Masterclad™ 15 kV Class Medium Voltage Switchgear

Outdoor Non-Walk-in Metal-Clad Switchgear

Instruction Bulletin

Class 6055

6055–15 Rev. 03
05/2024

www.se.com

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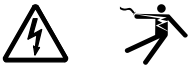
Safety Information

Read these instructions carefully and examine the equipment to become familiar with the device before attempting to install, operate, service, or maintain it. The following special messages may appear throughout this user guide or on the equipment to warn of hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of either symbol to a “Danger” or “Warning” safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠⚠ DANGER

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

⚠WARNING

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

⚠CAUTION

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

NOTICE

NOTICE is used to address practices not related to physical injury.

NOTE: Provides additional information to clarify or simplify a procedure.

Please Note

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction, installation, and operation of electrical equipment and has received safety training to recognize and avoid the hazards involved.

Electrical equipment should be transported, stored, installed, and operated only in the environment for which it is designed.

Introduction

This bulletin contains instructions for receiving, handling, storage, installation. (Including foundation preparation), and maintenance of Square D™ Masterclad 4.76-15 kV, outdoor, Non-walk-in, metal-clad Switchgear from Schneider Electric. The non-walk-in enclosure detailed in this bulletin is built around the standard Metal-Clad Indoor Switchgear and conforms to ANSI/IEEE C37.20.2.

NOTE: This bulletin must be used in conjunction with instruction bulletins 6055-30 Masterclad Metal-Clad Indoor Switchgear, 4.76–15 kV, Series 5, with Type VR Vacuum Circuit Breakers.

Read these instructions and inspect the equipment carefully. Become familiar with the device before trying to install, operate, or maintain it.

Figure 1 - Outdoor Non-Walk-in Switchgear

Safety Precautions

⚠⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E, NOM-029-STPS-2011, or CSA Z462.
- This equipment must be installed and serviced only by qualified electrical personnel.
- Perform such work only after reading and understanding all of the instructions contained in this bulletin.
- Turn off all power supplying this equipment before working on or inside equipment.
- Always use a properly rated voltage sensing device to confirm power is off.
- Before performing visual inspections, tests, or maintenance on this equipment, disconnect all sources of electric power. Assume all circuits are live until they are completely de-energized, tested, and tagged. Pay particular attention to the design of the power system. Consider all sources of power, including the possibility of backfeeding.
- Always practice lock-out/tag-out procedures according to OSHA requirements.
- Open all circuit breaker and switch contacts and discharge all springs before performing maintenance work, disconnection, or removal of a circuit breaker.
- Move circuit breakers to the disconnected position before removing rear access panels.
- Conduct electrical testing to confirm no short-circuits were created during installation, maintenance, or inspection.
- Never insert a circuit breaker into a circuit breaker compartment that is not complete and functional.
- The complete assembly arrangement determines if the top or bottom contacts are the line side; both can be energized when the circuit breaker is removed from the compartment. Identify the line side contacts for each circuit breaker compartment.
- Disconnect all high voltage to the switchgear before accessing the horizontal bus compartment.
- Do not use liquid fire extinguishers or water on electrical fires. Before extinguishing fires within the assembly, ensure the main power source is disconnected and the main and all feeder circuit breakers are open.
- Carefully inspect your work area, and remove any tools and objects left inside the equipment.
- Replace all devices, doors, and covers before turning on power to this equipment.
- All instructions in this manual are written with the assumption that the customer has taken these measures before performing maintenance or testing.

Failure to follow these instructions will result in death or serious injury.

⚠ **WARNING:** This product can expose you to chemicals including Nickel compounds, which are known to the State of California to cause cancer, and Bisphenol A (BPA), which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Moisture Contamination Avoidance and Mitigation

⚠⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Store the equipment in a clean, dry (including no condensation), well-ventilated area with an ambient temperature of approximately 70°F (21°C).
- If heaters are furnished in the assembly, energize them from an external source. When energizing heaters from an external source, remove the primary and secondary overcurrent protective devices from the control power transformer.
- If heaters are not installed in the assembly, and the area is cold and damp, use a temporary heating source within the assembly. A minimum of 200 W of heat per section is recommended.
- Avoid greasy, smoky heaters that can deposit carbon on insulation, which could lead to tracking and insulation breakdown.
- If moisture, condensation, or chemical ingress is observed, do not energize the equipment. If the equipment is already energized, de-energize it immediately.

Failure to follow these instructions will result in death or serious injury.

⚠WARNING

FIRE HAZARD

Remove all flammable material in the vicinity of the heaters, such as packaging, accessories in boxes, and documentation, before energizing the heaters.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Shipping, Receiving, and Storage Requirements

This equipment does not achieve its ratings until it is installed per record/as-built drawings, per the instructions contained in this document, and has operational environmental controls with appropriate settings to help mitigate environmental influences. This equipment can also be stored in a climate-controlled area that uses both heating and cooling to maintain acceptable environmental conditions. Indoor and outdoor rated equipment is not suitable for outdoor storage.

- Treat the equipment as if it is in storage until it is installed and operational. The storage area must be clean, dry (75% or less relative humidity), and climate-controlled with proper ventilation.
- To keep the equipment dry, use of heaters is required in some cases (for example, during seasonal or low periods of electrical loading and equipment de-energization).
  - Consult the engineer of record for the appropriate environmental control settings or means to mitigate environmental influences.
  - If so equipped, set the thermostats and/or humidistats to mitigate condensation. A minimum of 200 W of heat per section is recommended.
  - If heaters are used with the equipment that were not included in the equipment by Schneider Electric, they must be clean and free of debris and grease. Greasy and/or smoky heaters can contaminate electrical insulation and lead to dielectric breakdown and/or tracking.
- Shipping packaging is not suitable for and cannot be used by itself for equipment storage unless otherwise indicated on the shipping packaging labeling.

