

Eaton® Current-Limiting Reactor (2000/2500A)

Installation Manual



---

## **IMPORTANT SAFETY INSTRUCTIONS - SAVE THESE INSTRUCTIONS**

---

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

---

---

## **CONSIGNES DE SÉCURITÉ IMPORTANTES – CONSERVER CES INSTRUCTIONS**

---

Ce manuel contient des instructions importantes que vous devez suivre lors de l'installation et de la maintenance de l'équipement. Veuillez consulter entièrement ces instructions avant de faire fonctionner l'équipement et conserver ce manuel afin de pouvoir vous y reporter ultérieurement.

---

---

### **WARNING**

---

This is a product for restricted sales distribution to informed partners (EN/IEC 62040-2). Installation restrictions or additional measures may be needed to prevent electromagnetic disturbances.

---

Eaton reserves the right to change specifications without prior notice. Eaton is a registered trademark of Eaton Corporation or its subsidiaries and affiliates. All other trademarks are property of their respective companies.

©Copyright 2024 Eaton, Raleigh, NC, USA. All rights reserved. No part of this document may be reproduced in any way without the express written approval of Eaton.



Dear Customer,

On behalf of everyone at Eaton, we thank you for partnering with us, for trusting us to maintain your business continuity and for preventing downtime at your facility.

Our suite of backup power, power distribution and power management products are designed to protect you from a host of threats including power outages, surges, and lightning strikes, and enable you to monitor and control your power infrastructure.

We trust that our products will deliver high quality, reliable power for your business, and we are committed to your success.

Please read this manual, which details the installation and operation processes for your new Eaton product.

Thank you for choosing Eaton!

## Table of Contents

<b>1 Introduction</b>	<b>1</b>
1.1 Intended Use	1
1.2 Description	1
1.3 Using This Manual	2
1.4 Conventions Used in This Manual	2
1.5 Symbols, Controls, and Indicators	3
1.6 Getting Help	3
1.7 Warranty and End User License Agreement	3
<b>2 Safety</b>	<b>5</b>
<b>3 Installation</b>	<b>6</b>
3.1 Receiving and Unpacking the Reactor	6
3.2 Moving the Current-Limiting Reactor	6
3.3 Clearances	7
3.4 Anchoring the Current-Limiting Reactor to the Floor	7
3.5 Installing the Optional Side Car	8
<b>4 Power Cabling</b>	<b>10</b>
4.1 Cable Entry	10
4.1.1 Cable Entry Panels	10
4.1.2 Side Car Cable Entry	10
4.2 Power Connections	11
<b>5 Eaton Service Contracts</b>	<b>13</b>
5.1 The Service Promise	13
5.2 Preventive Maintenance	13
5.3 Eaton Provides Flexibility and Commitment	13
5.4 Time and Materials	13
5.5 Startup	13
5.6 Infrared Scanning	13
<b>6 Appendix A — Drawings</b>	<b>14</b>
6.1 Current-Limiting Reactor 2000A Drawings	14
6.2 Current-Limiting Reactor 2500A Drawings	17

## List of Figures

Figure 1.	Current-Limiting Reactor 2000A or 2500A, Front and Side Views .....	2
Figure 2.	Current-Limiting Reactor Dimensions and Weight .....	7
Figure 3.	Reactor Anchoring Locations .....	8
Figure 4.	Side Car Installation .....	8
Figure 5.	Side Car / Reactor Joining .....	9
Figure 6.	Cable Entry Panels .....	10
Figure 7.	Side Car Cable Entry .....	11
Figure 8.	Power Connections, Panels Removed .....	12

## Chapter 1 Introduction

### 1.1 Intended Use

Reactor Power Panels (RPPs) make maintenance of downstream equipment safer by limiting fault current and reducing the risk of arc flash. The Current-Limiting Reactor (2000A or 2500A) is designed to be used as part of a reserve power source for multiple downstream RPPs with Bypass Cabinets. An Current-Limiting Reactor, when used as a component of a reserve power source, allows multiple downstream RPPs to be taken offline for maintenance while the Current-Limiting Reactor temporarily provides the same safety benefits as the offline RPPs.

### 1.2 Description

The Current-Limiting Reactor is a stand-alone unit with no operational controls. Switching to reserve power occurs at the downstream RPP Bypass Cabinet. For operational procedures on switching downstream RPPs to reserve power, see these companion Eaton manuals:

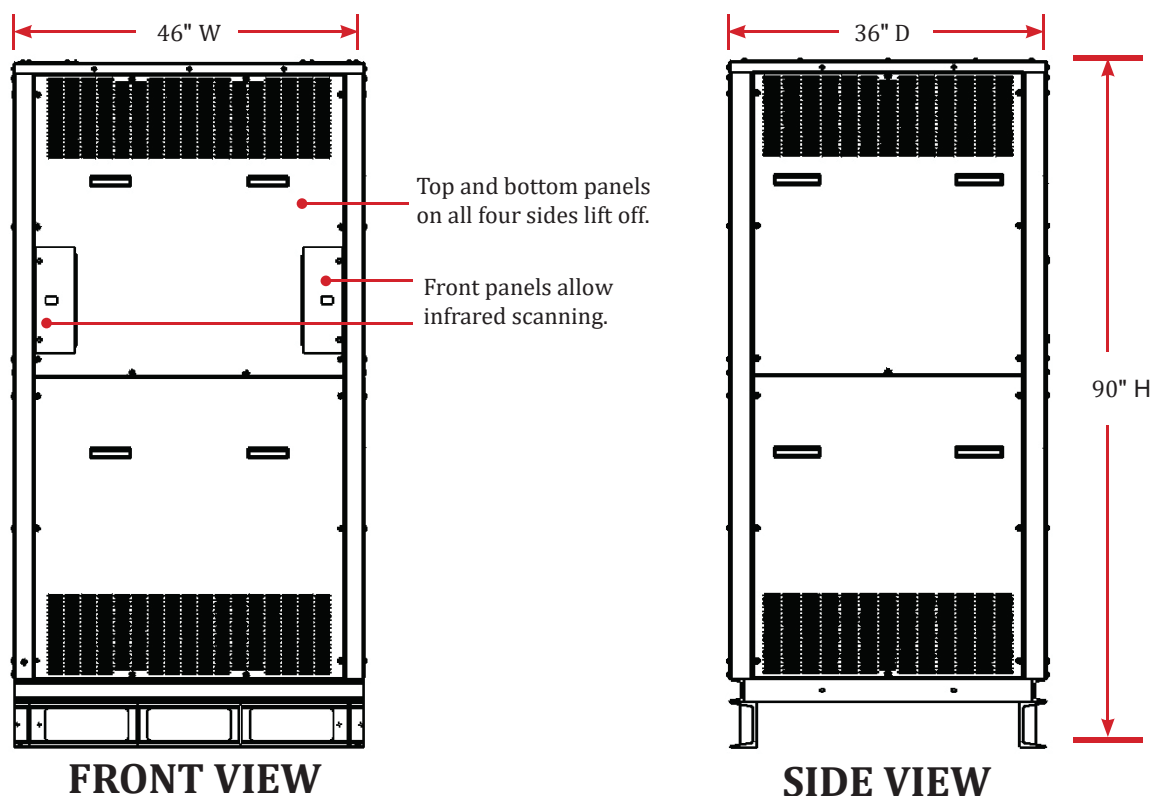
- Reactor Power Panel V2 (250A) Installation and Operation P-164001118
- Retrofit Bypass Cabinet for Reactor Power Panels (250A) Installation and Operation P-164001119

