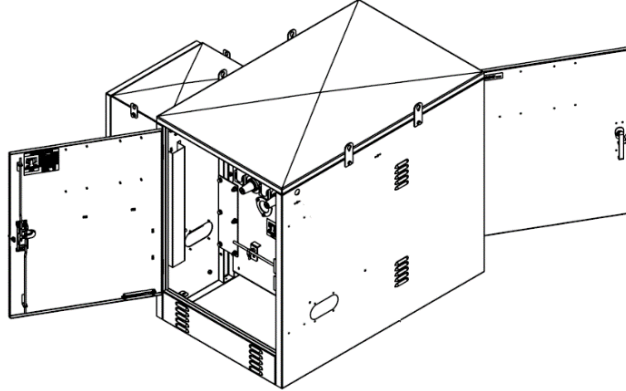


## 27 kV, Three-Phase, SF6-Free, Two-Way Switchgear



### 1. Scope

This standard covers the requirements for 27 kV, three-phase, SF6-free, two-way switchgear and compatible accessories.

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

Stock No.	# of Ways	Style
014801	2	Padmount

### 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 16 kA rms symmetrical.

This switchgear is an equivalent SF6-free alternative to the two-way Vista switchgear, SCL Stock No. 012673.

This switchgear is capable of interrupting faults up to 16 kA rms symmetrical and is used to protect transformers larger than 3 MVA.

The switchgear includes programmable overcurrent protection built into each switch way. The overcurrent protective device detects faults and initiates operation of the interrupting contacts.

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The protective device's relay settings are installed by the SCL Relay Shop personnel. The main advantage of utilizing fault interrupting capability of this switchgear, compared to other methods of protection, is that the phase and ground protective devices can be coordinated separately with the substation feeder phase and ground relays. Other benefits include providing protection for equipment rated more than 65 A and three-phase interruption to protect tertiary windings.

This switchgear does **not** contain any oil, fluid, or SF6 gas for component insulation or arc quenching interruption.

Each switch way is provided with a vacuum contact position indicator located on the switch handle housing to indicate the Open and Closed position of the vacuum interrupters.

Each switch way is provided with two viewing windows to observe the position of the Visible Open Isolation Point.

This switchgear is available in configurations other than 2-way. Contact Standards Engineering for assistance.

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### 3. Industry Standards

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

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

**IEEE C37.60**; High-Voltage Switchgear and Controlgear – Part 111: Automatic Circuit Reclosers for Alternating Current Systems up to and Including 38 kV

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

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### 4. Construction

#### 4.1 General

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

Switchgear shall feature single-handle operation to de-energize, isolate, and create a visible open.

Each switch way shall be designed to accommodate a motor operator for possible future conversion in the field to remote supervisory operable.

Tank shall be made of welded 304 stainless steel.

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

Switchgear shall have the following basic ratings:

<b>Maximum voltage</b>	27 kV, rms
<b>Mechanism type</b>	Heavy Duty
<b>Continuous current</b>	600 A
<b>Number of phases</b>	3
<b>Power frequency</b>	60 Hz
<b>Lighting-impulse withstand voltage (BIL)</b>	125 kV, crest
<b>Short-time (1s) withstand current</b>	16 kA, rms symmetrical
<b>Momentary (10 cycles) withstand current</b>	16 kA, rms asymmetrical

#### 4.2 Padmount Switchgear

Enclosures shall be made of welded 304 stainless steel.

Enclosures shall be sized to accommodate 24 Vdc submersible motor operators for future conversion to local automation, auto transfer applications, and SCADA control.

Enclosures shall be powder-coated for appearance and durability.

Enclosure color shall be MUNSELL 7GY3.29/1.5.

#### 4.3 Design Changes

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

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### 5. Documentation

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

Provision shall be made for SCL to obtain PDF files of all relevant, switch-specific documentation, such as the following:

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

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### 6. 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 slats, blocking, and wedges, shall be unpainted wood.

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

- Manufacturer name or symbol
- Seattle City Light purchase order number
- Seattle City Light stock number
- Manufacturer equipment serial number

## 7. Shipping

Switches may be delivered on enclosed, covered, or flatbed trucks. If switches are delivered on flatbed truck, switches 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. Issuance

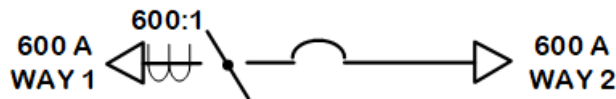
Stock Unit: EA

## 9. Detailed Requirements

### 9.1 2-Way, Padmount-Style Switch

Stock No.	Eaton Catalog No.
014801	P211066-50X-A0X
<i>where:</i>	
	P = double-sided padmount
	2 = number of total ways
	1 = number of switch ways
	1 = number of VFI-protected ways, wired, with relay
	0 = number of solid taps
	6 = 600 A bushing on Way 1
	6 = 600 A bushing on Way 2
	5 = 27 kV / 16 kA
	X = value to be assigned by the manufacturer after PO has been received and the design finalized

**Figure 9.1. 2-Way, Padmount-Style Switch Schematic**



## 10. Sources

**Eaton-Innovative Switchgear, Installation and Operations Manual**, Double-Sided Padmount, Revision A

**Eaton, Medium Voltage Underground Switchgear**, Section 26 13 19, June 6, 2020

**Eaton, Functional Specification Guide PS2850006EN**, Underground Distribution Switchgear, 15.5 kV / 20 kA and 27 kV / 16 kA Vacuum Loadbreak Switch and Fault Interrupter, December 2019

**Eaton, Publication No. PA 28500EN**, Solid Dielectric Vacuum Fault Interrupter Submersible, Vaultmount and Wallmount Switchgear Product Line, January 2020

**SCL Material Standard 4501.65**; "29 kV, Three-phase, SF6, Multi-purpose Switchgear, Manually Controlled"

**Shetab, Muneer**; SCL Standards Engineer, originator, and subject matter expert for 4502.65.