

# Trident<sup>®</sup> Automated Solid Dielectric Switchgear

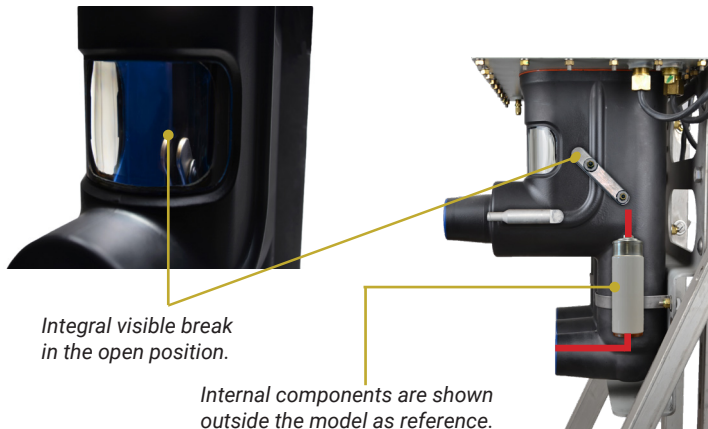
# When you need visible break... Trust Trident with SafeVu™

## Trident-SR w/ SafeVu and Trident-SR Switch Series

Utilizing the same magnetic actuator technology as G&W Electric's Viper® reclosers, the Trident-SR series switches offer extremely fast operation speeds of just 3.5 cycles for both load and fault interrupting operations. Its flexible design can be configured to provide a wide range of solutions for any application, from basic remote operation, to distribution automation, or Smart Grid schemes. Trident-SR switches offer multiple application functionality within a same compact switch footprint.

### SafeVu Visible Break

The load break and fault interrupter ways are available with G&W's SafeVu feature, which provides an integrated visible break disconnect switch in series with the vacuum interrupter. This eliminates the need to remove elbows or use externally mounted linkage systems to provide a visible open. Switches equipped with SafeVu incorporate redundant mechanical interlocks to ensure the vacuum bottle is open prior to the operation of the visible break switch.



### Automation Flexibility

The Trident-SR switch series was specifically designed to provide the high speed switching required for distribution automation schemes. Switch configurations can be paired with various control packages to provide the features required for a wide variety of applications including Automatic Transfer in under 10 cycles.



*Trident-SR w/ SafeVu  
Available up to 15.5kV*



*Trident-SR*

## Ratings for Trident

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The switch is designed, tested and built per IEEE C37.74 for load break switching, IEEE C37.60 for fault interrupting, IEEE 386 for bushing specification, and IEC 60529 for environmental protection rating. Padmount switch enclosures are designed per C57.12.28 or C57.12.29. Certified test reports are available upon request.

<b>Voltage Class (kV)</b>	15	25	35
<b>Max. System Voltage (kV)</b>	15.5	27 <sup>‡</sup>	38
<b>BIL (kV) 110<sup>Δ</sup> 125 150</b>	110 <sup>Δ</sup>	125	150
<b>Continuous Current (A)</b>	630 <sup>§</sup>	630 <sup>§</sup>	630 <sup>§</sup>
<b>Load Break Current (A)</b>	630 <sup>§</sup>	630 <sup>§</sup>	630 <sup>§</sup>
<b>AC Withstand, 1 min. (kV)</b>	35	60	70
<b>AC Withstand, Productions, 1 min. (kV)</b>	34	40	50
<b>DC Withstand, 15 min</b>	53	78	103
<b>Momentary Current, RMS, asym (kA)</b>	20	20	20
<b>Fault Close 3 times, asym (kA)</b>	20	20	20
<b>1 second Current, sym (kA)</b>	12.5	12.5	12.5
<b>Fault Interrupting Current, sym (kA)</b>	12.5	12.5	12.5
<b>Vacuum Interrupter Mechanical Operations</b>	10,000	10,000	10,000

Note:

<sup>Δ</sup> BIL impulse rating is 95kV when using the SafeVu feature

<sup>‡</sup> Up to 29.3kV Max. System Voltage available

<sup>§</sup> Up to 900A available on In/Out without SafeVu, Up to 800A available on multiway Trident without SafeVu

## Components

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### Overcurrent Protection

Fault interrupters with SafeVu are equipped with an encapsulated 500:1 or 1000:1 current transformers and fault interrupters without SafeVu are equipped with an encapsulated 200:1 or 400:1 current transformers. A wide variety of protective relay packages are available, including relays from SEL and other leading relay suppliers.