- When receiving equipment, the equipment may be at a lower temperature than the ambient air temperature. Allow time for the equipment temperature, including the temperature of internal components, to rise to the ambient air temperature before making openings in or otherwise disturbing the packaging. Condensation can occur on and inside the equipment if warm air contacts cold surfaces of the equipment. Moisture damage can occur, destroying the dielectric capabilities of the equipment and rendering it unusable.
- The factory shipping wrap around the equipment on shipping pallets is not suitable for non-enclosed (no tarp) over-the-road transportation that risks exposing the equipment to the elements. Leave the factory shipping wrap around the equipment on the equipment until the equipment is ready for inspection and stored or inspected and installed. After receiving the equipment and allowing it to acclimate to the environment, remove the packaging and inspect the equipment for damage that may have occurred in transit. If damage is found or suspected, immediately file a claim with the carrier and notify your Schneider Electric representative.
- Follow these guidelines every time the equipment is moved to a new storage location or to its final destination.

Installation, Operation, and Maintenance Requirements

This equipment does not achieve its ratings until it is installed per record/as-built drawings, installed per the instructions contained in this document, and has operational environmental controls with appropriate settings to help mitigate environmental influences. This equipment can also be operated in a climate-controlled area that uses both heating and cooling to maintain acceptable environmental conditions. Indoor and outdoor rated equipment is not suitable for outdoor storage.

In some cases (such as seasonal electrical loading, de-energized equipment, and standby/alternate power sources), the heat generated by equipment loading is insufficient to help prevent condensation and alternate heat sources are required. If environmental controls such as a thermostat or humidistat are used, their settings must be sufficient to mitigate condensation and always remain operational. Consult the engineer of record for the appropriate environmental control settings.

Exposure to Moisture, Chemicals, and Condensation

If liquids such as moisture, chemicals, and condensation contact the electronics, circuit breaker, fuses, bussing, or other electrical components, do not attempt to clean or repair the equipment as this may lead to unrepairable damage. If the equipment is energized, de-energize it. If equipment is not energized, do not energize it. Contact the Schneider Electric Customer Care Center at 888-778-2733.

Receiving, Handling, and Storage

⚠⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- If signs of moisture contamination are present, do not follow the instructions in this section.
- If signs of moisture contamination are present, proceed to Moisture Contamination Avoidance and Mitigation, page 8.

Failure to follow these instructions will result in death or serious injury.

Receiving and Storage

This equipment is not suitable for outdoor exposure until the equipment is installed per the drawings and instructions contained in this document and has operational environmental controls with appropriate settings.

- Treat the equipment as if it is in storage until it is installed and operational.
- Heaters and other environmental controls may be necessary until the equipment is fully operational. Set the environmental controls (thermostat, humidistat, or other items) to mitigate condensation (including times when the equipment is lightly loaded, such as storage, downstream loads deenergized). Consult the engineer of record for the appropriate environmental control settings.
- The factory shipping wrap around the equipment on shipping pallets is not suitable for over the road transportation without additional protection (such as covering with a tarp). Contact your local Schneider Electric representative in those cases.
- When receiving equipment, where the equipment may be at a lower temperature than the ambient air temperature, allow time for the equipment to rise to ambient air temperatures before making openings in the packaging or otherwise disturbing the packaging. Condensation can occur on and inside the equipment if warm air contacts cold surfaces. Moisture damage can occur destroying the dielectric capabilities of the equipment, rendering it unusable. Once the equipment is unwrapped, follow the guidelines in the instructional material.

If the equipment must be moved to a final destination after it is placed in storage, it is important to follow all guidelines in the instructional material for moving the equipment.

The switchgear is shipped on skids in protective crates or wrapping. Circuit breakers are shipped in switchgear cells or on separate pallets. Circuit breakers shipped on pallets have crush cones attached to the top of the circuit breaker box on the pallet. If the cone is crushed, DO NOT accept, or use the circuit breaker and report it as potential shipping damage to the freight carrier.

Upon receipt, inspect the equipment for damage that may have occurred in transit. Check all items against the packing list provided. Immediately notify the carrier and Schneider Electric of any damages or shortages.

⚠⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Store the equipment in a clean, dry (including no condensation), well ventilated area with an ambient temperature of approximately 70°F (21°C).
- Place dust covers over circuit breakers.
- If space heaters are furnished in the assembly, energize them from an external source. When energizing space heaters from an external source, remove the primary current limiting fuses from the control power transformer.
- If space heaters are not installed in the assembly and the area is cold and damp, use a temporary heating source within the assembly. A minimum of 200 W of heat per cell is recommended.
- Avoid greasy, smoky heaters that can deposit carbon on insulation that could lead to tracking and insulation breakdown.

Failure to follow these instructions will result in death or serious injury.

If the assembly is stored prior to installation, keep it in a clean, dry, well-ventilated area with an ambient temperature of approximately 70°F (21°C). Place dust covers over the circuit breakers. If space heaters are furnished in the assembly, energize them from an external source. Refer to the schematic and wiring diagrams for a logical connection point and for voltage and power requirements.

If the space heaters are normally energized from the assembly control power transformer, open the control power transformer secondary circuit breaker, remove the primary current limiting fuses, and install an out-of-service tag before energizing the space heaters. This action opens the circuit to the control power transformer and does not allow this circuit to backfeed the control power transformer and thus backfeed the main bus.

This equipment is not suitable for outdoor exposure until the equipment is installed per the drawings and instructions contained in this document and has operational environmental controls with appropriate settings.

- Treat the equipment as if it is in storage until it is installed and operational.
- Make sure the environmental controls (thermostat, humidistat, or other items.) are set to mitigate condensation (including times when the equipment is lightly loaded, such as storage, downstream loads deenergized). Consult the engineer of record for the appropriate environmental control settings.
- Heaters and other environmental controls may be necessary until the equipment is fully operational.
- The factory shipping wrap around the equipment on the shipping pallets is not suitable for over the road transportation without additional protection (such as covering with a tarp). Contact your local Schneider Electric representative in those cases.
- When receiving equipment, where the equipment may be at a lower temperature than the ambient air temperature, allow time for the equipment to rise to ambient air temperatures before making openings in the packaging or otherwise disturbing the packaging. Condensation can occur on and inside the equipment if warm air contacts cold surfaces. Moisture damage can occur destroying the dielectric capabilities of the equipment, rendering it unusable. Once the equipment is unwrapped, follow the guidelines in the instructional material.

If the equipment must be moved to a final destination after it is placed in storage, it is important to follow all guidelines in the instructional material for moving the equipment.

