

**29 kV, Three-Phase, SF6, Multi-Purpose, Switchgear Remote Supervisory (Capable)**



**1. Scope**

This standard covers 29 kV, three-phase, SF6-insulated, multi-purpose, remote supervisory (capable) switchgear and related accessories.

This standard applies to the following Seattle City Light (SCL) stock numbers:

**Automated Switch Controls and Fiber Optic Transceiver**

# of Ways	Style	Pedestal LVE		Wall Mount LVE		Padmount LVE		Section
		Included	Provision Only	Included	Provision Only	Included	Provision Only	
3	Wet	012704	013246	013725	013726	-	-	10.1
4	Wet	012885	013247	013727	013697	-	-	10.2
5	Wet	012703	013248	013728	013698	-	-	10.3
5	Padmount	-	-	-	-	012711 <sup>a</sup>	013244 <sup>a</sup>	10.4
6	Wet	012695	013249	013729	013696	-	-	10.5
6	Padmount	-	-	-	-	012710 <sup>a</sup>	013245 <sup>a</sup>	10.6
6	Padmount	-	-	-	-	013730 <sup>b</sup>	-	10.6

Notes:

- a. LVE is configured right-handed
- b. LVE is configured left-handed

**Accessories**

Stock No.	Description	Section
013348	Portable remote control	11.1
013350	Control cable, 50 ft	11.2
013743	Motor control battery pack (white jacketed)	11.3
013744	5802 control battery pack (black case)	11.4

*John Shipek*

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*Darnell Cola*

## 2. Application

This switchgear is intended for use on 26.4 kV, 4-wire, three-phase, 60 Hz, solidly grounded, wye-connected systems where the available fault current is less than 25 kA rms symmetrical.

All switches are provided with viewing windows to observe open gaps, ground positions, ground bus, and fault trip indicators (if so equipped).

Switchgear is not furnished with batteries. Batteries are ordered as separate stock numbers.

See SCL 9202.17 for detailed application information.

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## 3. Industry Standards

Except as modified by this standard, switchgear shall meet the applicable requirements of the latest revisions of:

**C37.74**; IEEE Standard Requirements for Subsurface, Vault, and Padmounted Load-Interrupter Switchgear and Fused Load-Interrupter Switchgear for Alternating Current Systems up to 38 kV

**IEEE C57.12.28**; Pad-Mounted Equipment—Enclosure Integrity

**IEC 298**; Appendix AA – 1 - 52 kV A.C. Metal Enclosed Switchgear and Controlgear

**IEEE C37.112**; Standard Inverse-Time Characteristic Equations for Overcurrent Relays

**IEEE 386**; Standard for Separable Insulated Connector Systems for Power Distribution Systems above 600 V

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## 4. Construction

### 4.1 General

The switchgear assembly shall be integrally designed and produced by the manufacturer of the individual switch components. The manufacturer shall be solely responsible for the performance of the individual switch components as well as the assembly.

All switchgear components shall be factory assembled and tested.

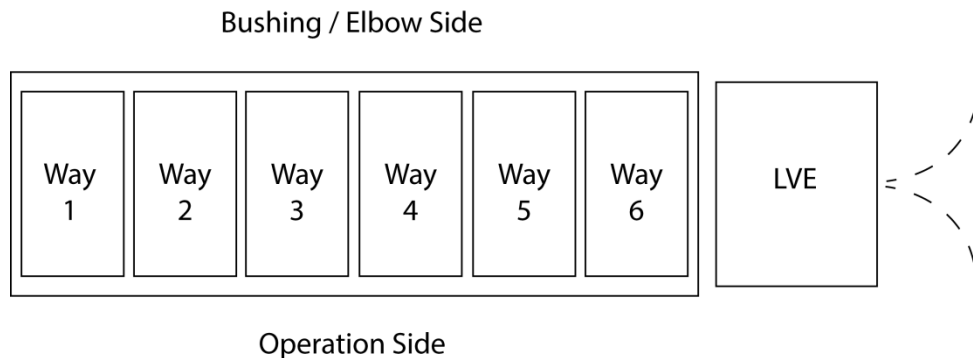
For padmount-style switches, the manufacturer's standard configuration is to permanently mount the LVE to the right-hand side of switch enclosure (when facing the operation side of the switch). See Figure 4.1. An LVE is also determined to be right-handed if it is mounted to the switch enclosure next to the last way, for example, Way 6 for a Vista 660 or Way 4 for a Vista 440. Unless specified otherwise, LVEs will be configured right-handed.

