IAC-B Breakers

6.2.2 Operation – Using the UPS when an IAC-B is Installed

To operate theIAC-B:

1. Open the front door (see Figure 4-1 or Figure 4-5) by lifting the latch from the bottom, turning to the right (counterclockwise), and swinging the door open.
2. Verify that the IAC-B circuit breakers are set as follows (see Figure 6-3 or Figure 6-4 for breaker locations):

MBP	**OPEN**
MIS	**CLOSED**
BIB	**CLOSED**
RIB (if installed)	**CLOSED**

3. Start the UPS. Refer to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9, for UPS operating procedures.
4. Close the door and secure the latch.

6.2.3 Transferring the UPS to Maintenance Bypass using an IAC-B

CAUTION

Only trained personnel familiar with the operation of this equipment should transfer loads. Failure to follow this transfer sequence may cause loss of power to loads.

CAUTION

In Bypass mode, the critical load is not protected from commercial power interruptions and abnormalities.

To transfer the load to maintenance bypass:

1. Open the front door (see Figure 4-1 or Figure 4-5) by lifting the latch from the bottom, turning to the right (counterclockwise), and swinging the door open.
2. Transfer the UPS from normal mode to bypass mode. Refer to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9 for UPS operating procedures.

CAUTION

Failure to close the MBP before opening the Maintenance Isolation Breaker (MIS) will result in the loss of power to the critical load.

3. Close the MBP
4. Slide the interlock bar to the left (see Figure 6-3 or Figure 6-4).
5. Open the MIS.

   The critical load is supplied by the maintenance bypass source.

WARNING

The BIB and RIB (if installed) must be opened to electrically isolate the UPS.

6. Open the BIB.
7. Open the RIB (if installed).
8. Close the door and secure the latch.
9. Shut down the UPS. Refer to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9 for UPS operating procedures.

6.2.4 Transferring the UPS from Maintenance Bypass using an IAC-B

⚠ CAUTION

Only trained personnel familiar with the operation of this equipment should transfer loads. Failure to follow this transfer sequence may cause loss of power to loads.

To transfer the load from maintenance:

1. Open the front door (see Figure 4-1 or Figure 4-5) by lifting the latch from the bottom, turning to the right (counterclockwise), and swinging the door open.
2. Close the BIB.
3. Close the RIB (if installed).
4. Start the UPS in bypass mode. Refer to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9 for UPS operating procedures.

⚠ CAUTION

Failure to close the MIS before opening the MBP will result in the loss of power to the critical load.

5. Close the MIS.
6. Slide the interlock bar to the right (see Figure 6-3 or Figure 6-4).
7. Open the MBP.
8. Close the door and secure the latch.
9. Transfer the UPS to Normal mode. Refer to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9 for UPS operating procedures.

6.3 Integrated Accessory Cabinet-Tie and Bypass

6.3.1 Circuit Breakers

Figure 6-5 and Figure 6-6 identify and show the location of the circuit breakers in the Integrated Accessory Cabinet-Tie and Bypass (IAC-TB). The descriptions provide a brief overview of the IAC-TB breaker use.

- **Module Output Breaker 1** – The Module Output Breaker 1 (MOB 1) controls the output from UPS 1, enabling two UPS modules to be paralleled together for redundancy or increased capacity.
- **Module Output Breaker 2** – The Module Output Breaker 2 (MOB 2) controls the output from UPS 2, enabling two UPS modules to be paralleled together for redundancy or increased capacity.
- **Maintenance Bypass Breaker** – The Maintenance Bypass Breaker (MBP) transfers the load from the UPS output to the bypass input feeder.
- **Maintenance Isolation Breaker** – The Maintenance Isolation Breaker (MIS) isolates the UPS from the bypass feed and the load.

