

Specifications

Conditions of Sale

STANDARD: The seller's standard conditions of sale set forth in Price Sheet 150 apply, except as modified under the "Warranty Qualifications" section on page 3 and the "Special Warranty Provisions" section on page 5.

SPECIAL TO THIS PRODUCT:

INCLUSIONS: Remote supervisory Vista Underground Distribution Switchgear provides automated switching and fault protection for underground distribution systems. It is available in three styles: UnderCover™ Style, vault-mounted, and pad-mounted. Each style is available with up to six "ways"—bus terminals, switches, and/or fault interrupters in ratings through 38 kV and 25 kA symmetrical. Standard Vista switchgear products ship with sulfur hexafluoride (SF₆) insulating gas. The new optional Vista Green Underground Distribution Switchgear ships with a dielectric gas mixture of carbon dioxide (CO₂) and C4-FN insulating gas instead of SF₆. See page 7 for details on how to build Vista and Vista Green switchgear catalog numbers.

The remote supervisory Vista switchgear features load-interrupter switches for switching 600- or 900-ampere main feeders and microprocessor-controlled, resettable, vacuum fault interrupters for switching and protection of 600- or 900-ampere main feeders and 200-, 600-, or 900-ampere taps, laterals, and subloops. These elbow-connected components are enclosed in a submersible gas-insulated, gas-tight (SF₆) or hermetically sealed (CO₂ mix) welded-steel tank, completely protected from the environment.

Because the remote supervisory Vista switchgear is submersible and considerably smaller than traditional air-insulated gear, it can be installed exactly where needed—even subsurface. Aesthetics of the installation are improved, and cost is lowered through reduced trenching and cable runs. Switchgear installed subsurface can be readily operated from grade level.

The three-position (CLOSED-OPEN-GROUNDED) load-interrupter switches may be manually operated or motor operated, and they provide three-pole live switching of 600-ampere three-phase circuits. A visible gap is provided

without exposure to medium voltage or the need to manipulate elbows.

The 200-, 600-, and 900-ampere fault interrupters feature resettable vacuum interrupters in series with manually operated three-position (CLOSED-OPEN-GROUND) disconnects for isolation and internal grounding of each phase. Fault interrupters provide three-pole load switching and fault interruption through 25 kA symmetrical or single-pole load switching and fault interruption through 12.5 kA symmetrical. (For other possible ratings, refer to the nearest S&C Sales Office.) Three-pole fault interrupters may be fitted with motor operators.

A manual handle is provided for operating load-interrupter switches and fault interrupters. The operating mechanisms function independently of the speed of manual handle operation and are designed to prevent inadvertent operation from the **Closed** position directly to the **Ground** position and vice versa. Operating shafts are padlockable in any position and can also be padlocked to prevent operation to the **Ground** position.

Large windows provide a clear view of the open gap, **Ground** position, and ground bus, allowing the operator to easily confirm the positions of the load-interrupter switches and disconnects of the fault interrupters. Trip indicators for the fault interrupters are readily visible through the windows as well.

Terminals are equipped with 200-ampere bushing wells (SF₆ models only) or 600- or 900-ampere bushings, as specified. Bushing and bushing-well interfaces conform with IEEE Standard 386 and accept all standard insulated connectors and inserts.

In addition, Vista switchgear has been certified as arc resistant per IEC 62271-200 for fault currents up to 12.5 kA symmetrical for 15 cycles. Arc resistance is standard for the pad-mounted and UnderCover styles. For the vault-mounted style, catalog number suffix "-N" must be specified, in which case a flange will be welded to the pressure-relief device for connection of user-supplied piping to vent exhaust gases out of the vault area.



Overcurrent Control 2.0

Fault interruption is initiated by a programmable overcurrent control housed in a watertight enclosure. The control is programmed using a personal computer connected to the control via a USB cable (Type A to Type A). The control receives both sensing and control inputs from current transformers. No batteries are needed for the Vista overcurrent control 2.0.

Current transformers provide power and input signals. The control features a variety of time-current characteristic (TCC) curves—standard “E,” “K,” and “T” speed curves, Vista switchgear coordinating-speed tap and main curves, and relay curves per IEEE C37.112-2018 and IEC 60255-151:2009.

Coordinating-speed tap curves are used for fault interrupters feeding subloop taps and are specifically designed to optimize coordination with load-side weak-link/backup current-limiting fuse combinations and source-side relays with low time-dial settings. The coordinating-speed main curves are used for fault interrupters on main feeders and have a longer minimum response time and a different shape to coordinate with tap-interrupter curves. Coordinating-speed curves have **Phase-Overcurrent**, **Ground-Protection**, **Negative-Sequence Fault**, and **Sensitive-Earth Fault** settings.

The coordinating-speed tap and main curves, as well as IEEE and IEC relay TCC curves, can be customized using a variety of **Definite-Time Delay** settings. **Ground Protection**, **Negative-Sequence Fault**, and **Sensitive-Earth Fault** settings are also available.

UnderCover Style

When the UnderCover Style is specified, a stainless steel gas-tight (SF₆) or hermetically sealed (CO₂ mix) tank with submersible wiring is furnished suitable for underground installation. A mild-steel or, optionally, stainless steel low-voltage enclosure is mounted on a customer-supplied pad at grade level. It is connected to the tank with cabling up to 45 feet (13.7 meters) in length.

Vault-Mounted Style

Two versions of this style are available. The wet-vault mounted style is intended for vaults subject to periodic flooding and includes submersible wiring and electrical components. The dry-vault mounted style is intended for

vaults that *are not* subject to periodic flooding, and it *does not* include submersible wiring and electrical components.

When the wet-vault mounted style is specified, a stainless steel gas-tight (SF₆) or hermetically sealed (CO₂ mix) tank is furnished suitable for mounting on the floor or wall of a vault. When the dry-vault mounted style is specified, a mild-steel tank is furnished. The mild-steel or, optionally, stainless steel low-voltage enclosure is mounted on the vault floor or wall; it is connected to the tank with cabling up to 45 feet (13.7 meters) in length.

Pad-Mounted Style

When the pad-mounted style is specified, a mild-steel or, optionally, stainless steel enclosure is furnished. A mild-steel or, optionally, stainless steel low-voltage compartment is mounted on the side of the enclosure.

The Vista switchgear gas-tight (SF₆) or hermetically sealed (CO₂ mix) tank itself is submersible, but many of the electrical components mounted to the tank are not. Special submersible components and wiring are provided when the UnderCover Style or wet-vault mounted style is specified. Contact your nearest S&C Sales Office for information on pad-mounted style units with submersible wiring.

Pad-mounted enclosures meet the requirements of ANSI Standard C57.12.28 for enclosure integrity. The top of the enclosure is hinged on both sides for convenient access to the operating and termination compartments. The roof of the enclosure is sloped outward to ensure water flows away from the switchgear. A removable panel provides access to the elbows and cables and is secured by the overlapping padlockable top. A resilient closed-cell gasket on the enclosure bottom flange protects the finish from being scratched during installation and isolates it from the alkalinity of a concrete foundation. Enclosures are protected from corrosion by S&C's Ultradur® II Outdoor Finish.

Motor Operators and Sensing

Motor operators provide the basis for automation. The robust Vista switchgear motor operator is available factory installed, or it can be readily installed in the field. It is easily removed for testing of the communication and control equipment without actually operating the gear.

Three-phase voltage sensing and three-phase current sensing are available for motor-operated ways.

Low-Voltage Compartment Enclosure

Motor-operator controls are located within the low-voltage compartment. Each motor operator is provided with a control board that includes CLOSE, OPEN, and, optionally, GROUND pushbuttons; switch-position indicating lamps; an operation counter; a LAMP TEST button; and a receptacle for portable remote control station. Up to six control boards can be accommodated, so any or all load-interrupter switches or three-pole fault interrupter ways may be motor operated. A single LOCAL/REMOTE switch is provided for all control boards, permitting an on-site operator to take complete control of the gear.

A 36-Volt, 5-ampere-hour, rechargeable, sealed-starved-electrolyte lead battery pack and 80-Watt temperature-compensated output battery charger are also furnished in the low-voltage compartment. The battery charger features integral load-disconnect circuitry to prevent deep discharge of batteries on loss of ac source, alarms for loss of ac source, battery low voltage and charger overvoltage, and a remote or locally initiated battery-test function. It provides both 36-Vdc and 12-Vdc outputs. The battery charger requires a 120-Vac, 50/60-Hz, or a 240-Vac, 50/60-Hz, external power supply. Internal control power is optionally available.

Connections are provided for the external power input; **Close**, **Open**, and, optionally, **Ground** command inputs; switch-position indication; current and voltage sensors; and battery-test and battery-status outputs.

Communication and Control Equipment

A user-specified remote terminal unit (RTU) and communication device may be furnished in the low-voltage compartment, providing a completely automated distribution switching and protection package. Contact the nearest S&C Sales Office for details. Alternately, a control unit for use with an RTU by others or a control unit for use without an RTU may be furnished. *One of these three control-equipment packages must be specified when ordering.* See Table 5 on page 15.

Potential Indication with Test Feature

When this optional voltage indication is specified, all routine operating tasks—switching, voltage-testing, and grounding—can be accomplished by a single person without cable handling or exposure to medium voltage. This feature is

available with or without provisions for low-voltage phasing. Cable-testing for faults can be performed through the back of a user-supplied elbow or through a user-supplied feedthrough insert, eliminating the need for cable handling or use of parking stands.

EXCLUSIONS: The purchaser must specify the switchgear style, communication and control equipment, motor-operator package, and any desired optional features to complete the catalog number of the switchgear.

For non-IntelliTeam® SG Automatic Restoration System applications, S&C may be able to furnish and install in the custom communication and control package—or make a provision in the control unit for use with an RTU by others—a user-specified communication device, as indicated in Table 5 on page 15. S&C will need to evaluate the physical and electrical requirements of the communication device and its performance characteristics, and conduct qualification testing to verify its suitability for the desired application. Refer to the nearest S&C Sales Office for pricing and scheduling information. S&C cannot furnish or install any communication device for which the supplier requires S&C to offer Tier I (i.e., “help desk”) support.

Communication devices, when specified, do not include an antenna, antenna support, surge protection, or a coaxial feed line. Propagation study, frequency selection, and FCC license application are also to be provided by others.

WARRANTY QUALIFICATIONS: The standard warranty contained in the seller’s standard conditions of sale (as set forth in Price Sheet 150) does not apply to major components not manufactured by S&C, such as remote terminal units and communication devices, including hardware, software, resolution of protocol-related matters, and notification of upgrades or fixes for those devices.

The seller’s standard warranty does not apply to any components not manufactured by S&C that are supplied and installed by the purchaser, nor to the ability of the seller’s equipment to work with such components.

APPLICATION NOTES: *Fault Interrupter:* Complete ratings for the fault interrupter are shown in Table 1 on page 6. Besides the load-dropping ratings shown, the fault interrupter is capable of interrupting transformer-magnetizing currents associated with the applicable loads as well as line-charging and cable-charging currents typical for distribution systems of these voltage ratings.

The duty-cycle fault-closing rating and 10-time duty-cycle fault-interrupting rating shown for the fault interrupter define, respectively, the level of available three-phase fault current into which the fault interrupter can be closed the designated number of times in the **Closed** or **Grounded** position and subsequently interrupt, with the fault interrupter remaining operable and able to interrupt rated continuous current.

A Note on Single-Pole Switching

In single-pole switching of ungrounded-primary three-phase transformers or banks (or single-phase transformers connected line to line), circuit connections or parameters may, in some cases, produce excessive overvoltages. In particular, for the following applications above 22 kV, single-pole switching should be performed only under the conditions stated in italics:

- Switching unloaded or lightly loaded delta-connected or ungrounded primary wye-wye-connected three-phase transformers or banks (or line-to-line connected single-phase transformers), rated 150 kVA or less three-phase, or 50 kVA or less single-phase—or of any kVA rating when combined with unloaded cables or lines—where maximum system operating voltage exceeds 22 kV (*Single-pole switching should be performed only if each phase is carrying 5% load or more, or if the transformer or bank is temporarily grounded at the primary neutral during switching.*)
- Switching loaded or unloaded ungrounded primary wye-delta-connected three-phase transformers or banks—alone or combined with unloaded cables or lines—where maximum system operating voltage exceeds 22 kV (*Single-pole switching should be performed only if each phase is carrying 5% load or more and if the lighting-load phase is always switched open first (or switched closed last), or if the transformer or bank is temporarily grounded at the primary neutral during switching.*)

Load-Interrupter Switch: Complete ratings for the load-interrupter switch are shown in Table 1 on page 6. Besides the load-dropping ratings shown, the load-interrupter switch is capable of interrupting transformer-magnetizing currents associated with the applicable loads as well as line-charging and cable-charging currents typical for distribution systems of these voltage ratings. For applications involving load current with high harmonic content (such as rectifier load currents), refer to the nearest S&C Sales Office.

The duty cycle fault-closing rating shown in Table 1 on page 6 for the load-interrupter switch defines the level of available three-phase fault current into which the load-interrupter switch can be closed the designated number of times in the **Closed** or **Grounded** position, with the load-interrupter switch remaining operable and able to interrupt rated continuous current. The following items should be considered when applying remote supervisory Vista switchgear:

Ungrounded systems: The S&C voltage sensors are connected phase to ground, so they are not intended for use on ungrounded systems. Contact the nearest S&C Sales Office for information on applying remote supervisory Vista switchgear on ungrounded systems.

Uni-grounded and resistance-grounded systems: Uni-grounded and resistance-grounded systems require power to be provided by a phase-to-phase connected voltage transformer. When the self-powered option (-Y4) is specified, the internal voltage transformer is connected phase to ground. Therefore, power must be supplied by an external source if remote supervisory Vista switchgear is to be applied on a resistively grounded or uni-grounded system. Contact the nearest S&C Sales Office for information on applying remote supervisory Vista switchgear on ungrounded systems.