### External CTs and External PTs

Metering or relaying accuracy current and potential transformers are available for use with protective relay packages.

### Operating Handle

G&W will select the appropriate handle based on the application. Handles are operable via hook stick or rope rigging.

### Key Interlocks

Key interlocks may be used to ensure safe coordination of equipment. All Trident ways can be equipped with provisions for key interlocks. Key interlocks can be provided, and factory installed if required.

### Auxiliary Contacts

Auxiliary contacts are internally mounted to the mechanism housing providing remote indication of switch contact position. One normally open and one normally closed Form C contact is provided. A junction box is available with terminal strip connections for up to three auxiliary contacts.

## Voltage Sensing

G&W's Voltage Sensing (VS) Bushings are available in Dead Break Apparatus or 200A Deepwell. The VS is temperature compensated, built-in, voltage measuring system that eliminates the need for PTs in analog phase to ground voltage monitoring. Compared to potential transformers, the VS bushing system offers these benefits:

- Significant cost savings
- Cleaner, less cumbersome installation
- Less space required
- Fewer add-on components which could potentially fail
- Installed and tested prior to shipment

Output	Temperature	Accuracy
0-8VAC	-20°C (-4°F) to +40°C (104°F)	+/- 2%
	-60°C (-76°F) to +65°C (149°F)	+/- 4%
0-120VAC	-60°C (-76°F) to +65°C (149°F)	+/- 5%

Voltage sensors are available as LEA (Low Energy Analog) or 120VAC output. Capacitive voltage sensors encapsulated within the bushings permit voltage reading for network reconfiguration while eliminating the need for add-on sensors and cabling. The phase angle accuracy is +/-1° throughout the full temperature range.

## Controls

Each G&W automated switch comes equipped with a pre-installed integral control package. Each control package is built on the platform of SEL hardware, and is pre-programmed and configured to provide the following functionality:

- Local/Remote Actuator Control
- Analog Current Monitoring for all ways
- Analog Voltage Monitoring for two ways
- Overcurrent Protection for all Fault Interrupters
- Remote Position Status Indication for all ways

Each control package is equipped with an integral power supply and optional battery back-up with automated battery test feature. Each control also comes standard with a DNP point map to controls and monitor the switch using SCADA. Ethernet or fiber optic ports for communications are available.



*Control located on automated Trident*

## ATC Packages

Using either an SEL451-5 or SEL751 relay, G&W can supply a control that provides auto-transfer between two sources. Controls are available for common-bus and bustle configurations with transfer in less than 10 cycles.

## Control Options

For padmount and dry vault applications, the control can be supplied in either a mild steel NEMA 4 enclosure or a stainless steel NEMA 4X enclosure. Both of these enclosures can be supplied in a compact size (24" tall by 24" wide) or in a larger size (30" tall by 24" wide) to accommodate additional equipment such as communication devices.

The NEMA 4 and NEMA 4X enclosures have several options including a padlocking handle, convenience outlet, test switches and a document holder.

## Part Number Configuration For Trident-SR

Character	1	2	3	4	5		6	7	8		9		10	11	12	13
Sample Part Number	P	M	R	3	2	-	3	7	6	-	12	-	6	FA	VU	-A

### 1. Type of Installation

P = Padmount (enclosure)  
V = Vault (no enclosure)

### 2. Type of Load Break Switches

M = Trident-SR  
L = Trident-S\*

Leave blank if no load break switches.  
Consult factory for other options or combinations of options shown on this page.

\* See Trident Spring-Operated Solid Dielectric Switchgear Brochure (GW11-2019).

### 3. Type of Fault Interrupter

R = Trident-SR  
S = Trident-S\*  
T = Trident-ST (Single Phase Trip capability)\*  
F = Trident-S and Trident-ST combination\*  
U = Unswitched bushings directly on bus

Leave blank if fault interrupters or no unswitched bushings directly on bus.

Consult factory for other options or combinations of options shown on this page.

\* See Trident Spring-Operated Solid Dielectric Switchgear Brochure (GW11-2019).

### 4. Number of Ways

Enter a number 2 through 6

### 5. Number of Load Break Switches

Enter a number 2 through 6, up to the number as Ways.