Cable entry can be from top or bottom of the unit. An Current-Limiting Reactor can also have an optional side car that provides additional cable entry space for conduit. The side car allows already installed floor conduit to align with the unit. See [Chapter 4 Power Cabling](#).

Left and right front panel doors enable infrared scanning from the front of the unit.

The 2500A Current-Limiting Reactor has the same cabinet and dimensions as the 2000A Current-Limiting Reactor.

Figure 1. Current-Limiting Reactor 2000A or 2500A, Front and Side Views



### 1.3 Using This Manual

Read this manual thoroughly and make sure you understand the procedures before you attempt to install, set up, operate or carry out any maintenance work on this Eaton product.

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


### 1.4 Conventions Used in This Manual

This manual uses these type conventions:



**NOTE** Some conventions only apply to display screens (if installed).

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

## 1.5 Symbols, Controls, and Indicators

The following are examples of symbols used on the reactor 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 waste electrical or electronic equipment (WEEE) in the trash. For proper disposal, contact your local recycling/reuse or hazardous waste center.

## 1.6 Getting Help

If help is needed with any of the following:

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

Please call the Eaton Help Desk at:

United States: **1-800-843-9433** or **1-919-870-3028**

Canada: **1-800-461-9166 ext 260**

All other countries: **Call your local service representative**

Please use the following e-mail for manual comments, suggestions, or to report a technical error in this manual.

**E-ESSDocumentation@eaton.com**

## 1.7 Warranty and End User License Agreement

To view the warranty please click on the link or copy the address to download from the Eaton website:

[Eaton Product Warranty](#)

<https://www.eaton.com/content/dam/eaton/products/backup-power-ups-surge-it-power-distribution/backup-power-ups/portfolio/eaton-three-phase-ups-warranty.pdf>



<https://www.eaton.com/content/dam/eaton/products/backup-power-ups-surge-it-power-distribution/backuppower-ups/portfolio/eaton-three-phase-ups-warranty.pdf>

To view the End User License Agreement please click on the link or copy the address to download from the Eaton website:

[Eaton End User License Agreement](#)

<https://www.eaton.com/content/dam/eaton/products/support-systems/software-and-cad-registration-form/eaton-end-user-software-license-agreement.pdf>

## Chapter 2 Safety

---

**⚠ WARNING**

---

Follow safe electrical work practices:

- Disconnect power before drilling holes, attaching conduit, and attaching other power distribution equipment.
- Disconnect and lock-out all power supplying equipment before working on or installing components.
- Use a properly rated voltage sensing device to confirm power is OFF.
- Leave ample space for attaching and routing wires.
- Use Lock Out/Tag Out procedures.
- Wear suitable personal protective clothing and use protective equipment for performing mechanical and electrical installations.
- Install equipment in an appropriate electrical environment per local regulations.

---

**⚠ WARNING**

---

Reactor units are connected to hazardous line voltages. Severe or fatal injury can result from electrical shock during contact with high voltage conductors, monitoring PCBs, or similar equipment. When installing and servicing reactors, there may be exposed components with housings or protrusions at or above line potential. Extreme care should be taken to protect against shock.

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel and in accordance with all local safety codes. The Current-Limiting Reactor (2000/2500A) must be installed by licensed electricians or by Eaton-authorized technicians.

Eaton assumes no responsibility for any consequences arising out of the use of this manual. This document should not be viewed as sufficient by otherwise non-qualified personnel to operate, service, or maintain the equipment discussed.

---

## Chapter 3 Installation

### 3.1 Receiving and Unpacking the Reactor

The Current-Limiting Reactor and its side car are shipped separately. Each unit is bolted to its shipping pallet and protected by two layers of external plastic covering. Units are first covered by a large plastic bag and then shrink-wrapped. Finally, each unit is secured to its pallet with metal retaining bands.

For moving the Current-Limiting Reactor or side car on its pallet, Eaton recommends that you leave the retaining bands intact until you have moved the unit to a convenient location for removing it from its pallet.

**Inspect the shipped unit twice, upon receipt and after removing packaging materials.**

1. Upon receiving a reactor or side car pallet and before removing packaging, inspect the packaging for visible damage. If damage is evident, notify the shipping company and Eaton (see for Eaton contact information).  
File any damage claims with the shipping company at time of delivery. Damage must be noted on the bill of lading. Failure to properly document all damage may result in the unit's warranty being voided.
2. Carefully cut the retaining bands, making sure that they do not scrape the exterior of the unit or scratch the paint.

---

**CAUTION**

---

- Metal retaining bands are under tension. Exercise caution when cutting them.
- Wear protective clothing including eye, face, and hand protection when cutting retaining bands!

- 
3. Carefully remove the outer layer of protective shrink wrap from the unit and the interior plastic covering bag. Use care to not puncture or scratch the reactor or side car with cutting tools.
  4. After removing the outer external packaging, inspect the unit's exterior panels and doors for any visible damage such as scratches, dents, or cracks. If you discover any damage, notify the shipping company and Eaton Service.

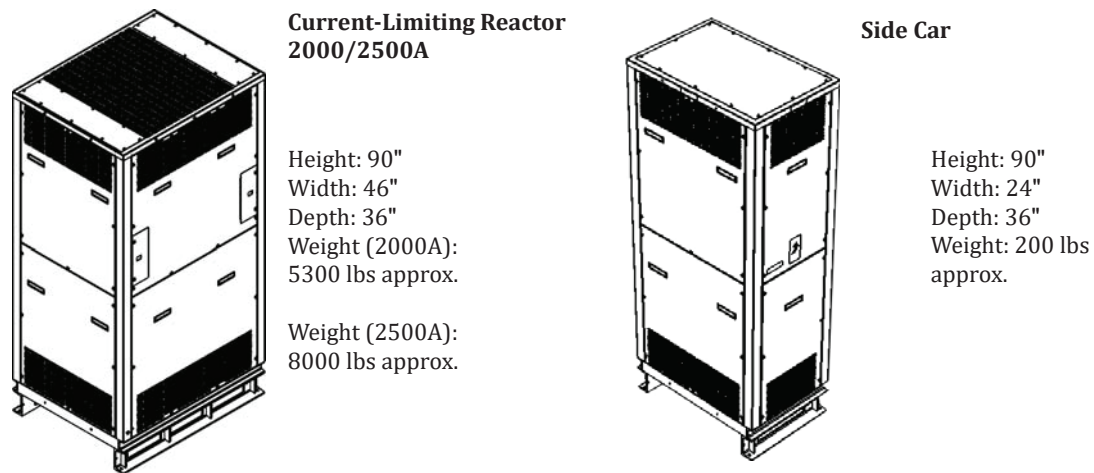
Eaton Service phone number: 1-800-843-9433.