Claims and Shortages

Claims for shortages or errors must be made in writing to Schneider Electric within 15 days after delivery. Failure to give such notice will constitute unqualified acceptance and a waiver of all such claims by the purchaser. Immediately inspect the switchgear sections for any damage that may have occurred in transit. If damage is found or suspected, file a claim with the carrier immediately, and notify Schneider Electric. Delivery of equipment to a carrier at any of the Schneider Electric plants or other shipping points constitute delivery to the purchaser regardless of freight payment and title. All risk of loss or damage passes to the purchaser at that time.

Handling

The switchgear is normally shipped in one- or two-section shipping splits. Each section has four lifting eyes bolted on top. If more than two bays are shipped as one section, lifting channels, frames, or spreader bars must be used when lifting. Attach a crane hook in each corner of the shipping split to lift and move the sections. After the shipping split has been placed in position, remove and discard the lifting lugs, if applicable. Screw the bolts back into place to cover the mounting holes.

Factory-built equipment is assembled with fixtures on flat and level floor surfaces to maximize the alignment of the sheet metal components. Door and panel adjustments may be necessary once the equipment is removed from the pallet and placed in position.

If a crane is not available, the sections may be unloaded and moved with a forklift. Rollers under the skids may be used on relatively flat surfaces if other moving equipment is not available or space prohibits the use of other moving methods.

NOTICE

EQUIPMENT DISTORTION

- Do not remove the skids until the shipping sections are in the final location.
- Do not maneuver the equipment directly on rollers. If rollers are used, move with the skid in place with the equipment on the skid. Remove the skid only when the equipment is in proper position on the pad.
- Always use the skids when moving the switchgear.

Failure to follow these instructions can result in equipment damage.

The shipping sections are designed to be lifted by a crane. Attach a sling to the lifting lugs on the roof of each of the shipping sections as shown in Lifting Method, page 13. A spreader bar may be necessary to maintain proper lifting angles. If a crane is not available, contact Schneider Electric for special arrangements for unloading the switchgear sections. Conduit should be stubbed a maximum of one inch (25 mm) above the Masterclad floor. Conduit placement must be accurate to assure alignment within the designated conduit area in the floor of the equipment to avoid mechanical interference with the switchgear floor. See following figures.

Floor plates must be installed with cutouts for the conduit to create a barrier to block moisture or pests from entering the switchgear compartment. Employ conduit hubs or a similar system to create a continuous barrier between the area below the switchgear and the switchgear compartment.

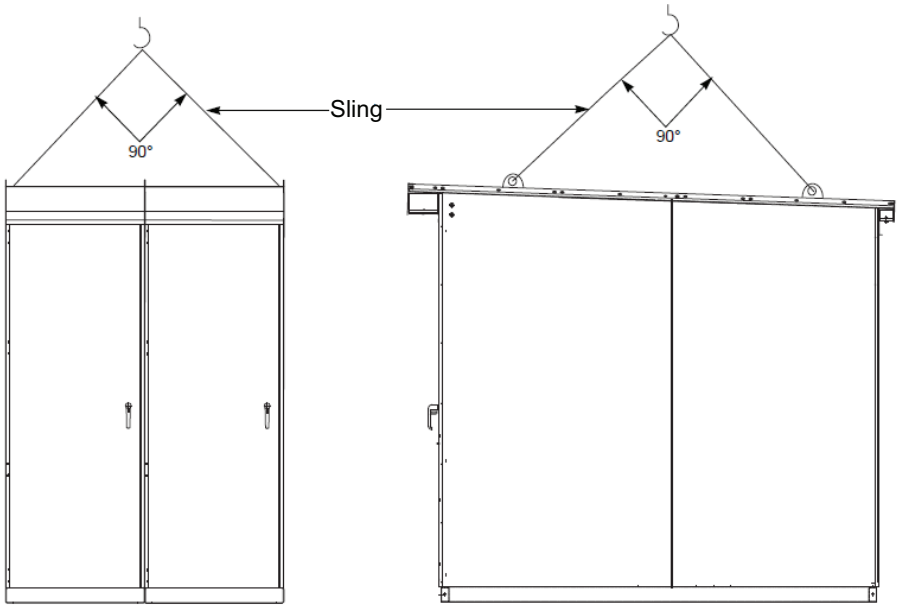
⚠CAUTION

DAMAGED LIFTING EYES

The interior angle of the lifting sling should not exceed 90°. Angles greater than 90° apply greater inward pressure on the lifting eyes, which can damage and dislodge the lifting eyes from the switchgear.

Failure to follow these instructions can result in injury or equipment damage.

Figure 2 - Lifting Method



Site Preparation

Foundation Requirements

The standard non-walk-in enclosure is designed for installation on a concrete pad. Refer to the factory order drawings for any additional mounting details which may be required on specific orders. The pad must be flat and leveled to 1/8-inch per square yard to help ensure proper alignment and to help prevent distortion of the gear.

Conduit Location

Typical Floor Plan–36 in. (914 mm) Wide Unit (not for construction), page 15 and Typical Floor Plan–48 in. (1219 mm) Wide Unit (not for construction), page 16 illustrate typical floor plans. Refer to the applicable drawings before using the typical foundation specifications.

Conduit should be stubbed a maximum of one inch (25 mm) above the Masterclad floor. Conduit placement must be accurate to assure alignment within the designated conduit area in the floor of the equipment to avoid mechanical interference with the switchgear floor. See following figures.

Floor plates must be installed with cutouts for the conduit to create a barrier to block moisture or pests from entering the switchgear compartment. Employ conduit hubs or a similar system to create a continuous barrier between the area below the switchgear and the switchgear compartment.

Avoid continuous loops of reinforcing rod in concrete or structural steel that do not enclose all three phase conductors of the same circuit.

