# Elastimold Molded Vacuum Recloser - MVR

## 1.0 SCOPE

1.1 This specification covers electrical and mechanical requirements for Three and single phase molded vacuum reclosers and controls for use on standard distribution class of voltages.

## 2.0 STANDARDS

Elastimold Molded Vacuum Reclosers (MVR) comply with the applicable provisions of the latest NEMA, IEEE, ANSI/IEEE, and IEC standards relating to Reclosers. The applicable standards include, but are not limited to, the following:

2.1 ANSI/IEEE C37.60-2003 American National Standards Requirements for Overhead, pad-mounted, dry vault, and submersible automatic circuit reclosers and fault interrupters for alternating current systems up to 38 kV

2.2 IEC 62217 - Salt Spray Test

2.3 Thomas & Betts /Elastimold manufacturing facilities are ISO 9001:2008 certified.

## 3.0 FUNCTIONAL FEATURES

The Elastimold Molded Vacuum Reclosers (MVR) are designed to automatically interrupt and reclose either all three phase or a single phase of an alternating-current circuit. The Elastimold MVR has a programmable electronic control that allows the operating characteristics to be changed without de-energizing the recloser. The Elastimold MVR is utilized to improve system coordination, reduce momentary outages, improve reliability and simultaneously isolate permanent faults.

## 4.0 PRODUCT FEATURES AND ACCESSORIES

4.1 Construction & Operation

The Elastimold MVR three-phase units are electrically ganged which allows the recloser to perform, through a control selection option, either simultaneous three phase trip or single phase trip operations and selection of three phase or single phase lockout. .

The manual trip handle is mechanically linked to trip and lockout all three phases simultaneously. The provided manual-tripping lever does not require external power for operation. The manual tripping lever is suitable for operation with a hot line stick in accordance with IEEE C37.60. The tripping lever is yellow in color. Lever status can be displayed on the control LED panel and also provided remotely via SCADA when used with SEL651R and 351RS Kestrel controls.

4.2 Mechanism

4.2.1 The mechanism uses three magnetic actuators (one for single phase units) capable of fast opening and closing operations with no recharging delay.

4.2.2 The recloser utilizes a modular design concept that has identical interrupter housings integrated into a common housing for three phase units.

4.2.3 The highly visible position indicator utilizes a viewing window that can be seen from any position 360 ° around the recloser.

4.2.4 Elastimold MVR does not require any special tools or measurement for routine inspection and maintenance.

4.2.5 The mechanism housing is sealed and manufactured from durable cast aluminum

4.3 Solid Dielectric Module

4.3.1 The Elastimold MVR solid polymer module is highly resistant to ozone, tracking, and ultraviolet rays.

The insulating material is constructed of a highly damage resistant EPDM rubber. The bushings sheds are made of silicone rubber and are high resistant to impact, ozone tracking, and damage from UV light.

4.4 Vacuum Interrupters

4.4.1 Current interruption occurs in vacuum interrupters, providing minimum and even contact wear, long life and maximum reliability. Elastimold MVR utilizes vacuum interrupters with the following ratings:

| Voltage Class | BIL Rating |
|---|---|
| 15 kV | 150 kV |
| 27 kV | 150 kV |
| 38 kV | 170 kV |

4.5 Current & Voltage Sensing

4.5.1 Three current sensors are provided for protection, instrumentation, metering and are capable of accurately monitoring full fault duty and providing accurate oscillographic data up to the full interrupting rating of the unit. Three load-side voltage sensors are provided for accurate voltage measurements and loss of voltage indication. The current and load-side voltage sensors are embedded in the recloser.
Integral Source-side voltage sensors can be provided as an option to provide full loop scheme automation.

4.6 Mounting Frame

4.6.1 The Elastimold MVR is provided with a corrosion resistant galvanized mounting frame for pole mounting.

4.6.2 Each mounting frame can be supplied with an optional voltage transformer for power to the control and six (6) surge arresters mounting provisions for the three-phase units (two for single-phase units).

4.6.3 Lifting lugs are provided in accordance with IEEE C37.60.

4.7 Control Cable

4.7.1 The Elastimold MVR is supplied with a standard 35 feet length UV protected cable and weatherproof connectors for assembly. Larger cable lengths are available and optional.