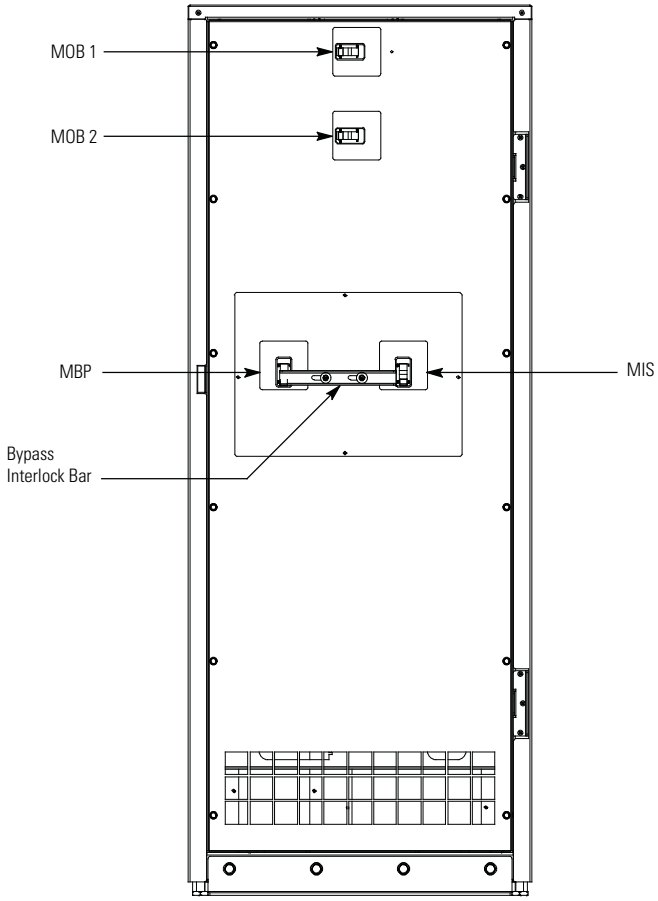


Figure 6-5. 93E 30IAC-TB Breakers

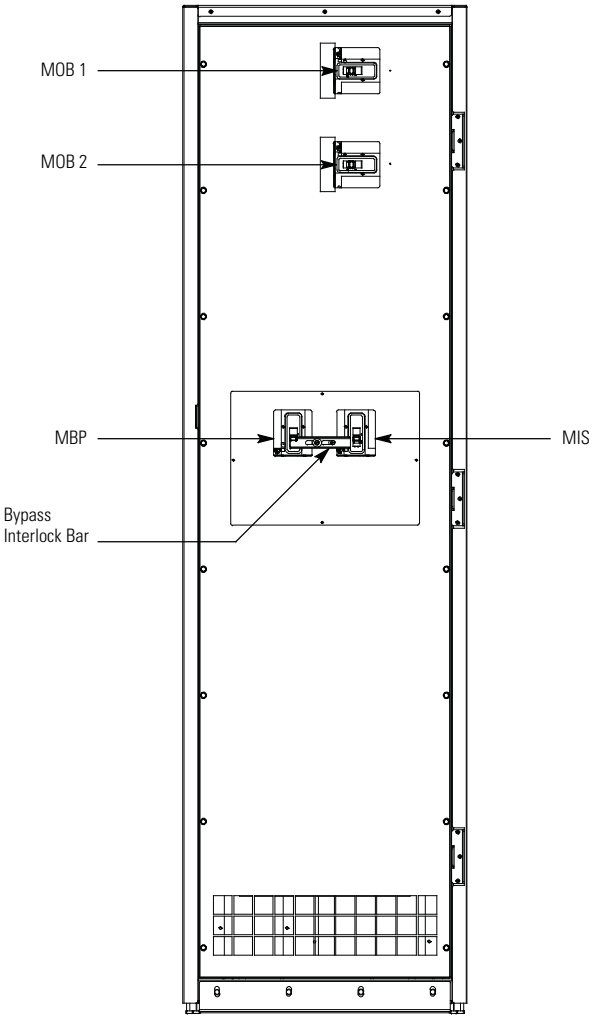


Figure 6-6. 93E 60IAC-TB Breakers

6.3.2 Operation – Using the UPS when an IAC-TB is Installed

To operate the IAC-TB:

