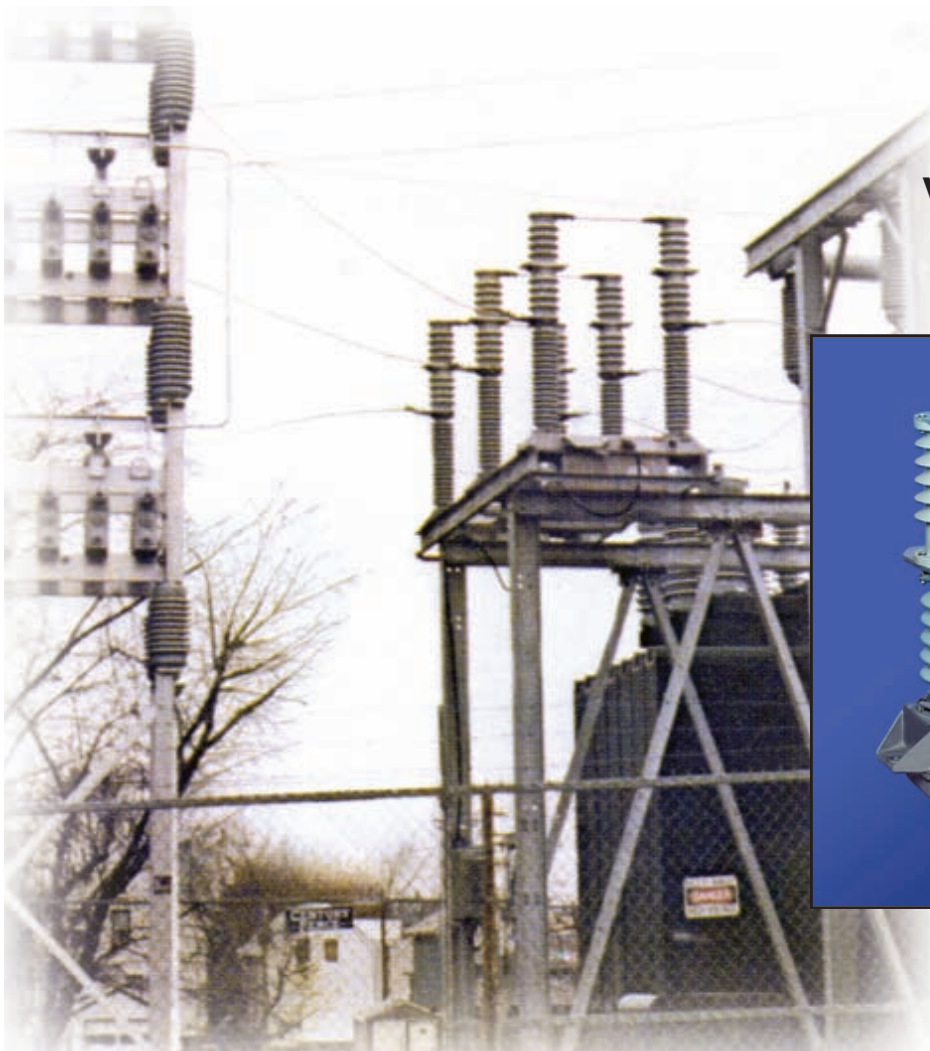


# Varmaster Vacuum Interrupter

Now with **VACSTAT™**  
Knowing is better™



The only Real Time  
**Vacuum Interrupter  
Monitor**  
in the industry!



15kV Varmaster  
Capacitor Switch with Vacstat

- Reduce Operating and Maintenance Costs
- Increase Reliability
- Provides Operator with status of vacuum interrupter
- Blocks Electrical Operation if problem is detected
- SCADA notification available

# Varmaster Switching Systems

Varmaster switching systems use VBM switches that are completely sealed breaker class devices utilizing vacuum as the interrupting dielectric. VBM interrupters are manufactured for application at system voltages from 15 to 69 kV. The switches are lightweight and require no special foundations or supports allowing for an easy and fast installation.

Each vacuum interrupter is enclosed in a shatterproof, high dielectric housing. The interrupter is surrounded by "Joslyte™" high-dielectric strength non-hydroscopic solid foam that does not absorb moisture, eliminates condensation and increases the impulse level on the outside of the vacuum interrupter. No gas, oil, or other material is required to maintain electrical properties.

## FEATURES

- Maintenance-free long life
- Completely sealed construction
- Safe, completely oil free
- Low cost installation
- Quiet Operation
- High speed operation
- Easy to test
- Compact and lightweight
- Choice of operating mechanisms
- Wide choice of control options
- Zero Voltage Closing
- Safe, Hermetically Sealed design

## Applications

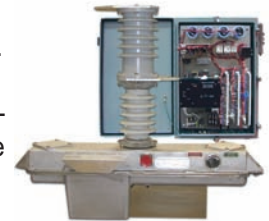
### Capacitor Switching

The JHV Varmaster with VacStat is ideal for distribution and substation capacitor switching. The VBM is rated to handle the repetitive duty requirements of the cap bank application. Now with VacStat, the VBM can provide an even higher level of cost savings through reduced maintenance costs associated with the eventual replacement of vacuum modules.