### 3.2 Moving the Current-Limiting Reactor

Move the Reactor off its pallet with a forklift as follows:

1. The Current-Limiting Reactor or its Side Car is bolted to a pallet. With the pallet resting on the floor, remove the bolts.
2. Insert forklift forks under the Current-Limiting Reactor Cabinet or optional Side Car from any side.
3. Move each unit to its installation location and withdraw the forklift. Units have no casters and should be precisely positioned with the forklift.

Figure 2. Current-Limiting Reactor Dimensions and Weight



### 3.3 Clearances

Current-Limiting Reactor Clearances:

- Service clearance, front: 30 inches
- Cabling clearance, one side 30 inches (for installing conduit and pulling conductors)

---

**i** **NOTE** Panels lift off; there is no door swing.

---

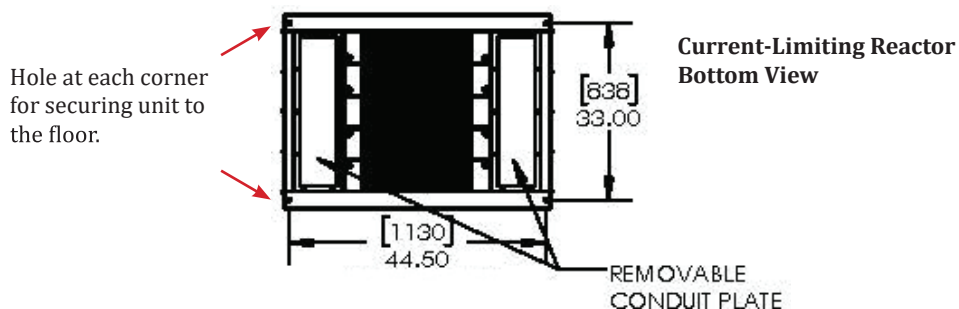
- Ventilation clearance:
  - Min. 6" front, top, and one side
  - Unit may be backed up to a wall without rear clearance.

See detailed drawings in [Chapter 6 Appendix A — Drawings](#).

### 3.4 Anchoring the Current-Limiting Reactor to the Floor

The base frame of the Current-Limiting Reactor has (4) holes for anchoring the unit to the floor. Customer provides the ½" hardware for securing the unit to the floor. ).

Figure 3. Reactor Anchoring Locations



### 3.5 Installing the Optional Side Car

The Current-Limiting Reactor will sometimes be installed over existing conduit in a concrete floor and the position of the conduit may not match the unit's cable entry panels. To accommodate the spacing of existing conduit, an optional Side Car provides more cable entry space.

The Side Car has removable side panels allowing it to be attached to either side of an Current-Limiting Reactor.

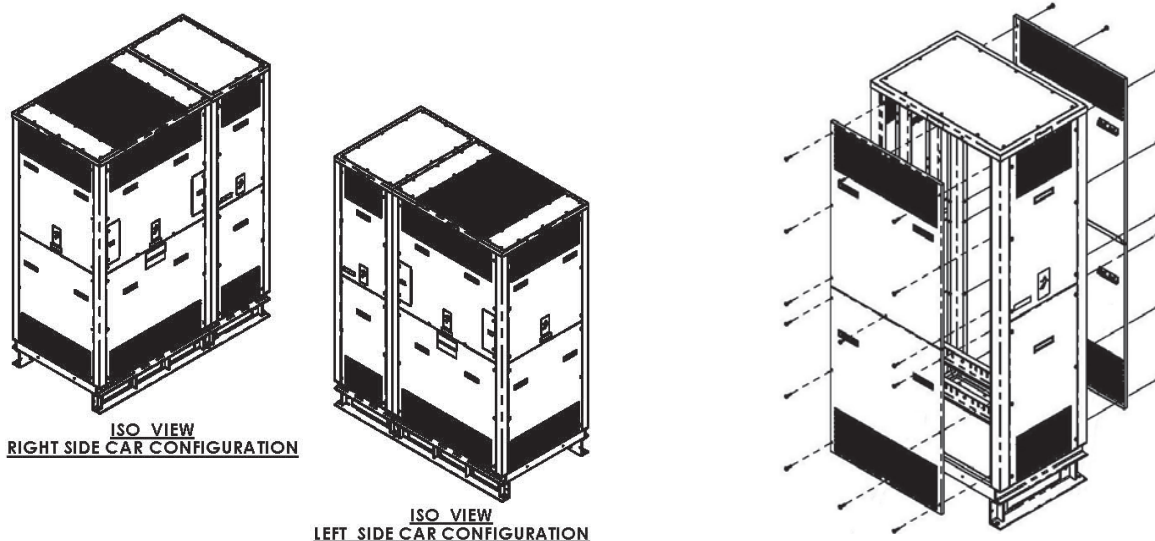
1. On the sides to be joined together:
  - On the Current-Limiting Reactor, remove the top and bottom side panels.
  - On the Side Car, remove the top and bottom side panels.