### 6. Phase

3 = Three Phase

### 7. Voltage Class (Maximum System Voltage, Ph-Ph)

7 = 15.5kV  
8 = 27kV\*\*  
9 = 38kV

\*\* Consult factory for 29.3kV options.

### 8. Continuous Current

6 = 630A  
8 = 800A  
9 = 900A

Consult factory for limitations.

### 9. Fault Interrupting / Close into fault rating

12 = 12.5kA sym. for Fault interrupting switches  
20 = 20kA asym. for Load Break switches

### 10. Model

3 = Single Load Break Way  
4 = Single Fault Interrupting Way  
6 = 3 Way with 2 Load Break 1 Fault Interrupter  
7 = 3 Way with 1 Load Break 2 Fault Interrupter  
9 = 4 Way with 2 Load Break 2 Fault Interrupter  
10 = 4 Way with 4 Load Break 0 Fault Interrupter  
11 = 4 Way with 3 Load Break 1 Fault Interrupter  
12 = 4 Way with 1 Load Break 3 Fault Interrupter  
13 = 3 Way with 3 Load Break 0 Fault Interrupter  
XX = Digit 4&5 if combination not listed above

### 11. Configuration (Access Style)

FA = Front Access to Bushings and Operators  
FB = Front Access to Bushings and Back Access to Operators

Consult factory for additional options.

### 12. SafeVu included

VU = SafeVu included\*\*\* (available up to 15.5kV)  
Leave blank if SafeVu not included

\*\*\*Advise factory if not all ways include SafeVu.

### 13. Automated

-A = Automated



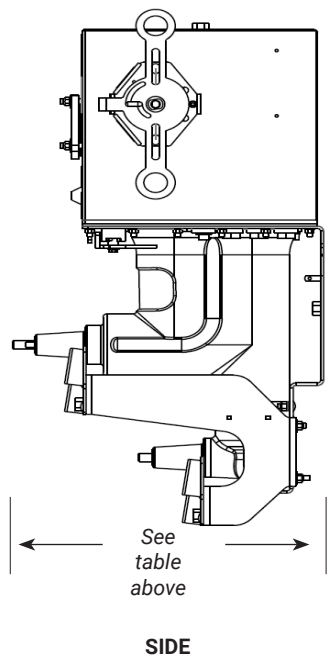
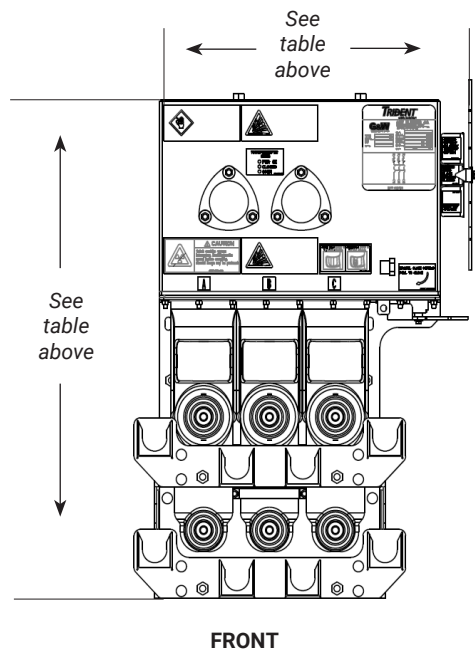
Multi-Way Trident		Vault Front Access (FA)		Padmount Front Access (FA)		Padmount Front/Back Access (FB)	
# of Ways	Model	Width Inches (mm)	Weight lbs. (kg)	Width Inches (mm)	Weight lbs. (kg)	Depth Inches (mm)	Weight lbs. (kg)
3	Non-SafeVu	91 (2310)	2300 (1000)	106 (2700)	3200 (1500)	77 (1960)	3500 (1600)
3	SafeVu	100 (2540)	3200 (1500)	115 (2700)	4100 (1900)	92 (2340)	3500 (1600)
4	Non-SafeVu	115 (2920)	2600 (1200)	130 (3300)	3500 (1600)	77 (1960)	3800 (1700)
4	SafeVu	124 (3150)	3500 (1600)	145 (3685)	4400 (2000)	92 (2340)	3800 (1700)
5	Non-SafeVu	140 (3560)	3100 (1400)	155 (3685)	3900 (1800)	<b>Consult Factory</b>	
5	SafeVu	149 (3780)	3900 (1800)	175 (4445)	4700 (2100)		
6	Non-SafeVu	165 (4190)	3500 (1600)	180 (4590)	4300 (3000)	<b>Consult Factory</b>	
6	SafeVu	174 (4420)	4300 (2000)	200 (5080)	5100 (2300)		