Special Warranty Provisions

The standard warranty contained in the seller's standard conditions of sale, as set forth in Price Sheets 150 and 181, applies only to remote supervisory Vista Underground Distribution Switchgear and its associated options. The Vista overcurrent control 2.0 shall have the following warranty provisions: the first and second paragraphs of Price Sheet 150 warranty are replaced with the following:

(1) General: The seller warrants to the immediate purchaser or end user for a period of 10 years from the date of shipment that the equipment delivered will be of the kind and quality specified in the contract description and will be free of defects of workmanship and material. Should any failure to conform to this warranty appear under proper and normal use within 10 years after the date of shipment, the seller agrees, upon prompt notification thereof and confirmation that the equipment has been stored, installed, operated, and maintained in accordance with recommendations of the seller and standard industry practice, to correct the nonconformity either by repairing any damaged or defective parts of the equipment or (at the seller's option) by shipment of necessary replacement parts.

The seller's warranty does not apply to any equipment that has been disassembled, repaired, or altered by anyone other than the seller. This limited warranty is granted only to the immediate purchaser or, if the equipment is purchased by a third party for installation in third-party equipment, the end user of the equipment. The seller's duty to perform under any warranty may be delayed, at the seller's sole option, until the seller has been paid in full for all goods purchased by the immediate purchaser. No such delay shall extend the warranty period.

The seller further warrants to the immediate purchaser or end user that for a period of two years from the date of shipment the software will perform substantially in accordance with the then-current release of specifications if properly used in accordance with the procedures described in the seller's instructions. The seller's liability regarding any of the software is expressly limited to exercising its reasonable efforts in supplying or replacing any media found to be physically defective or in correcting defects in the software during the warranty period. The seller does not warrant the use of the software will be uninterrupted or error-free.

Remote Supervisory Vista® and Vista® Green Underground Distribution Switchgear

Table 1. 50/60-Hz ANSI Ratings—IEC Ratings in Parentheses^①

kV			Amperes, RMS								
System Class	Max	BIL	Main Bus Cont. Current	Short-Circuit, Sym.	Fault Interrupter				Load-Interrupter Switch		
					Cont., Load Dropping, and Load Splitting ^②	10-Time Duty-Cycle Fault-Closing, Sym.		10-Time Duty-Cycle Fault-Interr., Sym.	Cont., Load Dropping, and Load Splitting ^②	10-Time Duty-Cycle Fault-Closing, Sym. ^③	Mom. and One-Second, Sym.
						Into Closed Position	Into Grounded Position				
15.5 (12)	15.5 (15.5)	95 (95)	600 (630)●	12 500 (12 500)	200 (200)■	12 500 (12 500)	12 500 (12 500)	12 500 (12 500)	600 (630)▼	16 000 (16 000)	12 500 (12 500)
				25 000 (25 000)	600 (630)▲	25 000 (25 000)	◆	25 000 (25 000)	600 (630)□	◆	25 000 (25 000)
27 (24)	29 (29)	125 (125)	600 (630)●	12 500 (12 500)	200 (200)■	12 500 (12 500)	12 500 (12 500)	12 500 (12 500)	600 (630)▼	16 000 (16 000)	12 500 (12 500)
				25 000 (25 000)	600 (630)▲	25 000 (25 000)	◆	25 000 (25 000)	600 (630)□	◆	25 000 (25 000)
38 (36)	38 (38)	150 (150)	600 (630)●	12 500 (12 500)	200 (200)■	12 500 (12 500)	12 500 (12 500)	12 500 (12 500)	600 (630)▼	16 000 (16 000)	12 500 (12 500)
				25 000 (25 000)	600 (630)▲	25 000 (25 000)	◆	25 000 (25 000)	600 (630)□	◆	25 000 (25 000)

① Refer to the nearest S&C Sales Office for other possible ratings.

② Parallel or loop switching (Fault interrupters and load-interrupter switches can switch the magnetizing current of transformers associated with the load-dropping rating. Unloaded cable switching rating: 10 amperes at 15.5 kV, 20 amperes at 29 kV and 38 kV.)

③ Applicable to fault closing into **Closed** or **Grounded** position.

● 1200 (1200) amperes when switchgear is furnished with optional copper bus, catalog number suffix “-Z5.”

■ 600 (630) amperes when switchgear is furnished with optional 600-ampere bushings at fault-interrupter terminals, catalog number suffix “-M2” or “-M3” (600-ampere bushings are supplied as standard for Vista Green switchgear.

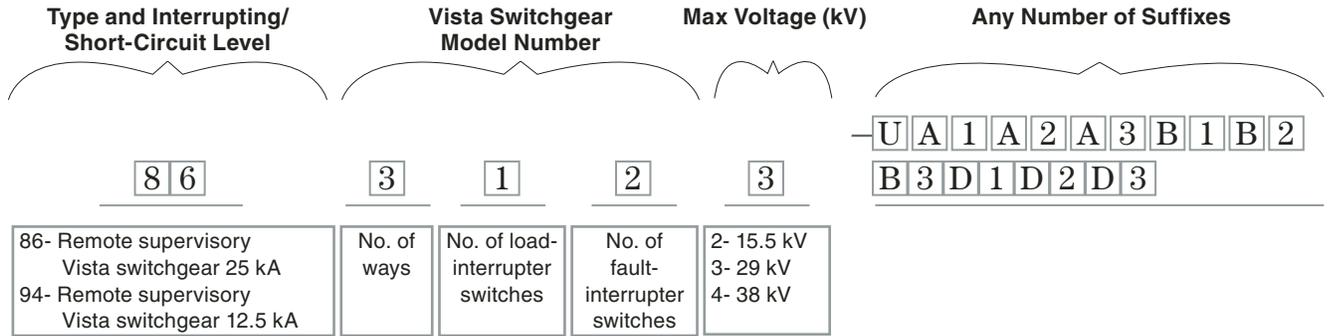
▲ 900 (900) amperes when switchgear is furnished with optional 900-ampere fault interrupters, catalog number suffix “-Q1” through “-Q6,” plus optional copper bus, catalog number suffix “-Z5” (SF₆ and 15.5-kV 25-kA Vista Green switchgear models only).

◆ 25,000 (25,000) amperes symmetrical three-time duty-cycle fault-closing rating; 16,000 (16,000) amperes symmetrical 10-time duty-cycle fault-closing rating.

▼ 200 (200) amperes when switchgear is furnished with optional 200-ampere bushing wells at load-interrupter switch terminals, catalog number suffix “-M4”. (SF₆ switchgear models only).

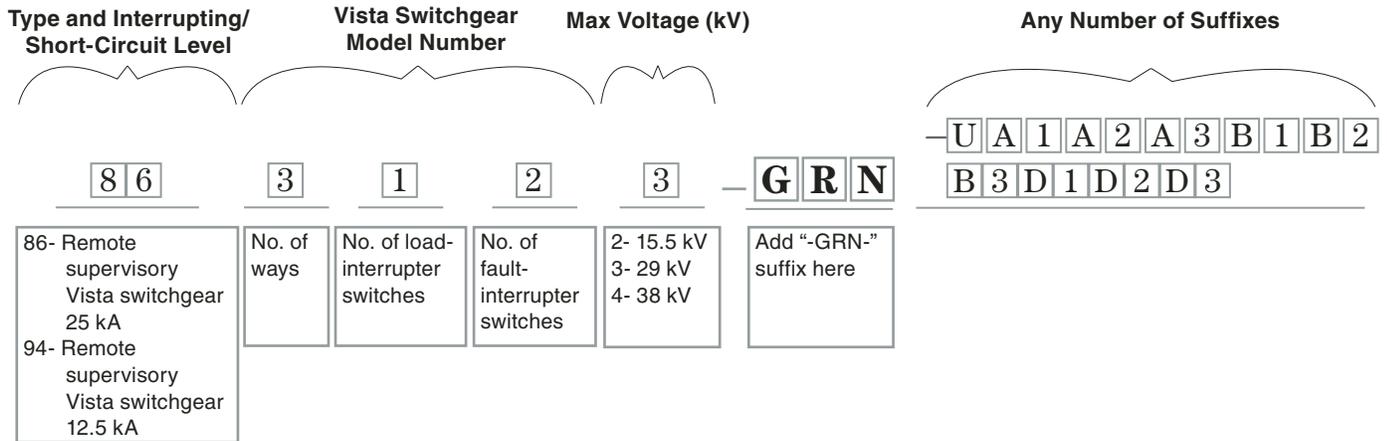
□ 900 (900) amperes when switchgear is furnished with optional 900-ampere load-interrupter switches, catalog number suffix “-K1” through “-K6,” plus optional copper bus, catalog number suffix “-Z5” (Vista SF₆ and 15.5-kV 25-kA Vista Green switchgear models only).

Anatomy of a Vista Switchgear Catalog Number



Note: The catalog number created above represents an UnderCover™ Style remote supervisory Vista switchgear unit, 25 kA, with a total of three ways that includes one load-interrupter switch and two fault-interrupter switches for a 29-kV application. All three ways will have the motor operator package, three-phase current sensing, and three-phase voltage sensing.

Anatomy of a Vista Green Switchgear Catalog Number



Note: The catalog number created above represents an UnderCover Style remote supervisory Vista Green switchgear (CO₂ mix) unit, 25 kA, with a total of three ways that includes one load-interrupter switch and two fault-interrupter switches for a 29-kV application. All three ways will have the motor operator package, three-phase current sensing, and three-phase voltage sensing.

How to Order Sample

STEP 1. Model Number and Base Catalog Number. Select the appropriate model number and the base catalog number from Table 2 on page 10, page 11, and page 12.

Model Number:

Base Catalog Number:

STEP 2. Insulating Gas. To order the new CO₂ mix insulating gas, add “-GRN-” after the base catalog number. (To order SF₆ insulating gas skip this step and proceed to step three.)

Insulating Gas: - -

(To order SF₆ insulating gas skip this step and proceed to step three.)

STEP 3. Switchgear-Style Suffix. Select the appropriate switchgear-style suffix from Table 3 on page 13.

Switchgear-Style Suffix:

STEP 4. Fault-Interrupter Suffix (applicable to 12.5-kA rated models only). Select the appropriate fault-interrupter suffix from Table 4 on page 14.

Fault-Interrupter Suffix:

STEP 5. Communication and Control-Equipment Suffix. Select the appropriate communication and control-equipment suffix from Table 5 on page 15.

Communication and Control Equipment Suffix:

STEP 6. Internal Control Power Suffix. If internal control power is desired, specify suffix “-Y4.” See Table 6 on page 15.

Internal Control Power Suffix:

STEP 7. Optional Feature Suffix(es). Select the suffix(es) of desired optional features from Table 7 on page 16 through page 17.

Options

STEP 8. Motor Operator Suffix. Using this table, “X” the load-interrupter switch ways and/or three-phase fault interrupter ways to be furnished with motor operators. To determine the motor operator suffix, write “A” and the selected way number for each way for which a motor operator is specified. See Table 8 on page 21.

Motor-Operated Way					
A1	A2	A3	A4	A5	A6
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Motor Operating Suffix:

STEP 9. Current-Sensing Suffix. Using this table, “X” the motor-operated ways to be furnished with three-phase current sensors. To determine the current-sensing suffix, write the selected way numbers after “-B.” See Table 9 on page 21.

Current-Sensing-Equipped Way					
B1	B2	B3	B4	B5	B6
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Current-Sensing Suffix:

STEP 10. Voltage-Sensing Suffix. Using this table, “X” the motor-operated ways to be furnished with three-phase voltage sensors. To determine the voltage-sensing suffix, write the selected way numbers after “-D.” See Table 9 on page 21.

Voltage-Sensor-Equipped Way					
D1	D2	D3	D4	D5	D6
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Voltage-Sensing Suffix:

Complete Catalog Number, Including Suffixes:

9	4	4	2	2	2	-	P	4	T	1	Y	6	Y	4
L	2	A	1	A	3	B	1	B	3	D	1	D	3	

Note: The catalog number above represents a pad-mounted remote supervisory Vista switchgear unit, 12.5 kA, 15.5 kV, with four ways: (2) load interrupters and (2) fault interrupters. The enclosure and low-voltage enclosure will be an olive green-finished mild steel. The second way will be (3) single-pole fault interrupters. It will have a control unit without a remote terminal unit, an internal control power, potential indication with a test feature, and provisions for low-voltage phasing. Ways one and three will have motor operators with current and voltage sensing.

How to Order

- STEP 1. Model Number and Base Catalog Number.** Select the appropriate model number and the base catalog number from Table 2 on pages 10, 11, and 12.
- STEP 2. Insulating Gas.** To order the new CO₂ mix insulating gas, add “-GRN-” after the base catalog number. (To order SF₆ insulating gas skip this step and proceed to step three.)
- STEP 3. Switchgear-Style Suffix.** Select the appropriate switchgear-style suffix from Table 3 page 13.
- STEP 4. Fault-Interrupter Suffix** (applicable to 12.5-kA rated models only). Select the appropriate fault-interrupter suffix from Table 4 on page 14.
- STEP 5. Communication and Control-Equipment Suffix.** Select the appropriate communication and control-equipment suffix from Table 5 on page 15.
- STEP 6. Internal Control Power Suffix.** If internal control power is desired, specify suffix “-Y4.” See Table 6 on page 15.
- STEP 7. Optional Feature Suffix(es).** Select the suffix(es) of desired optional features from Table 7 on page 16 through page 17.
- STEP 8. Motor Operator Suffix.** Using this table, “X” the load-interrupter switch ways and/or three-phase fault interrupter ways to be furnished with motor operators. To determine the motor operator suffix, write “A” and the selected way number for each way for which a motor operator is specified. See Table 8 page 21.
- STEP 9. Current-Sensing Suffix.** Using this table, “X” the motor-operated ways to be furnished with three-phase current sensors. To determine the current-sensing suffix, write the selected way numbers after “-B.” See Table 9 on page 21.
- STEP 10. Voltage-Sensing Suffix.** Using this table, “X” the motor-operated ways to be furnished with three-phase voltage sensors. To determine the voltage-sensing suffix, write the selected way numbers after “-D.” See Table 9 on page 21.