---

**NOTE** Side Car side panels can be removed from either side to make a Left-Hand or Right-Hand Side Car.

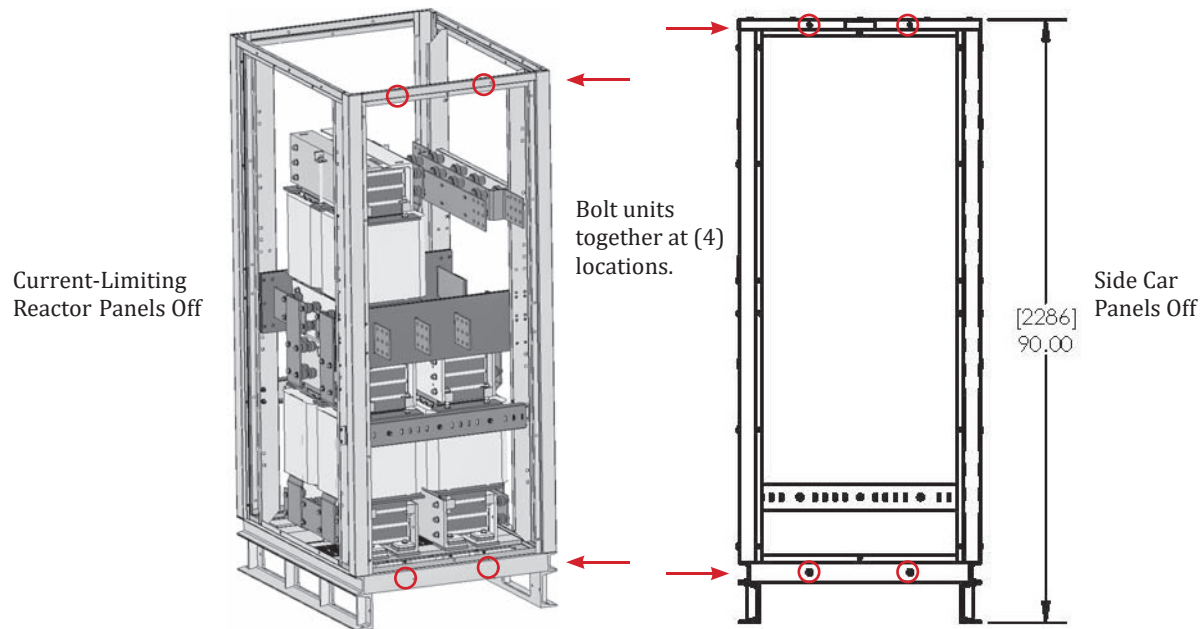
---

Figure 4. Side Car Installation



2. Move the Side Car up against the Current-Limiting Reactor so that edges and holes align.
3. Bolt units together at (4) bolt locations (2 upper, 2 lower) in the upper and lower frames.
4. Secure the Side Car to the floor using customer-provided  $\frac{1}{2}$ " hardware as for the Current-Limiting Reactor.

Figure 5. Side Car / Reactor Joining



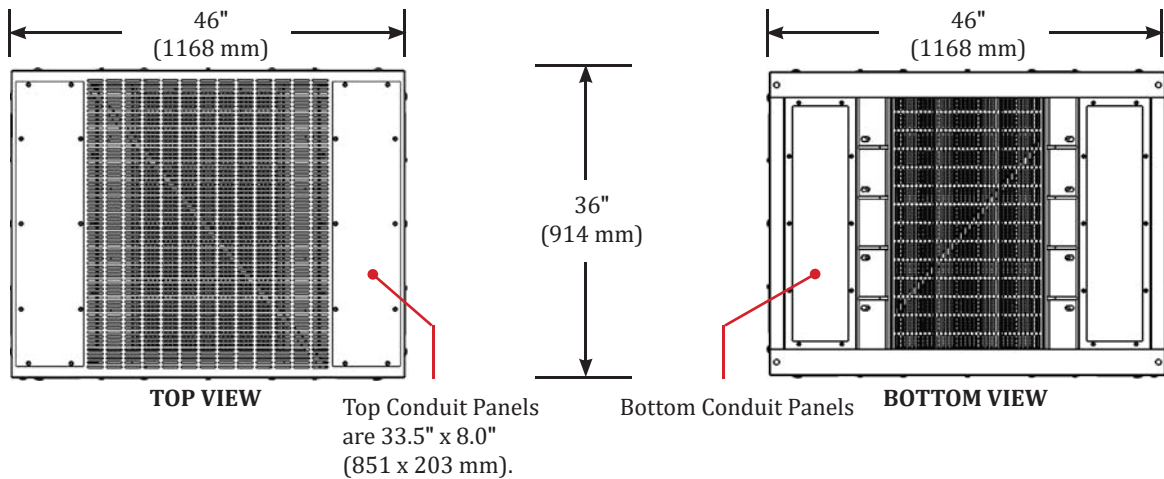
## Chapter 4 Power Cabling

### 4.1 Cable Entry

#### 4.1.1 Cable Entry Panels

The Current-Limiting Reactor has (2) top and (2) bottom cable entry panels. Installers can create up to (5) 4.0" cutouts in each panel. The unit supports internal cable bend radius for cables up to 600 MCM.

Figure 6. Cable Entry Panels

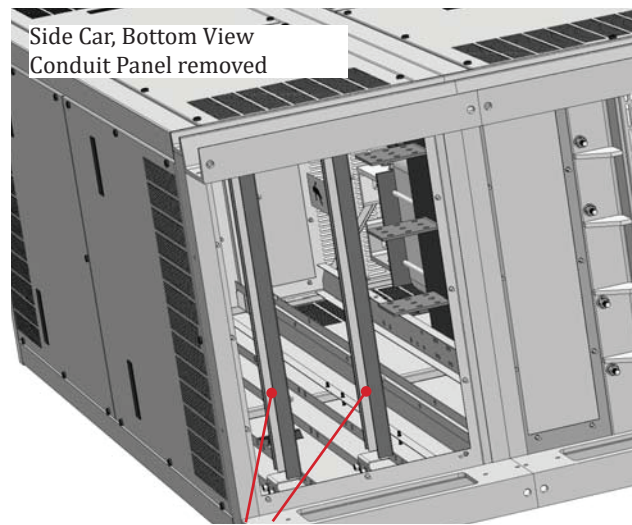


#### 4.1.2 Side Car Cable Entry

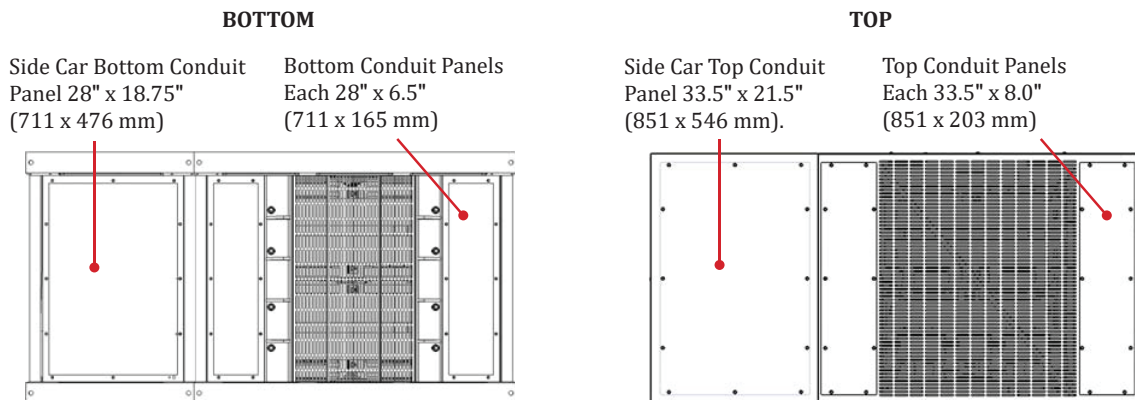
When installing an Current-Limiting Reactor over existing conduit in the concrete floor, conduits may not align with the bottom cable entry panels. The Current-Limiting Reactor can have an optional side car that provides additional cable entry space to enable conduit installed in the concrete floor to correctly align with cable entry panels.