Figure 3 - Typical Floor Plan–36 in. (914 mm) Wide Unit (not for construction)

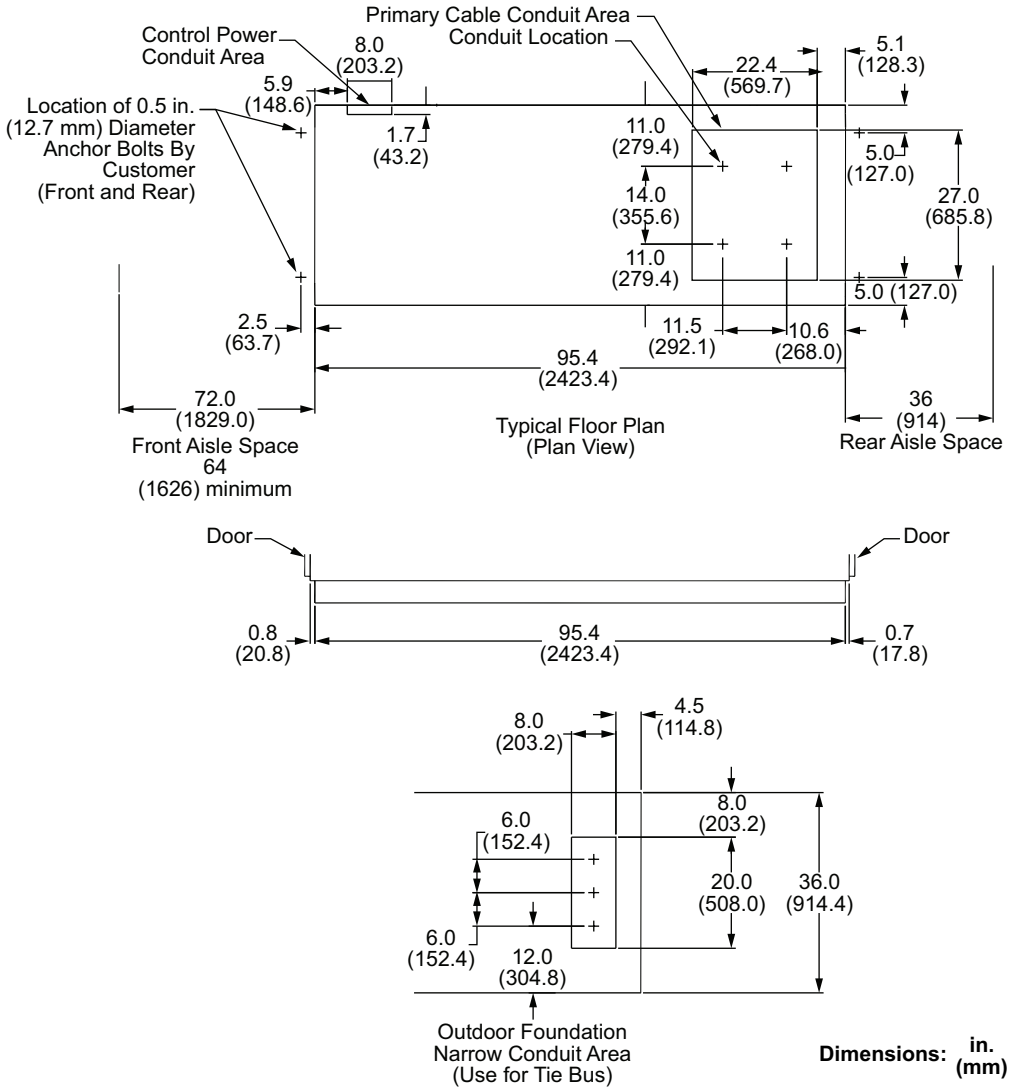
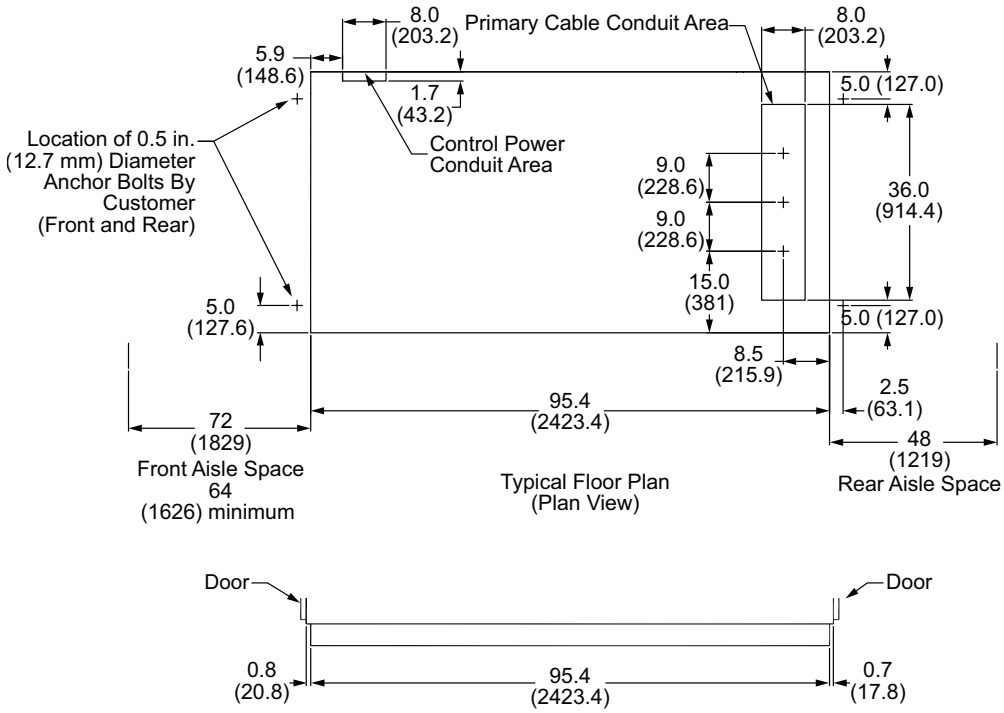


Figure 4 - Typical Floor Plan–48 in. (1219 mm) Wide Unit (not for construction)



Dimensions: in. (mm)

Installing the Switchgear

⚠⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Make sure there are no obstructions within 48 inch (1219 mm) of the rear door for proper vent function.
- Inspect air filters during maintenance and replace them if necessary.
- Do not remove the air filters except for inspection/replacement.
- Do not use filters other than those recommended in this instruction bulletin.

Failure to follow these instructions will result in death or serious injury.

Set the environmental controls (thermostat, humidistat, or other items.) to mitigate condensation (including times when the equipment is lightly loaded, such as storage, downstream loads deenergized). Consult the engineer of record for the appropriate environmental control settings.

