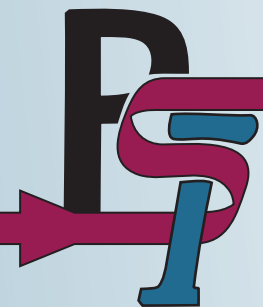


Metal Enclosed Switchgear, 5-35kV
1200 A Maximum Loadbreak, 4000 A Maximum Non-Loadbreak



Powergrid Solution's Metal Enclosed Switchgear has many different customizable options and configurations. Customers are able to choose from either loadbreaking or non-loadbreaking switches and either expulsion or current-limiting fuses. These switches and fuses can be chosen from multiple manufacturers. With various steel construction options, this metal enclosed switchgear is both strong and durable.

Design • Build • Deliver



Metal Enclosed Switchgear, 5-35kV

1200 A Maximum Loadbreak, 4000 A Maximum Non-Loadbreak

Models

SMEG

Standard Features

- Paint meeting IEEE C57.12.28
- Mild Steel
- Air insulation technology
- Copper bus (*silver- or tin-plated*)
- Custom paint colors (*when specified at time of order*)
- Full-height (front/rear) hinged doors
- Interactive personnel safety barrier (*operates in conjunction with fuse replacement*)
- Minimized shipping splits
- Sloped roof
- Stainless steel backing screens on louvers
- Welded construction

Customization Options

- Galvanneal or stainless steel construction
- Base undercoating
- Concealed hinges (*stainless*)
- Custom dimensions
- Customer-specified components/materials
- Externally removable ventilation filters
- Future bus expansion
- Ground switches
- Heaters and humidistats
- Insulating non-drip compound (*inside roof*)
- Interior or exterior lighting
- Key interlocks
- Load break switching to 1200 Amp;
non-load break switching to 4000 Amp
- Mimic bus
- Motor operators
- Multi-lingual exterior/interior signage
- Indoor, outdoor aisleless or walk-in aisle construction
- Relay packages
- Retrofit to existing
- SCADA interface
- Screened or sealed floor
- Penta Head latch (*3-point, dual-action, positive verification latch*)
- Sleeved, insulated bus
- Surge arrestors
- Trailer-mounted
- UL or CSA listed
- Utility and/or customer metering



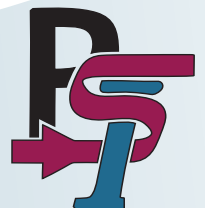
The Powergrid Solutions Difference

A major telecommunications company needed to expand its switching center. It would be an expensive project and they were looking for a cost-effective solution. The Powergrid Solutions team developed a space-saving solution, using hybrid switchgear. Rather than utilizing circuit breakers on the distribution feeders, the team designed two opposing switches on the common bus in place of each breaker, with no transitions. The end result was a more compact, cost-effective distribution solution: UL listed, medium-voltage generation/distribution switchgear. The creative solution saved the customer thousands of dollars in space and equipment costs.

Represented By:



