

Masterclad™ 27 kV Medium Voltage Switchgear

Outdoor Walk-in Switchgear

Instruction Bulletin

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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 Masterclad 27 kV, Outdoor Walk-in Metal-Clad Switchgear from Schneider Electric. The 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 bulletin 6055-40, Masterclad Metalclad Indoor Switchgear, 27 kV with Type VR Vacuum Circuit Breakers.

The outdoor walk-in switchgear assembly is a combination of switchgear and aisle space subassembly components that are attached during installation. The switchgear components are always shipped fully assembled. The aisle spaces for the single aisle configuration are shipped as fully assembled components, while the aisle space for the common aisle must be assembled during installation. Installation instructions for both aisle types are included in this bulletin.

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

Figure 1 - Outdoor 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 <ul style="list-style-type: none">• 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.

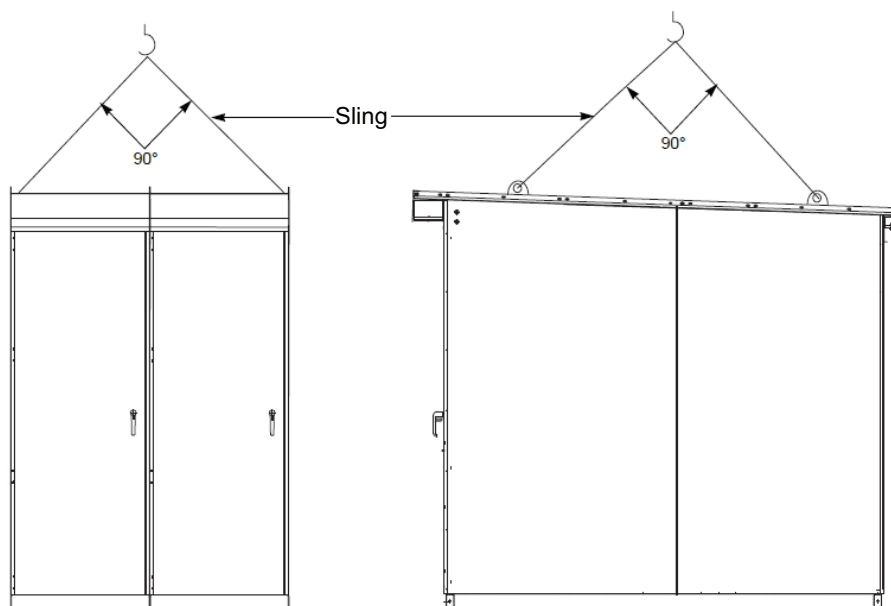
Floor plates must be installed with cutouts for the conduit to create a barrier to block moisture or pests from entering the switchgear compartment. Employ conduit hubs or a similar system to create a continuous barrier between the area below the switchgear and the switchgear compartment.

⚠ 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 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

The following figures 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 for reinforcing rod or structural steel around any single conductor three-phase power circuit and the electrical connections of the shipping sections.

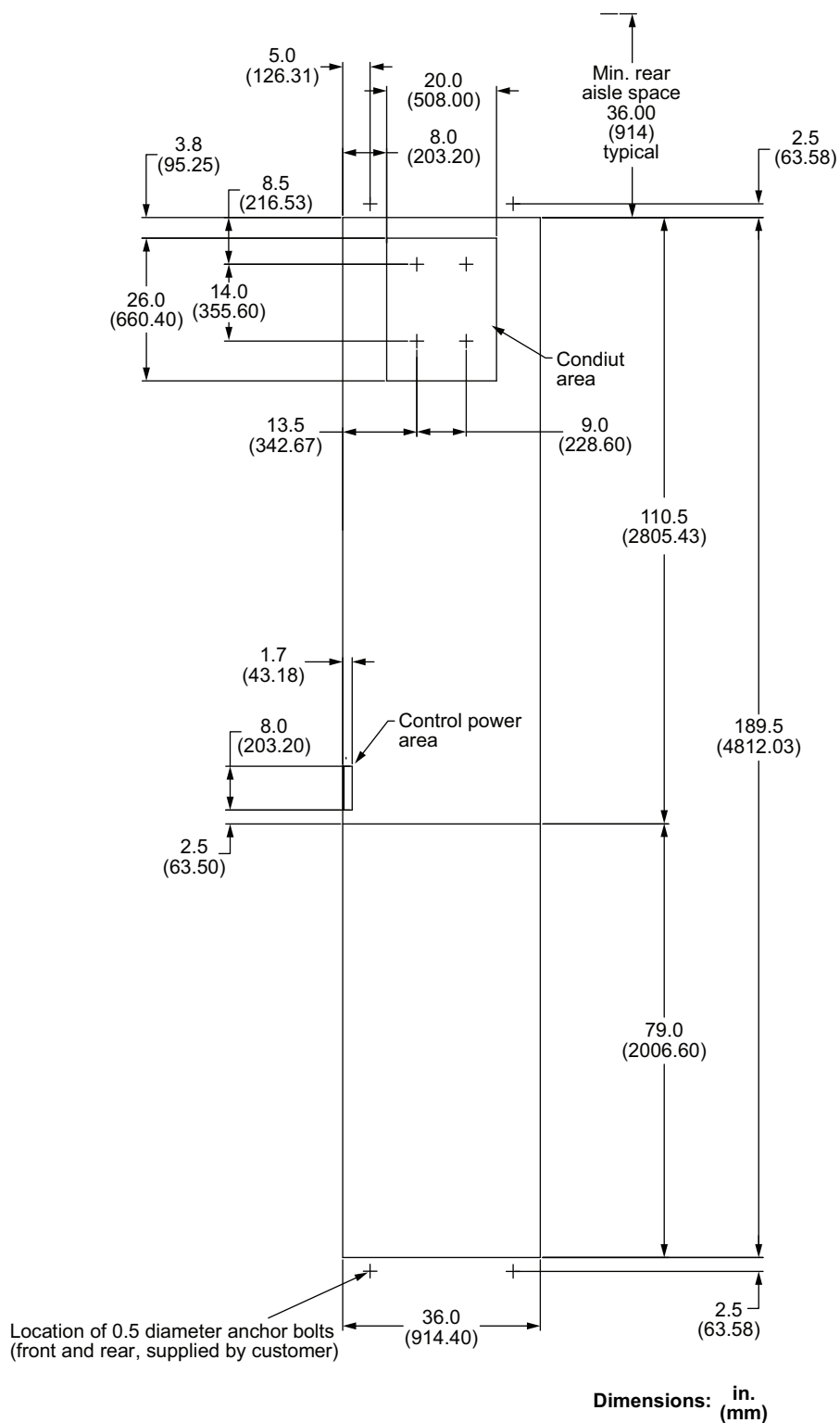
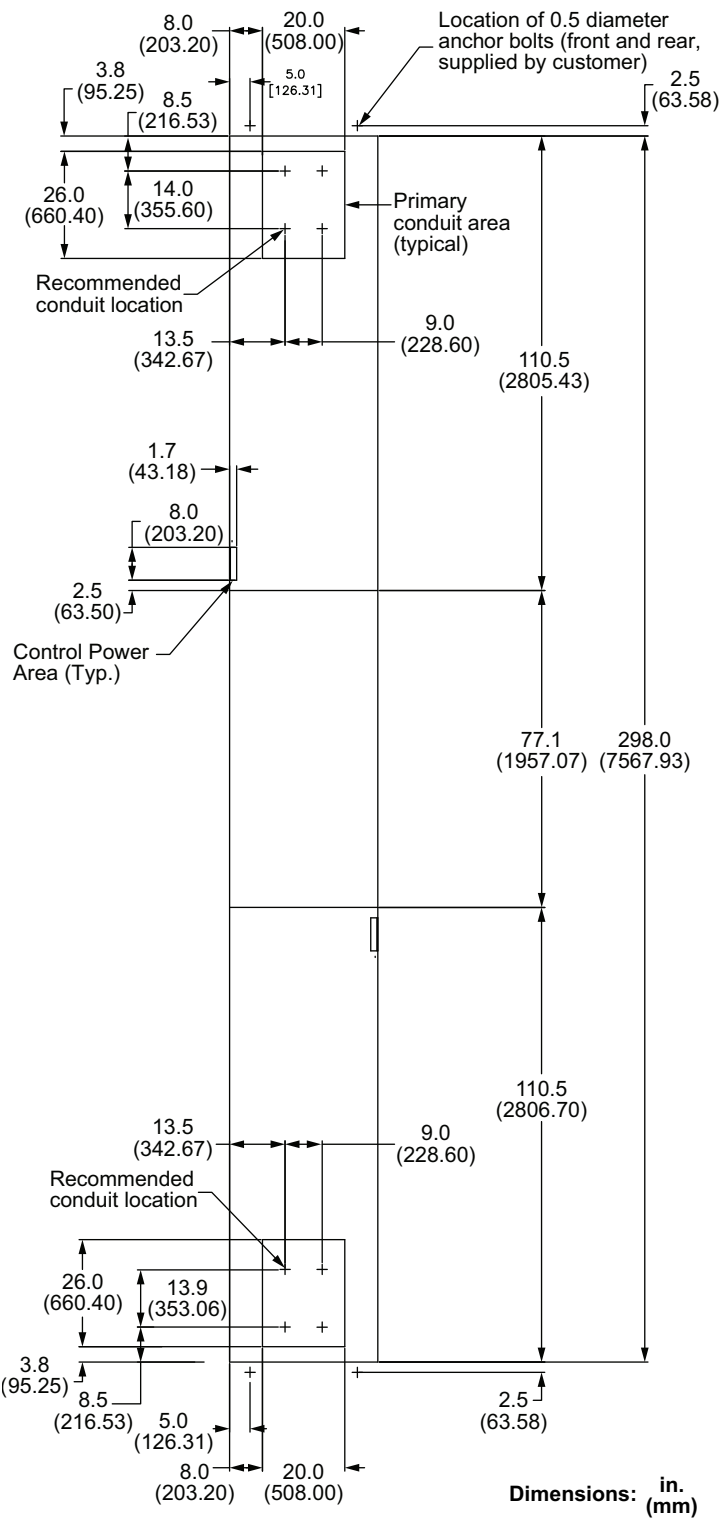
Figure 3 - Single Aisle Floor Plan: Standard 36 in. (914 mm) Wide Unit (Not for Construction)