### Zero Voltage Closing

The VBM with VacStat is a very valuable addition to a system using the digital ZVC control. The ZVC is typically used to eliminate inrush currents to the capacitors during a closing event. These inrush currents have a detrimental effect on sensitive equipment. The VacStat will prevent operations in the event of loss of vacuum that could seriously effect the equipment it was designed to protect.



### Reactor Switching

The Joslyn VBM Varmaster reactor switch can reliably switch shunt reactors. The low mean chop current of these switches eliminates over-voltage concerns. Continuous current ratings through 3000 amperes are available.



### Sectionalizing/Transfer Switching

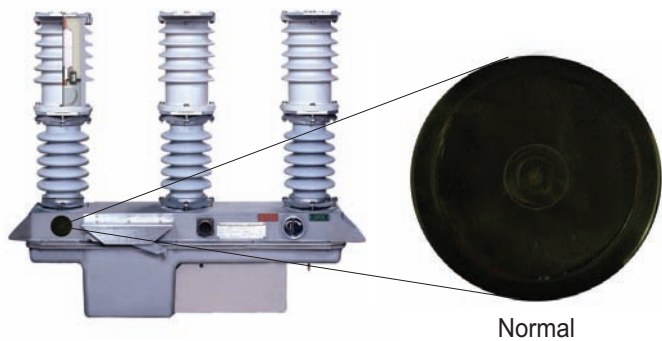
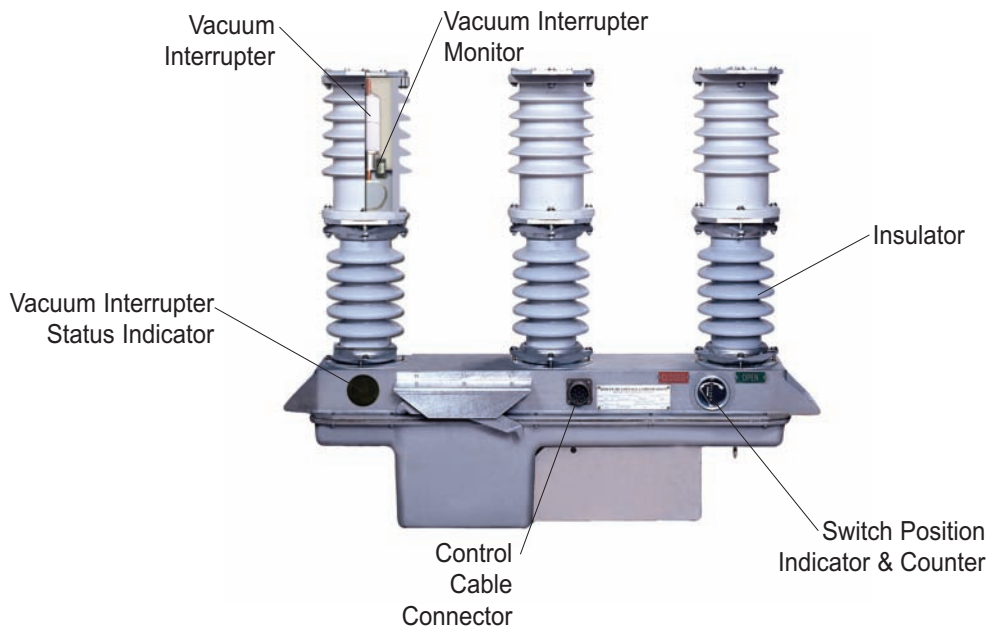
The Joslyn Varmaster switching system is also ideally suited for distribution automation schemes that include both local and remote transfer switching and sectionalizing. With the associated microprocessor based control, the Varmaster can greatly reduce outage time by automatically locating system faults and removing them from the circuit.



## **VACSTAT™** Varmaster with VacStat Vacuum Interrupter Monitor System

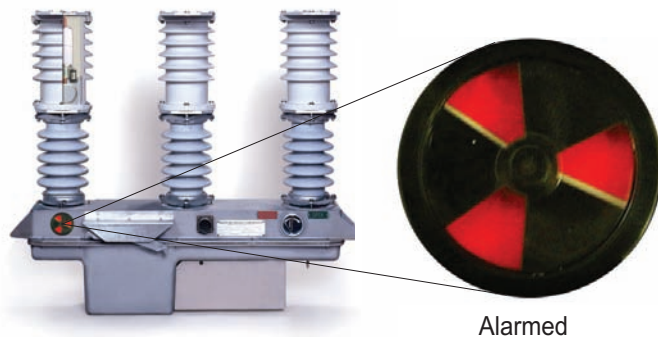
The VacStat is the only system that can give you real time status of your vacuum interrupters. This simple device will notify you immediately of a loss of vacuum through a visual indicator located on the switch and via a contact in the Varmaster control. The VacStat will also block operation of the switch.

