

# Surge Arresters

## VariSTAR® Riser Pole Type AZR Heavy Duty Distribution Class MOV Arrester Installation Instructions

## S235-71-1 Service Information

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### GENERAL

The Cooper Power Systems VariSTAR Type AZR heavy duty distribution class MOV arrester provides overvoltage protection to overhead distribution equipment.

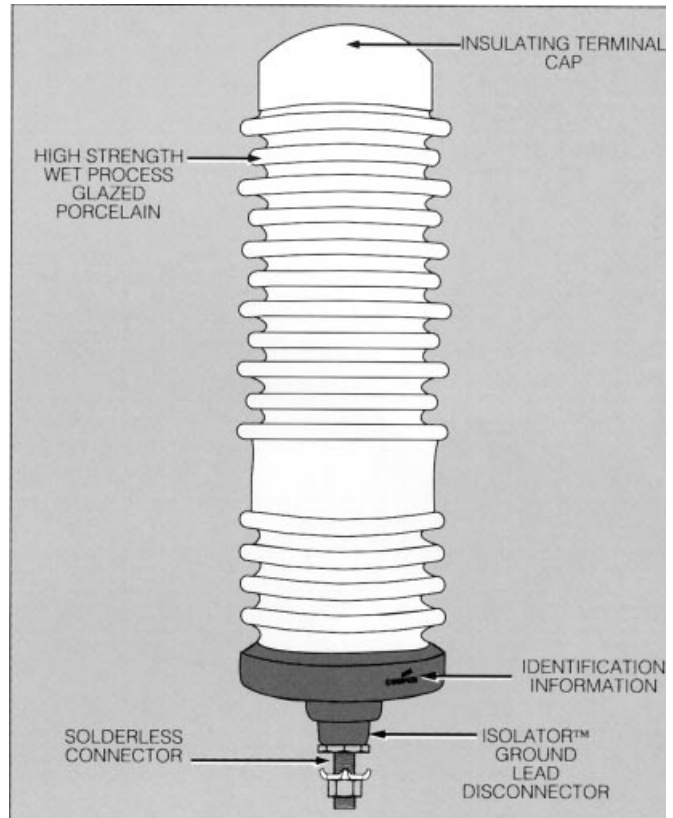
**CAUTION:** Type AZR arresters should be installed only by personnel familiar with good safety practice and the handling of high-voltage electrical equipment. These instructions are not intended to supersede or replace existing safety and operating procedures. Where applicable, the requirements of national and/or local codes and insurance underwriters must be fulfilled.

### INSPECTION AND ARRESTER CARE

Severe handling and shipping conditions may damage the arrester and cause premature arrester failure. If there is evidence of physical damage, the unit should not be installed unless approved by your Cooper Power Systems representative.

**CAUTION:** Always handle surge arrester - packed or unpacked - very carefully. Do not drop, jar, or handle an arrester roughly. Dropping, jarring, and/or rough handling may damage the arrester internally and/or externally, making it incapable of adequately protecting the apparatus or circuit on which it is to be installed or it may shorten the service life of the arrester significantly.

**CAUTION:** Never open an arrester. The arrester's internal components are under spring compression and may be expelled with such force as to cause personal injury.



**Figure 1.**  
**Line Illustration of VariSTAR Type AZR Arrester.**

**WARNING:** Never install a damaged arrester. A damaged arrester may misoperate violently, causing severe personal injury and property damage.

Product name, rating and maximum continuous operating voltage are identified on the arrester. If this information does not match the shipping order, please contact your Cooper Power Systems representative before installation.

**CAUTION:** Do not install an arrester if the type, voltage, and MCOV data are not exactly the same on the nameplate and the carton label because the arrester may be incapable of adequately protecting the apparatus or circuit on which it is to be installed.

*These instructions do not claim to cover all details or variations in the equipment, procedure, or process described, nor to provide direction for meeting every possible contingency during installation, operation, or maintenance. When additional information is desired to satisfy a problem not covered sufficiently for the user's purpose, please contact your Cooper Power Systems representative.*

## APPLICATION

The Type AZR arrester should be installed only on systems where the power frequency voltage applied across the arrester does not exceed published arrester maximum continuous operating voltages (MCOV) values.\*

**TABLE 1**  
**Commonly Applied Voltage Ratings of the VariSTAR Type AZR Arrester**

System Voltage (kV rms)		Recommended Arrester Rating* (kV rms)		
Nominal	Maximum	Four-Wire Wye; Multi- Grounded Neutral	Three-Wire Wye; Solidly Grounded Neutral	Delta and Un- grounded Wye
4.16Y/2.4	4.4Y/2.54	3	6	6
4.16	4.4	-	-	6
4.8	5.08	-	-	6
6.9	7.26	-	-	9
8.32Y/4.8	8.8Y/5.08	6	9	-
12.0Y/6.93	12.7Y/7.33	9	12	-
12.47Y/7.2	13.2Y/7.62	9	15	-
13.2Y/7.62	13.97Y/8.07	10	15	-
13.8Y/7.97	14.52Y/8.38	10	15	-
13.8	14.52	-	-	15
20.78Y/12.0	22Y/12.7	15	21	-
22.86Y/13.2	24.2Y/13.87	18	24	-
23	24.34	-	-	24
24.94Y/14.4	26.4Y/15.24	18	27	-
27.6Y/15.93	29.3Y/16.89	21	30	-
34.5Y/19.92	36.5Y/21.08	27	36	-

\*Lower ratings may be used if fault durations are not expected to exceed the temporary overvoltage (TOV) capability of the arrester.

## FIELD TESTING

Type AZR arresters must pass a complete series of production tests prior to shipment; therefore, no field testing is required.

**CAUTION:** Before performing any test on a Type AZR arrester, contact your Cooper Power Systems sales engineer. Some test procedures may damage the arrester externally and /or internally, making it incapable of protecting the apparatus or the circuit on which it is installed or shortening its service life significantly.

## INSTALLATION

- Install all mounting hardware on the arrester.
- Select an installation site as close as possible electrically to the apparatus that the arrester is to protect.
- Make the electrical connections.

**NOTE:** The arrester terminals accommodate conductor sizes from AWG No. 10 solid through AWG No. 2/0 stranded.

**NOTE:** Make the arrester ground connection as short and direct as possible to a solid, effective, permanent, low-resistance ground.

If the arrester has a ground lead disconnecter, the ground lead must be flexible enough to allow the disconnecter to operate properly.

**CAUTION:** Make all electrical connections - ground and line - so that no mechanical stress is applied to the surge arrester. Mechanical stress may damage the arrester in such a manner that its service life is shortened significantly.

## REMOVING AN ARRESTER FROM A CIRCUIT

**WARNING:** Always consider an arrester to be energized until after both the line and the ground leads have been disconnected from the circuit.

- Disconnect the arrester line lead(s) from the circuit.  
**NOTE:** A small amount of static charge may be retained in an arrester when it is removed from an energized circuit.
- Discharge the arrester by attaching the line terminal to a temporary ground.
- Mark the temporary ground to make sure it is removed before the arrester is reinstalled.
- Disconnect the arrester ground lead(s) from the circuit.

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