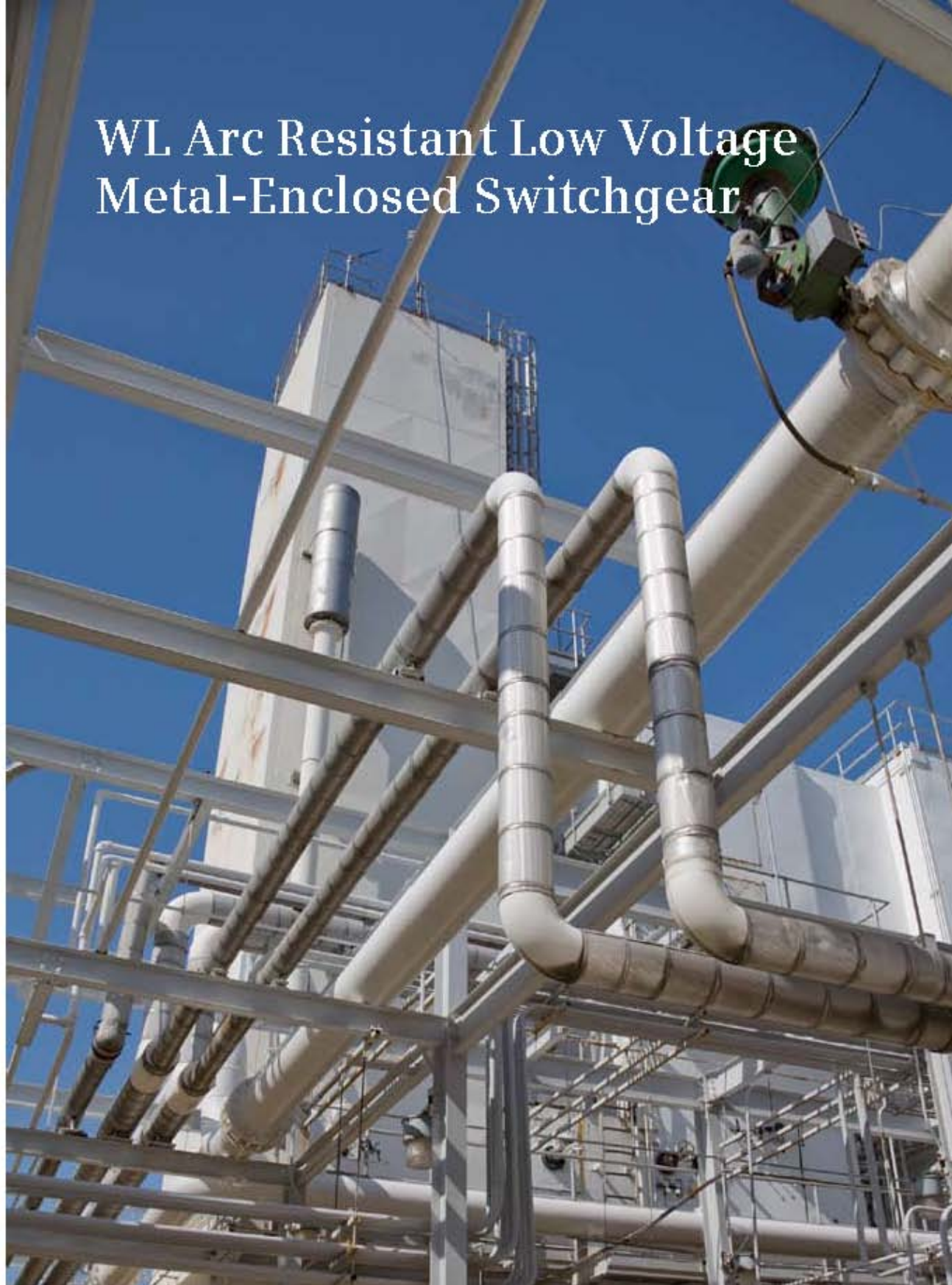


# WL Arc Resistant Low Voltage Metal-Enclosed Switchgear



Instruction & Installation Guide

Answers for industry.