Email: quotes@tanddproducts.com
More info at: www.tanddproducts.com



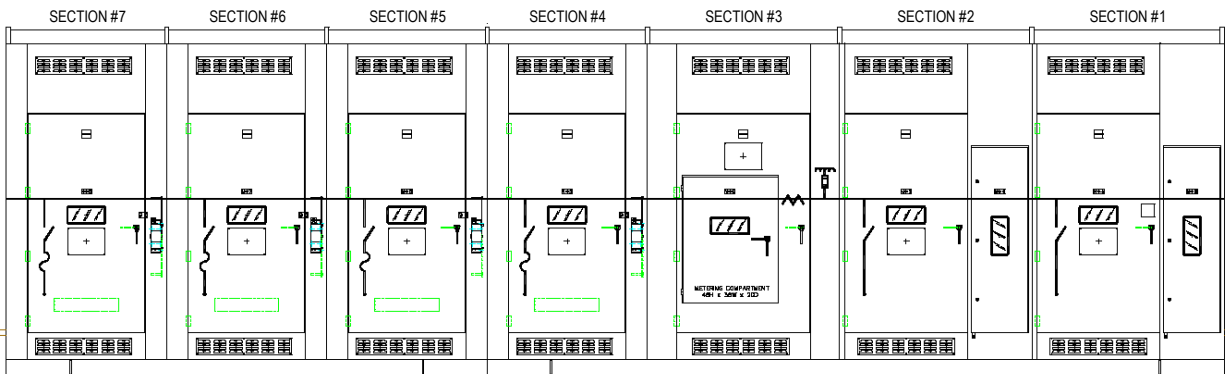
METAL-ENCLOSED SWITCHGEAR

Model SMEG, 5-38kV

5-15kV—1200A Max. Loadbreak / 4000A Max. Non-Loadbreak

27kV—1200A Max. Loadbreak / 2000A Max. Non-Loadbreak

38kV—600A Max Loadbreak / 1200A Max Non-Loadbreak



FRONT VIEW

Application:

Around the country at industrial plants, hotels, shopping centers, universities, waste water treatment facilities, renewable energy sites and other similar large facilities; there usually is a need to distribute electrical power at medium voltage (5kV-38kV). In order to distribute this electrical power, it is typically cable connected (above or below ground) to a central switchgear unit (single section or multi-section lineup), fed by a main circuit from the local utility company.

There are two types of switchgear applied today for switching and protection of medium voltage (5kV-38kV) power distribution systems.

- **Metal-Clad Switchgear:** Containing drawout circuit breakers and relays for both load switching and fault protection
- **Metal-Enclosed Switchgear:** Containing interrupter switches for load switching and power fuses for fault protection

These two types of switchgear are defined in ANSI Standards (IEEE Std. C37.20.2 for METAL-CLAD) and (IEEE Std. C37.20.3 for METAL-ENCLOSED)

The criteria for selecting one of these two types of switchgear units should be system complexity, cost, life cycle, protection & safety, and ease of operation.

METAL ENCLOSED SWITCHGEAR: The combination of interrupter switches for switching and fuses for protection eliminates the need for more complex circuit-breaker gear with protective relays (METAL-CLAD SWITCHGEAR). METAL-ENCLOSED SWITCHGEAR is virtually maintenance free. The interrupter switches never need adjusting, setting, or dielectric testing. Only an occasional inspection and exercising is required. The fuses, unlike protective relays, never need setting or testing. The simplicity of METAL-ENCLOSED SWITCHGEAR, its lower cost, its dependability, and its minimal maintenance cost makes it a good possible choice for your system.



© 2015 Powergrid Solutions Inc.
Catalog Version 2.1.1

To find a listing for your local Powergrid Solutions representative, log on to www.powergridsolutionsinc.com

METAL-ENCLOSED SWITCHGEAR

Model SMEG, 5-38kV Construction Features

1. Lifting provisions with removable lifting plates and blind-tapped bolt holes.
2. Stainless steel hinges, loose joint pin, allows doors to be removed in the open position.
3. 3-point positive rotary latch mechanism, secured and operated by a padlocking handle.
4. Gasketed doors, neoprene gasket, secured with a water and oil resistant adhesive.
5. Switch blade viewing window.
6. Manufacturer's data plate, noncorrosive, stamped and attached to enclosure.
7. Warning and identification labels per IEEE, NEC & NFPA.
8. Heavy gauge steel access cover plates over main and ground bus openings.
9. Base undercoating applied to the underside of the channel base.
10. Channel Base of heavy gauge steel supports enclosure.
11. All-welded construction.



METAL-ENCLOSED SWITCHGEAR

Model SMEG, 5-38kV
Construction Features



1. Stainless steel hinges, loose joint pin, allows doors to be removed in the open position.
2. 3-point positive rotary latch mechanism, secured and operated by a padlocking handle.
3. Gasketed doors, neoprene gasket, secured with a water and oil resistant adhesive.
4. Switch blade viewing window.
5. Storage box, door mounted for replacement fuses.
6. Hinged, inner protective metal screen barrier to shield against accidental contact, with t-handle.
7. Door stays (retained) hold doors in 90, 110 or 140 degree open position.
8. Door interlock prevents access to fuses unless switch is open.
9. GPO-3 fiberglass barriers isolate phases and ground.
10. All-welded construction.