Standard Components and Parts

The following components and parts are shipped with each unit:

- Caulk to be used to seal cracks found after final installation.
- 1/2 in. (13 mm) gasket for repair if the unit gasket is damaged during shipment.
- One set of four 1/2-13 bolts and seal washers per shipping section, to replace bolts that hold the lifting lugs on the roof.

NOTE: Refer to instruction bulletin 6055-40 for components shipped with the indoor switchgear.

Pre-Installation Procedures

1. The switchgear may be shipped in one or more shipping sections. Review the assembly drawings to verify that switchgear sections will be assembled in the correct order.
2. Verify that the conduit placement on the foundation is accurate according to customer drawings. Error in conduit placement may prohibit the proper installation of switchgear as described in this section (see the note below).
3. Sweep the pad and remove debris before installing any sections.

Installation

1. Install and level the switchgear shipping section. Carefully align the openings on the bottom of the switchgear sections with conduits on the foundation before lowering the switchgear into place.

   NOTE: When more than two shipping sections are involved, carefully measure the conduit spacing, comparing it to the factory order drawings. Cumulative error can be significant enough that it prohibits proper installation. To lessen cumulative error, install the center shipping section first, and work toward either end of the sections.

2. Unload the switchgear shipping sections from the delivery truck. The shipping sections are designed to be lifted by a crane. Attach a sling to the lifting lugs on the roof of each of the shipping sections as shown in . A spreader bar may be necessary to maintain proper lifting angles. If a crane is not available, contact Schneider Electric for special arrangements for unloading the switchgear sections.

⚠CAUTION

DAMAGED LIFTING EYES

The interior angle of the lifting sling should not exceed 90°. Angles greater than 90° apply greater inward pressure on the lifting eyes, which can damage and dislodge the lifting eyes from the switchgear.

Failure to follow these instructions can result in injury or equipment damage.

3. Remove the shipping covers. Be careful not to damage the instrumentation on the front doors when removing shipping covers.
4. Install and level the switchgear shipping section (see Placing First Section, page 18). Carefully align the openings on the bottom of the switchgear sections with conduits on the foundation before lowering the switchgear into place.

Figure 5 - Placing First Section

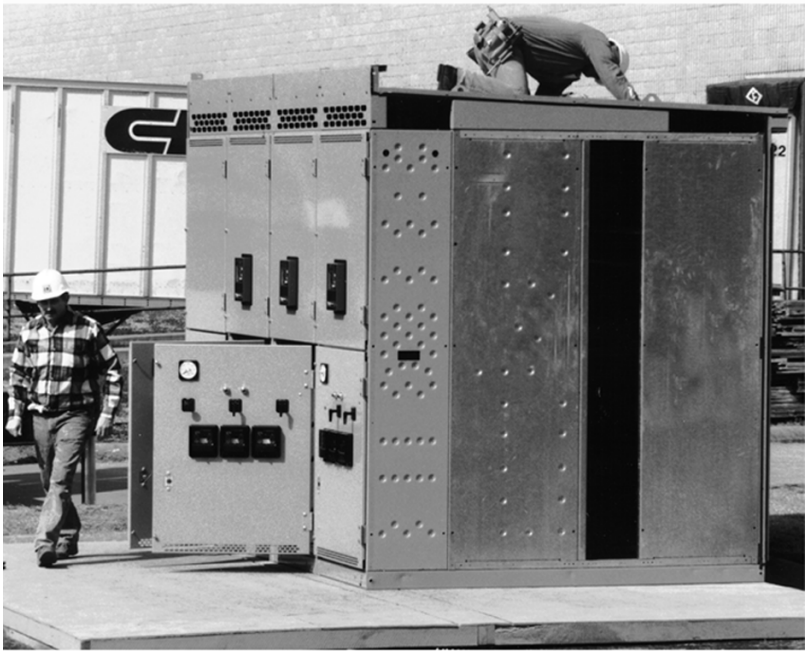
5. Level the switchgear shipping section using steel shims if necessary.
6. Verify that the factory-installed gasket attached to one side of the shipping section is in place before installing the subsequent shipping sections. If damaged or missing, repair it using the gasket material provided. Make sure there is no gap between splices if repairs are made.

7. Using a crane, install the second switchgear shipping section (see Unloading Second Section, page 19).

Figure 6 - Unloading Second Section

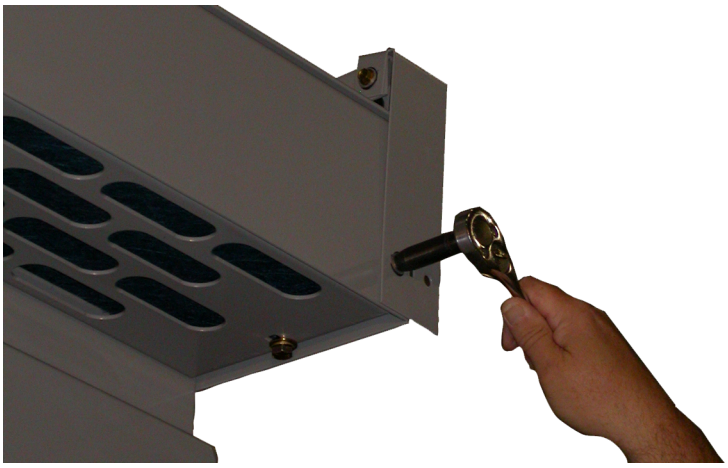
8. Level the switchgear shipping section using steel shims if necessary.
9. Verify that the switchgear sections are level, aligned, and fit snugly together. If the sections do not fit properly, lift the most recently placed section by crane, remove any obstructions, and reinstall.
10. Secure the second section to the previously installed section with the 3/8-16 x 1.0 carriage bolts located on the front of the switchgear, rear of the switchgear, and across the roof of the switchgear (see Securing Switchgear Sections, page 19).

Figure 7 - Securing Switchgear Sections



11. After all switchgear sections are in place and anchored, attach the roof caps, using 1/4 inch thread-forming screws supplied. See Roof Cap Installation, page 20. Switchgear anchorage for non-seismic applications, see Equipment Anchorage for Non-Seismic Application, page 22. Switchgear anchorage for seismic applications, see Equipment Anchorage for Non-Seismic Application, page 22.