1. Open the front door (see Figure 4-1 or Figure 4-5) by lifting the latch from the bottom, turning to the right (counterclockwise), and swinging the door open.
2. Verify that the IAC-TB circuit breakers are set as follows (see Figure 6-1 or Figure 6-2 for breaker locations):

MOB 1	**CLOSED**
MOB 2	**CLOSED**
MBP	**OPEN**
MIS	**CLOSED**

3. Start the UPS. Refer to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9, for multiple UPS parallel operating procedures.
4. Close the door and secure the latch.

6.3.3 Transferring the UPS to Maintenance Bypass using an IAC-TB

⚠ CAUTION

Only trained personnel familiar with the operation of this equipment should transfer loads. Failure to follow this transfer sequence may cause loss of power to loads.

⚠ CAUTION

In Bypass mode, the critical load is not protected from commercial power interruptions and abnormalities.

To transfer the load to maintenance bypass:

1. Open the front door (see Figure 4-1 or Figure 4-5) by lifting the latch from the bottom, turning to the right (counterclockwise), and swinging the door open.
2. Transfer the UPS from normal mode to bypass mode. Refer to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9 for UPS operating procedures.

⚠ CAUTION

Failure to close the MBP before opening the Maintenance Isolation Breaker (MIS) will result in the loss of power to the critical load.

3. Close the MBP
4. Slide the interlock bar to the left (see Figure 6-3 or Figure 6-4).
5. Open the MIS.

   The critical load is supplied by the maintenance bypass source.
6. Open the MOBs
7. Close the door and secure the latch.
8. Shut down the UPS. Refer to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9 for UPS operating procedures.

6.3.4 Transferring the UPS from Maintenance Bypass using an IAC-TB

⚠ CAUTION

Only trained personnel familiar with the operation of this equipment should transfer loads. Failure to follow this transfer sequence may cause loss of power to loads.

To transfer the load from maintenance bypass:

1. Open the front door (see Figure 4-1 or Figure 4-5) by lifting the latch from the bottom, turning to the right (counterclockwise), and swinging the door open.
2. Close the MOBs
3. Start the UPS in bypass mode. Refer to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9 for UPS operating procedures.

CAUTION

Failure to close the MIS before opening the MBP will result in the loss of power to the critical load.

4. Close the MIS.
5. Slide the interlock bar to the right (see Figure 6-3 or Figure 6-4).
6. Open the MBP.
7. Close the door and secure the latch.
8. Transfer the UPS to Normal mode. Refer to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9 for UPS operating procedures.

Chapter 7 Maintenance

The components inside the Integrated Accessory Cabinets (IACs) are secured to a sturdy metal frame. All repairable parts and assemblies are located for easy removal, with very little disassembly. This design allows authorized service personnel to perform routine maintenance and servicing quickly.

You must schedule periodic performance checks of the UPS system to keep it running properly. Regular routine checks of operation and system parameters enable your system to function efficiently for many trouble-free years.

7.1 Important Safety Instructions

Remember that your UPS system is designed to supply power **EVEN WHEN DISCONNECTED FROM THE UTILITY POWER**.

⚠ WARNING

- No user serviceable components.
- Servicing and maintenance should be performed by qualified service personnel only.
- LETHAL VOLTAGE PRESENT. This unit should not be operated with the cabinet doors open or protective panels removed. Do not make any assumptions about the electrical state of any cabinet in the UPS system.

7.2 Performing Preventive Maintenance

The UPS system requires very little preventive maintenance. However, the system should be inspected periodically to verify that the units are operating normally. Record maintenance results and any corrective actions in a suitable log.