METAL-ENCLOSED SWITCHGEAR

Model SMEG, 5-38kV

5-15kV—1200A Max. Loadbreak / 4000A Max. Non-Loadbreak

27kV—1200A Max. Loadbreak / 2000A Max. Non-Loadbreak

38kV—600A Max Loadbreak / 1200A Max Non-Loadbreak

Factory Check Sheet

Please fill out the Factory Check Sheet below along with providing Switchgear Specifications & One-line Drawings for a Request for Quotation.

Today's Date _____ Required Quote Date _____

Customer Name _____

Project Name _____

Location _____

Required On-Site Date _____

RATINGS:

Maximum Design Voltage: _____ kV

Nominal System Voltage: _____ kV

Basic Insulation Level (BIL):

- 5 kV, 60 kV BIL
- 15 kV, 95 kV BIL
- 25 kV, 125 kV BIL
- 38 kV, 150 kV BIL

Continuous Current (Line):

_____ amp

Main Disconnect Switching Device:

_____ amp, _____ kV, _____ kV BIL

Fusing Rating:

_____ amp, Type: _____, Voltage: _____ kV

ENCLOSURE TYPE:

Indoor:

Nema 1 / Nema 2

Outdoor (Non-Walk-in):

Nema 3 / Nema 3R / Nema 12 / Nema 4 / Nema 4X

FlexAisle (Walk-in Aisle):

Non-Insulated / Insulated / HVAC / Interior Walls Sheeted

Material:

- A36 Mild Steel
- A60 Galvanneal Steel
- 304L Stainless Steel
- 316L Stainless Steel

ENCLOSURE FEATURES:

3-Point Latch Type:

- Penta-Head Bolt
- Hex-Head Bolt
- Padlocking Handle

Paint Finish:

- Green - Munsell No., 7GY 3.29/1.5
- Gray (ANSI 70) - Munsell No., 8.3G 7.0/0.4
- Gray (ANSI 61) - Munsell No., 8.3G 6.10/0.54
- Other: _____

Insulation "No-Drip" Compound:

Applied to the inside surface of the enclosure roof to prevent condensation

Base Undercoating:

Applied to the bottom 2" of the enclosure. (Not required for SS enclosures.)

(Factory Check Sheet continued on next page)



© 2015 Powergrid Solutions Inc.
Catalog Version 2.1.1

To find a listing for your local Powergrid Solutions representative, log on to www.powergridsolutionsinc.com

6.1.4

METAL-ENCLOSED SWITCHGEAR

Model SMEG, 5-38kV

5-15kV—1200A Max. Loadbreak / 4000A Max. Non-Loadbreak

27kV—1200A Max. Loadbreak / 2000A Max. Non-Loadbreak

38kV—600A Max Loadbreak / 1200A Max Non-Loadbreak

Factory Check Sheet (continued)

Standard Component Options:

Switching:

- ABB
- Cutler-Hammer
- Square D
- S&C
- Cooper
- Other _____

Fusing:

- Cooper
- Cutler-Hammer
- General Electric
- Gould-Shawmut
- S&C
- Other _____

Miscellaneous:

- Cycloaliphatic Insulators
- Glass Polyester Insulators
- Polycrete Insulators
- Porcelain Insulators
- Other _____

Options:

- U.L. Label, (5 and 15 kV) (Consult Factory)
- C.S.A. Label , (5 through 38 kV) (Consult Factory)
- Key Interlocks
- Insulated Bus
- Mimic Bus
- Padlockable Switch Handle Cover
- Space Heaters *
- Roof Top Bushings
- Pot Head Terminators
- Surge Arresters
- Interior Lighting
- Duplex Outlets
- Control Power
- Instrumentation Packages
- Automatic Bus Transfer Schemes
- Motor Operator or Solenoid Trip
- Terminating Hardware
- Neoprene Door Gasketing
- Provisions for Future Extensions
- Braided Flex Connectors
(Transformer Disconnect Only)

Options:

- Non-Loadbreak Switching:
 - 1200 amp
 - 2000 amp
 - 3000 amp
 - 4000 amp
- Protective Inner Barrier,
(Standard on Fig. 5, 8, 12, 13, 14 and 15).
Other models, barrier is optional unless otherwise stated.
 - Metal-Screen
 - NEMA Type GPO-3, Glass Reinforced Polyester
 - Clear Polycarbonate
- Rear Access (Optional):
 - Hinged rear panels with padlocking handles
 - Bolted lift-off panels with padlocking provisions
- Ground Options:
 - Ground Bails
 - Ground Bosses, 1/2-13 UNC

* Space Heaters are provided standard with outdoor equipment.