Two-Way Vault (In/Out)				
Model	Depth Inches (mm)	Width Inches (mm)	Height Inches (mm)	Weight lbs. (kg)
Non-SafeVu	19 (483)	22 (559)	38 (965)	375 (170)
SafeVu	20 (508)	28 (711)	40 (1016)	375 (170)

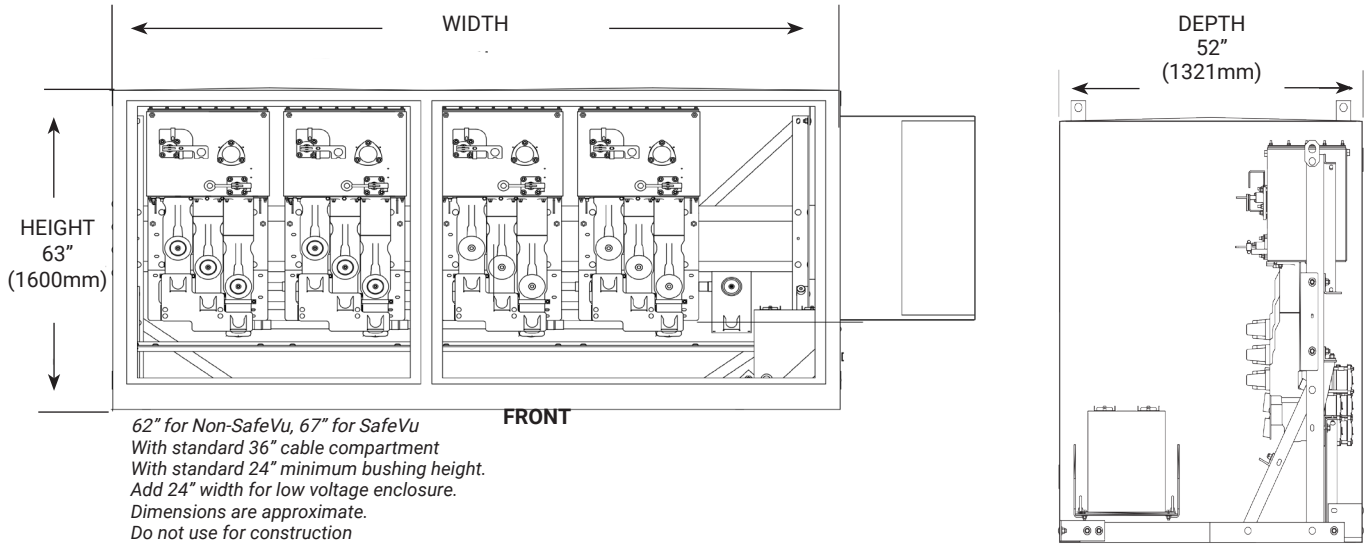
Padmount Two-Way				
Model	Depth Inches (mm)	Width Inches (mm)	Height Inches (mm)	Weight lbs. (kg)
Non-SafeVu	44 (1118)	34 (863)	62 (1575)	675 (306)
SafeVu	45 (1143)	41 (1042)	67 (1702)	675 (306)