- Increase Reliability
- Reduce Maintenance Costs
- Reduce the Risk of Harm to Employees and Assets



A simple device is attached to the vacuum interrupter during the manufacturing process. This device along with a simple fiber optic circuit monitors the interrupter to determine the presence of vacuum.

Under normal condition with vacuum present, a fiber optic circuit will conduct light. The visual indicator on the switch will be in a normal (not targeted) state. The control cabinet status indication will be normal.



In the event an interrupter loses vacuum, the fiber optic circuit will be blocked. The visual indicator will turn orange to indicate loss of vacuum. The control cabinet status indication will change states.

Once the VacStat senses a loss of vacuum all operations of the switch will be blocked until the switch has been serviced.



# Ratings

| Maximum Voltage   | 15.5kV/25kV <sup>3</sup> |           |           | 25kV      |           |           | 38kV       |            |            | 48.5kV     |                  |            | 72.5kV     |            |
|---|--------------------------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------|------------|------------------|------------|------------|------------|
| Capacitor & Load Switching Current <sup>1,2</sup> (Amperes)                       | 400                      | 600       | 600       | 200       | 300       | 400       | 300        | 400        | 600        | 600        | 200 <sup>4</sup> | 300        | 400        | 300        |
| Fault Interrupting Current (Amperes)  | 3kA                      | 4kA       | 8kA       | 3kA       | 3kA       | 3kA       | 3kA        | 3kA        | 4kA        | 8kA        | 4kA              | 3kA        | 3kA        | 3kA        |
| Momentary Current (RMS Amperes, Asymmetric)                                       | 20kA                     | 20kA      | 20kA      | 15kA      | 15kA      | 15kA      | 15kA       | 20kA       | 20kA       | 20kA       | 20kA             | 15kA       | 15kA       | 15kA       |
| Impulse Withstand (kV BIL) Terminal-to-Terminal <sup>5</sup>                      | 110                      | 110       | 110       | 200       | 200       | 200       | 200        | 200        | 200        | 200        | 200              | 250        | 250        | 280        |
| Line-to-Ground (kV BIL) (1.2 x 50 Positive Wave)                                  | 150                      | 150       | 150       | 150       | 150       | 150       | 200        | 200        | 200        | 200        | 250              | 250        | 250        | 350        |
| Max. 60-Cycle Withstand Line-to-Ground (kV):<br>One Minute Dry<br>Two Seconds Wet | 101<br>74                | 101<br>74 | 101<br>74 | 101<br>74 | 101<br>74 | 101<br>74 | 138<br>119 | 138<br>119 | 138<br>119 | 138<br>119 | 178<br>176       | 178<br>176 | 178<br>176 | 178<br>176 |
| Maximum Peak Making Current (kA)  | 20                       | 20        | 20        | 15        | 15        | 15        | 15         | 20         | 20         | 20         | 20               | 15         | 15         | 15         |
| Maximum Peak Back-to-Back Inrush Current (kA) <sup>6</sup>                        | 10                       | 10        | 10        | 8         | 8         | 8         | 8          | 10         | 10         | 10         | 10               | 8          | 8          | 8          |
| Two-second Current  | 12,500 Amperes           |           |           |           |           |           |            |            |            |            |                  |            |            |            |
| Four-second Current   | 9,000 Amperes            |           |           |           |           |           |            |            |            |            |                  |            |            |            |

**1** VBM Varmasters can switch loads of any power factor up to their continuous current rating. Include effects of voltage variances, harmonic currents and load tolerances in calculating continuous current.

**2** VBM Varmasters are available with continuous current ratings through 3000 amperes. Consult factory regarding application of these switches.

**3** Grounded systems only at 25kV

**4** In capacitor switching applications the 48.5kV, 200 ampere VBM may be used on solidly grounded systems and grounded capacitor banks with total current less than 200 amperes. For all other loads, this VBM rating is 600 amperes.

**5** Interrupter portion of switch does not provide a visible open gap; therefore it cannot be used to establish a safety clearance for personnel.

**6** In back-to-back capacitor bank switching applications, it is recommended that inrush current be limited to the values shown for maximum maintenance-free performance. Current limiting reactors through 60 microhenries/phase are available from Joslyn Hi-Voltage. Refer to Joslyn bulletin T.D. 750-457



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