(Factory Check Sheet continued on next page)



METAL-ENCLOSED SWITCHGEAR

Model SMEG, 5-38kV

5-15kV—1200A Max. Loadbreak / 4000A Max. Non-Loadbreak

27kV—1200A Max. Loadbreak / 2000A Max. Non-Loadbreak

38kV—600A Max Loadbreak / 1200A Max Non-Loadbreak

Standard Figures For Multi-Section Lineup



FIGURE 1

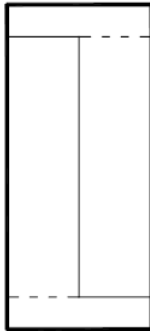


FIGURE 2



FIGURE 3

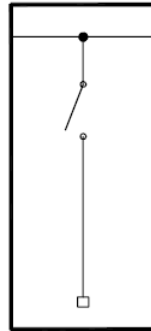


FIGURE 4

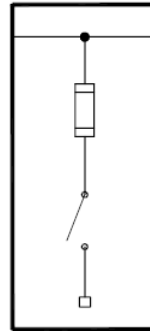


FIGURE 5

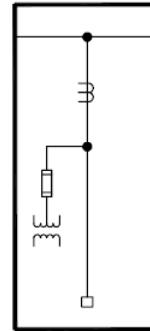


FIGURE 6

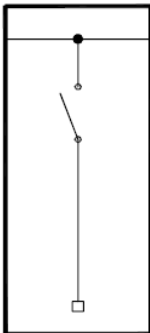


FIGURE 7

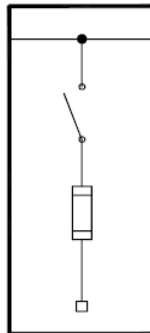


FIGURE 8

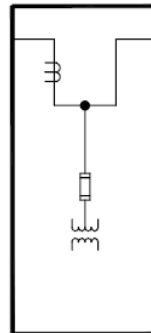


FIGURE 9

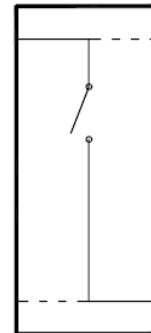


FIGURE 10

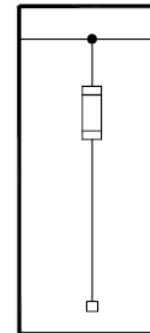


FIGURE 11

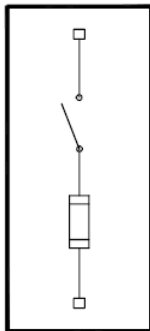


FIGURE 12

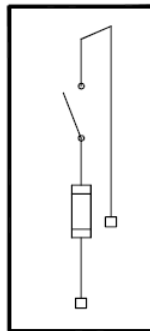


FIGURE 13

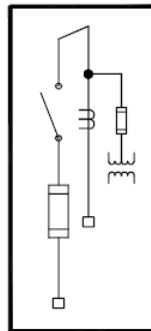


FIGURE 14

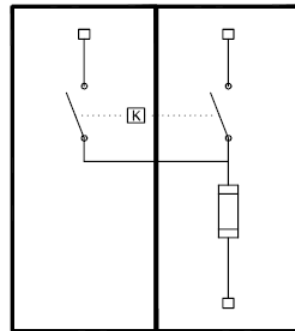


FIGURE 15

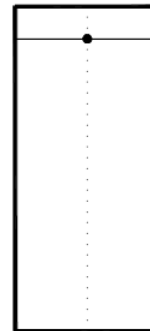


FIGURE 16



METAL-ENCLOSED SWITCHGEAR

Model SMEG, 5-38kV

5-15kV—1200A Max. Loadbreak / 4000A Max. Non-Loadbreak

27kV—1200A Max. Loadbreak / 2000A Max. Non-Loadbreak

38kV—600A Max Loadbreak / 1200A Max Non-Loadbreak

FIGURE	DESCRIPTION	DIMENSION TABLE
1	Empty Entrance Pull Section, Side Access – Top or Bottom Feed	A
2	Transition Section – Bussed, Cable or Flex Connected	A
3	Bussed Entrance Section, Front Access – Top or Bottom Feed	B
4	Entrance Section, Non-Fused Switch – Top or Bottom Feed	B
5	Entrance Section, Fused Switch – Top or Bottom Feed	B
6	Entrance Section, Metered – Top or Bottom Feed	Consult Factory
7	Distribution Section, Non-Fused Switch	B
8	Distribution Section, Fused Switch	B
9	Metering Section	Consult Factory