Figure 4 - Common Aisle Floor Plan: Standard 36 in. (914 mm) Wide Unit (Not for Construction)



Installation

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 standard with each unit:

- Use caulk to seal cracks found after final installation
- 1/2 inch (13 mm) gasket for repair if the unit gasket is damaged during shipment
- One set per shipping section of four 1/2–13 bolts and seal washers for replacing the bolts that hold the lifting lugs on the roof

NOTE: See instruction bulletin 6055-40, Masterclad Metalclad Indoor Switchgear, 27 kV, with Type VR Vacuum Circuit Breakers, for components shipped with the indoor switchgear.

Single Aisle Installation

Follow the instructions below for single aisle installation of outdoor walk-in switchgear. For common aisle installation, see [Common Aisle Installation](#), page 30.

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.

Installing the Switchgear and Equipment Space Sections

This section contains instructions for installing the switchgear and equipment space sections. Before starting this procedure, refer to [Handling](#), page 12 to move the switchgear to the installation location.

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.

Figure 5 - Preparing to Unload Shipping 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.

Figure 6 - Unloading a Section



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 20). Carefully align the openings on the bottom of the switchgear sections with conduits on the foundation before lowering the switchgear into place.

Figure 7 - 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 21).

Figure 8 - Unloading Second Section



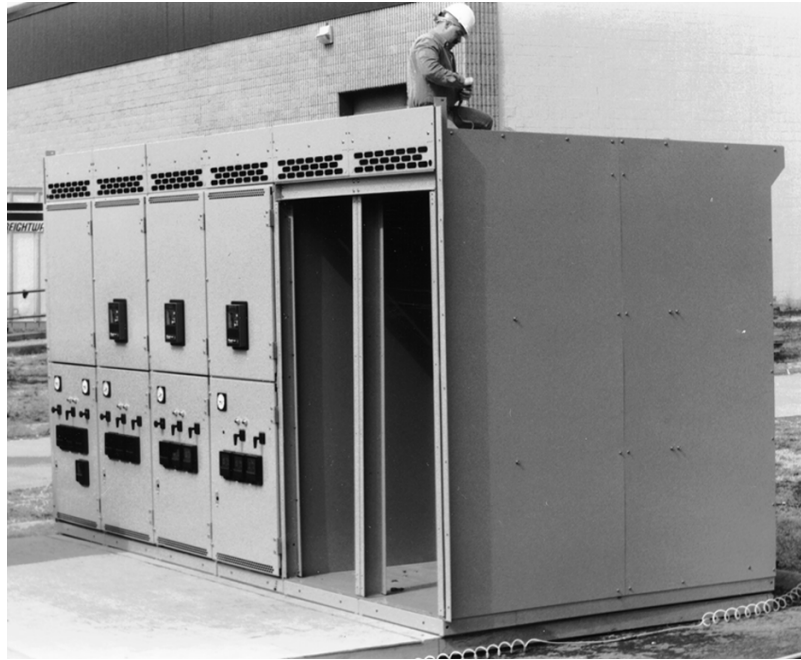
8. Level the switchgear shipping section using steel shims if necessary.
9. Verify that the switchgear sections are level, aligned, and fit snugly together. If the sections do not fit properly, lift the most recently placed section by crane, remove any obstructions, and reinstall.
10. Secure the second 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 21).

Figure 9 - Securing Switchgear Sections



11. Install the equipment space sections (see *Securing Equipment Space to Switchgear*, page 22). Equipment space sections are designed similarly to switchgear units and can be unloaded and installed in the same manner.