Model Number:

Base Catalog Number:

Insulating Gas: - -

(To order SF₆ insulating gas skip this step and proceed to step three.)

Switchgear-Style Suffix:

Fault-Interrupter Suffix:

Communication and Control Equipment Suffix:

Internal Control Power Suffix:

Options

Motor-Operated Way

A1	A2	A3	A4	A5	A6
<input type="checkbox"/>					

Motor Operating Suffix:

Current-Sensing-Equipped Way

B1	B2	B3	B4	B5	B6
<input type="checkbox"/>					

Current-Sensing Suffix:

Voltage-Sensor-Equipped Way

D1	D2	D3	D4	D5	D6
<input type="checkbox"/>					

Voltage-Sensing Suffix:

Complete Catalog Number, Including Suffixes:

-

Complete Catalog Number, Including Suffixes:

Remote Supervisory Vista® and Vista® Green Underground Distribution Switchgear

Table 2. Three-Phase Units

Model ^①	One-Line Diagram ^②	Ratings ^③			Catalog Number	Net Weight, Lbs. (Kg) ^④
		kV		Short-Circuit Amperes, RMS, Sym.		
		Max	BIL			
201		15.5	95	12 500 25 000	942012 862012	550 (250) 550 (250)
		29	125	12 500 25 000	942013 862013	550 (250) 550 (250)
		38	150	12 500 25 000	942014 862014	800 (363) 800 (363)
210		15.5	95	12 500 25 000	942102 862102	550 (250) 550 (250)
		29	125	12 500 25 000	942103 862103	550 (250) 550 (250)
		38	150	12 500 25 000	942104 862104	800 (363) 800 (363)
211		15.5	95	12 500 25 000	942112 862112	550 (250) 550 (250)
		29	125	12 500 25 000	942113 862113	550 (250) 550 (250)
		38	150	12 500 25 000	942114 862114	800 (363) 800 (363)
320		15.5	95	12 500 25 000	943202 863202	825 (374) 825 (374)
		29	125	12 500 25 000	943203 863203	825 (374) 825 (374)
		38	150	12 500 25 000	943204 863204	1075 (488) 1075 (488)
321		15.5	95	12 500 25 000	943212 863212	825 (374) 825 (374)
		29	125	12 500 25 000	943213 863213	825 (374) 825 (374)
		38	150	12 500 25 000	943214 863214	1075 (488) 1075 (488)
330		15.5	95	12 500 25 000	943302 863302	825 (374) 825 (374)
		29	125	12 500 25 000	943303 863303	825 (374) 825 (374)
		38	150	12 500 25 000	943304 863304	1075 (488) 1075 (488)

① The model number defines the total number of ways, the number of load-interrupter switch ways, and the number of fault-interrupter ways. For example, a Model 431 has “4” ways in total, of which “3” are load-interrupter switch ways and “1” is a fault-interrupter way.

② Refer to your nearest S&C Sales Office for other possible configurations.

③ Refer to Table 1 on page 6 for continuous, load-dropping, interrupting, and momentary ratings. For complete live-switching ratings for load-interrupter switches and fault interrupters as applied in Vista Underground Distribution Switchgear, refer to the “Application Notes” section on page 3.

④ Welded-steel tank, including components and insulating gas.

TABLE CONTINUED ►

Table 2. Three-Phase Units—Continued

Model ^⑤	One-Line Diagram ^⑥	Ratings ^⑦			Catalog Number	Net Wt., Lbs. (Kg) ^⑧
		kV		Short-Circuit Amperes, RMS, Sym.		
		Max	BIL			
413		15.5	95	12 500 25 000	944132 864132	1100 (499) 1100 (499)
		29	125	12 500 25 000	944133 864133	1100 (499) 1100 (499)
		38	150	12 500 25 000	944134 864134	1350 (612) 1350 (612)
422		15.5	95	12 500 25 000	944222 864222	1100 (499) 1100 (499)
		29	125	12 500 25 000	944223 864223	1100 (499) 1100 (499)
		38	150	12 500 25 000	944224 864224	1350 (612) 1350 (612)
431		15.5	95	12 500 25 000	944312 864312	1100 (499) 1100 (499)
		29	125	12 500 25 000	944313 864313	1100 (499) 1100 (499)
		38	150	12 500 25 000	944314 864314	1350 (612) 1350 (612)
440		15.5	95	12 500 25 000	944402 864402	1100 (499) 1100 (499)
		29	125	12 500 25 000	944403 864403	1100 (499) 1100 (499)
		38	150	12 500 25 000	944404 864404	1350 (612) 1350 (612)

⑤ The model number defines the total number of ways, the number of load-interrupter switch ways, and the number of fault-interrupter ways. For example, a Model 431 has “4” ways in total, of which “3” are load-interrupter switch ways and “1” is a fault-interrupter way.

⑥ Refer to your nearest S&C Sales Office for other possible configurations.

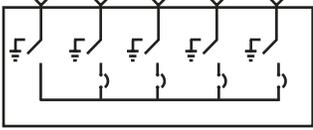
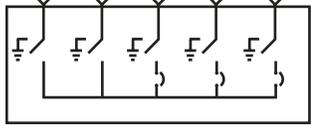
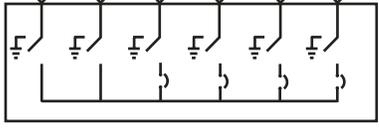
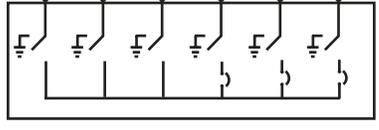
⑦ Refer to Table 1 on page 6 for continuous, load-dropping, interrupting, and momentary ratings. For complete live-switching ratings for load-interrupter switches and fault interrupters as applied in Vista Underground Distribution Switchgear, refer to the “Application Notes” section on page 3.

⑧ Welded-steel tank, including components and insulating gas.

TABLE CONTINUED ►

Remote Supervisory Vista® and Vista® Green Underground Distribution Switchgear

Table 2. Three-Phase Units—Continued

Model ^⑨	One-Line Diagram ^⑩	Ratings ^⑪			Catalog Number	Net Wt., Lbs. (Kg) ^⑫
		kV		Short-Circuit Amperes, RMS, Sym.		
		Max	BIL			
514		15.5	95	12 500 25 000	945142 865142	1100 (499) 1100 (499)
		29	125	12 500 25 000	945143 865143	1100 (499) 1100 (499)
		38	150	12 500 25 000	945144 865144	1350 (612) 1350 (612)
523		15.5	95	12 500 25 000	945232 865232	1100 (499) 1100 (499)
		29	125	12 500 25 000	945233 865233	1100 (499) 1100 (499)
		38	150	12 500 25 000	945234 865234	1350 (612) 1350 (612)
624		15.5	95	12 500 25 000	946242 866242	1375 (624) 1375 (624)
		29	125	12 500 25 000	946243 866243	1375 (624) 1375 (624)
		38	150	12 500 25 000	946244 866244	1625 (737) 1625 (737)
633		15.5	95	12 500 25 000	946332 866332	1650 (748) 1650 (748)
		29	125	12 500 25 000	946333 866333	1650 (748) 1650 (748)
		38	150	12 500 25 000	946334 866334	1900 (862) 1900 (862)

⑨ The model number defines the total number of ways, the number of load-interrupter switch ways, and the number of fault-interrupter ways. For example, a Model 431 has “4” ways in total, of which “3” are load-interrupter switch ways and “1” is a fault-interrupter way.

⑩ Refer to your nearest S&C Sales Office for other possible configurations.

⑪ Refer to Table 1 on page 6 for continuous, load-dropping, interrupting, and momentary ratings. For complete live-switching ratings for load-interrupter switches and fault interrupters as applied in Vista Underground Distribution Switchgear, refer to the “Application Notes” section on page 3

⑫ Welded-steel tank, including components and insulating gas.

Remote Supervisory Vista® and Vista® Green Underground Distribution Switchgear

Table 3. Switchgear Styles

Item				Suffix to be Added to Switchgear Catalog Number	Applicable to Models	Net Weight, Lbs. (Kg)①
UnderCover Style. Includes stainless steel tank, submersible wiring, and 25-foot (762-cm) submersible control cable for attachment to olive-green finish mild-steel low-voltage enclosure				-U	201, 210, 211	●
					320, 321, 330	
					413, 422, 431, 440	
					514, 523	
					624, 633	
Dry-vault mounted style. Includes mild-steel tank and 25-foot (762-cm) control cable for attachment to olive-green finish mild-steel low-voltage enclosure. Does not include submersible wiring				-V3	All models	■
Wet-vault mounted style. Includes stainless steel tank, submersible wiring, and 25-foot (762-cm) submersible control cable for attachment to olive-green finish mild-steel low-voltage enclosure				-V4	All models	
Pad-mounted style. Includes pad-mounted enclosure for mounting switchgear with integral low-voltage compartment on a pad	Two-way unit	Mild-steel outer enclosure and low-voltage compartment	Olive-green finish	-P2	201, 210, 211	534▲ (242)
			Light gray finish	-P7	201, 210, 211	
		Stainless steel outer enclosure and low-voltage compartment	Olive-green finish	-P12	201, 210, 211	
			Light gray finish	-P17	201, 210, 211	
	Three- or four-way unit	Mild-steel outer enclosure and low-voltage compartment	Olive-green finish	-P4	320, 321, 330, 413, 422, 431, 440	693▲ (314)
			Light gray finish	-P9	320, 321, 330, 413, 422, 431, 440	
		Stainless steel outer enclosure and low-voltage compartment	Olive-green finish	-P14	320, 321, 330, 413, 422, 431, 440	
			Light gray finish	-P19	320, 321, 330, 413, 422, 431, 440	
	Five- or six-way unit	Mild-steel outer enclosure and low-voltage compartment	Olive-green finish	-P6	514, 523, 624, 633	986▲ (447)
			Light gray finish	-P11	514, 523, 624, 633	
		Stainless steel outer enclosure and low-voltage compartment	Olive-green finish	-P16	514, 523, 624, 633	
			Light gray finish	-P21	514, 523, 624, 633	

① When internal control power, catalog number suffix “-Y4,” is specified, the size and weight of the tank and outer enclosure may increase on two-way units rated 12.5 kA short-circuit and four-way units. An appropriate dimensional drawing will be furnished.

● Weight of low-voltage enclosure (less components) is 185 pounds (83.9 kg).

■ Weight of low-voltage enclosure (less components) is 174 pounds (78.9 kg).

▲ Weight includes outer enclosure, base spacer, and empty low-voltage compartment.

Table 4. Single-Pole or Three-Pole Fault Interrupting ①②③

Item	Suffix to be Added to Switchgear Catalog Number	Applicable to Models
Single-pole manual fault interrupter on all fault-interrupting ways	-T0	12.5-kA-rated models with 1 or more fault interrupters
Three-pole manual fault interrupter on one fault-interrupting way (single-pole manual fault interrupter on all other fault-interrupting ways)	-T1	12.5-kA-rated models with 1 or more fault interrupters
Three-pole manual fault interrupter on two fault-interrupting ways (single-pole manual fault interrupter on all other fault-interrupting ways)	-T2	12.5-kA-rated models with 2 or more fault interrupters
Three-pole manual fault interrupter on three fault-interrupting ways (single-pole manual fault interrupter on all other fault-interrupting ways)	-T3	12.5-kA-rated models with 3 or more fault interrupters
Three-pole manual fault interrupter on four fault-interrupting ways (single-pole manual fault interrupter on all other fault-interrupting ways)	-T4	12.5-kA-rated models with 4 or more fault interrupters
Three-pole manual fault interrupter on five fault-interrupting ways (single-pole manual fault interrupter on all other fault-interrupting ways)	-T5	12.5-kA-rated models with 5 or more fault interrupters
Three-pole manual fault interrupter on six fault-interrupting ways	-T6	12.5-kA-rated models with 6 or more fault interrupters

① Not applicable to models rated 25 kA short circuit. All 25 kA-rated models include three-pole manual fault interrupters.

② Refer to the nearest S&C Sales Office for other possible configurations.

③ For standard models, components are in the following order (from left to right) when facing the operating side of the gear: load switches, bus taps, three-pole fault interrupters, single-pole fault interrupters.

Table 5. Communication and Control Equipment—One Suffix Must Be Specified

Item	Suffix to be Added to Switchgear Catalog Number	Applicable to Models
Custom communication and control package. Includes pushbuttons for local control of motor operators, LED position indicators, operation counter, battery charger, and battery packs. Also includes user-specified remote terminal unit (RTU) and user-specified communication device. Requires user-supplied 120-Volt 50/60-Hz ac external power source for battery charger. Other voltages are available upon request	●	All
Control unit for use with RTU by others. Includes pushbuttons for local control of motor operators, LED position indicators, operation counter, battery charger, and battery packs. Also includes provisions for mounting user-supplied, user-installed RTU and communication device in low-voltage enclosure or compartment. Requires user-supplied 120-Volt 50/60-Hz ac external power source for battery charger. Other voltages are available upon request	-Y3	All
Control unit for use without RTU. Includes pushbuttons for local control of motor operators, LED position indicators, operation counter, battery charger, and battery packs. Requires user-supplied 120-volt 50/60-Hz ac external power source for battery charger. Other voltages are available upon request	-Y6	All

- Refer to your nearest S&C Sales Office.

Table 6. Internal Control Power^{①②}

Item	Suffix to be Added to Base Catalog Number	Applicable to Models
Internal control power. A voltage transformer is mounted inside the Vista switchgear tank	-Y4	All, through 6 ways

^① If internal control power is not specified, user must supply 120-Vac control power to low-voltage enclosure.