The side car interior is open with no panels between the side car and the Current-Limiting Reactor bus bars, providing easy access to bus bars.

Figure 7. Side Car Cable Entry



Two (2) lashing bars are provided for tying cables.



## 4.2 Power Connections

### CAUTION

- The Current-Limiting Reactor must be installed by licensed electricians or by Eaton-authorized technicians.
- Installers should use Lock-Out/Tag-Out procedures and observe other precautions listed in the Safety section.
- Power wiring and grounding must comply with NEC and applicable local codes.

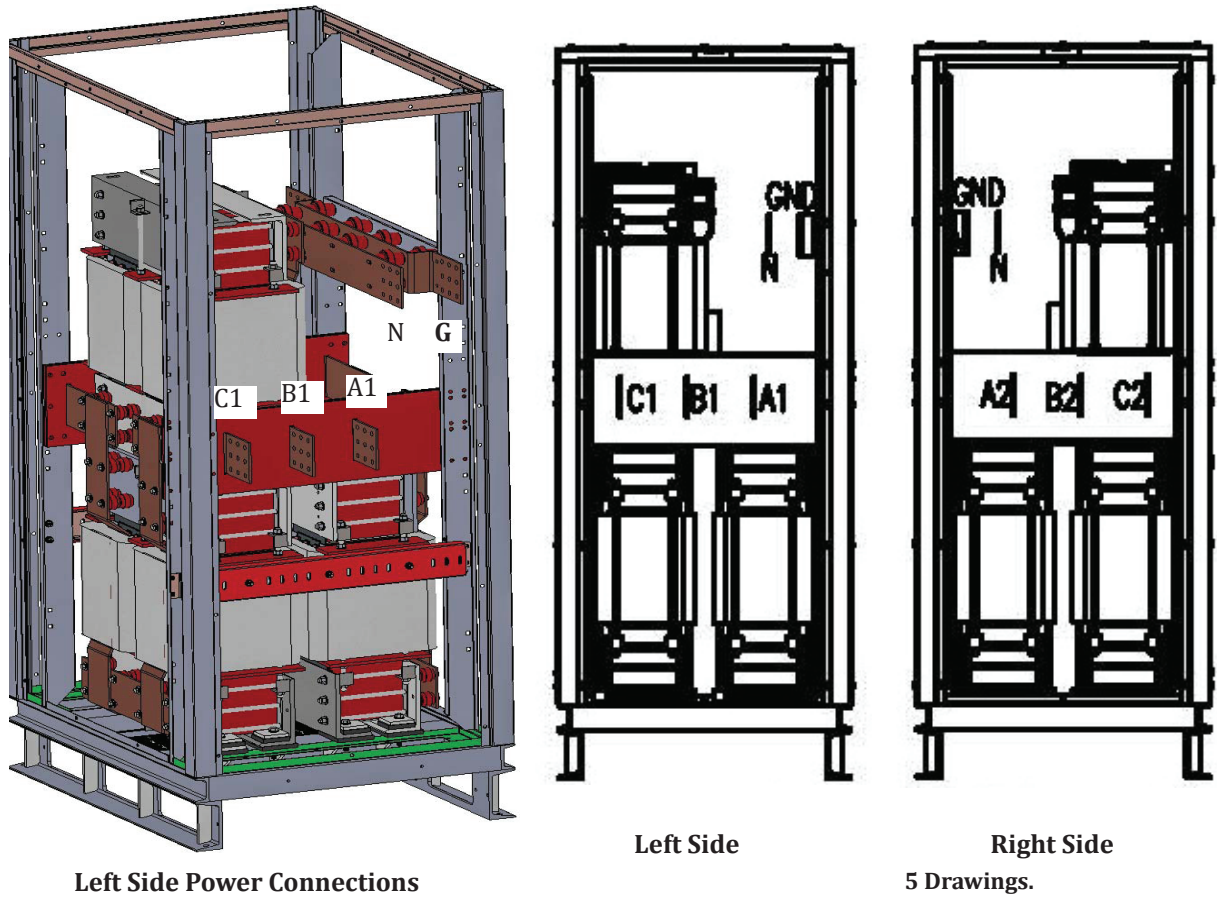
There are symmetric ABCNG power connections on both the left and right sides of the unit (see [Figure 8](#)).

Utility or other input power is connected on one side and output on the other side, but the sides can be reversed. The Reactor does not have directional power flow.

The switchgear manufacturer or the installer shall provide necessary linking connections in the form of flexible cables or busbars.



Figure 8. Power Connections, Panels Removed



## Chapter 5 Eaton Service Contracts

Eaton Service contracts help to provide the added insurance that the reliability of your critical power systems is intact. By following our stringent maintenance procedures, Eaton's factory trained Customer Support Engineers provide the added assurance for the availability of critical systems, thereby maximizing the company's profitability. See below for further details.

### 5.1 The Service Promise

With factory-trained technicians in every major city in North America, Eaton can respond rapidly and provide on-site assistance in emergency down time situations. Eaton provides telephone support 24 hours a day, 7 days a week with a direct line to Service (1-800-843-9433).

### 5.2 Preventive Maintenance

During a preventive maintenance visit, Eaton technicians inspect, test, calibrate, update and clean components, as well as update software as applicable. You'll receive a report at the end of the visit detailing the results of the inspection and specific recommendations for remedial actions, proactive replacements, and upgrades.

### 5.3 Eaton Provides Flexibility and Commitment

- We understand that service plans are not "one size fits all." That's why we offer a broad range of service options, designed to meet the varied requirements and applications of businesses of all shapes and sizes. Eaton can modify your contract on variables such as number of PM visits per year, scope of coverage, response time and length of contract.
- Eaton employs 250+ field technicians with an average tenure of more than ten years. Eaton CSEs are experts on Eaton products and receive ongoing product training and certification. Our technicians have expertise in power, electrical engineering, software and connectivity, batteries, UPSs and related products, and can deliver advanced troubleshooting and a reduced mean time to repair.
- When you rely on an Eaton service plan, rest assured that every factory-trained field technician stocks a solid inventory of parts to remedy emergencies.

### 5.4 Time and Materials

In most cases the customer will be covered by startup service or Maintenance Contracts, however, there may be times when the customer needs Eaton service and lacks the benefits that these two packages provide. Therefore, Eaton provides Time and Material coverage for those in need of our customer support engineers.