4.8 Electronics Control

4.8.1 The single phase Elastimold MVR is controlled and operated by the SEL 351RS-Kestrel control via a 10 pin interconnecting cable. The three phase Elastimold MVR can either by controlled directly with the SEL 651R control via a 32 pin interconnecting cable or by a SEL 351R or 351R Falcon control via a 14 pin cable connected to an MVR Power Module which then connects to the recloser.

4.8.2 The relays are SCADA ready with 9-pin serial cable connection. The controls communicate serially using DNP protocol level 2 or higher.

4.8.3 Recloser control will be provided with SEL ACSELERATOR® QuickSet SEL-5030 Software Database for ease and comprehensive logic manipulation and industry standard operating curves.

## 5.0 RATINGS

5.1 The recloser shall meet or exceed the following electrical and physical ratings:

| NOMINAL SYSTEM VOLTAGE RATING | 15 kV | 27 kV | 38 kV |
|---|---|---|---|
| Rated Max. Design Voltage (kV rms) | 14.4 | 25 | 35 |
| Max. Symmetrical Interrupting Capability at Max. Design Voltage | 17.1 | 29.3 | 38 |
| Nominal Frequency (Hz) | 50 or 60 | 50 or 60 | 50 or 60 |
| Phase Spacing on 3 phase units (inches) | 15.5 | 15.5 | 15.5 |
| BIL (kV) | 150 | 150 | 170 |
| Power Frequency Withstand - Dry (kV) | 50 | 60 | 70 |
| Power Frequency Withstand - Wet (kV) | 45 | 50 | 60 |
| Continuous Current (A RMS) | 800 | 800 | 800 |
| Eight (8) hour Overload Current (A RMS) | 960 | 960 | 960 |
| CT Ratio | 1000 to 1 | 1000 to 1 | 1000 to 1 |
| Interrupting Current (kA RMS Symmetrical) | 12.5 | 12.5 | 12.5 |
| Making Current (kA Asymmetrical Peak) | 32.5 | 32.5 | 32.5 |
| Creepage Distances - inches (line to ground) | 41.5 | 41.5 | 51 |
| Arc Extinction Medium | Vacuum | Vacuum | Vacuum |
| Insulation Medium | EPDM/Silicon Rubber | EPDM/Silicon Rubber | EPDM/Silicon Rubber |
| Mechanical Operations | 10,000 | 10,000 | 10,000 |
| Operating Temperatures | -40ºC to 65 ºC | -40ºC to 65 ºC | -40ºC to 65 ºC |
| Voltage Sensor Accuracy (Load/Line) | 3% / 1% | 3% / 1% | 3% / 1% |
| CT Accuracy | Class 1 | Class 1 | Class 1 |
| Weight (Single phase/Three phase) | 57/208 | 57/208 | 58/211 |

## 6.0 TESTS

6.1 The Elastimold MVR is tested in accordance with ANSI/IEEE C37.60, section 7 (Production Test), before shipment. Two (2) copies of certified Production Test reports are furnished to verify correctness of control wiring and proper functioning of all equipment.

## 7.0 NAMEPLATE

Reclosers are provided with stainless steel name plate securely attached to the recloser housing containing, the following information:

Manufacturers' Name:
Manufacturers' Model Number:
Manufacturers' Serial Number:
Control Voltage in Volts:
Date of Manufacturing:
Recloser Maximum Rated kV:
Maximum Interrupting Rating:
Purchase Order Number:

## 8.0 INSTALLATION

Elastimold three-phase MVRs are provided with lifting points that will enable a balanced unit when lifting the unit into its operating position. Detail installation instructions are provided in Elastimold Molded Vacuum Recloser Installation Manual.

## 9.0 PACKAGING AND SHIPPING

9.1 Elastimold MVRs are securely banded to pallets such that in no case will the recloser tip over during normal handling. Pallets are designed to accommodate the use of a fork lift for moving and storage. Packaging will provide for outside storage with no adverse effects on the recloser or its control.

9.2 Two sets of packing list are included with each shipment along with any instructions needed to assure the proper installation and operation of the reclosers.

## 10.0 SERVICE AND MAINTENANCE AND RELIABILITY

10.1 No field calibration shall be required to maintain accuracy of the Elastimold MVR.