^② May increase the size and weight of the tank and outer enclosure on two-way units rated 12.5 kV short-circuit and four-way units. An appropriate dimensional drawing will be furnished.

Table 7. Optional Features

Item			Suffix to be Added to Switchgear Catalog Number	Applicable to Models
Stainless steel tank for dry-vault-mounted style or pad-mounted style switchgear			-S	All models
Olive-green finish stainless steel low-voltage enclosure for undercover style or vault-mounted style switchgear			-E	
Auxiliary contacts. Standard form Open/Close contact switches.①	All load-interrupter switches②	With wire routed to the outside of the tank and to a low-voltage control enclosure for customer connections	-C11●	All models
		With wires routed to terminal blocks mounted in an enclosure for customer connection (The terminal block enclosure is typically mounted on the side of the Vista switchgear tank near the overcurrent relay enclosure)	-C12■	Pad-mounted and dry-vault style models
	All fault interrupters③④⑤	With wire routed to the outside of the tank and to a low-voltage control enclosure for customer connections	-C21●	All models
		With wires routed to terminal blocks mounted in an enclosure for customer connection (The terminal block enclosure is typically mounted on the side of the Vista switchgear tank near the overcurrent relay enclosure)	-C22■	Pad-mounted and dry-vault style models
Mounting provisions for fault indicators for each load-Interrupter switch, fault interrupter switch, or both. Accommodates three-phase indicator with single-phase sensors.⑥	For each load-interrupter switch	Without viewing window in pad-mounted enclosure	-F1	All models except 201, 302, 303, 404, 505, and 606
		With viewing window in pad-mounted enclosure	-F2	
	For each fault-interrupter switch	Without viewing window in pad-mounted enclosure	-F3	All models except 210, 220, 320, 330, 440, 530, 540, 550, 660
		With viewing window in pad-mounted enclosure	-F4	

① If auxiliary contacts are specified for both load-interrupter switches and fault interrupters, both options must have the same termination style.

② Provides verification of **Closed/Open/Grounded** blade position.

③ On three-pole fault interrupters, auxiliary contacts provide indication of **Closed/Open/Grounded** blade position, as well as trip indication.

④ Not available with single-pole fault interrupters (catalog option “-T0”) for 15-kV 12.5-kA models with catalog numbers ending in “R1.”

⑤ For single pole fault interrupters, on Vista switchgear models rated 29 kV and 38 kV, auxiliary contacts only provide trip indication.

⑥ Catalog number suffix “-F1” and “-F3” may be selected together or separately; “-F2” and “-F4” may also be selected in the same manner. No mixed combination of “-F1” or “-F3” with “-F2” or “-F4” is permitted. Specify catalog number suffix “-F12” for pad-mounted style switchgear with stainless steel outer enclosure, catalog number suffix “-P12,” “-P14,” “-P16,” “-P17,” “-P19,” or “-P21.”

● Not available with option “-R2,” “-C12,” or “-C22.”

■ Not available with option “-R11,” “-C11,” or “-C21.”

TABLE CONTINUED ►

Table 7. Optional Features—Continued

Item	Suffix to be Added to Switchgear Catalog Number	Applicable to Models	
Ground position pushbutton control. Provides local motor operation to and from the Ground position. Remote operation is accomplished via SCADA or a hard-wired connection ^⑦	-G	All models	
Control cable for undercover style or wet-vault-mounted style switchgear [25-foot (762-cm) length is standard]. Connects Vista switchgear tank to low-voltage enclosure	35-foot length (1067 cm)	All models with catalog number suffix “-U” or “-V4”	
	45-foot length (1372 cm)		
Control cable for dry-vault-mounted style switchgear [25-foot (762-cm) length is standard]. Connects Vista switchgear tank to low-voltage enclosure	35-foot length (1067 cm)	All models with catalog number suffix “-V3”	
	45-foot length (1372 cm)		
Potential indication with test feature. Includes LCD display to indicate presence of voltage on each phase, and solar panel to supply power for testing of complete voltage-indication circuit and phasing circuit (if furnished). One potential indicator is provided for each bus-terminal, load-interrupter switch, and fault-interrupter way	<i>Without</i> provisions for low-voltage phasing	All models	
	<i>With</i> provisions for low-voltage phasing		
Spanish labels	-L51	All models	
International crating ^⑧	-L71	All models	
900-ampere load-interrupter switch ^⑨ ^⑩ ^⑪ ^⑫ on:	Way 1	-K1	All models rated 25 kA (Vista SF ₆ and 15.5-kV 25-kA Vista Green switchgear models only)
	Way 2	-K2	
	Way 3	-K3	
	Way 4	-K4	
	Way 5	-K5	
	Way 6	-K6	
900-ampere fault interrupter ^⑨ ^⑩ ^⑪ ^⑫ ^⑬ on:	Way 1	-Q1	
	Way 2	-Q2	
	Way 3	-Q3	
	Way 4	-Q4	
	Way 5	-Q5	
	Way 6	-Q6	

⑦ Applies to all motor-operated ways in the gear.

⑧ Wood products used in the packaging are either hardwood or certified by the wood supplier as having been “heat treated (kiln dried) to a core temperature of 133°F (56°C) for a minimum of 30 minutes.”

⑨ 900-ampere cable connectors must be used.

⑩ If piggybacked cable connectors are desired, refer to the nearest S&C Sales Office.

⑪ Copper bus, catalog number suffix “-Z5,” must be specified if 900-ampere load-interrupter switches and/or 900-ampere fault interrupters are specified.

⑫ If any “-K” or “-Q” are selected, any bus tap ways and terminal are also rated 900 amperes.

⑬ Bushings are rated 900 amperes on ways furnished with 900-ampere load-interrupter switches (catalog number suffix “-K1” through “-K6”) and/or 900-ampere fault interrupters (catalog number suffix “-Q1” through “-Q6”).

⑭ Changes internal CT ratios from 660:1 to 1320:1.

TABLE CONTINUED ►

Table 7. Optional Features—Continued

Item		Suffix to be Added to Switchgear Catalog Number	Applicable to Models
600-A bushings without studs, at load-interrupter switch and bus terminals (in lieu of standard 600-A bushings with studs)		-M1	All models rated 12.5 kA
600-A bushings without studs, at load-interrupter switch, fault interrupter, and bus terminals (in lieu of standard 600-A bushings with studs)③			All models (SF ₆ and CO ₂ mix) are rated 25 kA
600-A bushings, at fault-interrupter terminals (in lieu of 200-A bushing wells)	Without studs	-M2	All SF ₆ models are rated 12.5 kA except Models 210, 220, 320, 330, and 440
	With studs	-M3	
200-A bushing wells at load-interrupter switch and bus terminals (in lieu of 600-A bushings with studs)		-M4	All SF ₆ models rated 12.5 kA except Model 201▲
Arc resistance for vault-mounted style (arc resistance is standard for pad-mounted and UnderCover styles), per IEC 62271-200, for arcs occurring internal to the tank (15 cycles, 12 kA symmetrical for 12.5 kA-rated models and 15 cycles, 25 kA symmetrical for 25 kA-rated models)		-N	All models with catalog number suffix “-V3” or “-V4”
Two-hole ground pads, one per way, located below bushings or bushing wells (in lieu of standard one ground pad per tank)		-O	All models
Remote low-pressure alarm—includes internal contact for remote low-pressure indication, with wiring to outside of tank	With wire routed to the outside of the tank and to a low-voltage control enclosure for customer connections	-R11◆	All pad-mounted and dry-vault-mounted styles
		-R12	All UnderCover and wet-vault mounted styles
	With wires routed to terminal blocks mounted in an enclosure for customer connection (The terminal block enclosure is typically mounted on the side of the Vista switchgear tank near the overcurrent relay enclosure)	-R2▼	All pad-mounted and dry-vault mounted styles
External trip provisions. Allows three-pole tripping of single-pole or three-pole fault interrupters via a trip signal from a remote location or an external relay. Requires a 110/120-Vac 50/60-Hz control power source⑮⑯	In addition to standard overcurrent control for all fault interrupters	-R31	All pad-mounted and dry-vault mounted styles
		-R32	All UnderCover and wet-vault mounted styles
	In lieu of standard overcurrent control and current transformers for all fault interrupters	-R41	All pad-mounted and dry-vault mounted styles
		-R42	All UnderCover and wet-vault mounted styles

③ Bushings are rated 900 amperes on ways furnished with 900-ampere load-interrupter switches (catalog number suffix “-K1” through “-K6”) and/or 900-ampere fault interrupters (catalog number suffix “-Q1” through “-Q6”).

▲ Model 201 is furnished with 200-ampere bushing wells at bus terminals as standard (SF₆ models only).

◆ Not available with option “-C12” or “-C22.”

▼ Not available with option “-C11” or “-C21.”

⑮ The user-supplied trip-initiating signal must be a momentary contact. Refer to the nearest S&C Sales Office if an application requires the use of a latching contact.

⑯ The external trip board can be powered by a user-supplied 120-Vac 50/60-Hz control power source, 120 Vac 50/60 Hz supplied by a voltage transformer internal to the tank (option suffix “-Y4”), or 36 Vdc supplied by the battery charger.

TABLE CONTINUED ►

Table 7. Optional Features—Continued

Item				Suffix to be Added to Switchgear Catalog Number	Applicable to Models
External trip provisions. Allows three-pole tripping of single-pole or three-pole fault interrupters via a trip signal from a remote location or an external relay. Requires a 220/240-Vac 50/60-Hz control power source ¹⁶				-R33	All pad-mounted and dry-vault mounted styles
				-R34	All UnderCover and wet-vault mounted styles
				-R43	All pad-mounted and dry-vault mounted styles
				-R44	All UnderCover and wet-vault mounted styles
Base spacers, Includes a mild-steel or stainless steel base spacer color-matched to enclosure with integral tank supports	15.5 kV 29 kV 38 kV	6-inch (152-mm) base spacer for enclosure and tank	Mild steel	-W1	Pad-mounted style enclosures (mild steel) “-P2,” “-P4,” “-P6,” “-P7,” “-P9,” “-P11”
			Stainless steel	-W11	Pad-mounted style enclosures (mild and stainless steel) “-P2,” “-P4,” “-P6,” “-P7,” “-P9,” “-P11,” “-P12,” “-P14,” “-P16,” “-P17,” “-P19,” “-P21”
	15.5 kV 29 kV 38 kV	12-inch (305-mm) base spacer for enclosure and tank	Mild steel	-W3	Pad-mounted style enclosures (mild steel) “-P2,” “-P4,” “-P6,” “-P7,” “-P9,” “-P11”
			Stainless steel	-W13	Pad-mounted style enclosures (mild and stainless steel) “-P2,” “-P4,” “-P6,” “-P7,” “-P9,” “-P11,” “-P12,” “-P14,” “-P16,” “-P17,” “-P19,” “-P21”
	15.5 kV 29 kV 38 kV	18-inch (457-mm) base spacer for enclosure and tank	Mild steel	-W5	Pad-mounted style enclosures (mild-steel) “-P2,” “-P4,” “-P6,” “-P7,” “-P9,” “-P11”
			Stainless steel	-W15	Pad-mounted style enclosures (mild and stainless steel) “-P2,” “-P4,” “-P6,” “-P7,” “-P9,” “-P11,” “-P12,” “-P14,” “-P16,” “-P17,” “-P19,” “-P21”

¹⁶ The external trip board can be powered by a user-supplied 120-Vac 50/60-Hz control power source, 120 Vac 50/60 Hz supplied by a voltage transformer internal to the tank (option suffix “-Y4”), or 36 Vdc supplied by the battery charger.

TABLE CONTINUED ►

Remote Supervisory Vista® and Vista® Green Underground Distribution Switchgear

Table 7. Optional Features—Continued

	Item	Suffix to be Added to Switchgear Catalog Number	Applicable to Models
Key interlocks. Locks load-interrupter switch or three-pole fault interrupter (catalog number suffix “-T1” through “-T6”) in the open position ^⑰ ^⑱	Way 1	-X1	Any in which Way 1 is a load-interrupter switch or three-pole fault interrupter
	Way 2	-X2	Any in which Way 2 is a load-interrupter switch or three-pole fault interrupter
	Way 3	-X3	Any in which Way 3 is a load-interrupter switch or three-pole fault interrupter
	Way 4	-X4	Any in which Way 4 is a load-interrupter switch or three-pole fault interrupter
	Way 5	-X5	Any in which Way 5 is a load-interrupter switch or three-pole fault interrupter
	Way 6	-X6	Any in which Way 6 is a load-interrupter switch or three-pole fault interrupter
Provisions for future key interlocks. Includes welded mounting blocks and locking shaft position indicators for future installation of key interlocks on load-interrupter switches or three-pole fault interrupters ^⑰ ^⑱ ^⑲	Way 1	-X19	Any in which Way 1 is a load-interrupter switch or three-pole fault interrupter
	Way 2	-X29	Any in which Way 2 is a load-interrupter switch or three-pole fault interrupter
	Way 3	-X39	Any in which Way 3 is a load-interrupter switch or three-pole fault interrupter
	Way 4	-X49	Any in which Way 4 is a load-interrupter switch or three-pole fault interrupter
	Way 5	-X59	Any in which Way 5 is a load-interrupter switch or three-pole fault interrupter
	Way 6	-X69	Any in which Way 6 is a load-interrupter switch or three-pole fault interrupter
Copper Bus ^⑳		-Z5	All models

^⑰ Motor operators can not be retrofitted onto ways with key interlocks.

^⑱ The portable motor operator accessory cannot be used on ways with key interlock mounting provisions or key interlocks. Permanent-style motor operators for remote supervisory Vista switchgear cannot be retrofitted onto ways with key interlocks or key interlock mounting provisions.

^⑲ Key interlock mounting provisions cannot be added after shipment. Only switchgear with ordered key interlock mounting provisions can be field equipped with key interlocks.

^⑳ Main bus can be rated up to 1200 amperes when catalog number suffix “-Z5” is specified.