Switchgear shall be furnished without motor control or 5802 control battery packs.

For the purpose of this standard the control module designations 5802 and 6802 are used interchangeably.

Battery connection wiring shall be color coded (red for positive, black for negative) or identified by some other durable means.

**Figure 4.1. Padmount Switch with Right-hand LVE**



Pedestal type LVEs are installed on an included 12-in high skirt.

#### 4.2 Design Changes

The manufacturer shall inform SCL in writing of all design changes that could affect the understood or published capabilities of the switchgear.

#### 4.3 Quality

Switchgear design and construction shall be high quality and provide safe and reliable operation with minimal maintenance over the life of the product.

#### 4.4 Switch Ratings

Switchgear shall have the following basic electrical ratings:

Maximum voltage	29 kV, rms
Number of phases	3
Power frequency	60 Hz
Lightning-impulse withstand voltage (BIL)	125 kV, crest
Short-time (1 s) withstand current	25 kA, rms symmetrical
Momentary (10 cycles) withstand current	40 kA, rms asymmetrical

### 5. Nameplate

Each switch shall be provided with a nameplate that meets the requirements of IEEE C37.74.

Each switch shall be provided with a label that states the amount of SF6 gas (in pounds) contained within the unit's tank.

### 6. Documentation

One instruction book shall be securely attached to each switch in an ultraviolet light-resistant envelope.

The manufacturer shall supply PDF files of all relevant, switch-specific documentation, such as:

- Installation instructions
- Operation and maintenance instructions
- Outline drawings
- Wiring and schematic drawings

## 7. Packaging

Each switch shall be packaged in its own crate and delivered on its own pallet.

The pallet shall be compatible with either a pallet jack or forklift.

The two openings for the pallet jack or forklift shall have a minimum height of 4 in and width of 21 in.

Crate and pallet, including slates, blocking, and wedges, shall be unpainted wood.

The outside of each crate shall be permanently and clearly marked with:

- Manufacturer name or symbol
- SCL purchase order number
- SCL stock number
- Manufacturer equipment serial number

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## 8. Shipping

### 8.1 Switches and Low Voltage Enclosures (LVEs)

Switches and LVEs may be delivered on enclosed, covered, or flatbed trucks.

Switches and LVEs delivered on a flatbed truck shall be side-loaded. Because Washington State law requires a 10-in minimum side board when driving a forklift or pallet jack onto the bed of a truck or trailer, most flatbed trucks or trailers must be side-loaded to ease off-loading.

### 8.2 Batteries

Battery packs shall be shipped fully charged.

Each battery pack shall be individually packaged to prevent damage during shipping, inside storage, and handling prior to use.

Each battery pack shall be marked with:

- S&C Electric
- Motor Control Battery Pack (aka Vista Battery Assembly) or 5802 Control Battery Pack (aka Remote Supervisory Battery Pack) as appropriate
- Date of last charge

Each battery pack shipping container shall be marked with:

- S&C Electric
- Product description
- SCL purchase order number

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## 9. Issuance

Stock Unit: EA

## 10. Detailed Requirements

### 10.1 3-Way, Wet Vault Style Switch

Stock No.	S&C Electric Co. Vista Switch Catalog No.
012704	863303-A1A2A3-B1B2B3-D1D2D3-E-G-J45-L2-M1-V4-O-R12-S101
013246	863303-A1A2A3-B1B2B3-D1D2D3-E-G-J45-L2-M1-V4-O-R12-S103
013725	863303-A1A2A3-B1B2B3-D1D2D3-E-G-J45-L2-M1-V4-O-R12-S104
013726	863303-A1A2A3-B1B2B3-D1D2D3-E-G-J45-L2-M1-V4-O-R12-S105

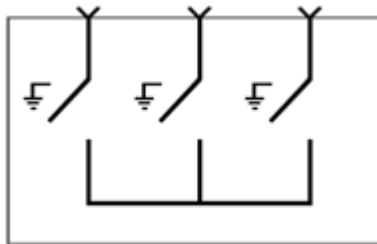
where:

86 =	25 kA rms symmetrical short-circuit rating
330 =	Three-way, three load interrupting ways, zero fault interrupting ways
3 =	29 kV voltage rating, maximum
A1A2A3 =	Motor operator package on all three ways
B1B2B3 =	Three-phase current sensing on all three ways
D1D2D3 =	Three-phase line-to-ground voltage sensing on each of three ways (1, 2, and 3)
E =	Stainless steel LVE, olive green finish
G =	Ground position push button control
J45 =	Submersible control cable that connects switch to LVE, 45 ft length (in place of standard 25 ft length)
L2 =	Potential indication with test feature with provision for low-voltage phasing
M1 =	600 A bushings (without studs) at all terminals
V4 =	Wet vault mounted style. Includes stainless steel tank, submersible wiring, and submersible control cable for attachment to LVE.
O =	Two-hole ground pad, one per way, located below bushings or bushing wells (in lieu of standard one ground pad per tank)
R12 =	Remote low-pressure alarm, with wires terminated in LVE that is furnished with a terminal block for customer connections
S101 =	Switch: auxiliary contacts on all ways. Auxiliary contacts in tank connected to the 5802 automated switch control(s) with provision for temporary disconnection when testing motor operators. Connections shall be waterproof for submersible application. LVE: special 48-in tall pedestal version includes an appropriate quantity of automatic switch control units to accommodate all motor operators. Includes one H&L single-mode, fiber optic transceiver. Includes remote low pressure alarm LED indicator, supplied with open-close-ground switch control.
S103 =	Switch: auxiliary contacts on all ways. Auxiliary contacts in tank connected to a terminal strip in the LVE for future connection to automated switch control(s) with provision for temporary disconnection when testing motor operators. Connections shall be waterproof for submersible application. LVE: special 48-in tall pedestal version with space for future mounting of automatic switch control units to accommodate all motor operators. Includes space for future mounting of one transceiver. Includes remote low-pressure alarm LED indicator supplied with open-close-ground switch control. Enclosure includes a plate that is drilled and wired to accommodate future mountings.
S104 =	Switch: auxiliary contacts on all ways. Auxiliary contacts in tank connected to the 5802 automated switch control(s) with provision for temporary disconnection when testing motor operators. Connections shall be waterproof for submersible application. LVE: 36-in tall wall-mount version includes appropriate quantity of automatic switch control units to accommodate all motor operators. Includes one H&L single-mode, fiber optic transceiver. Includes remote low pressure alarm LED indicator, supplied with open-close-ground switch control.

S105 = Switch: auxiliary contacts on all ways. Auxiliary contacts in tank connected to a terminal strip in the LVE for future connection to automated switch control(s) with provision for temporary disconnection when testing motor operators. Connections shall be waterproof for submersible application.

LVE: 36-in tall wall-mount version with space for future mounting of automatic switch control units to accommodate all motor operators. Includes space for future mounting of one transceiver. Includes remote low-pressure alarm LED indicator supplied with open-close-ground switch control. Enclosure includes a plate that is drilled and wired to accommodate future mountings.

**Fig. 10.1. 3-Way, Wet Vault Style Switch**



## 10.2 4-Way, Wet Vault Style Switch

Stock No.	S&C Electric Co. Vista Switch Catalog No.
012885	864403- A1A2A3A4-B1B2B3B4-D1D2D3D4-E-G-J45-L2-M1-V4-R12-O-S103
013247	864403- A1A2A3A4-B1B2B3B4-D1D2D3D4-E-G-J45-L2-M1-V4-R12-O-S102
013727	864403- A1A2A3A4-B1B2B3B4-D1D2D3D4-E-G-J45-L2-M1-V4-R12-O-S100
013697	864403- A1A2A3A4-B1B2B3B4-D1D2D3D4-E-G-J45-L2-M1-V4-R12-O-S101

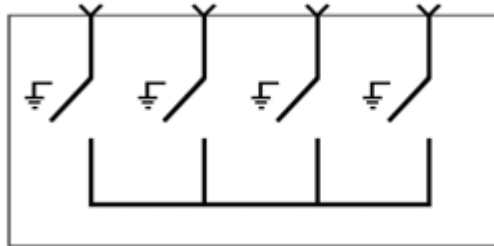
where:

86 =	25 kA rms symmetrical short-circuit rating
440 =	Four-way, four load interrupting ways, zero fault interrupting ways
3 =	29 kV voltage rating, maximum
A1A2A3A4 =	Motor operator package on all four ways
B1B2B3B4 =	Three-phase current sensing on all four ways
D1D2D3D4 =	Three-phase line-to-ground voltage sensing on each of four ways (1, 2, 3, and 4)
E =	Stainless steel LVE, olive green finish
G =	Ground position push button control
J45 =	Submersible control cable that connects switch to LVE, 45-ft length (in place of standard 25-ft length)
L2 =	Potential indication with test feature with provision for low-voltage phasing
M1 =	600 A bushings (without studs) at all terminals
V4 =	Wet vault mounted style. Includes stainless steel tank, submersible wiring, and submersible control cable for attachment to LVE.
R12 =	Remote low-pressure alarm, with wires terminated in LVE that is furnished with a terminal block for customer connections
O =	Two-hole ground pad, one per way, located below bushings or bushing wells (in lieu of standard one ground pad per tank)
S103 =	Switch: auxiliary contacts on all ways. Auxiliary contacts in tank connected to the automated switch control(s) with provision for temporary disconnection when testing motor operators. Connections shall be waterproof for submersible application. LVE: special 48-in tall pedestal version includes appropriate quantity of automatic switch control units to accommodate all motor operators. Includes one H&L single-mode, fiber optic transceiver. Includes remote low pressure alarm LED indicator supplied with open-close-ground switch control.
S102 =	Switch: auxiliary contacts on all ways. Auxiliary contacts in tank connected to a terminal strip in the LVE for future connection to automated switch control(s) with provision for temporary disconnection when testing motor operators. Connections shall be waterproof for submersible application. LVE: special 48-in tall pedestal version with space for future mounting of automatic switch control units to accommodate all motor operators. Includes space for future mounting of one transceiver. Includes remote low-pressure alarm LED indicator supplied with open-close-ground switch control. Enclosure includes a plate that is drilled and wired to accommodate future mountings.
S100 =	Switch: auxiliary contacts on all ways. Auxiliary contacts in tank connected to the 5802 automated switch control(s) with provision for temporary disconnection when testing motor operators. Connections shall be waterproof for submersible application. LVE: 36-in tall wall-mount version includes appropriate quantity of automatic switch control units to accommodate all motor operators. Includes one H&L single-mode, fiber optic transceiver. Includes remote low pressure alarm LED indicator, supplied with open-close-ground switch control.

S101 = Switch: auxiliary contacts on all ways. Auxiliary contacts in tank connected to a terminal strip in the LVE for future connection to automated switch control(s) with provision for temporary disconnection when testing motor operators. Connections shall be waterproof for submersible application.

LVE: 36-in tall wall-mount version with space for future mounting of automatic switch control units to accommodate all motor operators. Includes space for future mounting of one transceiver. Includes remote low-pressure alarm LED indicator supplied with open-close-ground switch control. Enclosure includes a plate that is drilled and wired to accommodate future mountings.

**Fig. 10.2. 4-Way, Wet Vault Style Switch**





### 10.3 5-Way, Wet Vault Style Switch

Stock No.	S&C Electric Co. Vista Switch Catalog No.
012703	865503-A1A2A3A4A5-B1B2B3B4B5-D1D2D3D4D5-E-G-J45-L2-M1-V4-R12-O-S104
013248	865503-A1A2A3A4A5-B1B2B3B4B5-D1D2D3D4D5-E-G-J45-L2-M1-V4-R12-O-S103
013728	865503-A1A2A3A4A5-B1B2B3B4B5-D1D2D3D4D5-E-G-J45-L2-M1-V4-R12-O-S105
013698	865503-A1A2A3A4A5-B1B2B3B4B5-D1D2D3D4D5-E-G-J45-L2-M1-V4-R12-O-S102

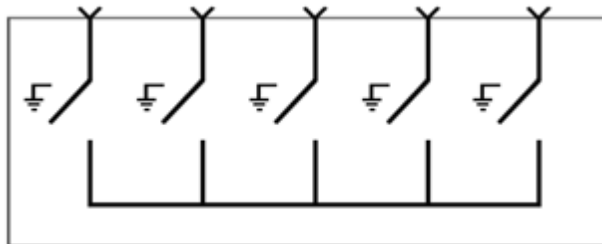
where:

86 =	25 kA rms symmetrical short-circuit rating
550 =	Five-way, five load interrupting ways, zero fault interrupting ways
3 =	29 kV voltage rating, maximum
A1A2A3A4A5 =	Motor operator package on all five ways
B1B2B3B4B5 =	Three-phase current sensing on all five ways
D1D2D3D4D5 =	Three-phase line-to-ground voltage sensing on each of five ways (1, 2, 3, 4, and 5)
E =	Stainless steel LVE, olive green finish
G =	Ground position push button control
J45 =	Submersible control cable that connects switch to LVE, 45 ft length (in place of standard 25-ft length)
L2 =	Potential indication with test feature with provision for low-voltage phasing
M1 =	600 A bushings (without studs) at all terminals
V4 =	Wet vault-mounted style. Includes stainless steel tank, submersible wiring, and submersible control cable for attachment to LVE
R12 =	Remote low-pressure alarm, with wires terminated in LVE that is furnished with a terminal block for customer connections
O =	Two-hole ground pad, one per way, located below bushings or bushing wells (in lieu of standard one ground pad per tank)
S104 =	Switch: auxiliary contacts on all ways. Auxiliary contacts in tank connected to the automated switch control(s) with provision for temporary disconnection when testing motor operators. Connections shall be waterproof for submersible application. LVE: special 60-in tall pedestal version includes appropriate quantity of automatic switch control units to accommodate all motor operators. Includes one H&L single-mode, fiber optic transceiver. Includes remote low pressure alarm LED indicator, supplied with open-close-ground switch control.
S103 =	Switch: auxiliary contacts on all ways. Auxiliary contacts in tank connected to a terminal strip in the LVE for future connection to automated switch control(s) with provision for temporary disconnection when testing motor operators. Connections shall be waterproof for submersible application. LVE: special 60-in tall pedestal version with space for future mounting of automatic switch control units to accommodate all motor operators. Includes space for future mounting of one transceiver, includes remote low-pressure alarm LED indicator supplied with open-close-ground switch control. Enclosure includes plate drilled and wired to accommodate future mountings.
S105 =	Switch: auxiliary contacts on all ways. Auxiliary contacts in tank connected to the 5802 automated switch control(s) with provision for temporary disconnection when testing motor operators. Connections shall be waterproof for submersible application. LVE: 48-in tall wall-mount version includes appropriate quantity of automatic switch control units to accommodate all motor operators. Includes one H&L single-mode, fiber optic transceiver. Includes remote low pressure alarm LED indicator, supplied with open-close-ground switch control.

S102 = Switch: auxiliary contacts on all ways. Auxiliary contacts in tank connected to a terminal strip in the LVE for future connection to automated switch control(s) with provision for temporary disconnection when testing motor operators. Connections shall be waterproof for submersible application.

LVE: 48-in tall wall-mount version with space for future mounting of automatic switch control units to accommodate all motor operators. Includes space for future mounting of one transceiver. Includes remote low-pressure alarm LED indicator supplied with open-close-ground switch control. Enclosure includes a plate that is drilled and wired to accommodate future mountings.

**Fig. 10.3. 5-Way Wet Vault Style Switch**



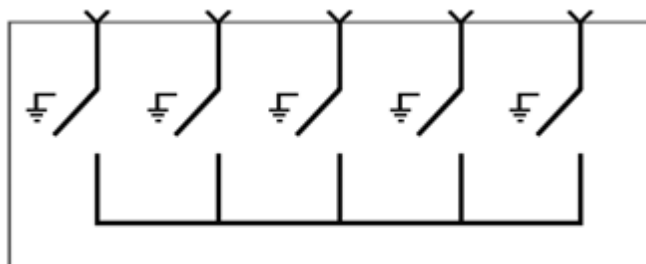
#### 10.4 5-Way, Padmount Style Switch

Stock No.	S&C Electric Co. Vista Switch Catalog No.
012711	865503-A1A2A3A4A5-B1B2B3B4B5-D1D2D3D4D5-G-L2-M1-O-R11-P16-S106
013244	865503-A1A2A3A4A5-B1B2B3B4B5-D1D2D3D4D5-G-L2-M1-O-R11-P16-S107

where:

86 =	25 kA rms symmetrical short-circuit rating
550 =	Five-way, five load interrupting ways, zero fault interrupting ways
3 =	29 kV voltage rating, maximum
A1A2A3A4A5 =	Motor operator package on all five ways
B1B2B3B4B5 =	Three-phase current sensing on all five ways
D1D2D3D4D5 =	Phase line-to-ground voltage sensing on each of five ways (1, 2, 3, 4, and 5)
G =	Ground position push button control
L2 =	Potential indication with test feature with provision for low-voltage phasing
M1 =	600 A bushings (without studs) at all terminals
O =	Two-hole ground pad, one per way, located below bushings or bushing wells (in lieu of standard one ground pad per tank)
R11 =	Remote low-pressure alarm, with wires terminated in LVE that is furnished with a terminal block for customer connections
P16 =	Pad-mounted style, stainless steel outer enclosure and low-voltage compartment, olive green finish
S106 =	Switch: auxiliary contacts on all ways. Auxiliary contacts in tank connected to the automated switch control(s) with provision for temporary disconnection when testing motor operators. Connections shall be waterproof for submersible application. LVE: special 48-in tall version with the LVE configured right-handed, includes appropriate quantity of automatic switch control units to accommodate all motor operators. Includes one H&L single-mode, fiber optic transceiver. Includes remote low-pressure alarm LED indicator supplied with open-close-ground switch control.
S107 =	Switch: auxiliary contacts on all ways. Auxiliary contacts in tank connected to a terminal strip in the LVE for future connection to automated switch control(s) with provision for temporary disconnection when testing motor operators. Connections shall be waterproof for submersible application. LVE: special 48-in tall version with the LVE configured right-handed, includes space for future mounting of automatic switch control units to accommodate all motor operators. Includes space for future mounting of one transceiver. Includes remote low pressure alarm LED indicator supplied with open-close-ground switch control. Enclosure includes plate drilled and wired to accommodate future mountings.