Figure 10 - Securing Equipment Space to Switchgear



12. After the switchgear and equipment space sections have been installed, verify that all sections are aligned accurately, and that the bases and roof lines are level. Use a water level and a straight edge.

NOTE: The floor of the front aisle will be level only if the switchgear is level.

13. Secure the equipment space sections to the adjoining switchgear shipping section with the bolts located on the front of the switchgear, rear of the switchgear, and across the roof of the switchgear.

Attaching and Anchoring the Aisle 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.

1. Using a crane, install the first aisle section.

NOTE: The front aisle is shipped in sections of up to four bay sections. The sections are braced with temporary shipping sheet metal angles, bars, and channels (see [Braced Front Aisle Section](#), page 23). Do not remove any of these braces until the shipping sections are in place and bolted to the switchgear section.

Figure 11 - Braced Front Aisle Section



2. Verify that the vertical sections, the base, and the roof are aligned with the switchgear shipping sections. Use steel shims if necessary. It is important that the bolt holes on the aisle roof support brackets align with the corresponding holes on the front of switchgear sections.

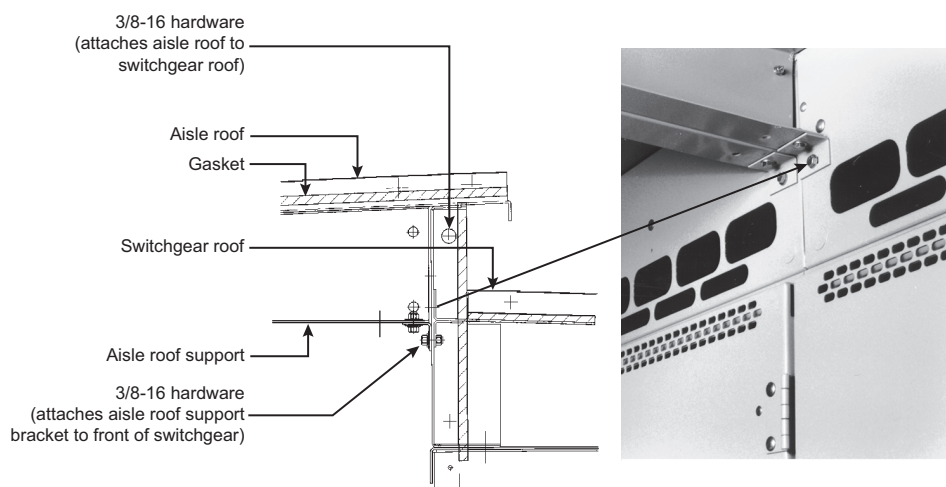
Figure 12 - Aligning Aisle with Switchgear Section



3. Attach the aisle section to the switchgear by bolting each bay's aisle roof support bracket to the front of the switchgear and by bolting the aisle roof to the switchgear roof, using the supplied 3/8-16 x 1.0 inch bolts (Anchoring Aisle Roof Support Bracket to Switchgear, page 24).

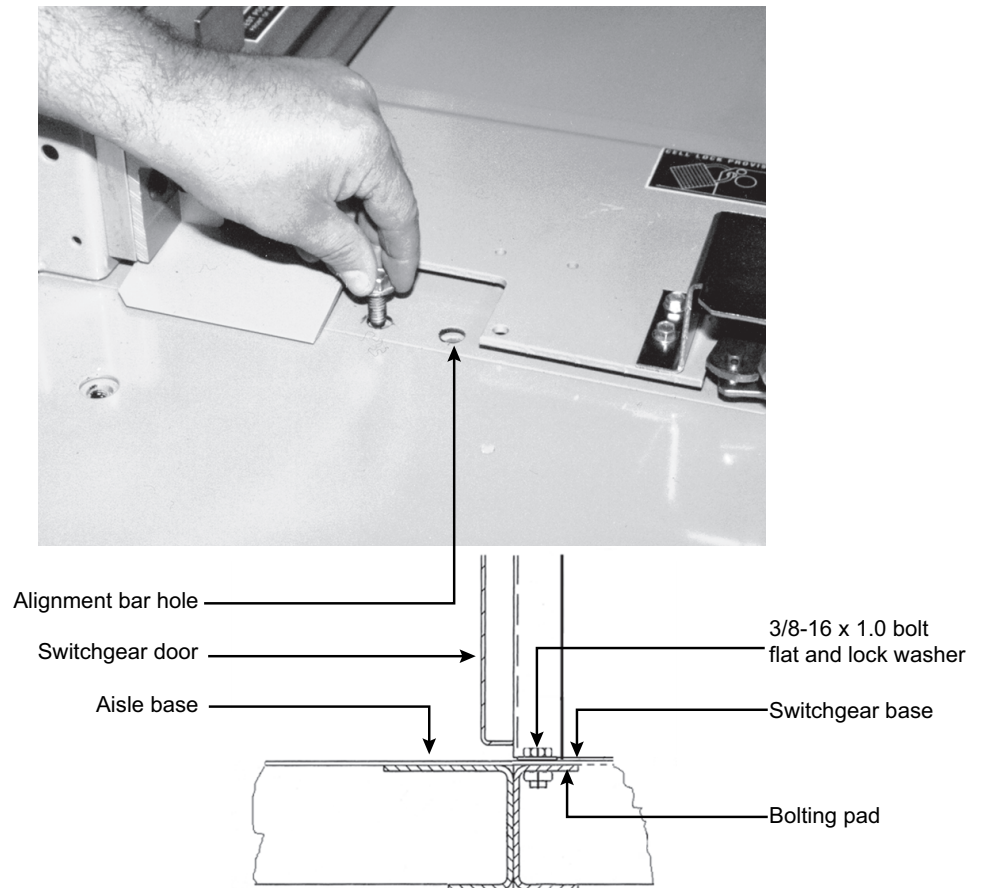
NOTE: Insert the supplied connecting bolts loosely until all are in place then tighten to 18–24 lb-ft. (24.4–32.5 N•m).

Figure 13 - Anchoring Aisle Roof Support Bracket to Switchgear



4. Bolt the aisle base to the switchgear base with 3/8–16 x 1.0 inch bolts (**Aisle and Switchgear Base Connection**, page 25). If required, pry the aisle base in place with an alignment bar.

Figure 14 - Aisle and Switchgear Base Connection



5. After the aisle section is in place and attached to the switchgear section, remove the end shipping braces. Do not remove the braces from in front of the switchgear as it may be necessary to lift the aisle section again if it does not align properly.

Figure 15 - Moving Sections with Braces in Place



6. Using a crane, set the second aisle section onto the concrete pad approximately 12 inches (305 mm) from the section in place.

7. Remove the end braces from the new section and, using a crane, carefully lift the section into place.

NOTE: Do not remove the end shipping braces before the section is sitting on the pad; doing so may distort the assembly.