10	Tie Section – Switched	B
11	Distribution Section, Fused	B
12	Switch and Fuse Section – Top Entrance/Bottom Exit or Bottom	B
13	Switch and Fuse Section – Top Entrance/Top Exit or Bottom	C
14	Switch and Fuse, Metering Section – Top Entrance/Exit or Bottom Entrance/Exit	C
15	Duplex Switch Section, Top or Bottom Feed	D
16	Corner Section	Per Requirements

DIMENSION TABLE													
KV RATING		TABLE A			TABLE B			TABLE C			TABLE D		
Design	BIL	H	W	D	H	W	D	H	W	D	H	W	D
5	60	94"	24"	44"	94"	40"	44"	94"	40"	54"	94"	80"	54"
15	95	94"	24"	44"	94"	40"	44"	94"	40"	54"	94"	80"	54"
25	125	126"	36"	60"	126"	48"	60"	126"	48"	72"	Consult Factory		
35	150	126"	40"	72"	126"	60"	72"	126"	60"	84"	Consult Factory		
35	200	162"	40"	96"	162"	78"	96"	162"	78"	110"	Consult Factory		

Dimensions reflect indoor units.
Add 3" to height (H) on outdoor units.

- For special configurations and sizes, consult factory.

NOTE: (For Figure 6 and Figure 9 Metering Section)

- 5-15kV = 48" W
- 27kV = 60" W
- 38kV = 78" W



METAL-ENCLOSED SWITCHGEAR

Model SMEG, 5-38kV

5-15kV—1200A Max. Loadbreak / 4000A Max. Non-Loadbreak

27kV—1200A Max. Loadbreak / 2000A Max. Non-Loadbreak

38kV—600A Max Loadbreak / 1200A Max Non-Loadbreak

Selection Matrix Example:

	Section #1	Section #2	Section #3	Section #4	Section #5	Section #6	Section #7	Section #8	Section #9	Section #10
Enter in spaces at right of the applicable figure below	5	9	8	8	8	8				
Switch (____Amps) For Each Section	600	N/A	200	200	200	200				
Switch-Fault Interrupt Rating (____kA) For Each Section	40	N/A	40	40	40	40				
Fuse (____Amps) For Each Section	400	N/A	200	50	50	50				
Fuse-Fault Interrupt Rating (____kA) For Each Section	29,400	N/A	14,000	14,000	14,000	14,000				

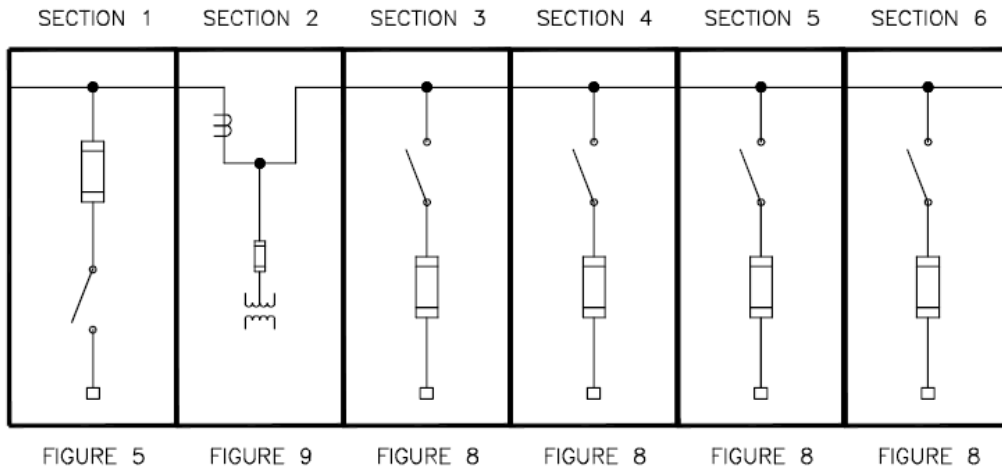
LINEUP DESCRIPTION:

6- Section, Outdoor, NEMA 3R, 15kV, 600A Metal-Enclosed Switchgear Lineup—Includes

Section 1—Main Incoming Fused Switch Section

Section 2—Metering Section

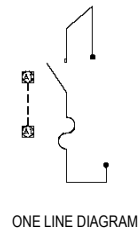
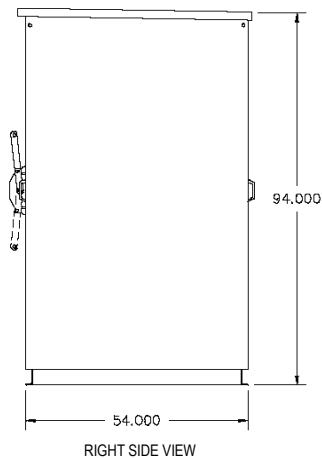
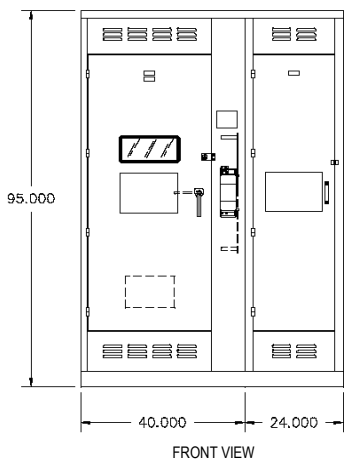
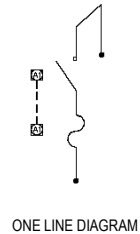
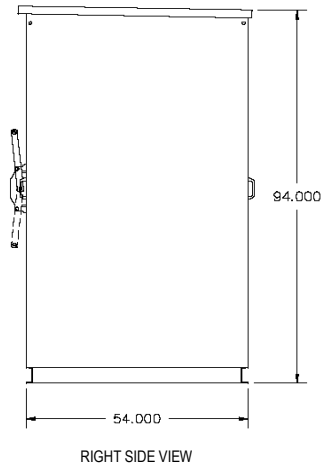
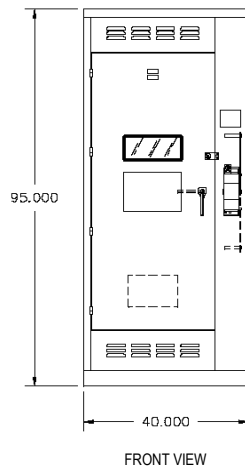
Sections 3—6—Distribution Fused Switch Sections



METAL-ENCLOSED SWITCHGEAR

Model SMEG, 15kV

Example:



Sections shown are:

Top:

Figure 13: 15kV, Switch and Fuse Section - Bottom Entrance/Bottom Exit.

Bottom:

Figure 13: 15kV, Switch and Fuse Section - Bottom Entrance/Top, Bottom, or Side Exit.