**Fig. 10.4. 5-Way, Padmount Style Switch**



### 10.5 6-Way, Wet Vault Style Switch

Stock No.	S&C Electric Co. Vista Switch Catalog No.
012695	866603-A1A2A3A4A5A6-B1B2B3B4B5B6-D1D2D3D4D5D6-E-G-J45-L2-M1-V4-O-R12-S101
013249	866603-A1A2A3A4A5A6-B1B2B3B4B5B6-D1D2D3D4D5D6-E-G-J45-L2-M1-V4-O-R12-S105
013729	866603-A1A2A3A4A5A6-B1B2B3B4B5B6-D1D2D3D4D5D6-E-G-J45-L2-M1-V4-O-R12-S109
013696	866603-A1A2A3A4A5A6-B1B2B3B4B5B6-D1D2D3D4D5D6-E-G-J45-L2-M1-V4-O-R12-S108

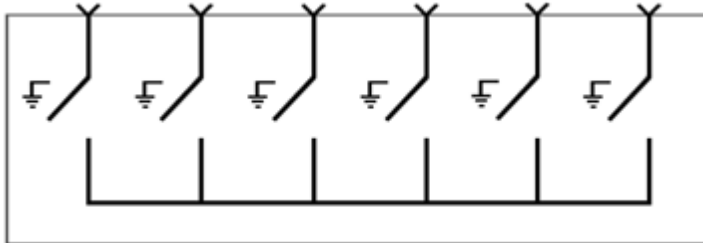
where:

86 =	25 kA rms symmetrical short-circuit rating
660 =	Six-way, six load interrupting ways, zero fault interrupting ways
3 =	29 kV voltage rating, maximum
A1A2A3A4A5A6 =	Motor operator package on all six ways
B1B2B3B4B5B6 =	Three-phase current sensing on all six ways
D1D2D3D4D5D6 =	Three-phase line-to-ground voltage sensing on each of six ways (1, 2, 3, 4, 5, and 6)
E =	Stainless steel LVE, olive green finish
G =	Ground position push button control
J45 =	Submersible control cable that connects switch to LVE, 45-ft length (in place of standard 25-ft length)
L2 =	Potential indication with test feature with provision for LVE
M1 =	600 A bushings (without studs) at all terminals
V4 =	Wet vault-mounted style. Includes stainless steel tank, submersible wiring, and submersible control cable for attachment to LVE
O =	Two-hole ground pad, one per way, located below bushings or bushing wells (in lieu of standard one ground pad per tank)
R12 =	Remote low-pressure alarm with wires routed on tank for future customer connections
S101 =	Switch: auxiliary contacts on all ways. Auxiliary contacts in tank connected to the automated switch control(s) with provision for temporary disconnection when testing motor operators. Connections shall be waterproof for submersible application. LVE: special 60-in tall pedestal version includes appropriate quantity of automatic switch control units to accommodate all motor operators. Includes one H&L single-mode, fiber optic transceiver. Includes remote low-pressure alarm LED indicator, supplied with open-close-ground switch control.
S105 =	Switch: auxiliary contacts on all ways. Auxiliary contacts in tank connected to a terminal strip in the LVE for future connection to automated switch control(s) with provision for temporary disconnection when testing motor operators. Connections shall be waterproof for submersible application. LVE: special 60-in tall pedestal version with space for future mounting of automatic switch control units to accommodate all motor operators. Includes space for future mounting of one transceiver. Includes remote low-pressure alarm LED indicator supplied with open-close-ground switch control. Enclosure includes plate drilled and wired to accommodate future mountings.
S109 =	Switch: auxiliary contacts on all ways. Auxiliary contacts in tank connected to the 5802 automated switch control(s) with provision for temporary disconnection when testing motor operators. Connections shall be waterproof for submersible application. LVE: 48-in tall wall-mount version includes appropriate quantity of automatic switch control units to accommodate all motor operators. Includes one H&L single-mode, fiber optic transceiver. Includes remote low pressure alarm LED indicator, supplied with open-close-ground switch control.