### 5.5 Startup

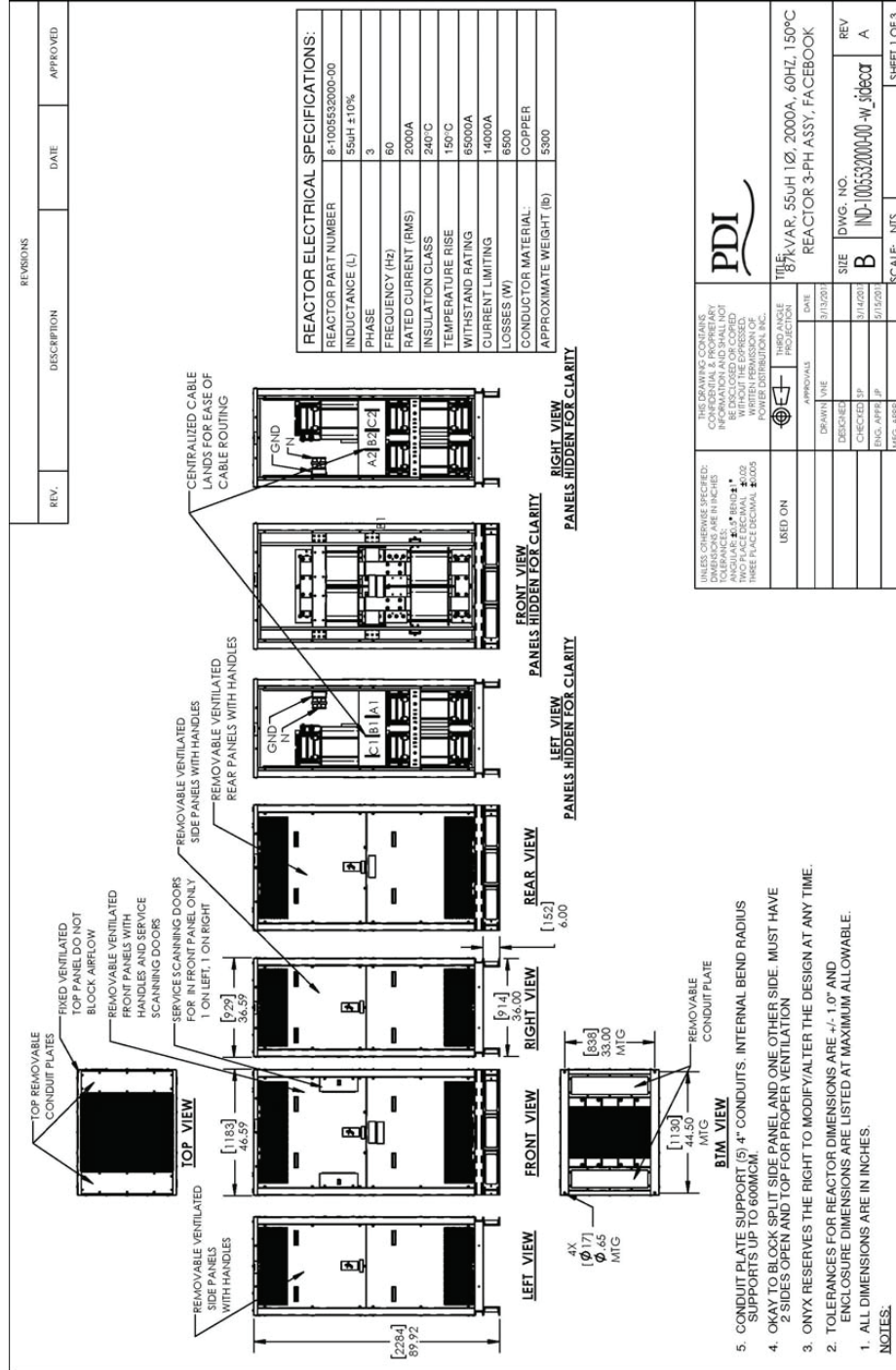
At the initial startup of the Current-limiting Reactor, an Eaton factory-authorized technician is recommended to validate correct operation. The product warranty may be voided if the correct startup procedures are not followed.