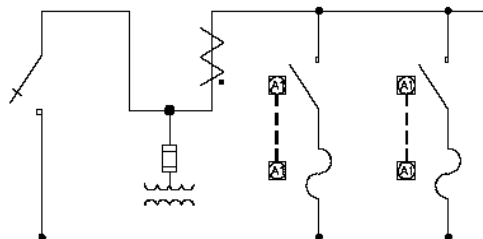
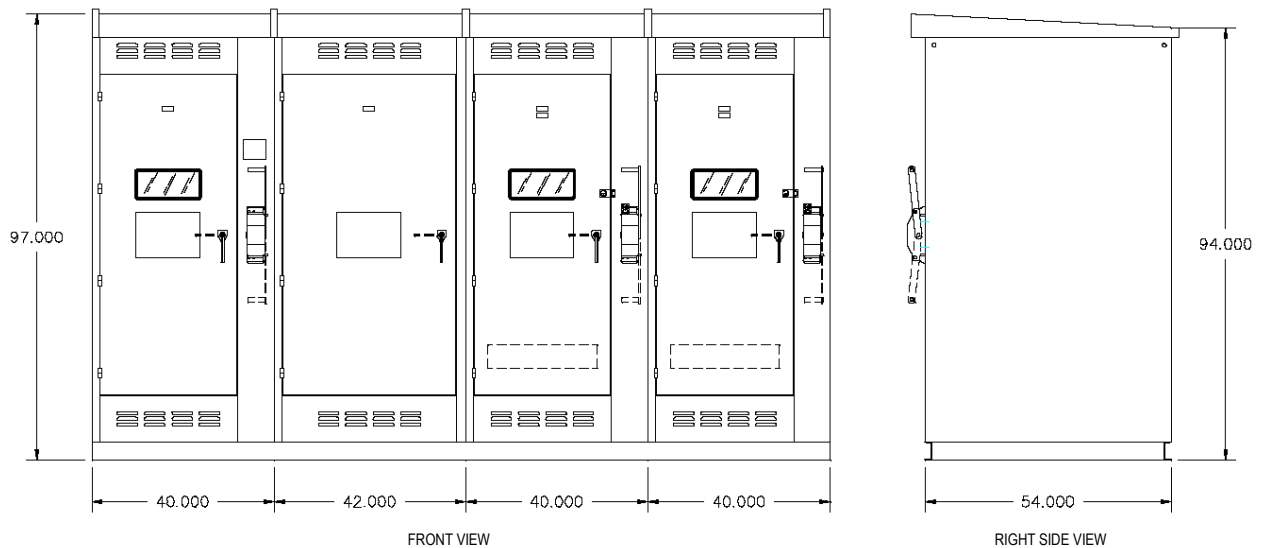
Figure 2: 15kV, Transition Section.

- Refer to section matrix for specific applications.
- For special configurations and sizes, consult factory.

METAL-ENCLOSED SWITCHGEAR

Model SMEG, 15kV

Example:



ONE LINE DIAGRAM
(FIG. 4, FIG. 9, FIG. 8, FIG. 8)

Sections shown from left to right:

Figure 4: 15kV, Entrance Section, Non-fused Switch - Bottom Feed.

Figure 9: 15kV, Metering Section.

Figure 8: 15kV, Fused Switch Distribution Section.

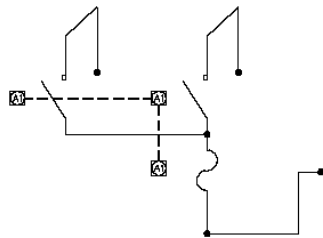
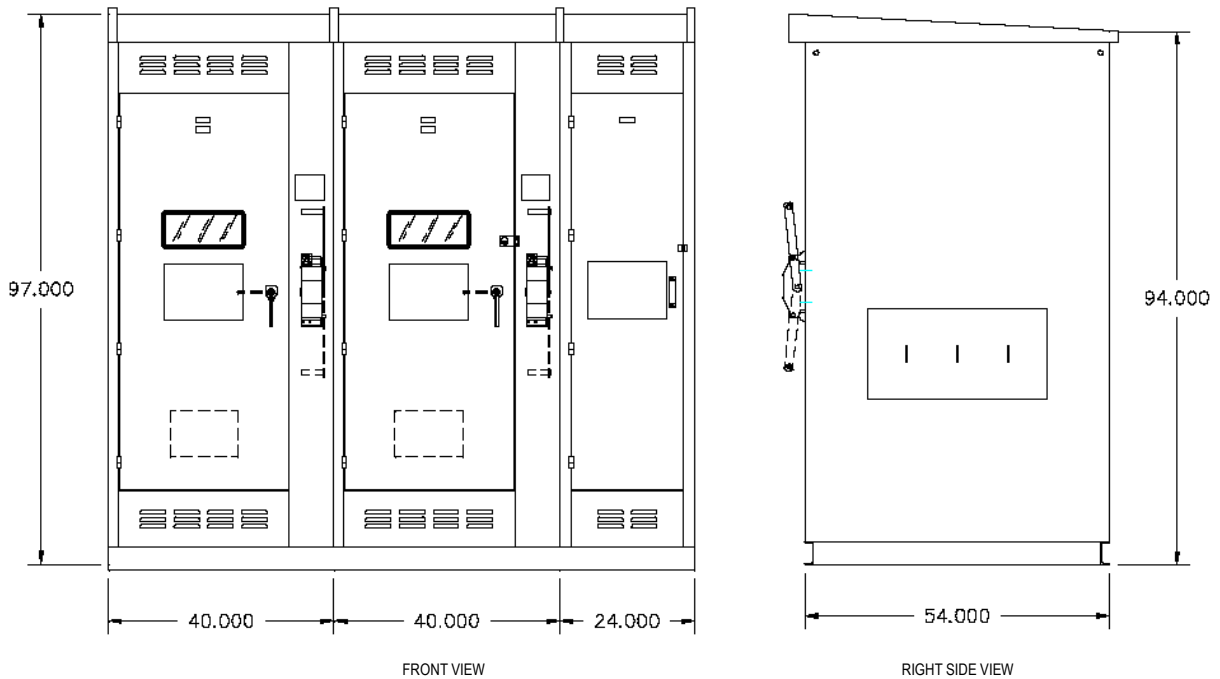
Figure 8: 15kV, Fused Switch Distribution Section.