Figure 16 - Placing Second Aisle Section



8. Install, level, and attach the second aisle section to the switchgear by bolting each bay's aisle roof support bracket to the front of switchgear, and by bolting the aisle roof to the switchgear roof. Use steel shims, if necessary, to make sure there is an alignment.

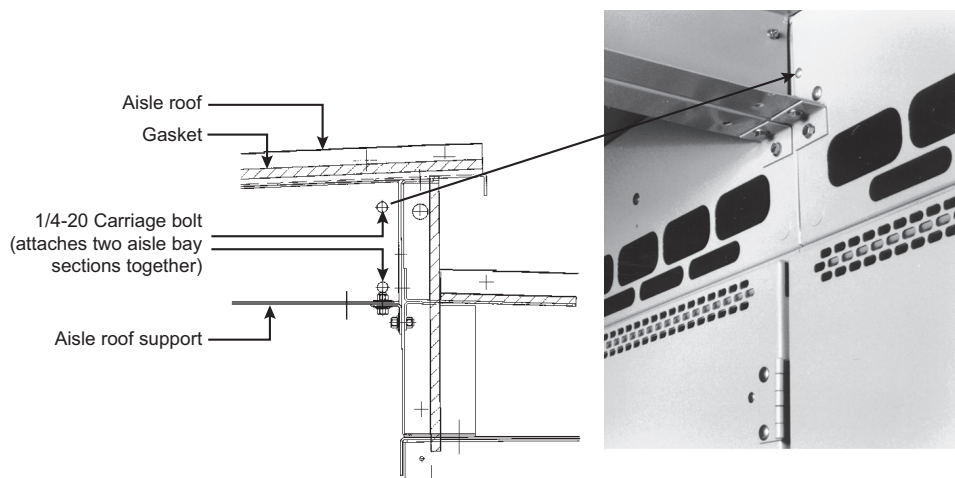
NOTE: Insert the connecting bolts loosely until all are in place, then tighten to 18–24 lb-ft. (24.4–32.5 N•m).

Figure 17 - Switchgear with all Sections in Place



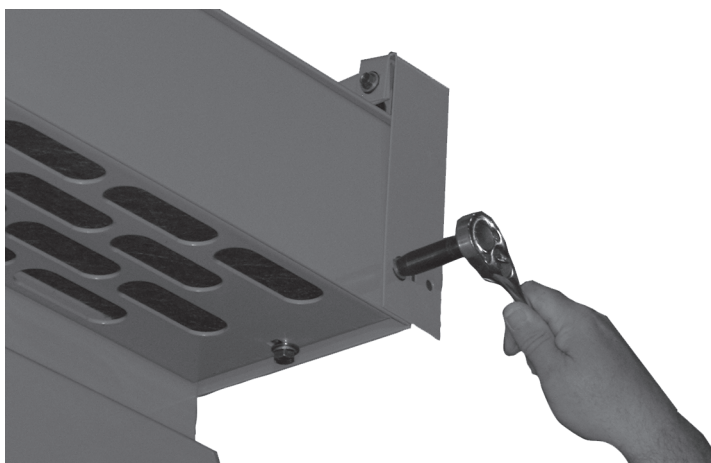
9. Attach the second aisle section to the first aisle section by bolting the aisle roof supports together (see *Attaching Second Aisle Section to First Aisle Section*, page 27).

Figure 18 - Attaching Second Aisle Section to First Aisle Section



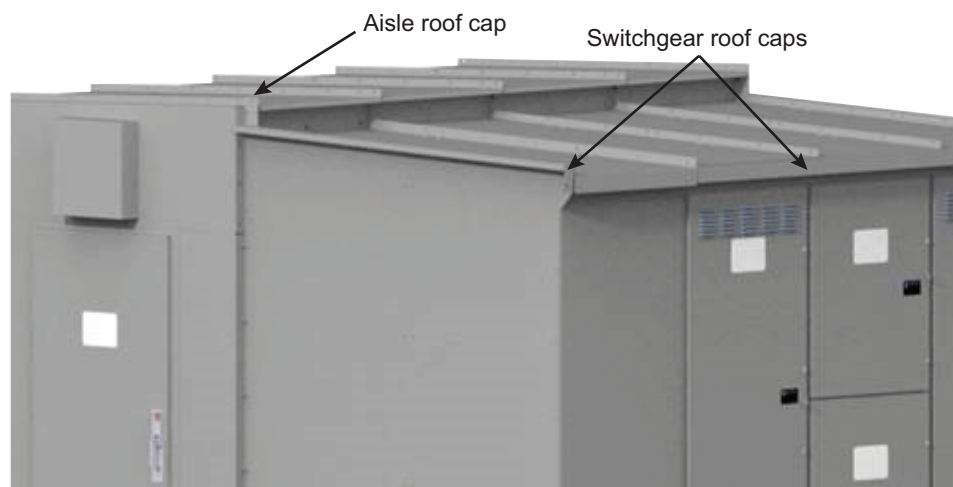
10. Install, level, and attach the second aisle section to the first aisle section by bolting the aisle roof supports together. Use steel shims, if necessary, to make sure there is an alignment.
11. Bolt the aisle base to the switchgear base with 3/8-16 x 1.0 inch bolts (**Aisle and Switchgear Base Connection**, page 25). If required, pry the aisle base in place with an alignment bar.
12. After all aisle sections are bolted in place, remove the aisle shipping braces in front of the switchgear.
13. Mount the aisle roof caps to the roof at each end using the supplied 1/4 inch thread-forming screws. See *Roof Cap Installation*, page 27.

Figure 19 - Roof Cap Installation



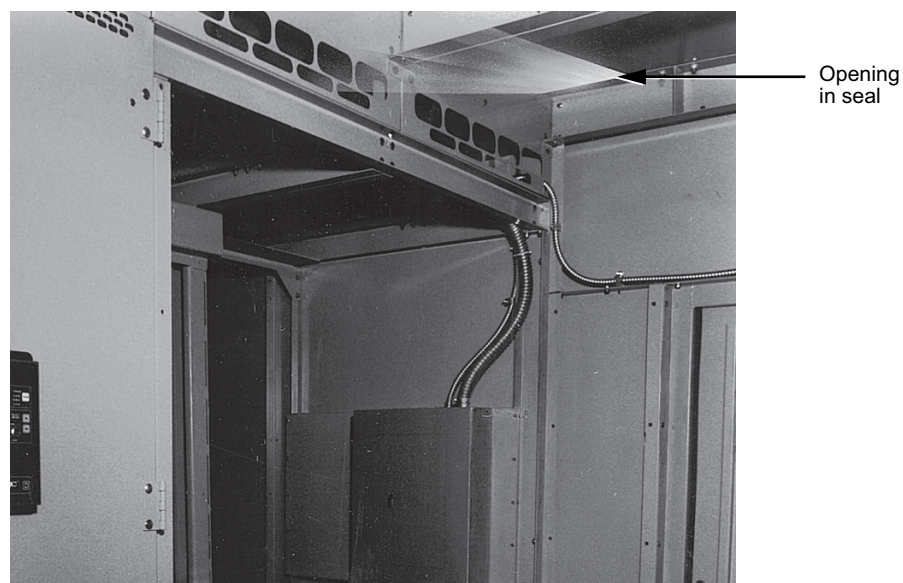
14. Mount the switchgear roof cap to the roof at each end using 1/4 inch thread-forming screws, then mount the roof cap to the aisle roof support using two 1/4 inch carriage bolts, seal washers, and locknuts all supplied by Schneider Electric (see Roof Cap Mountings, page 28).