Figure 8 - Roof Cap Installation



12. Remove the lifting lugs located on the roof of the switchgear (see Removing Large Lifting Lugs, page 21 and Removing Small Lifting Lugs, page 21). Plug the holes with the factory-supplied 1/2-13 bolts and seal washers (see Plugging Holes with Bolt/Seal Washers, page 22) furnished with each shipping section.

NOTICE
IMPROPER ROOF INSTALLATION Make sure that all 1/2-13 bolts and seal washers are in place; they not only seal the roof, they hold it to the switchgear. **Failure to follow these instructions can result in equipment damage.**

Figure 9 - Removing Large Lifting Lugs

Figure 10 - Removing Small Lifting Lugs

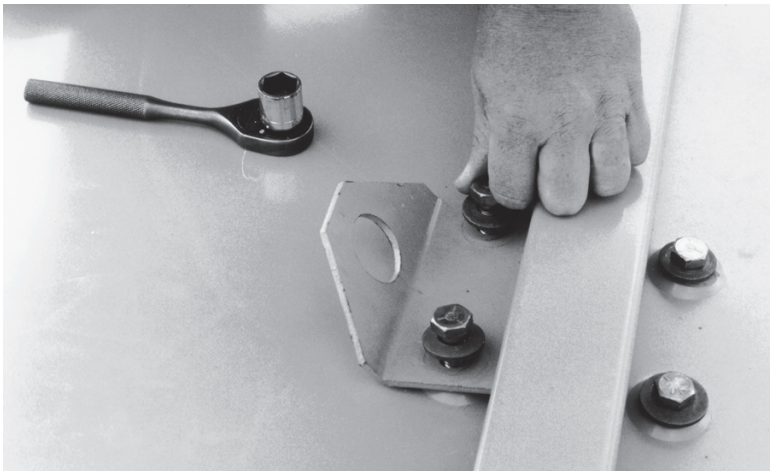
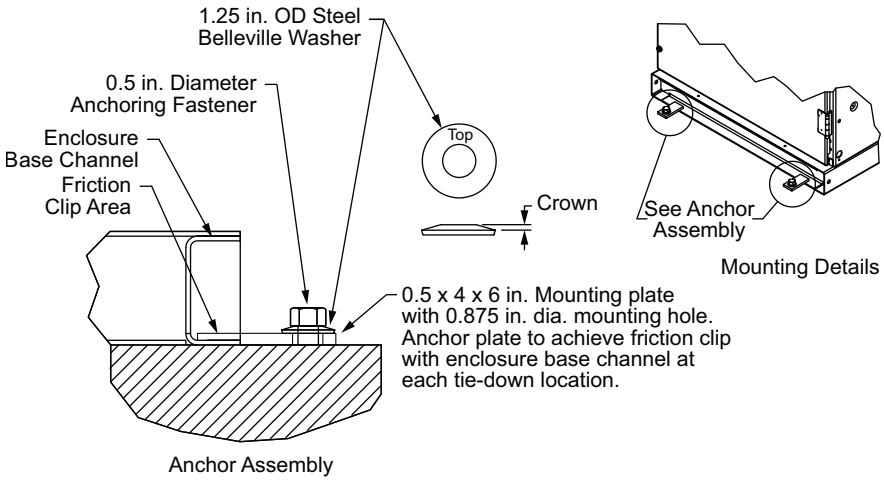


Figure 11 - Plugging Holes with Bolt/Seal Washers

Equipment Anchorage for Non-Seismic Application

The switchgear needs to be anchored to the building structure or foundation using mounting plates as shown in Non-seismic Switchgear Anchor Assembly, page 22. Mounting plates (supplied by Schneider Electric) are used as friction clips to secure the enclosure base channels to the building structure or foundation. Equipment installations must be anchored using all enclosure tie-down points as shown in Typical Floor Plan–36 in. (914 mm) Wide Unit (not for construction), page 15 for outdoor applications.

Figure 12 - Non-seismic Switchgear Anchor Assembly



Equipment Installation for Seismic Applications

Introduction Seismic Certification

Seismic certification is an optional feature on the Masterclad 15 kV Metal-Clad product line and provides seismic conformance options to any of the North American and International building codes and seismic design standards identified in List of Supported Regional Building Codes and Seismic Design Standards, page 23. Masterclad 15 kV Metal-Clad that is seismically certified has been certified to the seismic requirements of the listed code per the manufacturer's certificate of compliance (CoC). Equipment compliance labels and CoC's are provided with all seismically certified Masterclad 15 kV Metal-Clad. Refer to the equipment CoC for certification details and applicable seismic parameters. To maintain the validity of this certification, the installation instructions provided in this section must be followed.

Table 1 - List of Supported Regional Building Codes and Seismic Design Standards

Country / Region	Code Reference ID	Code Name
North American Codes		
Canada	NBCC	National Building Code of Canada
Mexico	CFE MDOC-15	Civil Works Design Manual, Earthquake Design
United States	IBC per ASCE 7 CBC per ASCE 7 UFC per DoD	International Building Code—IBC California Building Code—CBC Uniform Facilities Criteria—UFC
International Codes		
Argentina	INPRES-CIRSOC103	Argentinean Standards for Earthquake Resistant Constructions
Australia	AS 1170.4-2007 (R2018)	Structural design actions, Part 4: Earthquake actions in Australia
Chile	NCh 433.Of1996	Earthquake resistant design of buildings
China	GB 50011-2010 (2016)	Code for Seismic Design of Buildings
Colombia	NSR-10 Título A	Colombian Regulation of Earthquake Resistant Construction
Europe	Eurocode 8 EN1998-1	Design of structures for earthquake resistance – Part 1: General rules, seismic actions and rules for buildings
India	IS 1893 (Part 1) : 2016	Criteria for Earthquake Resistant Design of Structures Part 1 General Provisions and Buildings
Indonesia	SNI 1726:2019	Earthquake Resistance Planning Procedures for Building and Non-building Structures
Japan	Building Standard Law	The Building Standard Law of Japan
New Zealand	NZS 1170.5:2004+A1	Structural design actions, Part 5: Earthquake actions – New Zealand
Peru	N.T.E. - E.030	National Building Code, Earthquake-Resistant Design
Russia	СП 14.13330.2018	Building norms and regulations: Construction in seismic regions
Saudi Arabia	SBC 301	Saudi Building Code, Loads & Forces Requirements
Taiwan	CPA 2011	Seismic Design Code and Commentary for Buildings
Turkey	TBEC-2018	Turkey Buildings Earthquake Standard

Responsibility for Mitigation of Seismic Damage

The Masterclad 15 kV Metal-Clad equipment is considered a nonstructural building component as defined by regional building codes and seismic design standards. Equipment capacity was determined from tri-axial seismic shake-table test results in accordance with the International Code Counsel Evaluation Service (ICC ES) Acceptance Criteria for Seismic Certification by Shake-Table Testing of Nonstructural Components (ICC-ES AC156).