Table 8. Motor Operator Options—Option Suffix “-A”

Item	Total Number of Motor-Operated Ways on the Gear ^{①②}
Motor operator package. Includes motor operator for use on load-interrupter switch way or three-pole fault-interrupter way; motor-operator control board with CLOSE, OPEN, and, optionally, GROUND pushbuttons; push-to-test indicator lamps; operation counter; and connector for portable remote-control station. There is only one LOCAL/REMOTE switch for the entire gear. Also includes connections for the user-supplied external control power; Close , Open , and, optionally, Ground command inputs; and switch-position indication	1
	2
	3
	4
	5
	6

① Refer to the “How to Order” section on page 8 and page 9.

② Each motor operator weighs 24.5 pounds (11.1 kg).

Table 9. Sensing Options for Motor-Operated Ways

Item	Total Number of Motor-Operated Ways on the Gear
Three-phase current sensing—option suffix “-B” ^{①②} Includes three current sensors for each way selected	1
	2
	3
	4
	5
	6
Three-phase voltage sensing—option suffix “-D” ^{①③} Includes three-phase line-to-ground voltage sensing for each way selected	1
	2
	3
	4
	5
	6

① Refer to the “How to Order” section on page 8 and page 9.

② Current sensor ratio is 600:5.

③ Refer to the nearest S&C Sales Office for specifications on the voltage sensing circuit.

Remote Supervisory Vista® and Vista® Green Underground Distribution Switchgear

Table 10. Accessories

Item		Catalog Number
Shotgun clamp stick for use with separable connectors	6-foot-5½-inch (197 cm) length	9933-150
	8-foot-5½-inch (258 cm) length	9933-151
Storage bag for shotgun clamp stick, heavy canvas	6-foot-6-inch (198 cm) length	9933-152
	8-foot-6-inch (259 cm) length	9933-153
Portable remote control for permanent motor operator. Requires one of the control cables listed below		TA-2424
Portable motor operator. For operation of load-interrupter switches and single- or three-pole fault interrupters from a remote location. Includes carrying case and 50-foot (1524-cm) length control cable with remote controls. Power supplied by:	User-furnished 24-Volt battery and battery charger	38320R1
	S&C-furnished 24-Volt battery and battery charger	38322R1
	S&C-furnished ac input power supply	38323R1
25-foot (762 cm) length control cable for portable remote control for permanent motor operator		9931-615
50-foot (1524 cm) length control cable for portable remote control for permanent motor operator		9931-616
One 5-ampere-hour 12-Vdc battery with leads and connectors		QCUA-5601-1
Two 5-ampere-hour 12-Vdc batteries with leads and connectors		QCUA-5601-2
Three 5-ampere-hour 12-Vdc batteries with leads and connectors (this item used with Vista switchgear control rack and battery charger catalog number 360091)		QCUA-5601-3
Pentahead socket, for ½-inch (13 mm) drive		9931-074

Table 11. Vista Overcurrent Control Replacement Parts

Item	Catalog Number
Vista overcurrent control 2.0 connection cable. For connecting the control to the user PC for programming and status information. This 2-meter (6.6-foot)-long cable includes a USB Type A-to-Type A connection.	TR-11887

Table 12. Touch-Up Kit Components—Aerosol Coatings in 12-ounce Cans

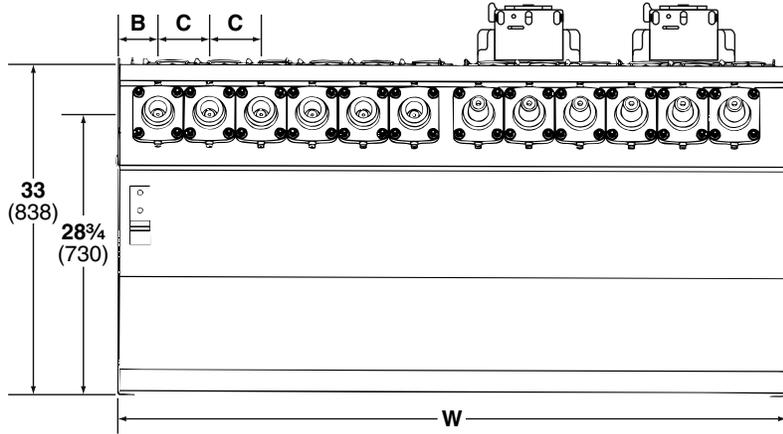
Item	Catalog Number
S&C light gray outdoor finish	9999-080
S&C olive-green (Munsell 7GY3.29/1.5) outdoor finish	9999-058
S&C red-oxide primer	9999-061

Vista Underground Distribution Switchgear Tank

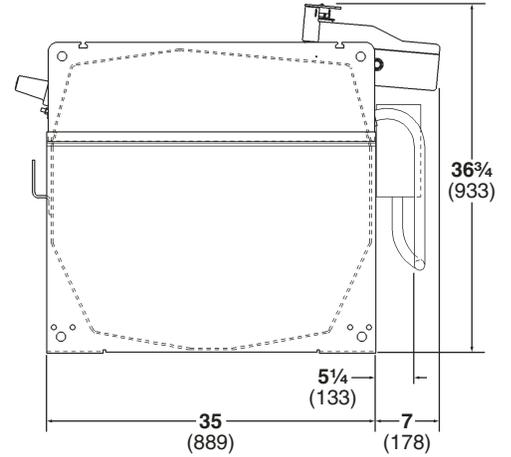
(Model 422 rated 15.5 kV, 12.5 kA symmetrical shown.)

All dimensions apply to both Vista SF₆ and Vista Green switchgear.)

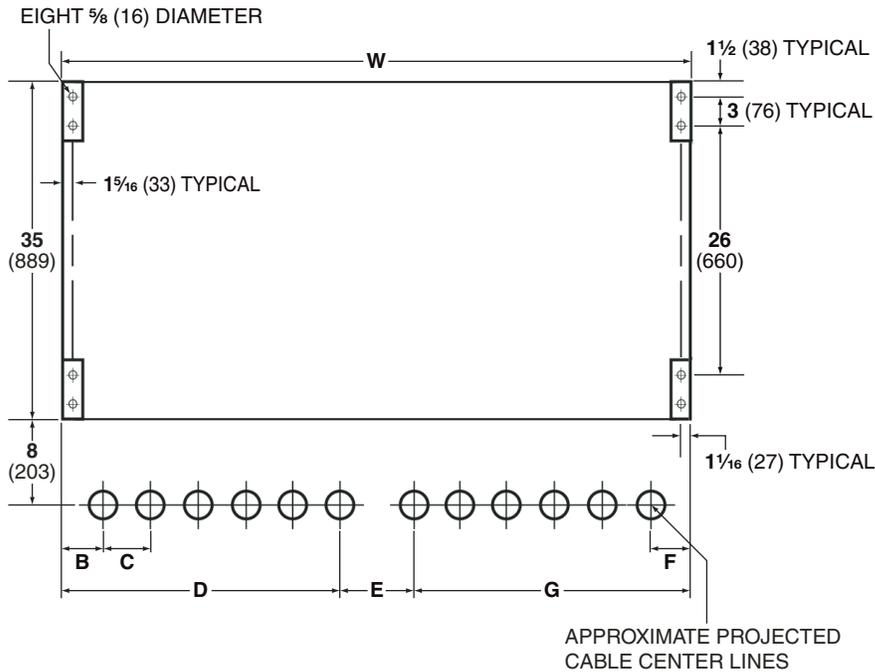
Dimensions in inches (mm)



TERMINATION VIEW



SIDE VIEW



ANCHOR BOLT PLAN

Remote Supervisory Vista® and Vista® Green Underground Distribution Switchgear

Vista Underground Distribution Switchgear Tank

(Model 422 rated 15.5 kV, 12.5 kA symmetrical shown.)

All dimensions apply to both Vista SF₆ and Vista Green switchgear.)—Continued

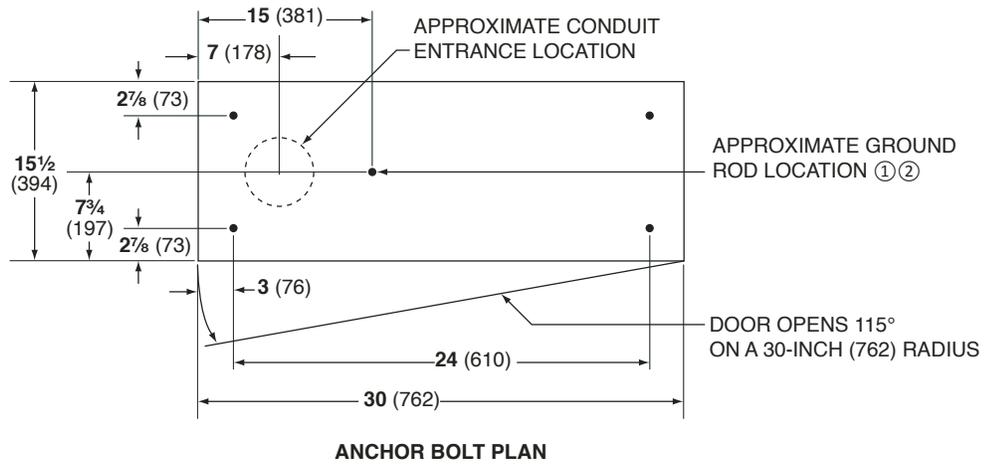
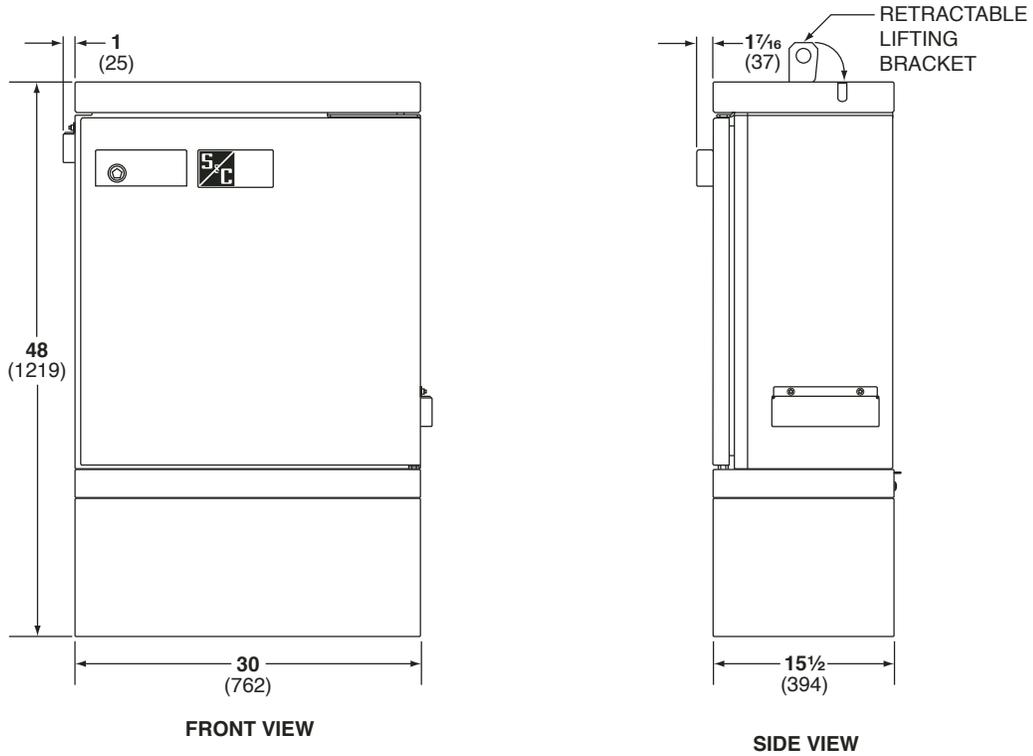
Dimensions in inches (mm)