**SIEMENS**

## Type 2 Arc Resistant WL Low Voltage Metal-Enclosed Switchgear

	<p><b>! DANGER</b></p> <p><b>Hazardous voltage. Will cause death or serious injury.</b></p> <p>Keep out. Qualified personnel only. Disconnect and lock off all power before working on this equipment.</p>
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### IMPORTANT

The information contained herein is general in nature and not intended for specific application purposes. It does not relieve the user of responsibility to use sound practices in application, installation, operation, and maintenance of the equipment purchased. Siemens reserves the right to make changes in the specifications shown herein or to make improvements at any time without notice or obligations. Should a conflict arise between the general information contained in this publication and the contents of drawings or supplementary material or both, the latter shall take precedence.

### NOTE

These instructions do not purport to cover all details or variations in equipment, nor to provide for every possible contingency to be met in connection with installation, operation, or maintenance. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to the local Siemens sales office.

The contents of this instruction manual should not become part of or modify any prior or existing agreement, commitment, or relationship. The sales contract contains the entire obligation of Siemens Energy & Automation, Inc. The warranty contained in the contract between the parties is the sole warranty of Siemens Energy & Automation, Inc. Any statements contained herein do not create new warranties or modify the existing warranty.

# Type 2 Arc-Resistant WL Low Voltage Metal-Enclosed Switchgear

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# Type 2 Arc-Resistant WL Low Voltage Metal-Enclosed Switchgear

## Introduction and Safety

### Introduction

Type 2B Arc Resistant WL low voltage switchgear is designed to meet all applicable UL, ANSI, NEMA and IEEE standards. It is designed and performance tested to ANSI C37.20.7 to provide an additional degree of protection from internal arc faults. Successful application and operation of this equipment depends as much upon proper installation and maintenance by the user as it does upon the careful design and construction by Siemens.

The purpose of this Instruction Manual is to assist the user in developing safe and efficient procedures for the installation, maintenance and use of the equipment. This Instruction Manual acts a supplement to 11-C-9100-01: 'Instruction & installation guide for low voltage metal-enclosed switchgear'.

Application of Arc Resistant Low Voltage Switchgear meeting the requirements of IEEE C37.20.7 does not eliminate the requirements of **Personal Protection Equipment (PPE)**.

Contact the nearest Siemens representative if any additional information is desired.



### Qualified Person

For the purpose of this manual and product labels, a **Qualified Person** is one who is familiar with the installation, construction and operation of the equipment and the hazards involved. In addition, this person has the following qualifications:

- Training and authorization to energize, de-energize, clear, ground and tag circuits and equipment in accordance with established safety practices.
- Training in the proper care and use of protective equipment such as rubber gloves, hard hat, safety glasses, face shields, flash

clothing, etc., in accordance with established safety procedures.

- Training in rendering first aid.

### Signal Words

The signal words “**Danger**,” “**Warning**” and “**Caution**” used in this manual indicate the degree of hazard that may be encountered by the user. These words are defined as:

**Danger** - Indicates an imminently hazardous situation which if not avoided, **will** result in death or serious injury.

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

**Caution** - Indicates a potentially hazardous situation which, if not avoided, **may** result in minor or moderate injury.

### Dangerous Procedures

**In addition to other procedures described in this manual as dangerous, user personnel must adhere to the following:**

1. **Always work on de-energized equipment. Always de-energize a breaker, and remove it from the switchgear before performing any tests, maintenance or repair.**
2. **Always discharge energy from closing and opening (tripping) springs before performing maintenance on circuit breakers.**
3. **Always let an interlock device or safety mechanisms perform its function without forcing or defeating the device.**

### Field Service Operation

Siemens Industrial Services Division can provide the following support services for Type WL low voltage switchgear.

Call 1-800-241-4453 to obtain additional information and schedule an appointment.