7.2.1 DAILY Maintenance

Perform the following steps daily:

1. Check the area surrounding the UPS system. Ensure the area is not cluttered, allowing free access to the unit.
2. Ensure the air intakes on the Accessory cabinets are not blocked.
3. Ensure the operating environment is within the parameters specified in paragraph 3.2.1 and Chapter 8, "Product Specifications."

7.2.2 PERIODIC Maintenance

Periodic inspections of the IACs should be made to determine if components, wiring, and connections exhibit evidence of overheating. Particular attention should be given to the compression lug connections. Maintenance procedures should specify that the compression lug connections be retorqued to values listed in this manual.

7.2.3 ANNUAL Maintenance

Annual preventive maintenance should be performed only by authorized service personnel familiar with maintenance and servicing of the UPS system. Contact an Eaton service representative for more information about service offerings.

7.3 Maintenance Training

A basic training course, available from Eaton Corporation, gives you a competent working knowledge of the UPS system operation and teaches you how to perform first level corrective maintenance. For more information about training and other services, contact the Help Desk (see paragraph 1.9).

This page intentionally left blank.

Chapter 8 Product Specifications

This section provides the following specifications:

- Model Numbers
- Input specifications
- Output specifications
- Environmental and safety specifications

8.1 Model Numbers

The Integrated Accessory Cabinets (IACs) are available in the models listed below to meet the needs of the Eaton 93E UPS product line.

Integrated Accessory Cabinet Models	Description
Eaton 93E 30IAC-T	IAC-T for Eaton 93E 30kVA UPS
Eaton 93E 60IAC-T	IAC-T for Eaton 93E 60kVA UPS
Eaton 93E 30IAC-B	IAC-B for Eaton 93E 30kVA UPS
Eaton 93E 60IAC-B	IAC-B for Eaton 93E 60kVA UPS
Eaton 93E 30IAC-TB	IAC-TB for Eaton 93E 30kVA UPS
Eaton 93E 60IAC-TB	IAC-TB for Eaton 93E 60kVA UPS

8.2 Specifications

The following sections detail the input, output, and environmental and safety specifications for the IACs.

8.2.1 Input

Operating Input Voltage Range	208 Vac nominal (60 Hz)
Input Wiring: 4W + G **Operating Frequency Range**	60 Hz ± 5 Hz
Operating Input Current	See Tables 3-3, 3-4, 3-5, 3-6, 3-7, or 3-8

8.2.2 Output

Operating Output Voltage	208/120 Vac nominal
Output Wiring: 4W + G **Operating Output Frequency Range**	60 Hz ± 5 Hz
Output Current	See Tables 3-3, 3-4, 3-5, 3-6, 3-7, or 3-8

8.2.3 Environmental and Safety Specifications

Operating Temperature	32°F to 86°F (0°C to 30°C).
Transit Temperature	-13°F to 140°F (-25°C to 60°C)
Storage Temperature	-13°F to 131°F (-25°C to 55°C)
Operating Altitude	Maximum 1500m (5000 ft) at 30°C without derating
Transit Altitude	15000m (49213 ft)
Ventilation	Convection
Relative Humidity (operating and storage)	5% to 95% maximum noncondensing
Acoustical Noise	Not applicable
Safety Conformance	UL1778 4th edition
Agency Markings	cULus
EMC (Class A)	FCC Part 15 Class A and 62040-2 c3

Section 3

Wall Mount Maintenance Bypass

Chapter 9 Wall Mounted Bypass Panel Operating Instructions, Onelines, and Schematics

This section provides Wall Mounted Maintenance Bypass Panel (WMMBP) oneline and schematic drawings, and describes how to operate the WMMBP in conjunction with the 93E UPS.

NOTE Read this section of the manual and have thorough knowledge of WMMBP operation before attempting to operate any of the controls.

9.1 93E Three-Breaker WMMBP Operation

CAUTION

Only trained personnel familiar with the operation of this equipment should transfer loads. Failure to follow this transfer sequence may cause loss of power to loads.

CAUTION

In Bypass mode, the critical load is not protected from commercial power interruptions and abnormalities.