Model	Ratings		B	C	D ^①	E ^①	F	G ^①	W
	kV, Max	Short-Circuit, Amperes, RMS, Sym.							
201 210 211	15.5	12 500	3 ¹⁵ / ₁₆ (100)	5 (127)	NA	NA	3 ¹⁵ / ₁₆ (100)	NA	32 ⁷ / ₁₆ (824)
		25 000	26 ¹¹ / ₁₆ (678)	5 (127)	NA	NA	3 ¹⁵ / ₁₆ (100)	NA	55 ⁹ / ₁₆ (1411)
	29	12 500	3 ¹⁵ / ₁₆ (100)	5 (127)	NA	NA	3 ¹⁵ / ₁₆ (100)	NA	32 ⁷ / ₁₆ (824)
		25 000	22 ⁷ / ₁₆ (560)	5 ³ / ₄ (146)	NA	NA	4 ¹⁹ / ₁₆ (122)	NA	55 ⁹ / ₁₆ (1411)
	38	12 500	4 ¹³ / ₁₆ (122)	5 ³ / ₄ (146)	NA	NA	4 ¹⁹ / ₁₆ (122)	NA	38 ⁹ / ₁₆ (973)
		25 000	22 ⁷ / ₁₆ (560)	5 ³ / ₄ (146)	NA	NA	4 ¹⁹ / ₁₆ (122)	NA	55 ⁹ / ₁₆ (1411)
320 321 330	15.5	12 500	3 ¹⁵ / ₁₆ (100)	5 (127)	NA	NA	3 ¹⁵ / ₁₆ (100)	NA	47 ¹³ / ₁₆ (1214)
		25 000	11 ¹¹ / ₁₆ (297)	5 (127)	NA	NA	3 ¹⁵ / ₁₆ (100)	NA	55 ⁹ / ₁₆ (1411)
	29	12 500	3 ¹⁵ / ₁₆ (100)	5 (127)	NA	NA	3 ¹⁵ / ₁₆ (100)	NA	47 ¹³ / ₁₆ (1214)
		25 000	4 ¹³ / ₁₆ (122)	5 ³ / ₄ (146)	NA	NA	4 ¹⁹ / ₁₆ (122)	NA	55 ⁹ / ₁₆ (1411)
	38	12 500	4 ¹³ / ₁₆ (122)	5 ³ / ₄ (146)	NA	NA	4 ¹⁹ / ₁₆ (122)	NA	55 ⁹ / ₁₆ (1411)
		25 000	4 ¹³ / ₁₆ (122)	5 ³ / ₄ (146)	NA	NA	4 ¹⁹ / ₁₆ (122)	NA	55 ⁹ / ₁₆ (1411)
413 422 431 440	15.5	12 500	3 ¹⁵ / ₁₆ (100)	5 (127)	28 ¹⁵ / ₁₆ (735)	7 ⁷ / ₈ (194)	3 ¹⁵ / ₁₆ (100)	28 ¹⁵ / ₁₆ (735)	65 ⁷ / ₁₆ (1662)
		25 000	3 ¹⁵ / ₁₆ (100)	5 (127)	28 ¹⁵ / ₁₆ (735)	7 ⁷ / ₈ (194)	3 ¹⁵ / ₁₆ (100)	28 ¹⁵ / ₁₆ (735)	65 ⁷ / ₁₆ (1662)
	29	12 500	3 ¹⁵ / ₁₆ (100)	5 (127)	28 ¹⁵ / ₁₆ (735)	7 ⁷ / ₈ (194)	3 ¹⁵ / ₁₆ (100)	28 ¹⁵ / ₁₆ (735)	65 ⁷ / ₁₆ (1662)
		25 000	4 ¹³ / ₁₆ (122)	5 ³ / ₄ (146)	NA	NA	4 ¹⁹ / ₁₆ (122)	NA	72 ¹³ / ₁₆ (1849)
	38	12 500	4 ¹³ / ₁₆ (122)	5 ³ / ₄ (146)	NA	NA	4 ¹⁹ / ₁₆ (122)	NA	72 ¹³ / ₁₆ (1849)
		25 000	4 ¹³ / ₁₆ (122)	5 ³ / ₄ (146)	NA	NA	4 ¹⁹ / ₁₆ (122)	NA	72 ¹³ / ₁₆ (1849)
514 523	15.5	12 500	3 ¹⁵ / ₁₆ (100)	5 (127)	28 ¹⁵ / ₁₆ (735)	7 ⁷ / ₈ (194)	3 ¹⁵ / ₁₆ (100)	43 ¹⁵ / ₁₆ (1116)	80 ⁷ / ₁₆ (2043)
		25 000	3 ¹⁵ / ₁₆ (100)	5 (127)	28 ¹⁵ / ₁₆ (735)	7 ⁷ / ₈ (194)	3 ¹⁵ / ₁₆ (100)	43 ¹⁵ / ₁₆ (1116)	80 ⁷ / ₁₆ (2043)
	29	12 500	3 ¹⁵ / ₁₆ (100)	5 (127)	28 ¹⁵ / ₁₆ (735)	7 ⁷ / ₈ (194)	3 ¹⁵ / ₁₆ (100)	43 ¹⁵ / ₁₆ (1116)	80 ⁷ / ₁₆ (2043)
		25 000	4 ¹³ / ₁₆ (122)	5 ³ / ₄ (146)	NA	NA	4 ¹⁹ / ₁₆ (122)	NA	90 ¹ / ₁₆ (2288)
	38	12 500	4 ¹³ / ₁₆ (122)	5 ³ / ₄ (146)	NA	NA	4 ¹⁹ / ₁₆ (122)	NA	90 ¹ / ₁₆ (2288)
		25 000	4 ¹³ / ₁₆ (122)	5 ³ / ₄ (146)	NA	NA	4 ¹⁹ / ₁₆ (122)	NA	90 ¹ / ₁₆ (2288)
624 633	15.5	12 500	3 ¹⁵ / ₁₆ (100)	5 (127)	43 ¹⁵ / ₁₆ (1116)	7 ⁷ / ₈ (194)	3 ¹⁵ / ₁₆ (100)	43 ¹⁵ / ₁₆ (1116)	95 ⁷ / ₁₆ (2424)
		25 000	3 ¹⁵ / ₁₆ (100)	5 (127)	43 ¹⁵ / ₁₆ (1116)	7 ⁷ / ₈ (194)	3 ¹⁵ / ₁₆ (100)	43 ¹⁵ / ₁₆ (1116)	95 ⁷ / ₁₆ (2424)
	29	12 500	3 ¹⁵ / ₁₆ (100)	5 (127)	43 ¹⁵ / ₁₆ (1116)	7 ⁷ / ₈ (194)	3 ¹⁵ / ₁₆ (100)	43 ¹⁵ / ₁₆ (1116)	95 ⁷ / ₁₆ (2424)
		25 000	4 ¹³ / ₁₆ (122)	5 ³ / ₄ (146)	NA	NA	4 ¹⁹ / ₁₆ (122)	NA	107 ⁹ / ₁₆ (2726)
	38	12 500	4 ¹³ / ₁₆ (122)	5 ³ / ₄ (146)	NA	NA	4 ¹⁹ / ₁₆ (122)	NA	107 ⁹ / ₁₆ (2726)
		25 000	4 ¹³ / ₁₆ (122)	5 ³ / ₄ (146)	NA	NA	4 ¹⁹ / ₁₆ (122)	NA	107 ⁹ / ₁₆ (2726)

① All four-, five-, and six-way units rated 15.5 kV and 29 kV, 12.5 kA, include an extra 2⁵/₁₆-inch (67-mm) gap between ways two and three (four-way units) or between ways three and four (five- and six-way units).

UnderCover™ Style Switchgear Low-Voltage Enclosure

Dimensions in inches (mm)

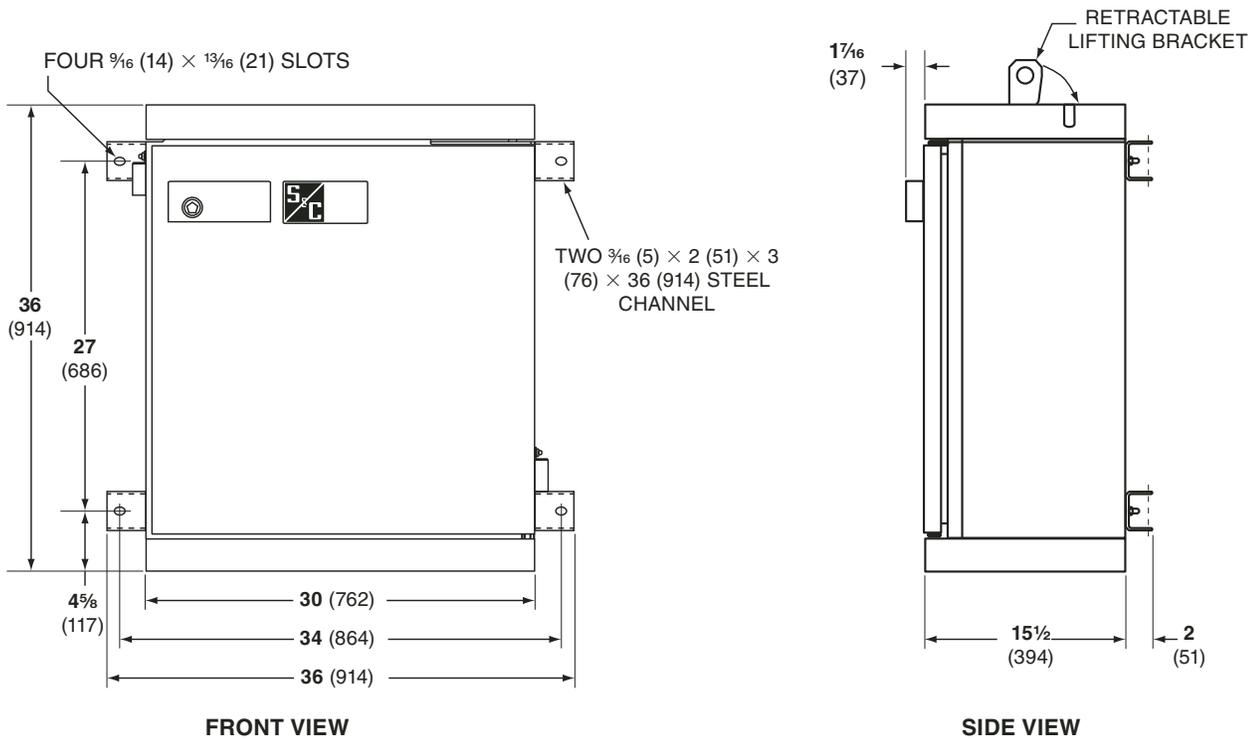
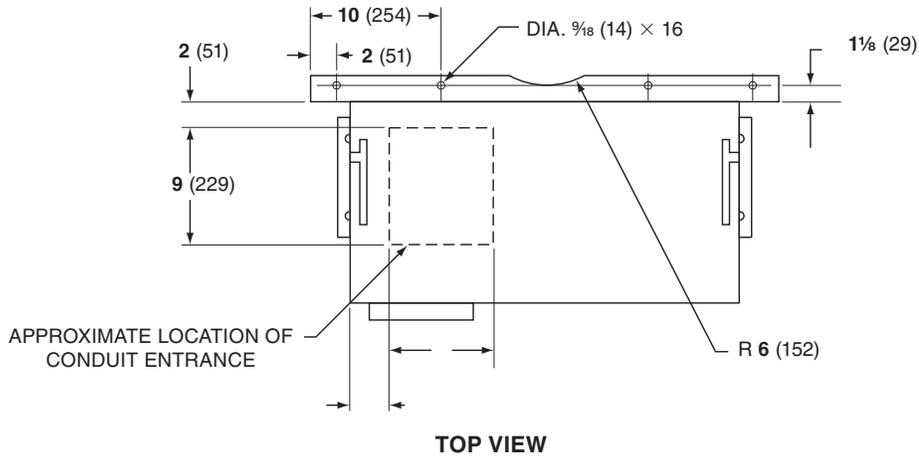


① Attach earth ground cable between the ground lug inside the low-voltage enclosure and the ground rod using copper cable of 4/0 or greater and less than 10 feet (305 cm) in length.

② Ground rod must be 25-ohm impedance or less.

Vault-Mounted Style Switchgear Low-Voltage Enclosure for Both Wall-Mounted and Floor-Mounted Tanks

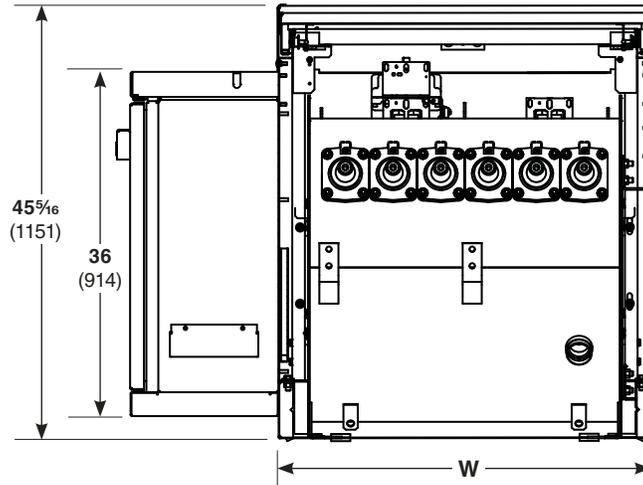
Dimensions in inches (mm)



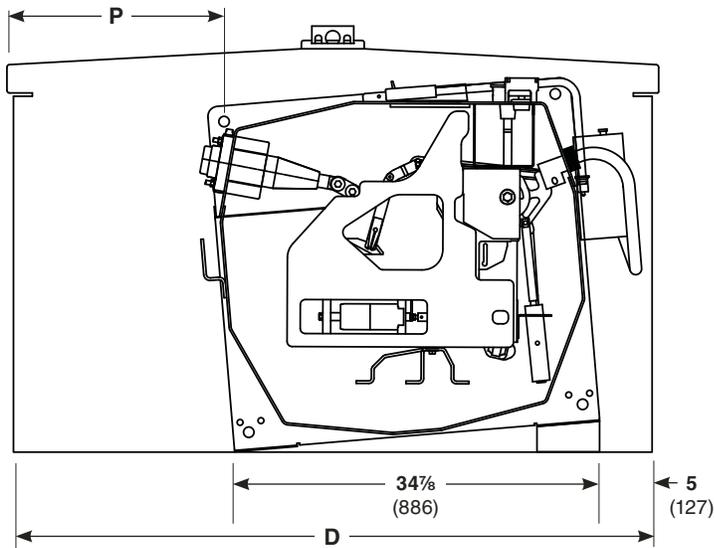
Pad-Mounted Style Switchgear with Low-Voltage Compartment

Models 201, 210, and 211 (Model 201 15.5 kV, 12.5 kA symmetrical shown. All dimensions apply to both Vista SF₆ and Vista Green switchgear.)