- Start-up and Commissioning
- Component and System Testing
- Maintenance (Scheduled and Preventative)
- Repair and Refurbishing
- On Site Operational Training

# Type 2 Arc-Resistant WL Low Voltage Metal-Enclosed Switchgear

## General Description

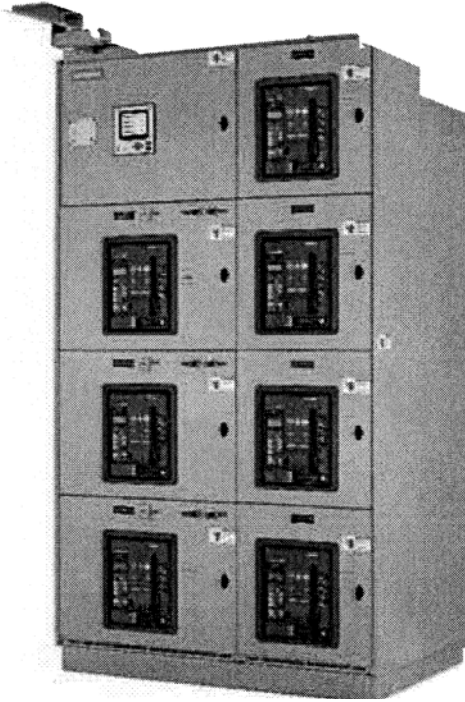


Figure 1: Front view of Switchgear

## Introduction

Siemens Type 2B Arc Resistant Metal-Enclosed Low Voltage Switchgear is designed to provide an additional degree of protection for personnel performing normal operating duties in proximity to the energized equipment. Such duties include opening or closing breakers, closed door racking of breakers, reading of instruments, or other such activities that do not require the opening of doors or removal of covers except doors or covers of compartments specifically identified as low-voltage control or instrumentation compartments. It is designed and performance tested to ANSI C37.20.7 to provide an additional degree of protection from internal arc faults.

This instruction manual acts as a supplement to 11-C-9100-01 Rev. 1: 'Instruction & installation guide for low voltage metal-enclosed switchgear'.

Should additional information be desired, including replacement instruction books, contact your Siemens representative.

## Scope

These instructions cover the installation and maintenance of Siemens Type 2B WL Arc Resistant metal enclosed low voltage switchgear assemblies, using the Type WL UL -1066 low voltage power circuit breakers. A typical indoor Type 2B WL arc resistant switchgear assembly is shown in Figure 1.

Instruction and installation details of standard switchgear have already been discussed in 11-C-9100-01 Rev.1. This manual discusses the special features and maintenance associated with arc resistant switchgear.

## General Description

Type 2B Arc Resistant WL switchgear is an assembly of an indoor enclosure and mounting base with arc plenum. It has an insulated bus bar system, removable rear cover panels/doors secured with captive screws, section barriers and cable compartment barriers. Flame retardant barriers and shutters are provided in power circuit breaker compartments. One piece circuit breaker compartment doors with insert panels for fuses, indicating lights and control switches are used when required.

A 39 inch minimum front aisle, a 36 inch minimum rear aisle and a 118 inch minimum ceiling height must be maintained for proper functioning of arc resistant switchgear.

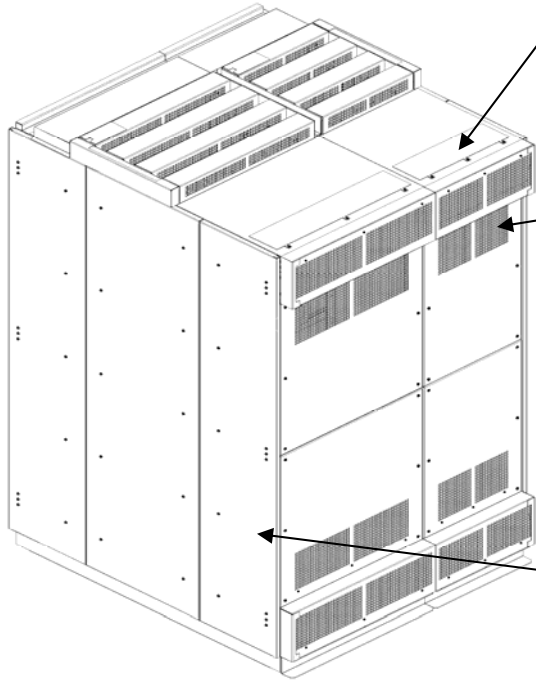
The arc resistant ratings are listed on the switchgear rating label. Ratings are given for:

- (1) Accessibility Type,
- (2) Arcing SHORT-CIRCUIT current and voltage, and
- (3) Arcing duration.

# Type 2 Arc-Resistant WL Low Voltage Metal-Enclosed Switchgear

## Special Features

### Switchgear - Rear



#### Top cover plate pressure relief flaps

- These flaps should be closed under normal conditions.
- The flaps open outward in the event of an arc fault to relieve internal pressure.
- The opening of flaps should not be blocked by cables or bus.
- A clear space of 22" must be maintained above the flaps.

#### Rear cover pressure dams

- All the vents in the rear side of switchgear have pressure dam flaps installed inside.
- These flaps close in the event of arc fault to prevent arc gases from exiting the rear of the equipment.
- During normal operation the flaps should be open by 2" to 3" for venting.
- The flaps should not be modified, removed or blocked open.

#### Enclosure & Rear Covers

- Reinforced enclosure to withstand pressure from internal arcing faults.
- Reinforced bolted rear covers/doors.
- Ensure that all screws are in place and tightened

Figure 2: Rear Isometric view of Switchgear

### Switchgear - Front

#### Enhancements

- Reinforced and gasketed front doors with additional hinges and latching means. Ensure that all doors are properly secured before placing gear in service.
- Shutters required in breaker compartments. If shutters are removed for servicing, they must be replaced before gear is placed back into service.
- The mounting base with integrated arc plenum must be installed under the switchgear.