Figure 20 - Roof Cap Mountings



15. Inspect the walk-in switchgear for any openings that may expose the equipment to rain. To do so, enter the walk-in enclosure, close the doors, and look for any light coming through the joints, mainly in the corners (Checking Enclosure for Openings in the Seal, page 28). Make note of them, and seal with caulk. Look mainly for cracks that could be directly exposed to rain.

Figure 21 - Checking Enclosure for Openings in the Seal



16. Remove the lifting lugs located on the roof of the switchgear and aisle (Removing Large Lifting Lugs, page 29 and Removing Small Lifting Lugs, page 29). Plug the holes with the 1/2-13 inch bolts and seal washers (Plugging Holes with Bolts and Seal Washers, page 30) furnished with each shipping section.

⚠ CAUTION

IMPROPER ROOF INSTALLATION

Make sure all 1/2-13 inch bolts and seal washers are in place; they not only seal, but hold the roof to the switchgear. Refer to Plugging Holes with Bolts and Seal Washers, page 30.

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

Figure 22 - Removing Large Lifting Lugs



Figure 23 - Removing Small Lifting Lugs

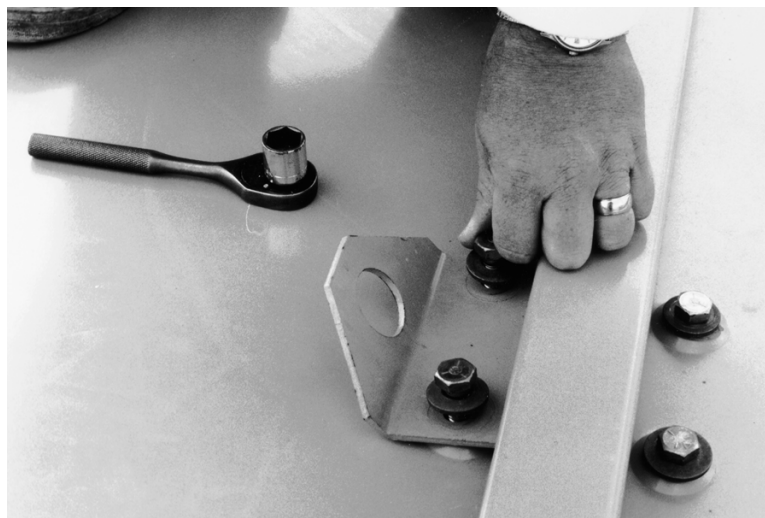


Figure 24 - Plugging Holes with Bolts and Seal Washers

Common Aisle

The same basic guidelines and assembly procedures used for single aisle installation also apply to the common aisle. Refer to the single aisle installation procedures for general information. Specific procedures for common aisle assembly are detailed in this section.

Figure 25 - Outdoor Walk-in Switchgear with Common Aisle

The common aisle switchgear is shipped with the “low side” and the “high side” switchgear sections fully assembled and ready to set on a concrete pad. The aisle is shipped in subassemblies.

Common Aisle Installation

1. Install the switchgear “high side” shipping section (see Common Aisle Configuration, page 31).
2. Line up and bolt the bases to the “high side” switchgear.

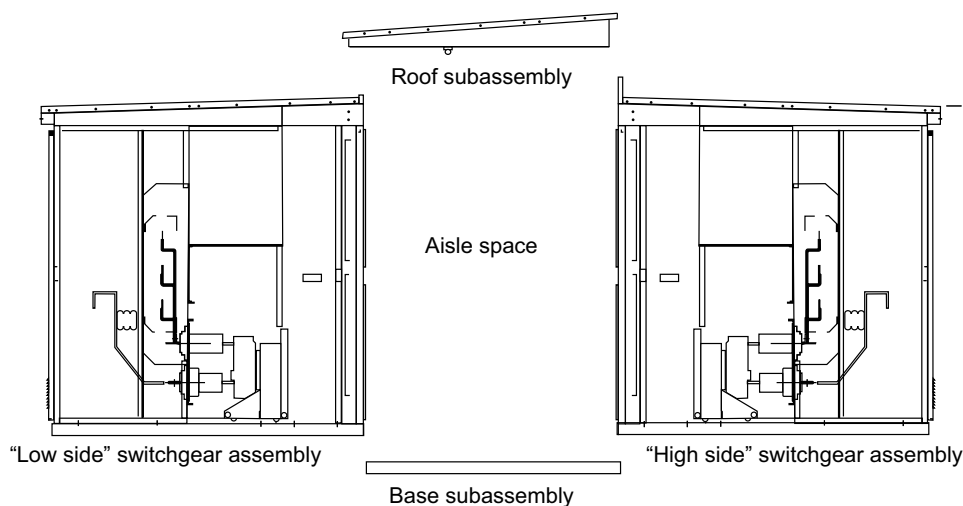
3. Install the switchgear “low side” shipping section and bolt it to the base (see [Common Aisle Configuration](#), page 31).

NOTE: The lineup of all switchgear sections and bases must be accurate and square, and the floor must be level. Use shims if necessary.

4. Install the roof subassemblies, attaching them to the switchgear sections (see [Common Aisle Configuration](#), page 31).
5. Add the end panel subassemblies. Use 3/8-16 x 1-1/2 inch carriage bolts to attach them to the side sheet. Use 3/8-16 x 1 inch hex-head bolts to attach the subassemblies to the roof.
6. Make sure the gaskets attached to one side of the roof and around all bolted flanges are in place. If damaged, repair them using the factory-supplied 1/2 inch gasket material. Make sure there is no gap between the splices if repaired.
7. Attach the roof caps to the aisle and the switchgear roof.