- Refer to section matrix for specific applications.
- For special configurations and sizes, consult factory.

METAL-ENCLOSED SWITCHGEAR

Model SMEG, 15kV

Example:



Sections shown from left to right:

Figure 15: 15kV, Switch Only and Switch/Fuse Section - Bottom Entrance, Top/Bottom, or Side Exit.
 Figure 2: 15kV, Transition Section.

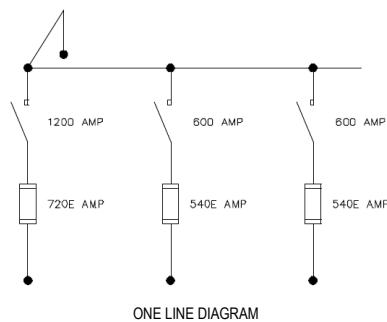
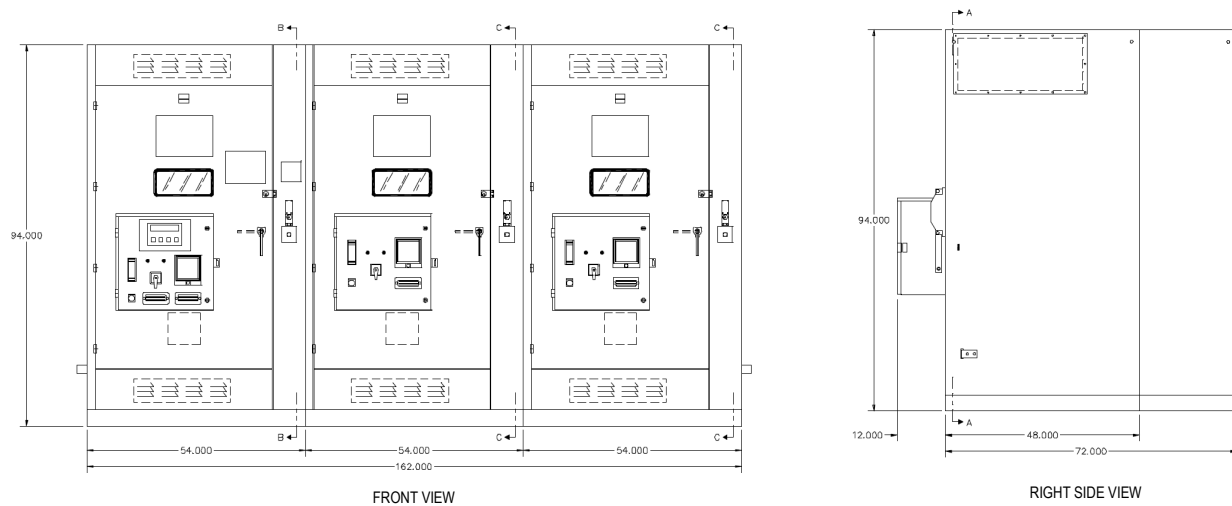
- Refer to section matrix for specific applications.
- For special configurations and sizes, consult factory.



METAL-ENCLOSED SWITCHGEAR

Model SMEG, 15kV

Example:



Sections shown from left to right:

Figure 13: 15kV, Custom Switch & Fuse Section

Figure 8: 15kV, Custom Distribution Section

Figure 8: 15kV, Custom Distribution Section

- Refer to section matrix for specific applications.
- For special configurations and sizes, consult factory.