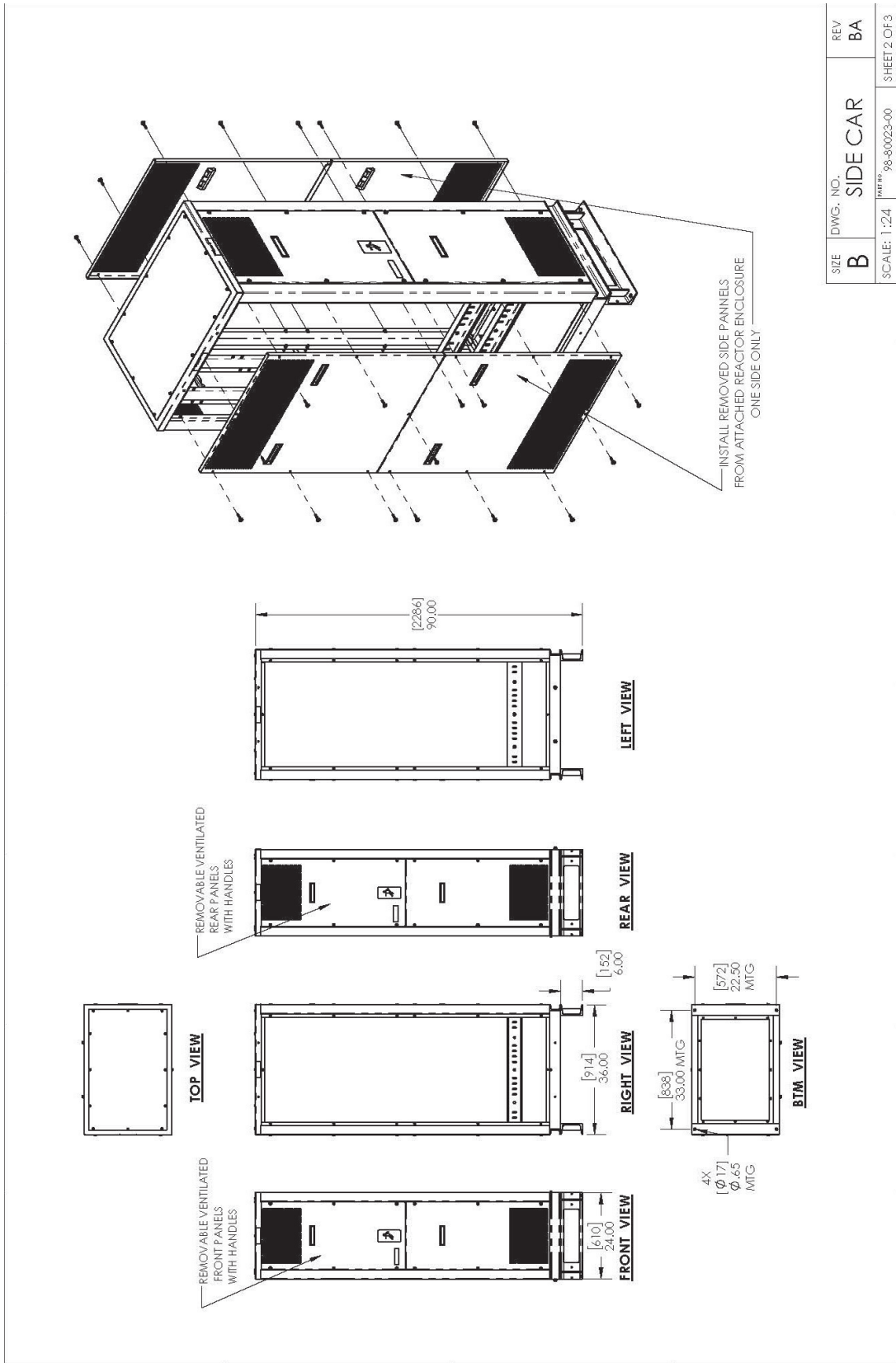
### 5.6 Infrared Scanning

To gain access to transformer and cables for infrared scanning, remove the left or right side panel.