S108 = Switch: auxiliary contacts on all ways. Auxiliary contacts in tank connected to a terminal strip in the LVE for future connection to automated switch control(s) with provision for temporary disconnection when testing motor operators. Connections shall be waterproof for submersible application.

LVE: 48-in tall wall-mount version with space for future mounting of automatic switch control units to accommodate all motor operators. Includes space for future mounting of one transceiver. Includes remote low-pressure alarm LED indicator supplied with open-close-ground switch control. Enclosure includes a plate that is drilled and wired to accommodate future mountings.

**Fig. 10.5. 6-Way Wet Vault Style Switch**



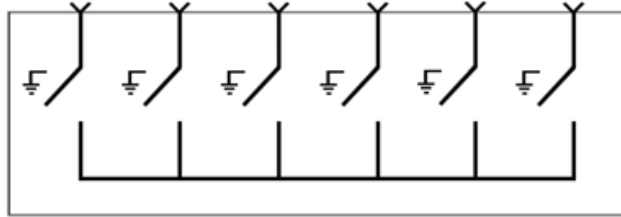
### 10.6 6-Way, Padmount Style Switch

Stock No.	S&C Electric Co. Vista Switch Catalog No.
012710	866603-A1A2A3A4A5A6-B1B2B3B4B5B6-D1D2D3D4D5D6-G-L2-M1-O-R11-P16-S102
013730	866603-A1A2A3A4A5A6-B1B2B3B4B5B6-D1D2D3D4D5D6-G-L2-M1-O-R11-P16-S103
013245	866603-A1A2A3A4A5A6-B1B2B3B4B5B6-D1D2D3D4D5D6-G-L2-M1-O-R11-P16-S107

where:

86 =	25 kA rms symmetrical short-circuit rating
660 =	Six-way, six load interrupting ways, zero fault interrupting ways
3 =	29 kV voltage rating, maximum
A1A2A3A4A5A6 =	Motor operator package on all six ways
B1B2B3B4B5B6 =	Three-phase current sensing on all six ways
D1D2D3D4D5D6 =	Three-phase line-to-ground voltage sensing on each of six ways (1, 2, 3, 4, 5, and 6)
G =	Ground position push button control
L2 =	Potential indication with test feature with provision for low-voltage phasing
M1 =	600 A bushings (without studs) at all terminals
O =	Two-hole ground pad, one per way, located below bushings or bushing wells (in lieu of standard one ground pad per tank)
R11 =	Remote low-pressure alarm, with wires terminated in LVE that is furnished with a terminal block for customer connections
P16 =	Pad mounted-style, stainless steel outer enclosure and low-voltage compartment, olive green finish
S102 =	Switch: auxiliary contacts on all ways. Auxiliary contacts in tank connected to the automated switch control(s) with provision for temporary disconnection when testing motor operators. Connections shall be waterproof for submersible application. LVE: special 48-in tall version with LVE configured right-handed, includes appropriate quantity of automatic switch control units to accommodate all motor operators. Includes one H&L single-mode, fiber optic transceiver. Includes remote low-pressure alarm LED indicator, supplied with open-close-ground switch control.
S103 =	Switch: auxiliary contacts on all ways. Auxiliary contacts in tank connected to the automated switch control(s) with provision for temporary disconnection when testing motor operators. Connections shall be waterproof for submersible application. LVE: special 48-in tall version with the LVE configured left-handed, includes appropriate quantity of automatic switch control units to accommodate all motor operators. Includes one H&L single-mode, fiber optic transceiver. Includes remote low-pressure alarm LED indicator supplied with open-close-ground switch control.
S107 =	Switch: auxiliary contacts on all ways. Auxiliary contacts in tank connected to a terminal strip in the LVE for future connection to automated switch control(s) with provision for temporary disconnection when testing motor operators. Connections shall be waterproof for submersible application. LVE: special 48-in tall version with the LVE configured right-handed, includes space for future mounting of automatic switch control units to accommodate all motor operators. Includes space for future mounting of one transceiver. Includes remote low pressure alarm LED indicator supplied with open-close-ground switch control. Enclosure includes plate drilled and wired to accommodate future mountings

**Fig. 10.6. 6-Way, Padmount Style Switch**



## 11. Accessories

### 11.1 Portable Remote Control

Stock No.	S&C Electric Co. Catalog No.	Description
013348	TA-2424	Portable remote control for a permanent motor operator. Use with a 50-ft control cable, Stock No. 013350, to operate a switch located in the same in-building vault as the LVE.