An equipment importance factor, I_p, that is greater than one ($I_p > 1.0$) is assumed and indicates that equipment functionality is required after a seismic event and after seismic simulation testing. This importance factor is applicable for designated seismic systems (for example, special certification) servicing critical infrastructure and essential buildings where post-earthquake equipment functionality is a requirement.

Incoming and outgoing bus, cable, and conduit must also be considered as related but independent systems. These distribution systems must be designed and restrained to withstand the forces generated by the seismic event without increasing the load transferred to the equipment. For applications where seismic hazard exists, it is preferred that bus, cable, and conduit enter and exit the bottom of the equipment enclosure.

Seismic certification of nonstructural components and equipment by Schneider Electric is just one link in the total chain of responsibility required to maximize the probability that the equipment will be intact and functional after a seismic event. During a seismic event, the equipment must be able to transfer the inertial loads that are created and reacted through the equipment's force resisting system and anchorage to the load-bearing path of the building structural system or foundation.

Anchorage of equipment (for example, nonstructural supports and attachments) to the primary building structure or foundation is required to validate seismic conformance. The construction site structural engineer or engineer of record (EOR) or the registered design professional (RDP) is responsible for detailing the equipment anchorage requirements for the given installation. The installer and manufacturers of the anchorage system are responsible for assuring that the mounting requirements are met. Schneider Electric is not responsible for the specification and performance of equipment anchorage systems.

Tie-down Points for Rigid Floor Mounted Equipment

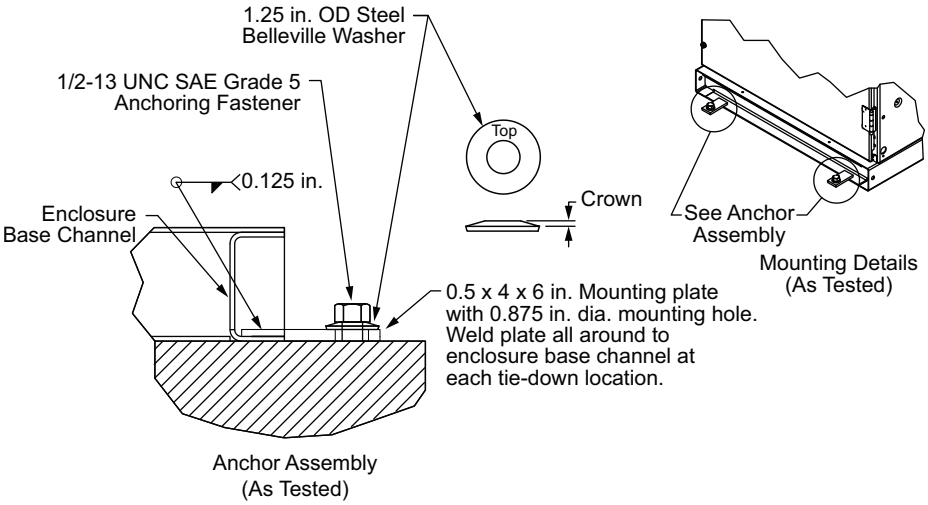
Tie-down points for enclosure anchorage to the building structure or foundation require using mounting plates as shown in Switchgear as Tested Anchor Assembly, page 25. Mounting plates (supplied by Schneider Electric) are welded to the enclosure base channels and accept anchor attachments to the building structure or foundation. Equipment installations must be anchored using all enclosure tie-down points as shown in Typical Floor Plan–36 in. (914 mm) Wide Unit (not for construction), page 15 for outdoor applications.

Welded mounting plates must be properly sized to ensure the weldment withstand capacity exceeds the earthquake demand at location of equipment installation. Precautions shall be made to properly vent and shield the equipment enclosure during the field welding process. Schneider Electric is not responsible for equipment damage caused by field welded mounting plates.

Anchorage Assembly Instructions

The bolted anchor assembly view depicted in Switchgear as Tested Anchor Assembly, page 25 illustrates the equipment's as-tested attachment to the seismic shake-table test fixture. The equipment seismic rated capacity, as stated on the Schneider Electric CoC, was achieved with the identified size and grade attachment hardware. For bolted attachments, the use of factory supplied Belleville conical spring washers, are required to maintain seismic conformance. Field installed equipment attachment and support detailing shall be in accordance with the anchorage system requirements as defined by the construction site EOR or RDP.

Figure 13 - Switchgear as Tested Anchor Assembly



Inspection and Maintenance

⚠⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E, NOM-029-STPS-2011, or CSA Z462.
- This equipment must be installed and serviced only by qualified electrical personnel.
- Perform such work only after reading and understanding all of the instructions contained in this bulletin.
- Turn off all power supplying this equipment before working on or inside equipment.
- Always use a properly rated voltage sensing device to confirm power is off.
- Before performing visual inspections, tests, or maintenance on this equipment, disconnect all sources of electric power. Assume all circuits are live until they are completely de-energized, tested, and tagged. Pay particular attention to the design of the power system. Consider all sources of power, including the possibility of backfeeding.
- Always practice lock-out/tag-out procedures according to OSHA requirements.
- Open all circuit breaker and switch contacts and discharge all springs before performing maintenance work, disconnection, or removal of a circuit breaker.
- Move circuit breakers to the disconnected position before removing rear access panels.
- Conduct electrical testing to confirm no short circuits were created during installation, maintenance, or inspection.
- Never insert a circuit breaker into a circuit breaker compartment that is not complete and functional.
- Disconnect all high voltage to the switchgear before accessing the horizontal bus compartment.
- Do not use liquid fire extinguishers or water on electrical fires. Before extinguishing fires within the assembly, ensure all sources of electric power are disconnected and the main and all feeder circuit breakers are open.
- Carefully inspect your work area, and remove any tools and objects left inside the equipment.
- Replace all devices, doors, and covers before turning on power to this equipment.
- All instructions in this manual are written with the assumption that the customer has taken these measures before performing maintenance or testing.