⚠ CAUTION
<p>IMPROPER ROOF INSTALLATION</p> <p>Make sure all 1/2-13 bolts and seal washers are in place; they not only seal, but hold the roof to the switchgear (see Common Aisle Configuration, page 31).</p> <p>Failure to follow these instructions can result in injury or equipment damage.</p>

Figure 26 - Common Aisle Configuration



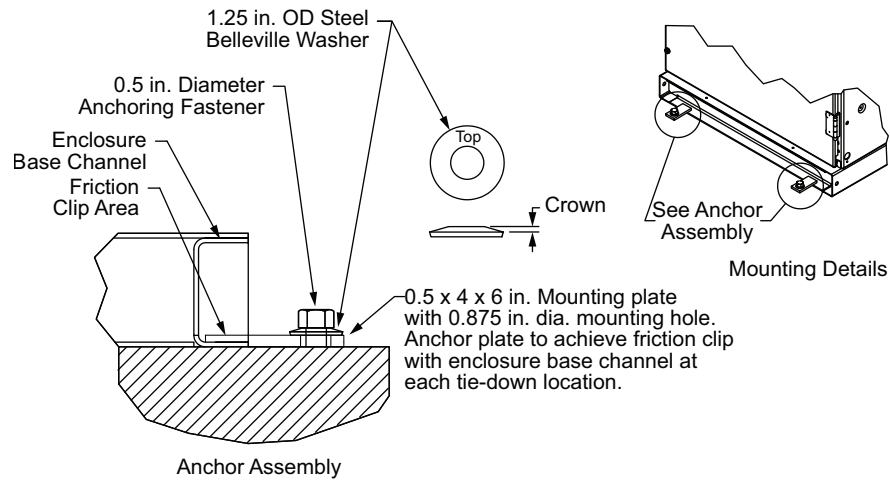
8. After installation of common aisle outdoor walk-in switchgear, the switchgear base needs to be anchored to the concrete pad or foundation. For non-seismic applications see [Equipment Anchorage for Non-Seismic Applications](#), page 31. For seismic applications see [Equipment Installation for Seismic Applications](#), page 32.

Equipment Anchorage for Non-Seismic Applications

The switchgear needs to be anchored to the building structure or foundation using mounting plates as shown in [Non-seismic Switchgear Anchor Assembly](#), page 32. 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 [Single](#)

Aisle Floor Plan: Standard 36 in. (914 mm) Wide Unit (Not for Construction), page 15
and Common Aisle Floor Plan: Standard 36 in. (914 mm) Wide Unit (Not for Construction), page 16.

Figure 27 - Non-seismic Switchgear Anchor Assembly



Equipment Installation for Seismic Applications

Introduction Seismic Certification

Seismic certification is an optional feature on the Masterclad 27 kV MetalClad product line and provides seismic conformance options to any of the North American and International building codes and seismic design standards identified in Table 1. Masterclad 27 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 27 kV MetalClad. 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 27 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.

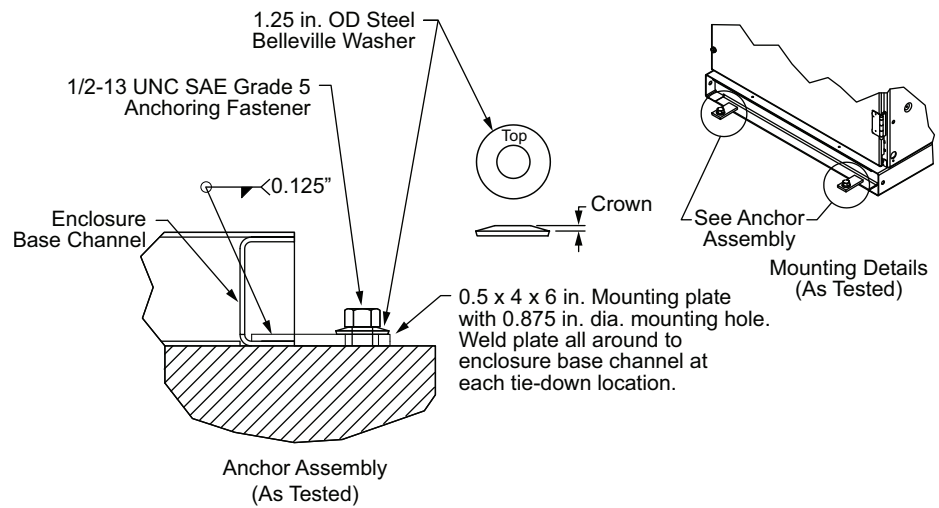
Tie-down Points for Rigid Floor Mounted Equipment

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 35. 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 *Single Aisle Floor Plan: Standard 36 in. (914 mm) Wide Unit (Not for Construction)*, page 15 and *Common Aisle Floor Plan: Standard 36 in. (914 mm) Wide Unit (Not for Construction)*, page 16 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 35 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 28 - Switchgear as Tested Anchor Assembly

Electrical Low Voltage Connections

The electrical hookup varies from unit to unit; it may be from a panelboard (see Panelboard (Optional), page 37) or directly in the switchgear. Normally there are three circuits:

- Lights and fan with thermostat. Thermostat is set at 80°F (27°C).
- Receptacles (one at each end).
- Heater with thermostat (optional). Heater is set at 70°F (21°C).

Set the environmental controls (thermostat, humidistat, or others.) 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.

Refer to the wiring diagrams furnished with the unit for the locations of the circuit breakers and the electrical connections of the shipping sections.

Figure 29 - Lights, Receptacle, and Fan



Figure 30 - Lights, Heater/Thermostat (Optional)**Figure 31 - Panelboard (Optional)**

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.

⚠️ DANGER**HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

- Ground the main and feeder circuits before touching the main bus, bus pads, or primary contacts.
- 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 if necessary.
- Do not remove the air filters except for inspection/replacement.
- Do not use filters other than ones recommended in this instruction manual.

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

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 of the walk-in enclosure based on environmental conditions and experience. Abnormal operation or conditions may require immediate corrective action.

The inspection of the Masterclad Metal-Clad 27 kV Indoor Switchgear is outlined in detail in Instruction Bulletin 6055–40.

The following instructions apply only to the walk-in enclosure.

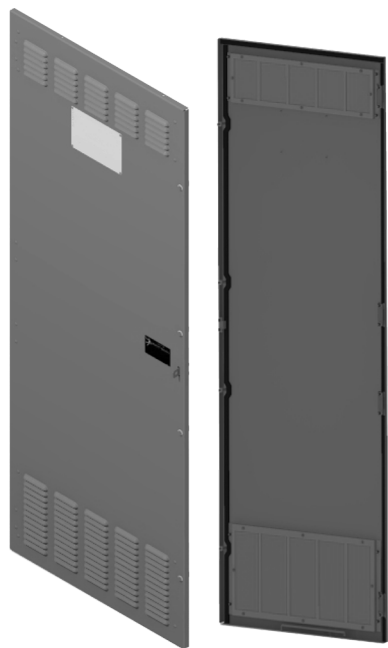
Routine Inspection

During regular inspection intervals, inspect for the following:

- Check for leaks in the front aisle, in each cable compartment, and in the roof of the indoor switchgear. Check the roof, using a flashlight, through the vent openings from the front aisle. If large puddles of water are found at the doors, check the door gaskets.
- Check the weeping holes in the cable compartment doors to make sure they are not clogged.
- Check the heater and fan in the front aisle for proper operation. Check the thermostat settings (see [Electrical Low Voltage Connections](#), page 36). Verify that the space heaters in the switchgear are operating.
- Check that the door panic latch (for use in an emergency) is working properly.

Replacing the Air Filters

Figure 32 - Rear Doors, Front (left) and Back (right)



Replace air filters every six months or as environmental conditions dictate. The following table lists correct filter applications.