9.1.1 Transfer from UPS Bypass to Maintenance Bypass

To transfer the load from UPS bypass to maintenance bypass:

1. Verify the Bypass Input Breaker (BIB) is closed.
2. Transfer the UPS from normal mode to bypass mode. Refer to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9 for UPS operating procedures.

CAUTION

Failure to close the Maintenance Bypass Breaker (MBP) before opening the Maintenance Isolation Breaker (MIS) will result in the loss of power to the critical load.

3. Close the MBP.
4. Open the MIS.

   The critical load is supplied by the maintenance bypass source.

WARNING

The BIB must be opened to electrically isolate the UPS.

5. Open the BIB.
6. Shut down the UPS. Refer to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9 for UPS operating procedures.

9.1.2 Transfer from Maintenance Bypass to UPS Bypass

To transfer the load from maintenance bypass to UPS bypass:

1. Close the BIB.
2. Start the UPS in bypass mode. Refer to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9 for UPS operating procedures.

⚠ CAUTION

Failure to close the MIS before opening the MBP will result in the loss of power to the critical load.

3. Close the MIS.
4. Open the MBP.
5. Transfer the UPS to Normal mode. Refer to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9 for UPS operating procedures.

9.2 93E Parallel WMMBP Operation

⚠ CAUTION

Only trained personnel familiar with the operation of this equipment should transfer loads. Failure to follow this transfer sequence may cause loss of power to loads.

⚠ CAUTION

In Bypass mode, the critical load is not protected from commercial power interruptions and abnormalities.

NOTE The Parallel WMMBP is to be used with the Integrated Accessory Cabinet-Tie (IAC-T).

9.2.1 Transfer from UPS Bypass to Maintenance Bypass

To transfer the load from UPS bypass to maintenance bypass:

1. Verify all of the UPS feeder breakers are closed.
2. Transfer all of the UPSs from normal mode to bypass mode. Refer to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9 for UPS operating procedures.

⚠ CAUTION

Failure to close the Maintenance Bypass Breaker (MBP) before opening the Maintenance Isolation Breaker (MIS) will result in the loss of power to the critical load.

3. Close the MBP.
4. Open the MIS.

   The critical load is supplied by the maintenance bypass source.

WARNING

The UPS feeder breakers and IAC-T Module Output Breakers (MOBs) must be opened to electrically isolate the UPS.

5. Open all of the UPS feeder breakers and MOBs.
6. Shut down all of the UPSs. Refer to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9 for UPS operating procedures.

9.2.2 Transfer from Maintenance Bypass to UPS Bypass

To transfer the load from maintenance bypass to UPS bypass:

1. Close all of the UPS feeder breakers.
2. Start all of the UPSs in bypass mode. Refer to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9 for UPS operating procedures.

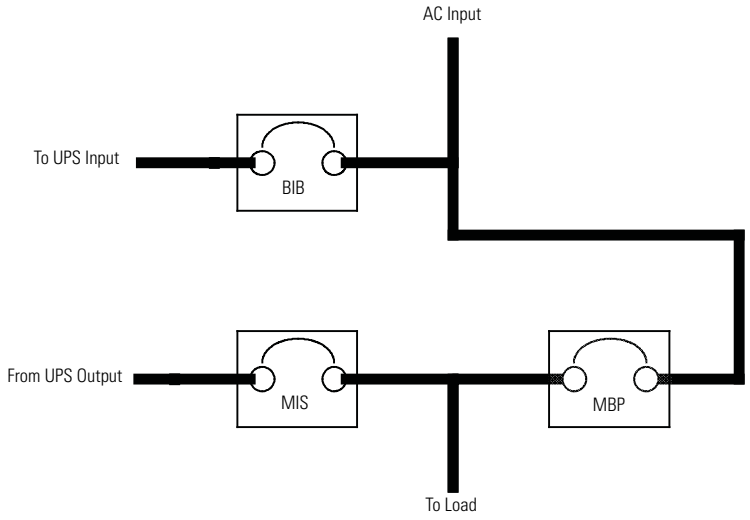
CAUTION

Failure to close the MIS and MOBs before opening the MBP will result in the loss of power to the critical load.