Failure to follow these instructions will result in death or serious injury.

NOTE: The complete assembly arrangement determines if the top or bottom contacts are the line side; both can be energized when the circuit breaker is removed from the compartment.

Set environmental controls (thermostat, humidistat, other items.) to mitigate condensation (including times when the equipment is lightly loaded, such as storage, downstream loads deenergized). Consult the engineer of record for the appropriate environmental control settings.

Perform inspection and maintenance for the non-walk-in enclosure on the basis of environmental conditions and experience. Abnormal operation or conditions may require immediate corrective action. The inspection for the switchgear is outlined in detail in instruction bulletin 6055–30. The following instructions apply only to the non-walk-in enclosure.

The inspection of the Masterclad Metal-Clad 15 kV Indoor Switchgear is outlined in detail in Instruction Bulletin 6055–30.

Replace the filters every six months or as applicable. List of Supported Regional Building Codes and Seismic Design Standards, page 23 lists correct filter applications.

Table 2 - Replacement Air Filters

Filter Location[1]	Bay Width in. (mm)	Square D™ Part Number	Size in. (mm)
Front Eaves	36 (914)	46005-243-02	7.3 x 30.5 (185 x 775)
Rear Eaves	36 (914)	46005-243-03	3.3. x 34.0 (84 x 864)

Periodic switchgear maintenance also includes cleaning, lubricating, and exercising component parts. The maximum recommended inspection interval is one year. During regular inspection intervals, check for the following:

- Check for leaks in the front of the switchgear and in each circuit breaker and cable compartment.
- Check the drain holes in the cable compartment doors to help ensure they are not clogged.
- Check the thermostat settings. Verify that space heaters in the switchgear are operating.

1. Filter material is 1/2 (13) rubberized hair filter pad or equivalent (Paratex™).

Outlines

Figure 14 - Typical Side View: Non-Walk-in Switchgear

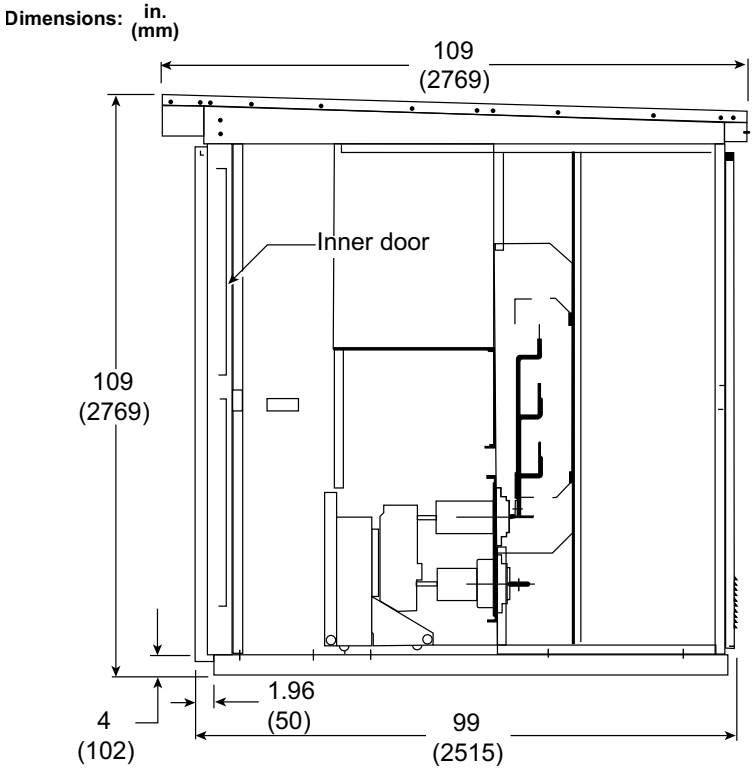
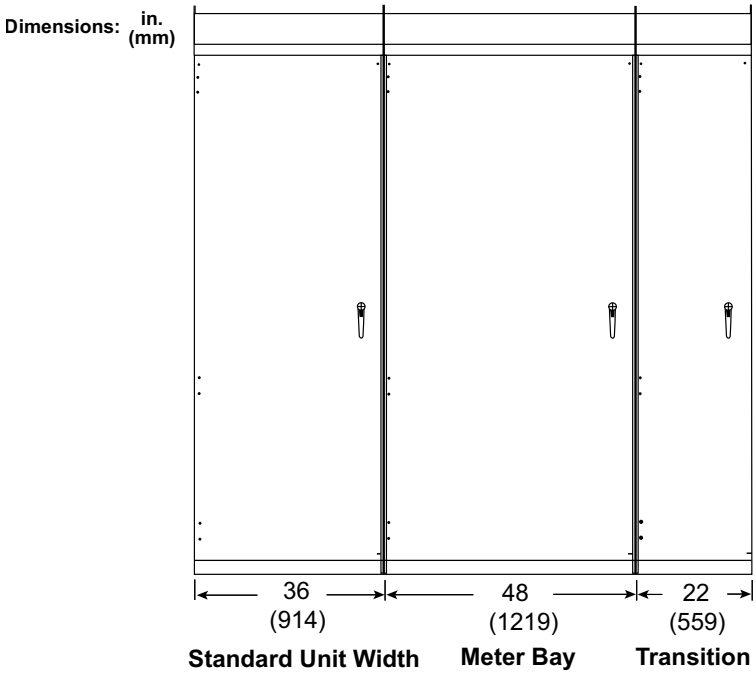


Figure 15 - Typical Side View: Non-Walk-in Switchgear



Maintenance Log

Date	Initials	Actions

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As standards, specifications, and design change from time to time, please ask for confirmation of the information given in this publication.

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