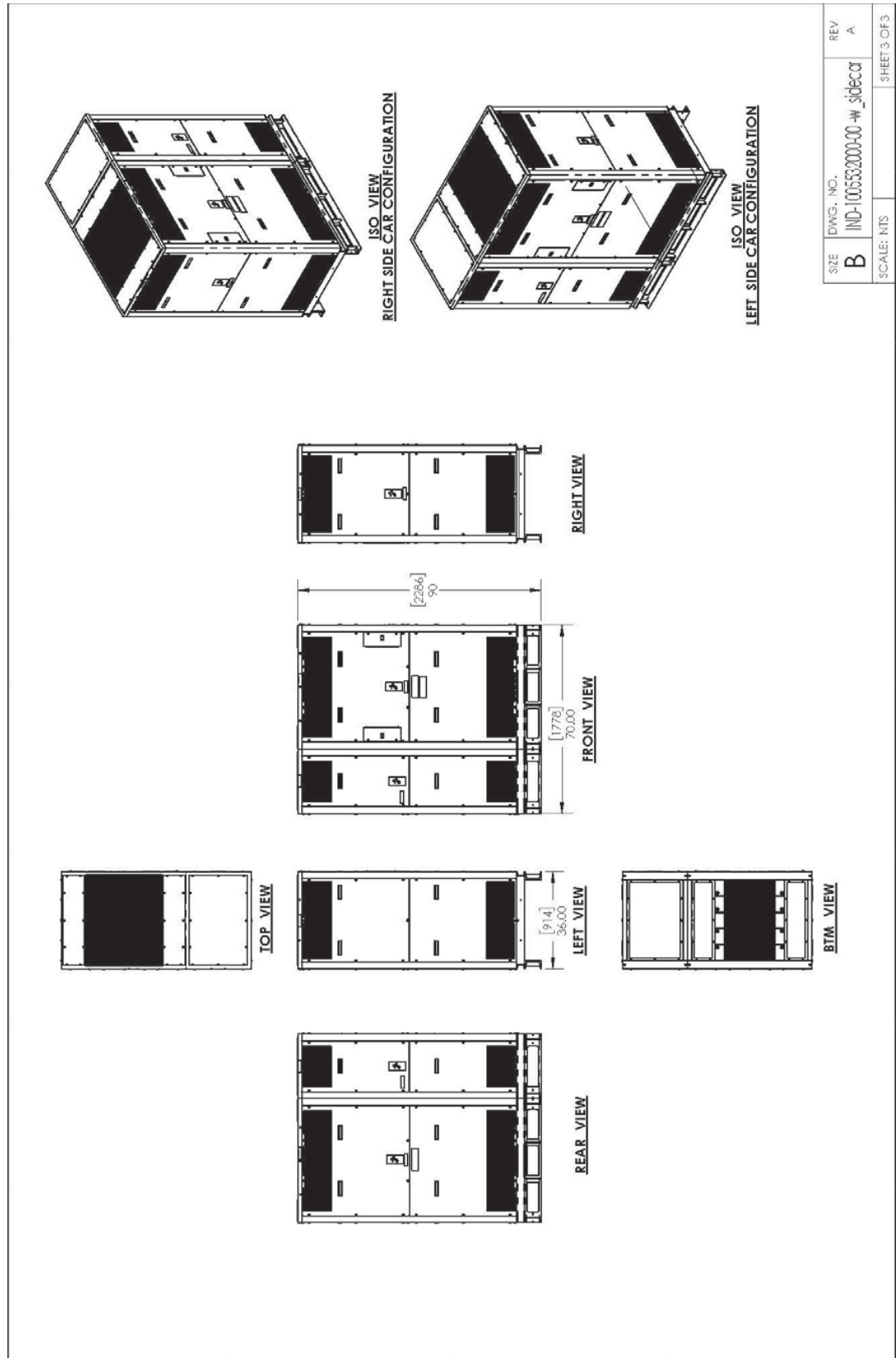
# Chapter 6 Appendix A — Drawings

## 6.1 Current-Limiting Reactor 2000A Drawings

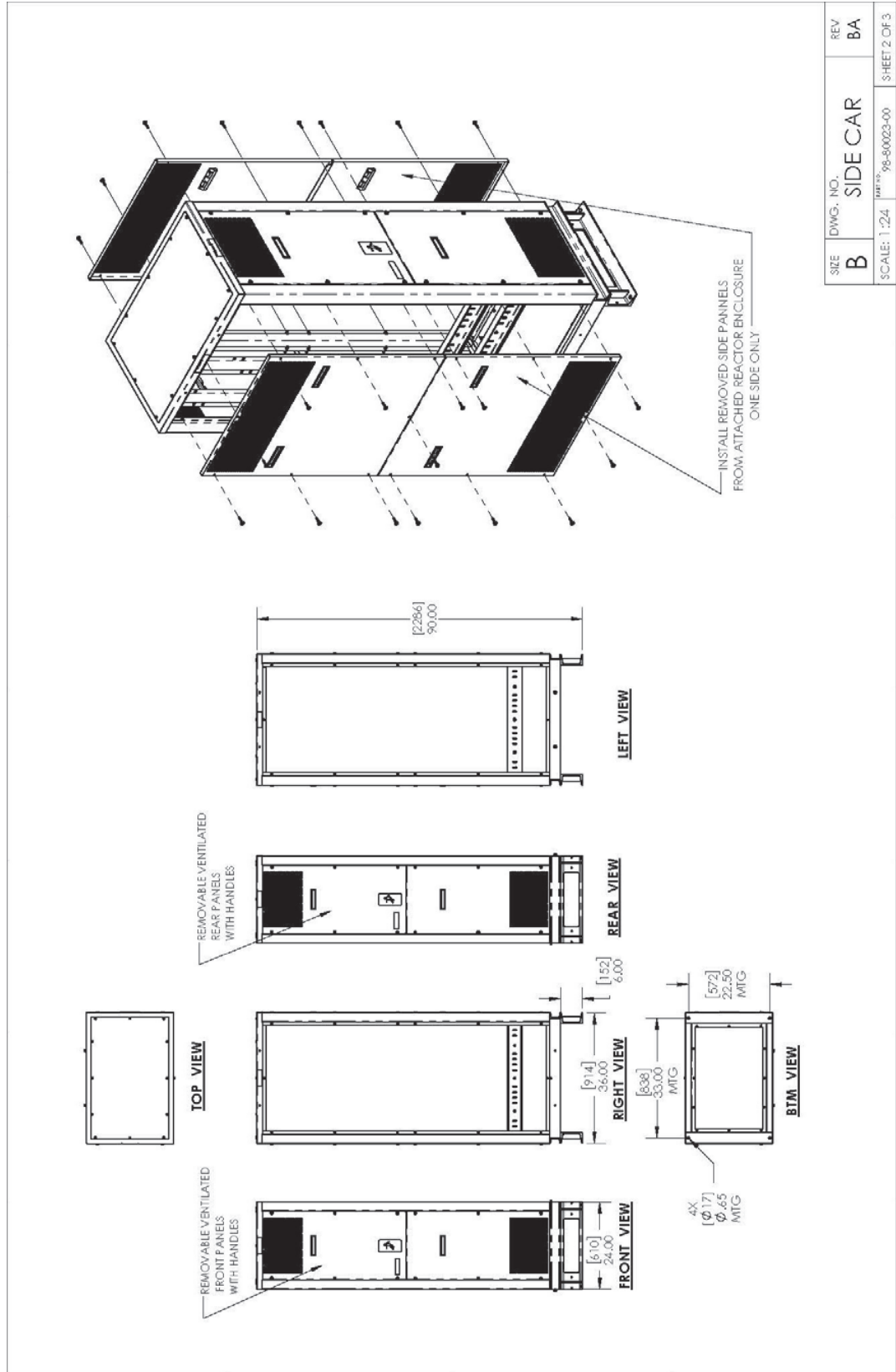




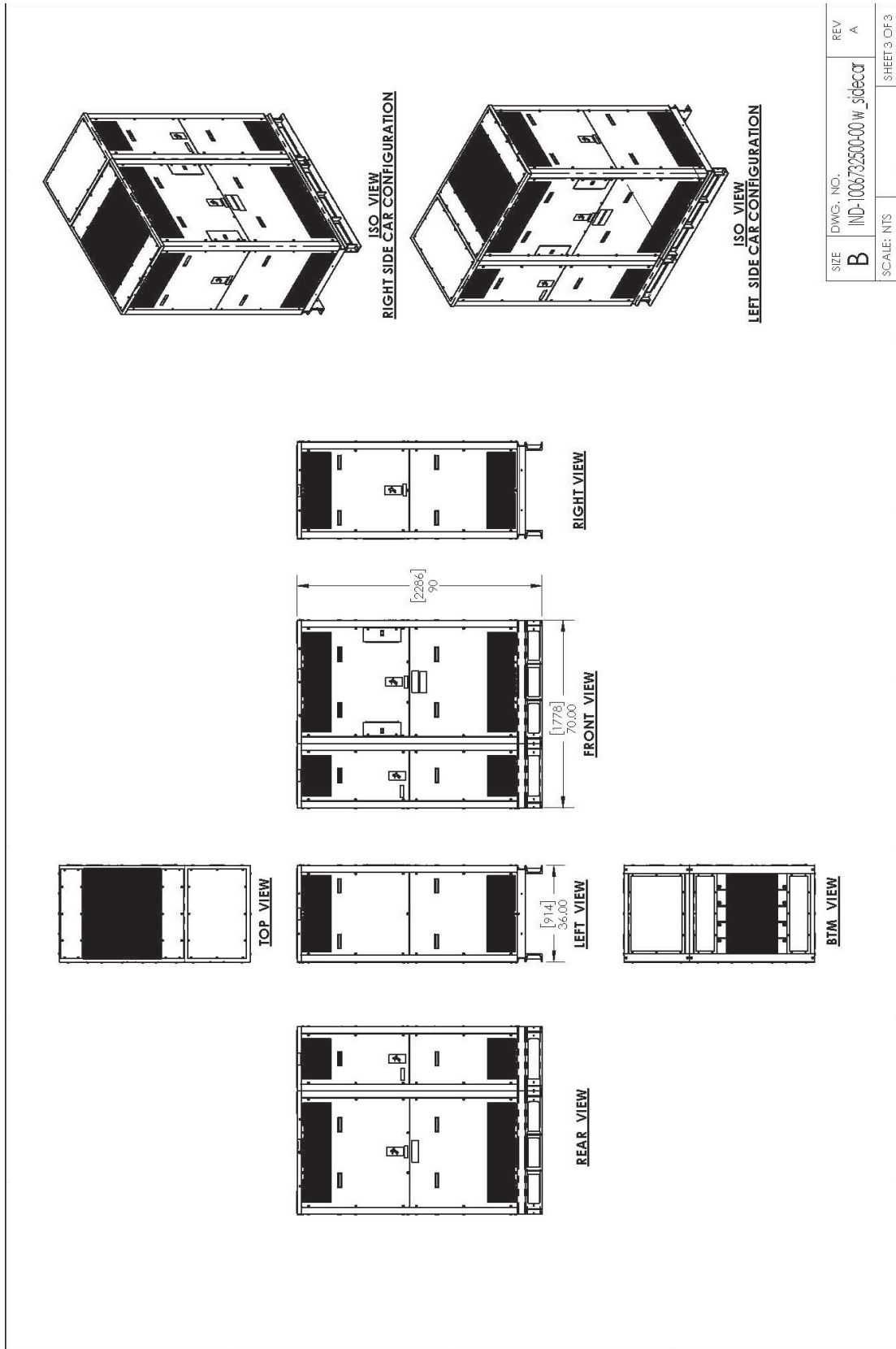
SIZE	DWG. NO.	REV
B	SIDE CAR	BA
SCALE: 1:24		SHEET 2 OF 3







SIZE	DWG. NO.	REV
B	SIDE CAR	BA
SCALE: 1:24	REV. NO. 98-80023-00	SHEET 2 OF 3



SIZE	DWG. NO.	REV
B	IND-1006732500-00-w_sidecar	A
SCALE: NTS		SHEETS OF 3