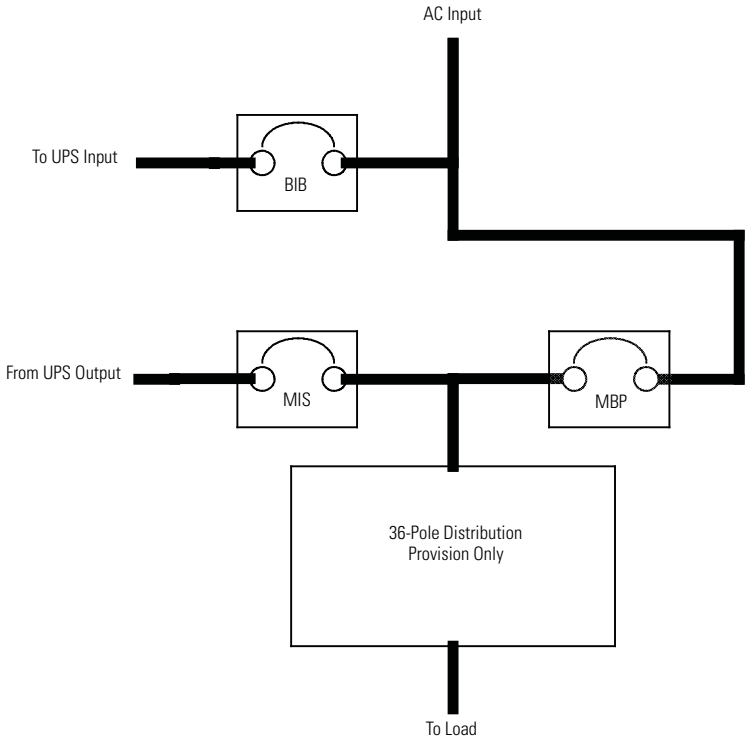
3. Close the IAC-T MOBs
4. Close the MIS.
5. Open the MBP.
6. Transfer all of the UPSs to Normal mode. Refer to the applicable Eaton 93E UPS Installation and Operation manual listed in paragraph 1.9 for UPS operating procedures.

9.3 Onelines

Figure 9-1 and Figure 9-2 show the simplified internal structure of the three-breaker and parallel WMMBP.