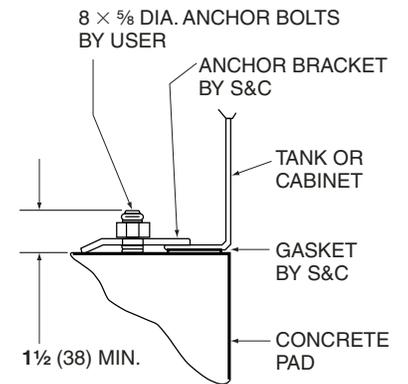
Dimensions in inches (mm)



TERMINATION VIEW

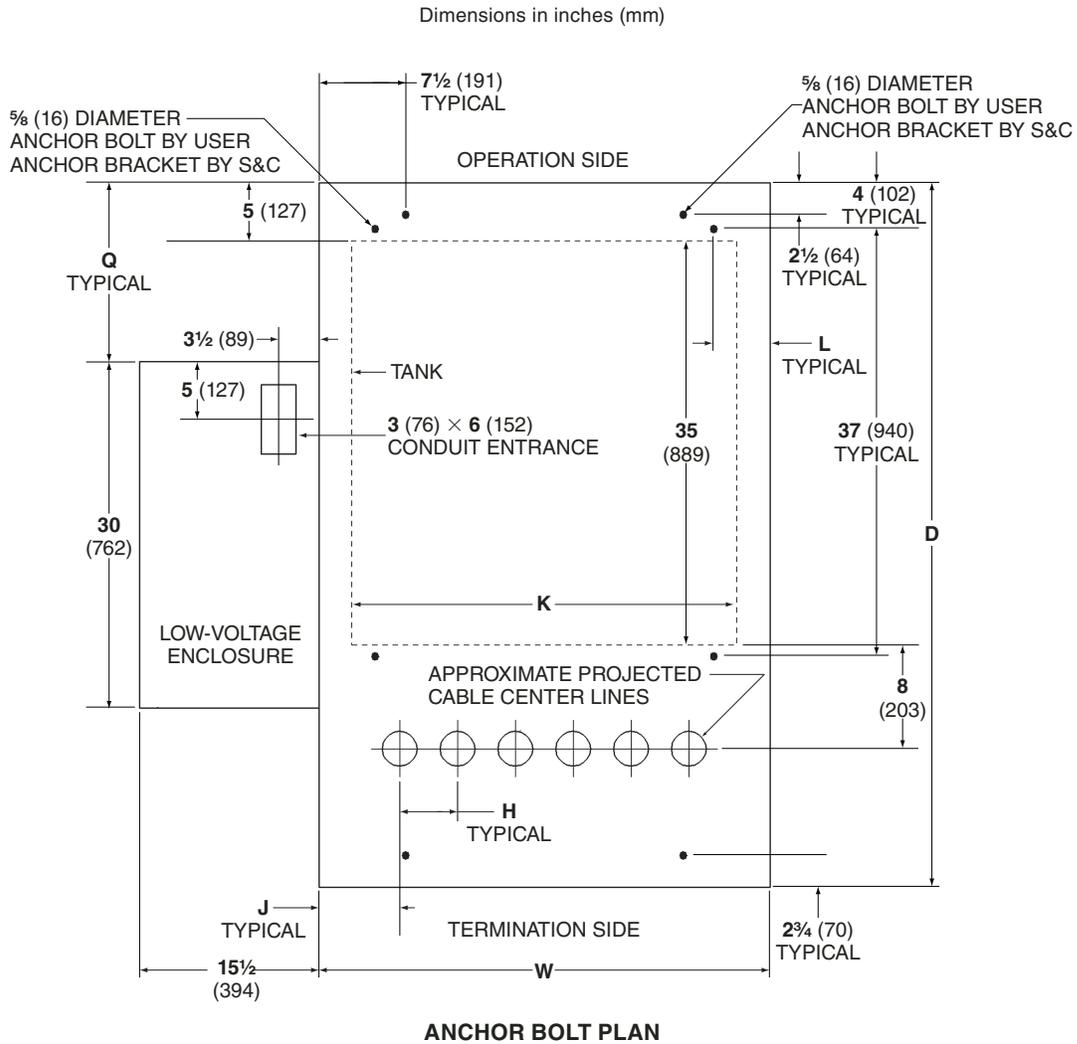


SIDE VIEW



ANCHOR BOLT DETAIL

Remote Supervisory Vista® and Vista® Green Underground Distribution Switchgear



Model	Ratings		D	H	J	K	L	P	Q	W
	kV, Max	Short-Circuit, Amperes, RMS, Sym.								
201 210 211	15.5	12 500	61 (1549)	5 (127)	7 (178)	32 ¹ / ₁₆ (833)	4 ¹ / ₂ (114)	19 ¹ / ₂ (495)	15 ¹ / ₂ (394)	39 (991)
		25 000	65 (1651)	5 (127)	38 ³ / ₁₆ (975)	55 ⁹ / ₁₆ (1411)	13 ³ / ₈ (333)	23 ¹ / ₂ (597)	17 ¹ / ₂ (445)	79 (2007)
	29	12 500	65 (1651)	5 (127)	7 (178)	32 ¹ / ₁₆ (833)	4 ¹ / ₂ (114)	23 ¹ / ₂ (597)	17 ¹ / ₂ (445)	39 (991)
		25 000	65 (1651)	5 ³ / ₄ (146)	33 ³ / ₄ (857)	55 ⁹ / ₁₆ (1411)	13 ³ / ₈ (333)	23 ¹ / ₂ (597)	17 ¹ / ₂ (445)	79 (2007)
	38	12 500	65 (1651)	5 ³ / ₄ (146)	7 ⁷ / ₁₆ (194)	38 ¹ / ₁₆ (989)	4 ¹ / ₂ (114)	23 ¹ / ₂ (597)	17 ¹ / ₂ (445)	44 (1118)
		25 000	65 (1651)	5 ³ / ₄ (146)	33 ³ / ₄ (857)	55 ⁹ / ₁₆ (1411)	13 ³ / ₈ (333)	23 ¹ / ₂ (597)	17 ¹ / ₂ (445)	79 (2007)

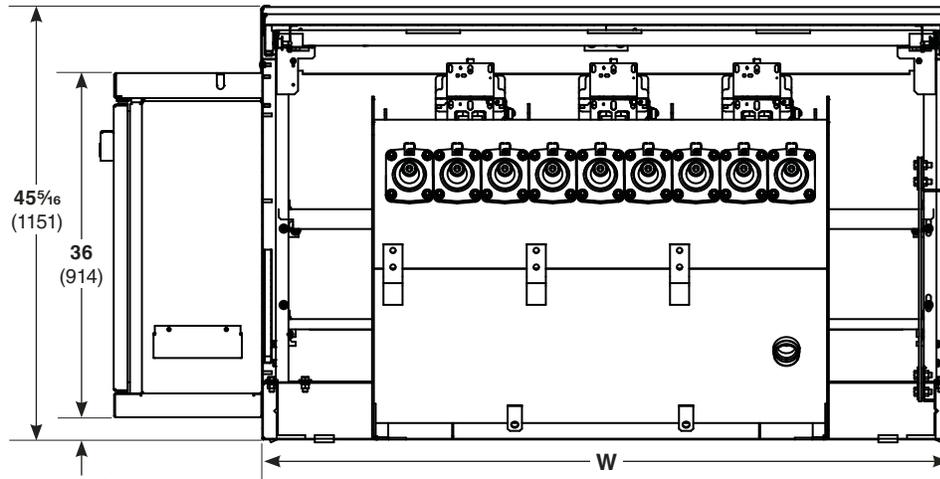
Remote Supervisory Vista® and Vista® Green Underground Distribution Switchgear

Pad-Mounted Style Switchgear with Low-Voltage Compartment

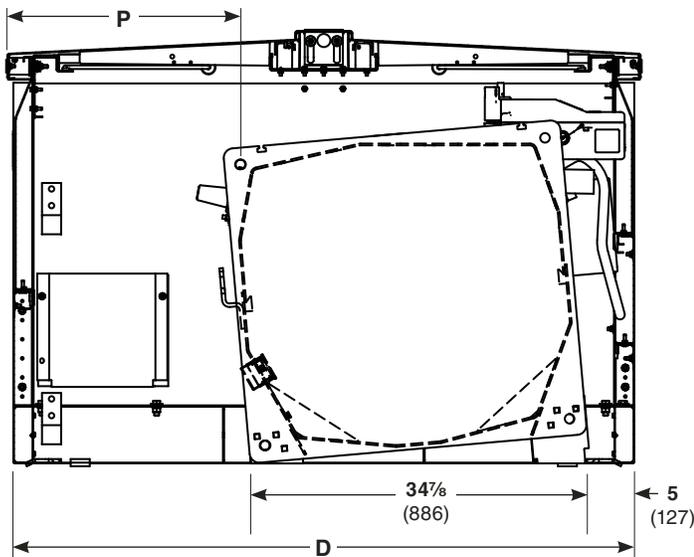
Models 320, 321, and 330 (Model 321 15.5 kV, 12.5 kA symmetrical shown.)

All dimensions apply to both Vista SF₆ and Vista Green switchgear.

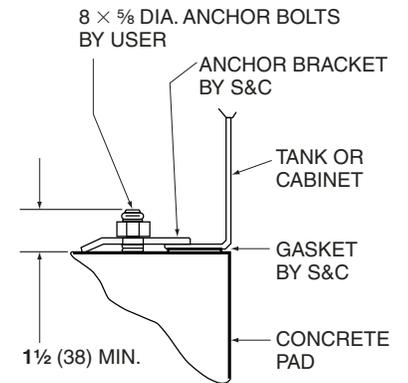
Dimensions in inches (mm)



TERMINATION VIEW



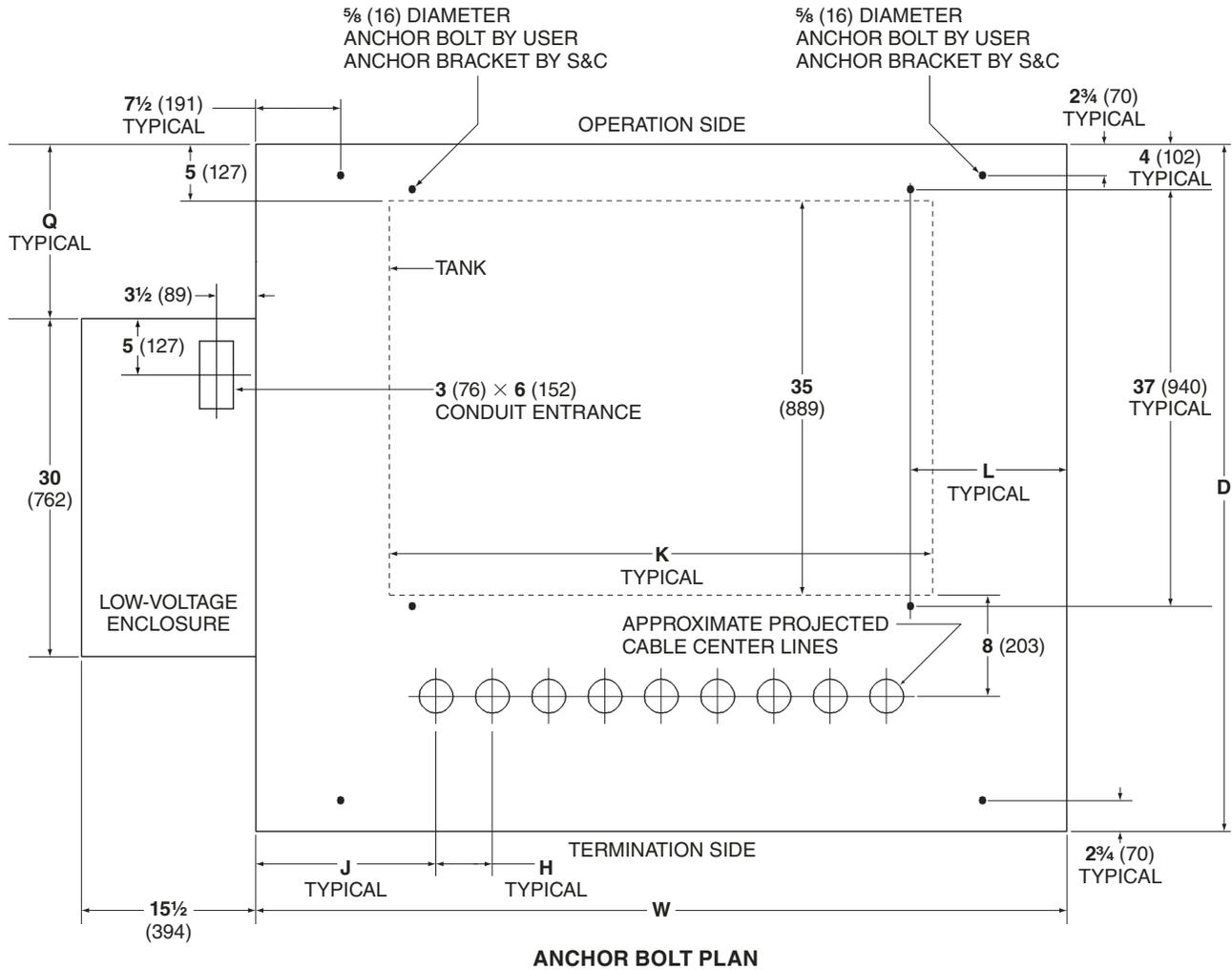
SIDE VIEW



ANCHOR BOLT DETAIL

Remote Supervisory Vista® and Vista® Green Underground Distribution Switchgear

Dimensions in inches (mm)



Model	Ratings		D	H	J	K	L	P	Q	W
	kV, Max	Short-Circuit, Amperes, RMS, Sym.								
320 321 330	15.5	12 500	61 (1549)	5 (127)	16 (406)	47 ¹³ / ₁₆ (1214)	13 ¹ / ₂ (343)	19 ¹ / ₂ (495)	15 ¹ / ₂ (394)	72 (1829)
		25 000	65 (1651)	5 (127)	23 ³ / ₈ (594)	55 ⁵ / ₁₆ (1411)	13 ³ / ₈ (333)	23 ¹ / ₂ (597)	17 ¹ / ₂ (445)	79 (2007)
	29	12 500	65 (1651)	5 (127)	16 (406)	47 ¹³ / ₁₆ (1214)	13 ¹ / ₂ (343)	23 ¹ / ₂ (597)	17 ¹ / ₂ (445)	72 (1829)
		25 000	65 (1651)	5 ³ / ₄ (146)	16 ¹ / ₂ (419)	55 ⁵ / ₁₆ (1413)	13 ³ / ₈ (333)	23 ¹ / ₂ (597)	17 ¹ / ₂ (445)	79 (2007)
	38	12 500	65 (1651)	5 ³ / ₄ (146)	16 ¹ / ₂ (419)	55 ⁵ / ₁₆ (1413)	13 ³ / ₈ (333)	23 ¹ / ₂ (597)	17 ¹ / ₂ (445)	79 (2007)
		25 000	65 (1651)	5 ³ / ₄ (146)	16 ¹ / ₂ (419)	55 ⁵ / ₁₆ (1413)	13 ³ / ₈ (333)	23 ¹ / ₂ (597)	17 ¹ / ₂ (445)	79 (2007)