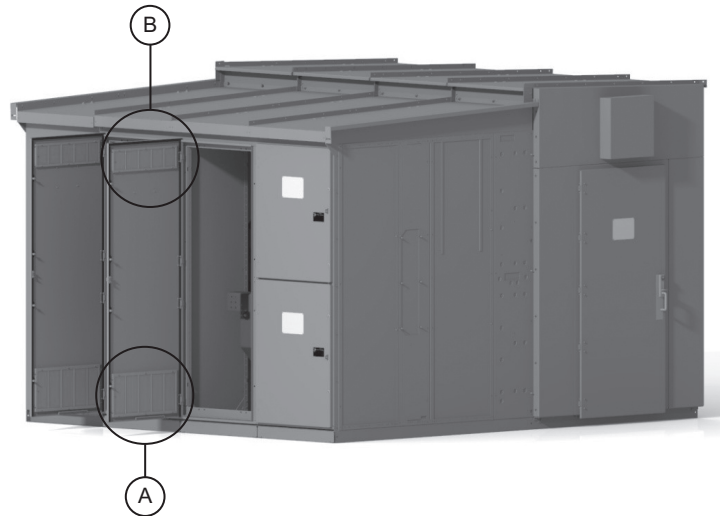
Table 2 - Air Filter Part Numbers

Filter Location ¹	Bay Width in. (mm)	Schneider Electric Part Number	Size in. (mm)
New Rear Door Top Louvers (see Rear Doors, Front (left) and Back (right), page 40)	36 (914)	JYT25926	29.75 x 7.6 (756 x 193)
New Rear Door Bottom Louvers (see Rear Doors, Front (left) and Back (right), page 40)	36 (914)	JYT16426	29.75 x 14.42 (756 x 366)
Rear Door	22 (559)	46005-679-01	11 x 13 (279 x 330)
	36 (914) 48 (1219)	46005-243-01	11 x 19.5 (279 x 495)
Rear Eaves	22 (559)	44005-679-02	3.3 x 20 (84 x 508)
	36 (914)	46005-243-03	3.3 x 34 (84 x 864)
	48 (1219)	46005-418-02	3.3 x 46 (84 x 1168)

1. Filter material is 1/2 in. (13 mm) thick rubberized air filter pad or equivalent (Paratex®).

Bottom Rear Door Filters

Figure 33 - Walk-in Units with Rear Doors Open



Instructions for changing the filter in the bottom of the rear door (item **A** in the figure above):

1. Open the rear doors.
2. Remove the four filter support nuts and the support (JYT22125) as shown in [Removing the Used Filter \(Bottom Louver\)](#), page 41. (**Note:** it is not necessary to remove the eight self-threaded screws in the support frame.)
3. Remove the used filter and discard it.
4. Replace the used filter with a new Schneider Electric filter (JYT16426).
5. Reinstall the filter support (JYT122125) along with the new filter.
6. Reinstall all the nuts and washers as shown in [Replacing the New Filter \(Bottom Louver\)](#), page 42.

Figure 34 - Removing the Used Filter (Bottom Louver)

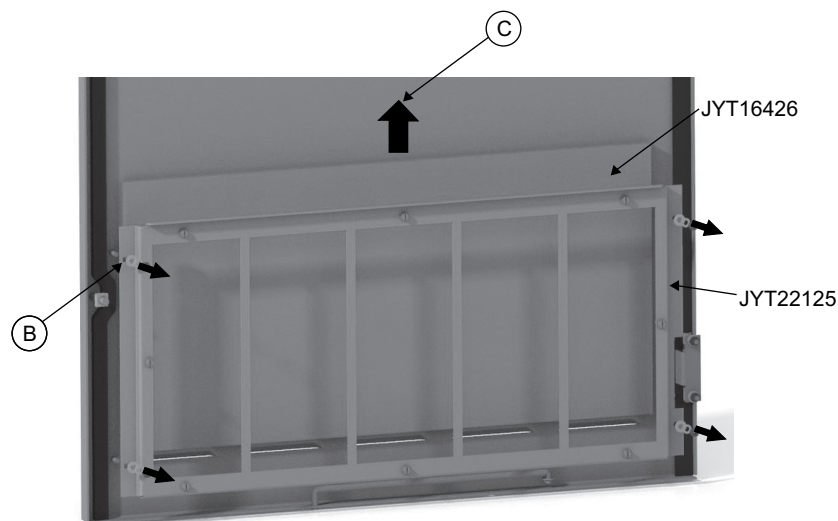
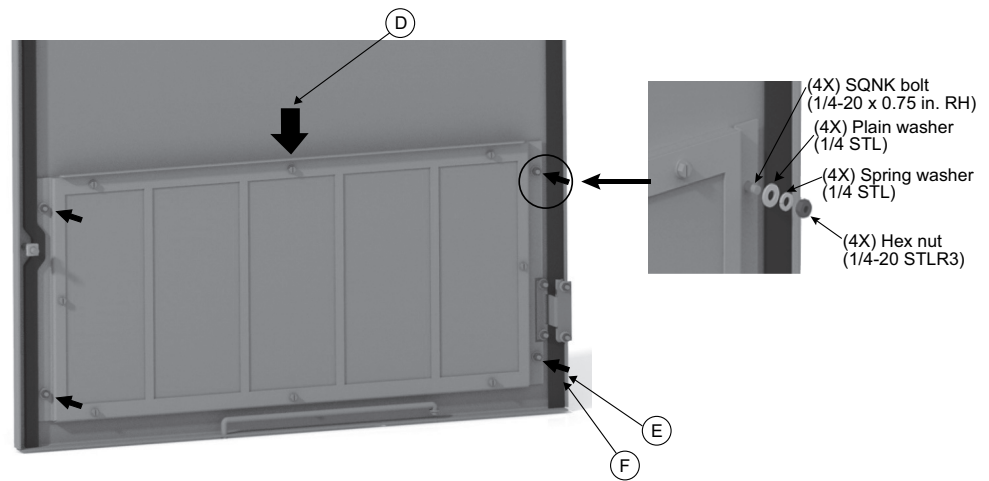
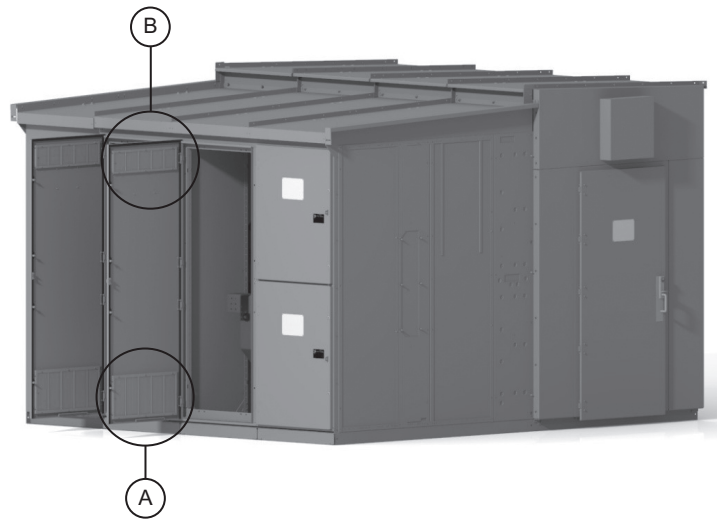