### 11.2 Control Cable

Stock No.	S&C Electric Co. Catalog No.	Description
013350	9931-616	50-ft control cable for portable remote control for a permanent motor operator. Use with a portable remote control, Stock No. 013348, to operate a switch located in the same in-building vault as the LVE.

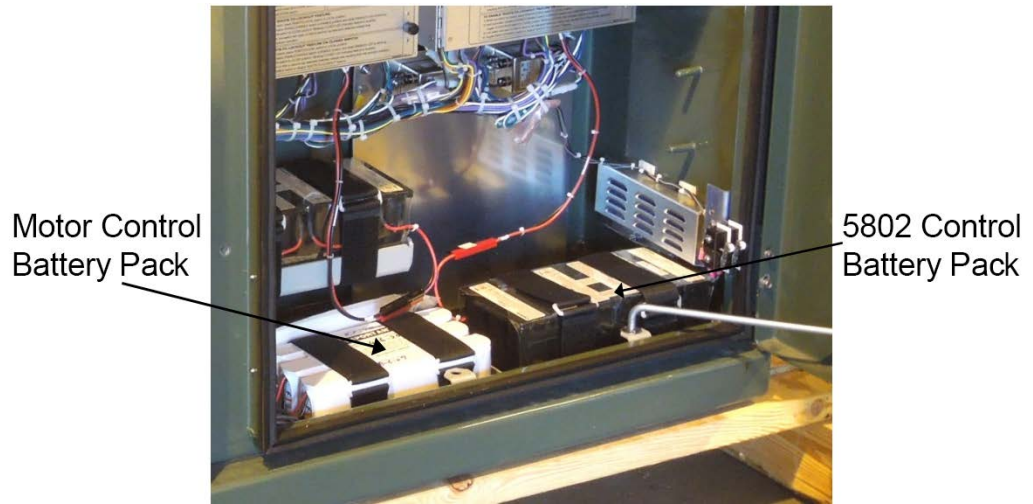
### 11.3 Motor Control Battery Pack (White Jacketed)

Stock No.	S&C Electric Co. Catalog No.	Description
013743	QCUA-5601-3	36 Vdc, 5 Ah, battery assembly. Motor control battery packs are also known as Vista battery assemblies. One Stock No. 013743 is required per switch. This battery provides power to remote supervisory (capable) Vista switch motor operators. Motor operators will not operate without a battery in the circuit. Switchgear and batteries are ordered as separate stock numbers. See Figure 11.4.

### 11.4 5802 Control Battery Pack (Black Case)

Stock No.	S&C Electric Co. Catalog No.	Description
013744	591-000190-02	36 Vdc, 8 Ah, battery assembly. 5802 control battery packs are also known as remote supervisory battery packs. Note: 3- and 4-way switches require two Stock No. 013744. 5- and 6-way switches require three Stock No. 013744. This battery provides backup power to remote supervisory (capable) Vista switch 5802 controls. Switchgear and batteries are ordered as separate stock numbers. See Figure 11.4.

**Figure 11.4. Battery Pack Identification**



## 12. References

**SCL Design Standard 9202.17**; "Vista Switch Application Guide"

## 13. Sources

**S&C 1042-501**; "S&C Series Automatic Switch Controls With IntelliTeam II Automatic Restoration System," June 1, 2005, S&C Electric Company

**S&C 1044-31**; "IntelliTeam SG Automatic Restoration Software, Software Licensing, Specification Bulletin 1044-31," dated September 7, 2010

**S&C 1044-34**; "IntelliTeam SG Automatic Restoration System, Descriptive Bulletin 1044-34," dated January 17, 2011

**S&C 1045-30**; "S&C 6801 Automatic Switch Control for Outdoor Pole-Mounted Gear, Descriptive Bulletin 1045-30," dated January 24, 2011

**S&C 682-31**; "Remote Supervisory Vista Underground Distribution Switchgear, Specification Bulletin," December 17, 2007, S&C Electric Company

**SCL Material Standard 2501.67** (canceled); "29 kV, Three-Phase, SF6, Multi-Purpose, Distribution Switchgear, Remote Supervisory (Capable)"

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