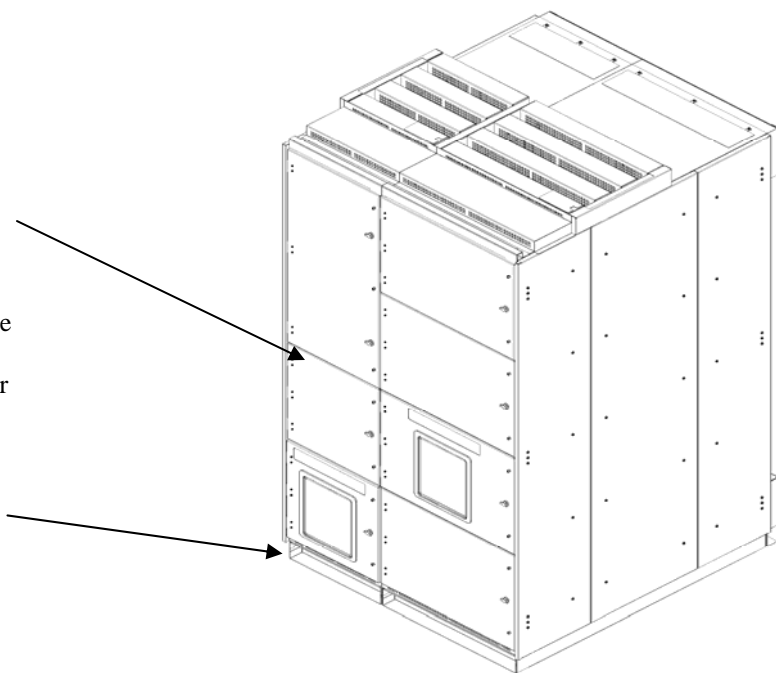


Figure 3: Front Isometric view of Switchgear

# Type 2 Arc-Resistant WL Low Voltage Metal-Enclosed Switchgear

## Special Features

### Breaker Compartment

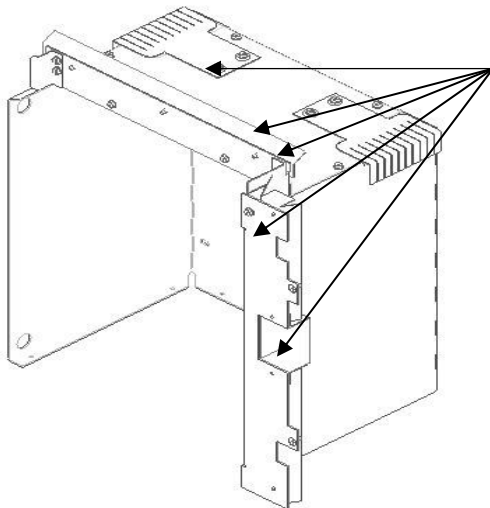
#### Breaker compartment parts

- Flame Retardant gap protection parts provide protection in the event of arc fault.
- These parts must be in place during normal operation.
- If they are removed during installation or servicing, they must be replaced before gear is re-energized.



Figure 4: Front View of Breaker Compartment

### Auxiliary Compartment



#### Auxiliary compartment parts

- Auxiliary bucket gap protection parts provide protection in the event of arc fault.
- Flame Retardant parts are attached on the back of metal gap protection parts.
- These parts must be in place during normal operation.
- If they are removed during installation or servicing, they must be replaced before gear is re-energized.

Figure 5: Isometric view of Auxiliary Compartment

### Bottom Compartment Breaker

#### Breaker Cradle Button Plug

- The button plug must be replaced after installing or servicing anchor bolt.
- This part must be in place during normal operation.

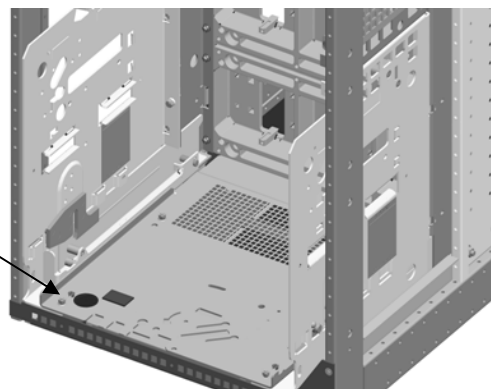


Figure 6: Isometric view of D-Compartment

## Type 2 Arc-Resistant WL Low Voltage Metal-Enclosed Switchgear

### Sill Channel



#### Gap between Switchgear and Mounting Base

- The gap between the Mounting Base and the Switchgear must be closed after installation with silicone caulking compound. Silicone caulking compound is installed at the factory if the switchgear is shipped installed on the Mounting Base. If the Mounting Base is shipped separately, a tube of silicone caulking compound is furnished with the switchgear.