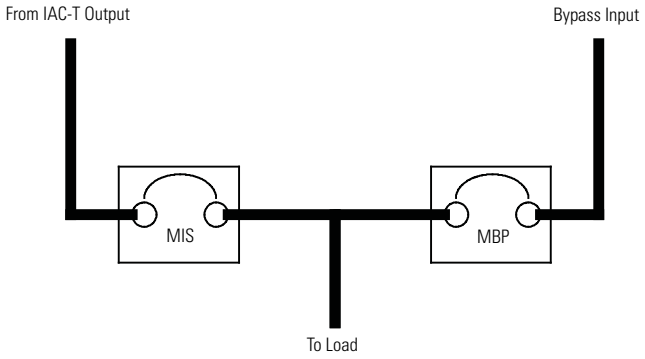


No Distribution

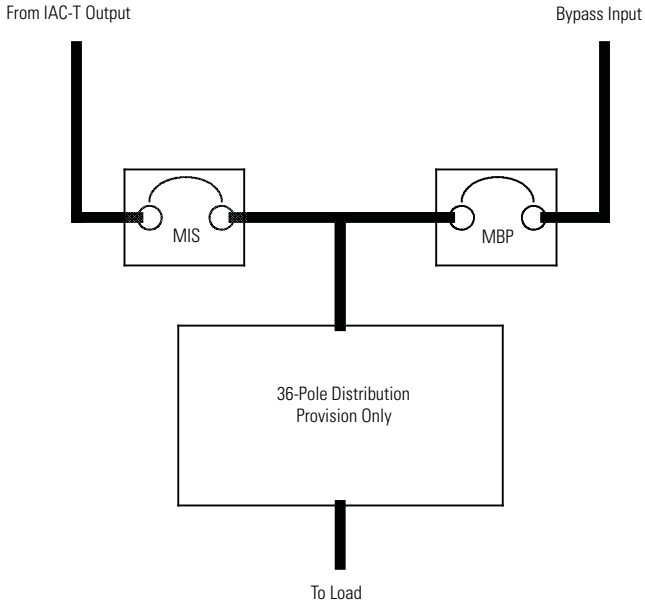


With 36-Pole Distribution

Figure 9-1. 93E Three-Breaker WMMBP



No Distribution



With 36-Pole Distribution

Figure 9-2. 93E Parallel WMMBP

This page intentionally left blank.

Warranty

LIMITED FACTORY WARRANTY FOR THREE-PHASE EATON® 93E UPS AND 93E UPS ACCESSORY PRODUCTS

WARRANTOR: The warrantor for the limited warranties set forth herein is Eaton Corporation, an Ohio Corporation ("Eaton").

LIMITED WARRANTY: This limited warranty (this "Warranty") applies only to the original end-user (the "End-User") of the Eaton Three-Phase 93E UPS and 93E UPS Accessory Products (the "Product") and cannot be transferred. This restriction applies even in the event that the Product is initially sold by Eaton for resale to an End-User. This Warranty gives you specific legal rights, and you may also have other rights which vary from State to State (or jurisdiction to jurisdiction).

WHAT THIS LIMITED WARRANTY COVERS: The warrantor warrants, with the terms of this Warranty, that the Eaton three-phase UPS electronics, Eaton-built accessories, and Eaton -built battery cabinets (individually and collectively, the "Warranted Items") are free from defects in material and workmanship.

For Product installed (and currently located) in the fifty (50) United States and the District of Columbia, if, in the opinion of Eaton, a Warranted Item is defective, Eaton's sole obligation, at the option of Eaton, will be to refurbish or replace such defective Warranted Item (including the costs of providing diagnosis, service, and labor ["labor coverage"]). The defective Warranted Item will be refurbished or replaced onsite at the End-User's location or such other location as determined by Eaton. Any parts that are replaced may be new or reconditioned. All parts replaced by Eaton shall become the property of Eaton.

For Product installed (and currently located) outside the fifty (50) United States and the District of Columbia, if, in the opinion of Eaton, a Warranted Item is defective, Eaton's sole obligation, at the option of Eaton, will be to refurbish or replace such defective Warranted Item (not including the costs of labor coverage). The defective Warranted Item will be refurbished or replaced onsite at the End-User's location or such other location as determined by Eaton. Any parts that are replaced may be new or reconditioned. All parts replaced by Eaton shall become the property of Eaton.

LIMITED WARRANTY PERIOD: The period covered by this Warranty for Product installed (and currently located) in the fifty (50) United States and the District of Columbia is six (6) months from the date of Product purchase for labor coverage when no startup is performed by an authorized Eaton Customer Service Engineer or Agent or twelve (12) months from the date of Product purchase with startup performed by an authorized Eaton Customer Service Engineer or Agent and twelve (12) months from the date of Product purchase or eighteen (18) months from date of Product shipment, whichever occurs first, for the refurbishment/ replacement of parts.

The period covered by this Warranty for Product installed (and currently located) outside the fifty (50) United States and the District of Columbia is twelve (12) months from the date of Product purchase or eighteen (18) months from the date of Product shipment, whichever occurs first, for the refurbishment/replacement of parts.