**Two-Way Vault**

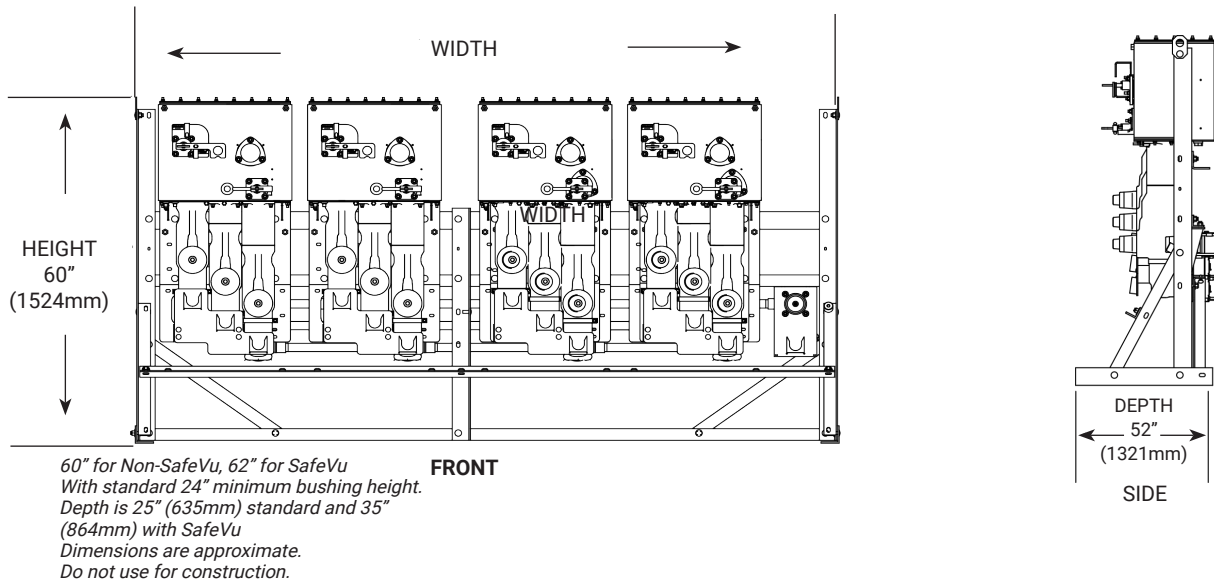


Dimensions are approximate.  
Do not use for construction.

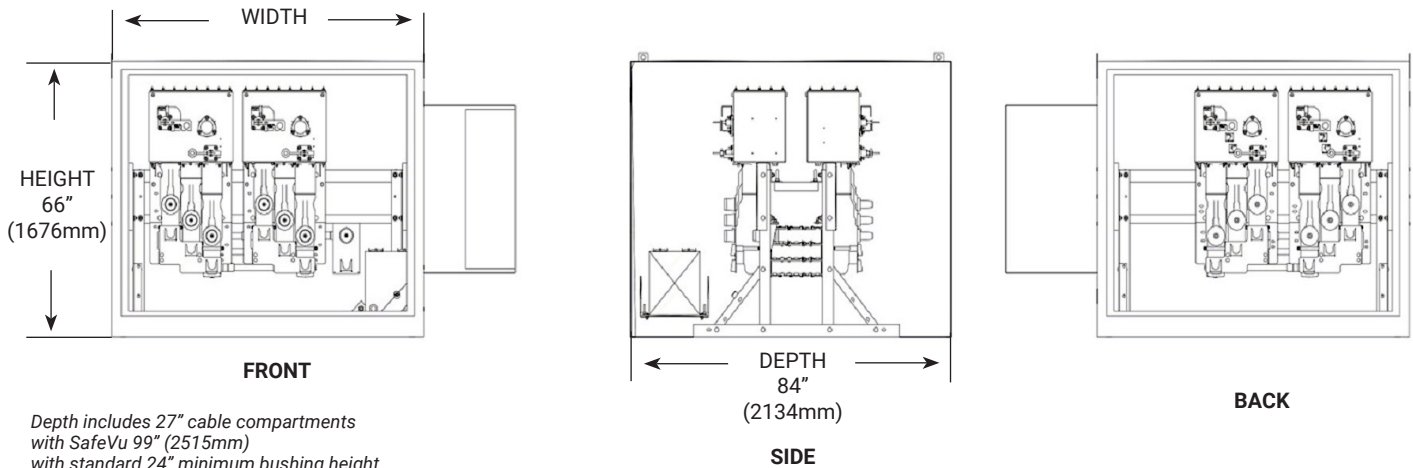
## Padmount Front Access



## Vault Front Access



## Front Back Access



Contact us today

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Since 1905, G&W Electric has been a leading provider of innovative power grid solutions, including the latest in load and fault interrupting switches, reclosers, system protection equipment, power grid automation and transmission and distribution cable terminations, joints and other cable accessories. G&W is headquartered in Bolingbrook, Illinois, U.S.A., with manufacturing facilities and sales support in more than 100 countries, including China, Mexico, Canada, UAE, India, Singapore, Brazil and Italy. We help our customers meet their challenges and gain a competitive edge through a suite of advanced products and technical services.

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GW10-2019 02/21