Figure 7: Front view of Mounting Base

**SPACE LEFT INTENTIONALLY BLANK.**

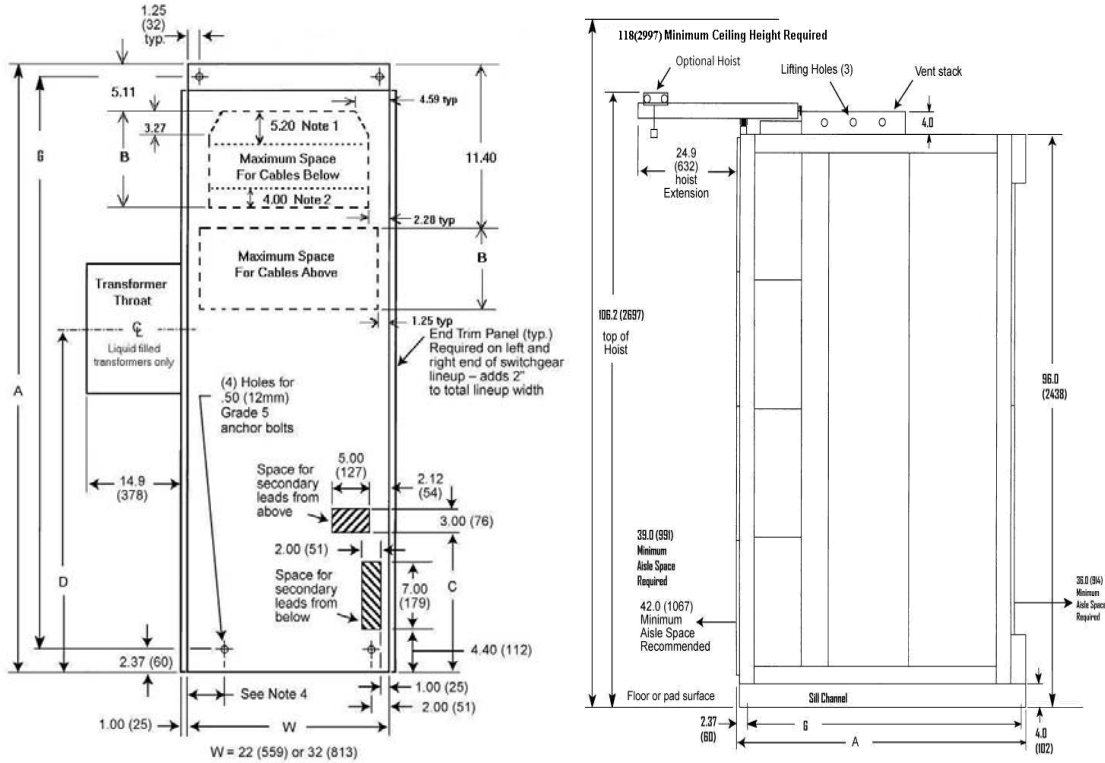


# Type 2 Arc-Resistant WL Low Voltage Metal-Enclosed Switchgear

## Installation

### Indoor Floor Plan – Arc-Resistant Switchgear

Cable space above and below for arc resistant switchgear is different from the standard LV switchgear. The details are as shown:



A Equipment Depth	Cable Direction	B	C	D	G Anchor Bolt Spacing
62.6 (1590)	Below	20.00 (508) (1)		32.59 (828)	59.13 (1502)
	Above	13.68 (347)	13.88 (353)	37.59 (955)	
67.6 (1717) (Fused)	Below	20.00 (508) (1)		32.59 (828)	64.13 (1629)
	Above	13.68 (347)	18.88 (480)	37.59 (955)	
72.6 (1844)	Below	30.00 (762) (1)		32.59 (828)	69.13 (1756)
	Above	23.68 (601)	13.88 (353)	37.59 (955)	
77.6 (1971) (Fused)	Below	30.00 (889) (1)		32.59 (828)	74.13 (1883)
	Above	23.68 (728)	18.88 (480)	37.59 (955)	
82.6 (2098)	Below	40.00 (1016) (1)		32.59 (828)	79.13 (2010)
	Above	33.68 (855)	13.88 (353)	32.59 (828)	
82.6 (2098) (Fused)	Below	35.00 (889) (1)		37.59 (955)	79.13 (2010)
	Above	28.68 (728)	18.88 (480)	37.59 (955)	

Note: Dimensions shown in inches and (mm). Drawings are not to scale.

(1) Space available for cables below is reduced by 5.20 inches when a lower neutral bus is present.

(2) Space available for cables below is reduced by 4.00 if an 800-3200A breaker is located in the bottom compartment.

Reductions per notes 1 & 2 are additive. Example: cables below + lower neutral + 2000A breaker in bottom compartment = B - 9.20.

(3) 118 inches minimum room ceiling height is required for ventilation of arc products

(4) 4.10 (104) if W=22; 4.60 (117) if W=32.

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