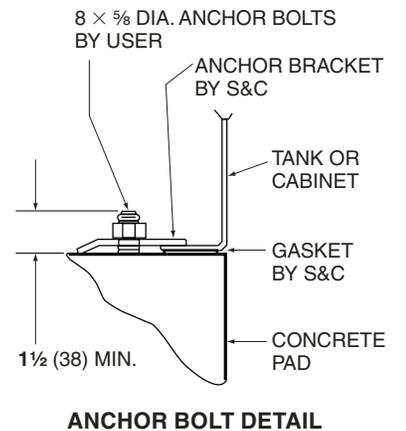
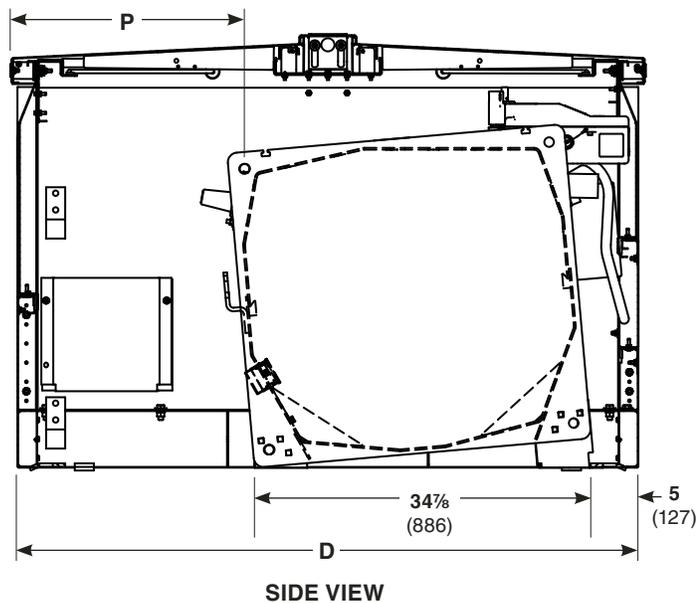
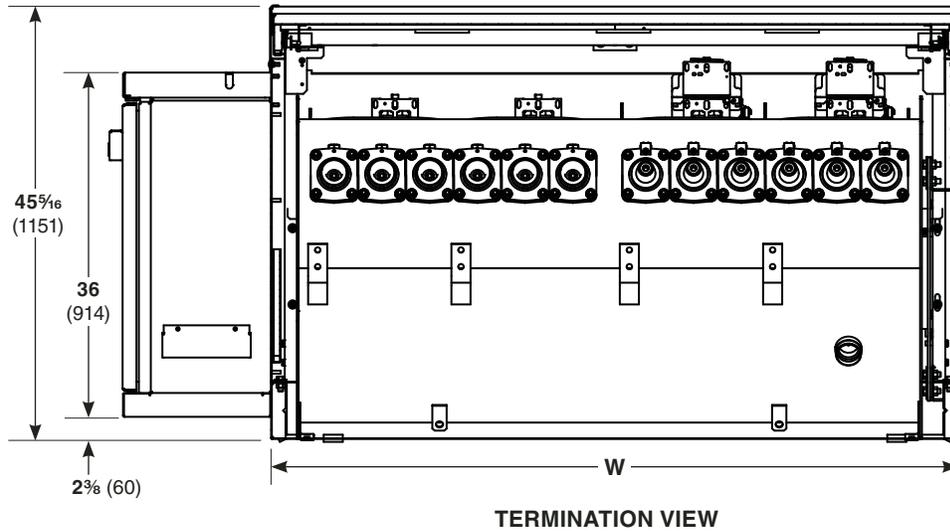
Remote Supervisory Vista® and Vista® Green Underground Distribution Switchgear

Pad-Mounted Style Switchgear with Low-Voltage Compartment

Models 413, 422, 431, and 440 (Model 422 15.5 kV, 12.5 kA symmetrical shown.)

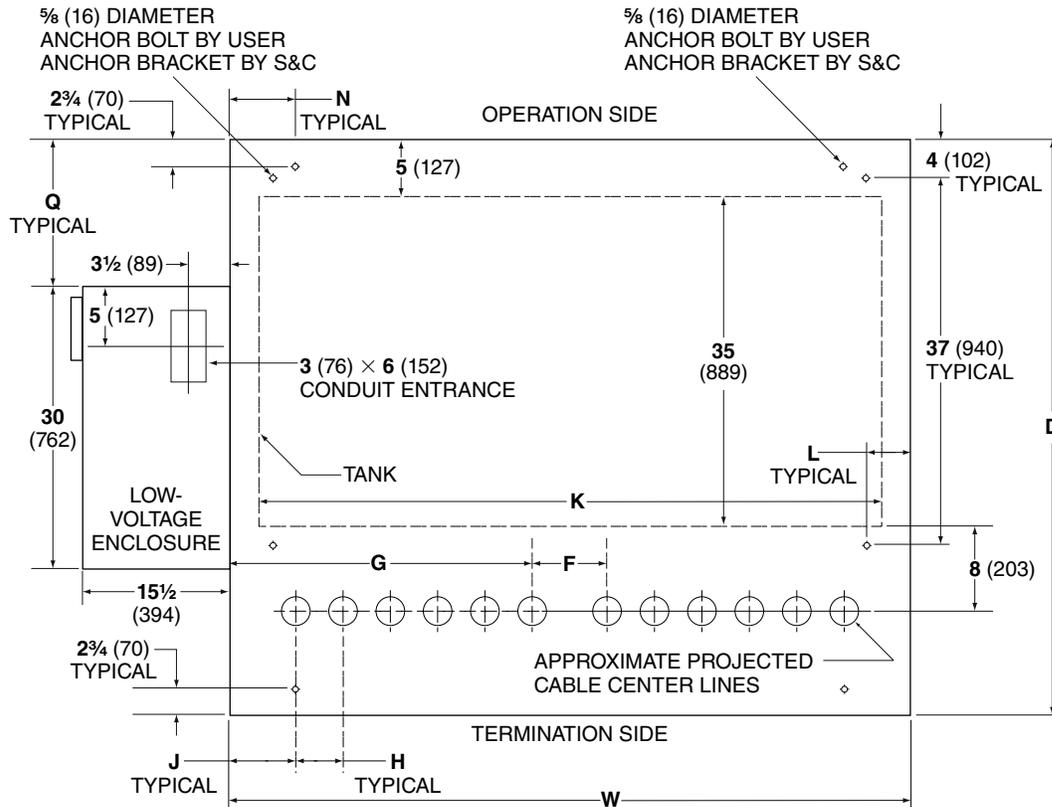
All dimensions apply to both Vista SF₆ and Vista Green switchgear.)

Dimensions in inches (mm)



Remote Supervisory Vista® and Vista® Green Underground Distribution Switchgear

Dimensions in inches (mm)



ANCHOR BOLT PLAN

Model	Ratings		D	F	G	H	J	K	L	N	P	Q	W
	kV, Max	Short-Circuit, Amperes, RMS, Sym.											
413 422 431 440	15.5	12 500	61 (1549)	7 5/8 (194)	32 3/16 (818)	5 (127)	7 3/8 (183)	65 7/16 (1662)	4 5/8 (117)	7 1/2 (191)	19 1/2 (495)	15 1/2 (394)	72 (1829)
		25 000	65 (1651)	7 5/8 (194)	32 3/16 (818)	5 (127)	10 1 1/16 (271)	65 7/16 (1662)	8 1/8 (206)	11 (279)	23 1/2 (597)	17 1/2 (445)	79 (2007)
	29	12 500	65 (1651)	7 5/8 (194)	32 3/16 (818)	5 (127)	7 3/8 (183)	65 7/16 (1662)	4 5/8 (117)	7 1/2 (191)	23 1/2 (597)	17 1/2 (445)	72 (1829)
		25 000	65 (1651)	NA	NA	5 3/4 (146)	7 7/8 (200)	72 1 3/16 (1849)	4 1/2 (114)	7 1/2 (191)	23 1/2 (597)	17 1/2 (445)	79 (2007)
	38	12 500	65 (1651)	NA	NA	5 3/4 (146)	7 7/8 (200)	72 1 3/16 (1849)	4 1/2 (114)	7 1/2 (191)	23 1/2 (597)	17 1/2 (445)	79 (2007)
		25 000	65 (1651)	NA	NA	5 3/4 (146)	7 7/8 (200)	72 1 3/16 (1849)	4 1/2 (114)	7 1/2 (191)	23 1/2 (597)	17 1/2 (445)	79 (2007)

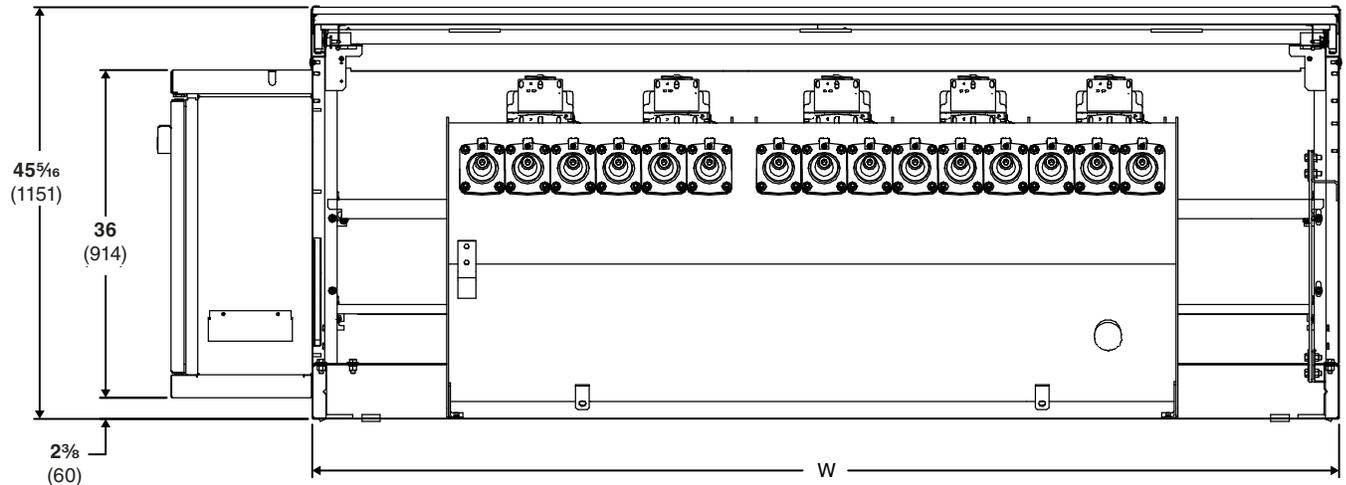
Remote Supervisory Vista® and Vista® Green Underground Distribution Switchgear

Pad-Mounted Style Switchgear with Low-Voltage Compartment

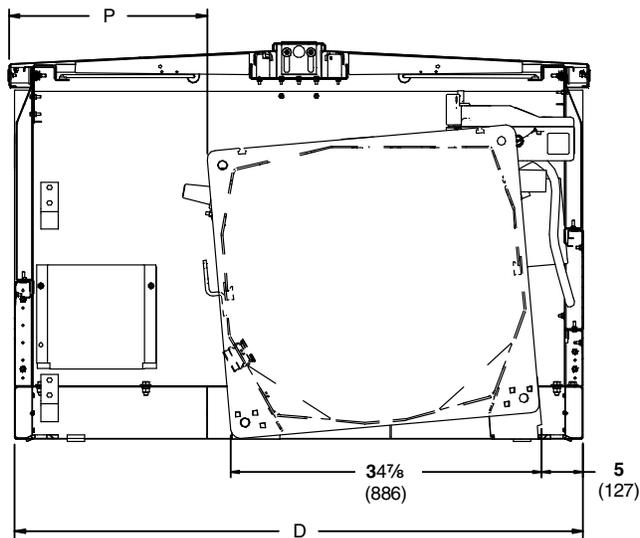
Models 514 and 523 (Model 514 15.5 kV, 12.5 kA symmetrical shown.

All dimensions apply to both Vista SF₆ and Vista Green switchgear.

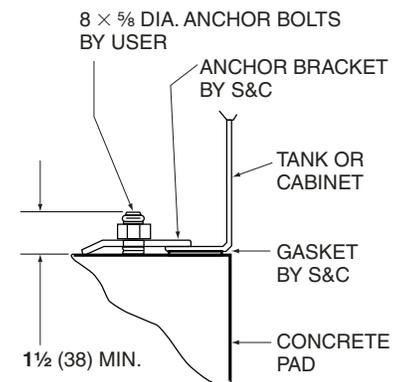
Dimensions in inches (mm)



TERMINATION VIEW



SIDE VIEW



ANCHOR BOLT DETAIL

Model	Ratings		D	F
	kV, Max	Short-Circuit, Amperes, RMS, Sym.		
514 523	15.5	12 500	61 (1549)	7% (194)
		25 000	65 (1651)	7% (194)
	29	12 500	65 (1651)	7% (194)
		25 000	65 (1651)	NA
	38	12 500	65 (1651)	NA
		25 000	65 (1651)	NA

Remote Supervisory Vista® and Vista® Green Underground Distribution Switchgear

Pad-Mounted Style Switchgear with Low-Voltage Compartment

Models 624 and 633 (Model 624 15.5 kV, 12.5 kA symmetrical shown.)

All dimensions apply to both Vista SF₆ and Vista Green switchgear.)

Dimensions in inches (mm)