WHAT THIS LIMITED WARRANTY DOES NOT COVER: This Warranty does not cover any defects or damages caused by: (a) failure to properly store the Product before installation, including the "trickle charge" of batteries no later than the date indicated on the packaging; (b) shipping and delivery of the Product if shipping is FOB Factory; (c) neglect, accident, fire, flood, lightning, vandalism, acts of God, Customer's neglect, abuse, misuse, misapplication, incorrect installation; (d) repair or alteration not authorized in writing by Eaton personnel or performed by an authorized Eaton Customer Service Engineer or Agent; or (e) improper testing, operation, maintenance, adjustment, or any modification of any kind not authorized in writing by Eaton personnel or performed by an authorized Eaton Customer Service Engineer or Agent.

This Warranty is not valid: if the Product's serial numbers have been removed or are illegible. Any Warranted Items repaired or replaced pursuant to this Warranty will be warranted for the remaining portion of the original Warranty subject to all the terms thereof. Eaton does not provide a labor warranty for Product located outside of the fifty (50) United States or the District of Columbia. **Any equipment, parts, or materials included in the Product and not manufactured by Eaton are warranted solely by the manufacturer of such equipment, parts, or materials and are not included as part of this Warranty. Batteries are not warranted by Eaton.**

THIS WARRANTY IS THE END-USER'S SOLE REMEDY AND IS EXPRESSLY IN LIEU OF, AND THERE ARE NO OTHER, EXPRESSED OR IMPLIED GUARANTEES OR WARRANTIES (INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PURPOSE, WHICH ARE EXPRESSLY DISCLAIMED). SOME STATES OR JURISDICTIONS DO NOT ALLOW THE EXCLUSION OF EXPRESS OR IMPLIED WARRANTIES, SO THE ABOVE EXCLUSION MAY NOT APPLY TO YOU. IN THAT EVENT, SUCH WARRANTIES ARE LIMITED IN DURATION TO THE LIMITED WARRANTY PERIOD. SOME STATES OR JURISDICTIONS DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS OR THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS AND/OR EXCLUSIONS MAY NOT APPLY TO YOU.

LIMITATION OF LIABILITY: In no event shall Eaton be liable for any indirect, incidental, special or consequential damages of any kind or type whatsoever, resulting from or in connection with any claim or cause of action, whether brought in contract or in tort (including negligence and strict liability). Some States or jurisdictions do not allow the exclusion of limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. Eaton shall not be responsible for failure to provide service or parts due to causes beyond Eaton's reasonable control. In no case will Eaton's liability under this Warranty exceed the replacement value of the Warranted Items.

END-USER'S OBLIGATIONS: In order to receive the benefits of this Warranty, the End-User must register the product warranty (via mail or online at www.powerquality.eaton.com/Product-Registration "product registration"); use the Product in a normal way; follow the Product's user's guide; and protect against further damage to the Product if there is a covered defect.

OTHER LIMITATIONS: Eaton's obligations under this Warranty are expressly conditioned upon receipt by Eaton of all payments due to it (including interest charges, if any). During such time as Eaton has not received payment of any amount due to it for the Product, in accordance with the contract terms under which the Product is sold, Eaton shall have no obligation under this Warranty. Also during such time, the period of this Warranty shall continue to run and the expiration of this Warranty shall not be extended upon payment of any overdue or unpaid amounts.

COSTS NOT RELATED TO WARRANTY: The End-User shall be invoiced for, and shall pay for, all services not expressly provided for by the terms of this Warranty, including without limitation site calls involving an inspection that determines no corrective maintenance is required. Any costs for replacement equipment, installation, materials, freight charges, travel expenses, or labor of Eaton representatives outside the terms of this Warranty will be borne by the End-User.

OBTAINING WARRANTY SERVICE: In the USA, call the Eaton Customer Reliability Center 7x24 at 800-843-9433. Outside of the USA, call your local Eaton sales or service representative, or call the Eaton Customer Reliability Center in the United States at 919-845-3633. For comments or questions about this Limited Factory Warranty, write to the Customer Quality Representative, 8609 Six Forks Road, Raleigh, North Carolina 27615 USA.

P-164000073 2