

# Type VCS-1S Vacuum Capacitor Switch

## Technical Specifications

### Introduction

The VCS-1S a single-phase, electrically operated capacitor switch suitable for application on grounded WYE capacitor banks up to 14.4/24.9 kV systems or for application on ungrounded capacitor banks up to 13.0 kV systems.

### Quality

The vacuum interrupter shall be assembled in a class 100 environment, manufactured using state-of-the-art processing equipment, and 100% tested to assure vacuum integrity. Testing shall include:

- 60 Hz withstand test
- Magnetron pressure testing
- DC resistance

The manufacturing facility shall be independently certified to meet the following standards: ISO 9001, CAN/CSA ISO 9001, BS EN ISO 9001, and ANSI/ASQC Q9001. The certification shall include design and manufacturing systems of the facility.

### Standards

The switch covered by this specification shall be manufactured and tested in accordance with the latest revision of ANSI C37.66 as a minimum.

### Ratings

Maximum Design Voltage, for grounded banks, phase-to-ground, kV .....	15.5
Maximum Design Voltage, for ungrounded banks, phase-to-phase, kV .....	13.0
Basic Insulation Level (BIL) line-to-ground, kV .....	125
Basic Insulation Level (BIL) open contact, kV .....	95
60 Hertz Withstand Voltage, kV	
Dry, One Minute .....	50
Wet, Ten Seconds .....	45
Continuous Current Rating, A .....	200
Load Interrupting Ability (Inductive), A 10-100% power factor .....	200
Maximum Capacitive Current, A .....	200
Rated Asymmetrical Making Current, A .....	9000

### Short Time Current, A

Asymmetric (10 cycles) .....	9000
Symmetric (0.5 second) .....	6000
Symmetric ( 1 second) .....	4500

### Rated High Frequency Peak

Transient Making Current, A .....	12000
Rated Transient Inrush Frequency, Hz ....	6000

Operating Temperature Range, °C .....	-40° to +65°
RIV, maximum at 9.4 kV, $\mu$ V .....	100

### Operating Power

Operating Voltage Range, Vac .....	95–127
Current required during operation, maximum, A .....	8
KVA transformer, minimum needed for operation, VA .....	1000

### Duty Cycle

#### Duty Cycle per ANSI C37.66

200 A .....	400 Operations
100 A .....	400 Operations
40 A .....	400 Operations
Total	1200

### Switch Features

- Oil, foam, or SF<sub>6</sub> insulation shall not be used in any volume within the switch.
- Vacuum shall be used for the interrupting medium. The vacuum interrupter shall be encapsulated in cycloaliphatic epoxy or equivalent.
- There shall be no porcelain used on the external portion of the switch. The switch shall not crack or shatter.
- Fluorocarbons shall not be used in the manufacture of the switch.
- Electrical operations shall be accomplished utilizing a low-energy solenoid. The current requirement for opening or closing shall not exceed 8 A.

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- The switch cover and mechanism shall rotate independently of the tank for maximum application flexibility.
- The switch shall include a mechanical contact position indicator, easily visible from the side or bottom of the switch.
- The switch shall withstand a minimum of 25,000 mechanical operations. An operation shall be defined as an open and close cycle.
- The switch shall be maintenance free. No routine maintenance is required.
- There shall be no seals, o-rings, or gaskets to contain the insulation medium.
- The switch shall operate correctly with a supply transformer rated as low as 1000 VA.
- The bushing terminal connector shall accept a cable range from #8 solid to 2/0 AWG stranded.

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