Figure 35 - Replacing the New Filter (Bottom Louver)

Top Rear Door Filters

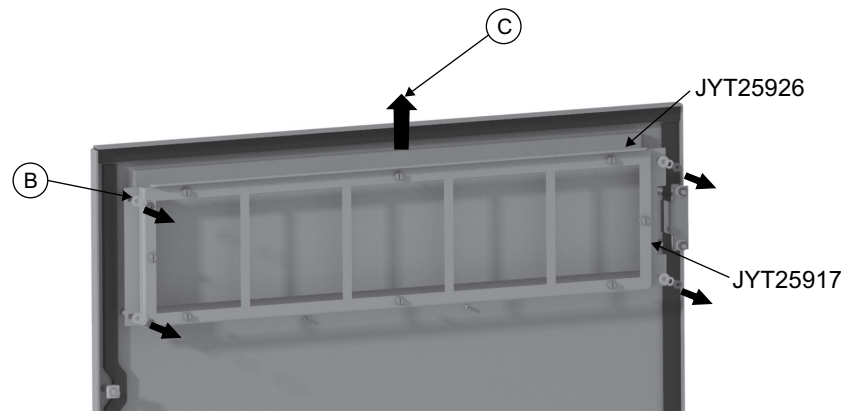
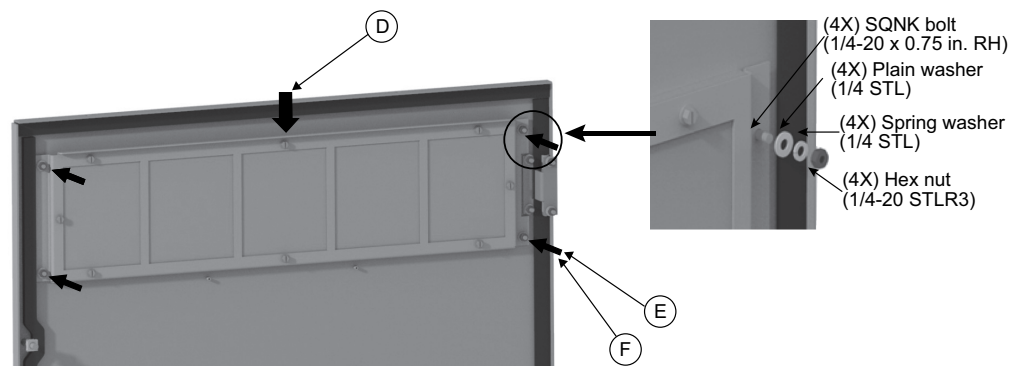
Figure 36 - Walk-in Units with Rear Doors Open

Instructions for changing the filter in the top of the rear door (item **B** in Walk-in Units with Rear Doors Open, page 42):

1. Open the rear doors.
2. Remove the four filter support nuts and the support (JYT25917) as shown in Removing the Used Filter (Top Louver), page 43.

NOTE: It is not necessary to remove the eight self-threaded screws in the support frame.

3. Remove the used filter and discard it.
4. Replace the used filter with a new Schneider Electric filter (JYT25926).
5. Reinstall the filter support (JYT25917) along with the new filter.
6. Reinstall all the nuts and washers as shown in Replacing the New Filter (Top Louver), page 43.

Figure 37 - Removing the Used Filter (Top Louver)**Figure 38 - Replacing the New Filter (Top Louver)**

Outline

Figure 39 - Outline of Single-Aisle Walk-in

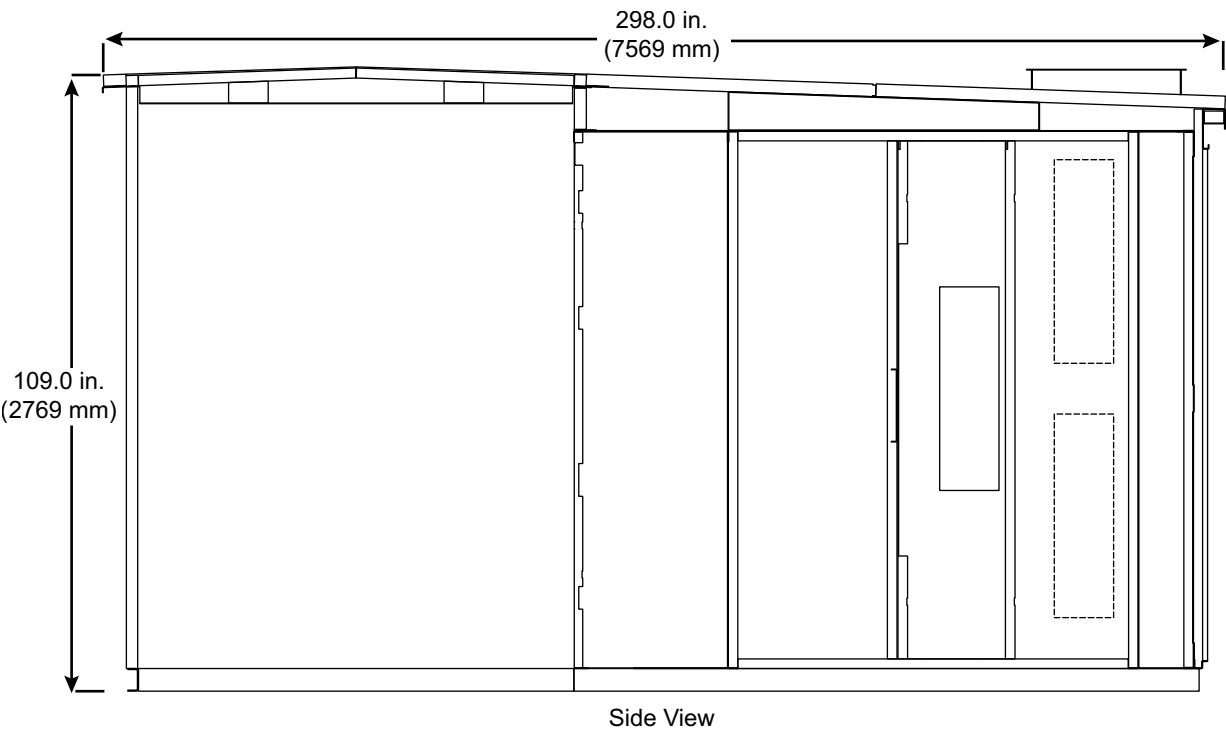


Table 3 - Maintenance Log

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Table 3 - Maintenance Log (Continued)

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As standards, specifications, and design change from time to time,
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