Surge Arresters
Catalog Data
CA235020EN

Effective August 2015
Supersedes TD235003EN September 2014

COOPER POWER SERIES

VariSTAR® Storm Trapper® secondary class MOV surge arrester

General

Eaton's Cooper Power™ series VariSTAR® Storm Trapper® secondary class MOV surge arrester is designed to provide overvoltage protection for low voltage equipment and distribution circuits. Storm Trapper arresters are Canadian Standards Association, CSA® listed for safety and comply with IEEE Std C62.11™ -1993 standard "IEEE Standard for Metal Oxide Surge Arrester for AC Power Circuits."

Applications*

Storm Trapper surge arresters are available in three voltage ratings:

175-Volt Arresters

The 175-volt arrester is designed for single-phase 120-volt applications. It is available as single-, double-, or triple-pole for two-, three-, or four-wire systems.

350-Volt Arresters

The 350-volt single-pole arrester is designed for individual application at single voltage source installations with line-to-ground voltages greater than 175 volts and less than 350 volts.

The 350-volt two-pole device is designed for common three-wire 480/240 volt applications. The 350-volt three-pole unit protects motors and other equipment on three-phase systems which can have a number of system voltages between 175 and 350 volts.

650-Volt Arresters

The 650-volt arrester is designed for commercial/industrial applications where the line-to-ground system voltage is greater than 350 volts, but not more than 650 volts.

Installation

The Storm Trapper arrester is moisture proof. Refer to *Service Instructions S235-15-1, MOV Storm Trapper Secondary Class Surge Arrester Installation Instructions* for details.

* For service entrance applications, a higher energy device is recommended. Refer to *Catalog Data CA235015EN Storm Trapper High Energy Lov-Voltage Distribution-Class MOV Surge Arrester* CA235015EN.

Powering Business Worldwide

Production tests

A complete production test program assures a quality product. Each VariSTAR metal oxide varistor receives a series of 100% electrical tests. Quality is further ensured by a series of destructive tests performed on every batch of varistors. Listed are the tests that are performed on the varistors:

- 100% Physical Inspection
- 100% Discharge Voltage Test
- 100% V1mA/cm^2
- 100% Leakage Current at 80% of V1mA/cm^2 Voltage
- Batch High Current Short-Duration Test
- Batch Thermal Stability Test

Each Storm Trapper arrester must pass the following production tests:

- 100% Physical Inspection
- 100% Reference Voltage (Vref)
- 100% Vacuum over Fluid Seal Test
- 100% Radio Interference Voltage Test (RIV)

Table 1. Protective Characteristics

Arrester Rating	MCOV	Maximum Discharge Voltage 8/20 µs Current Wave (kV crest)				
(V rms)	(V rms)	1.5 kA(a)	3 kA(a)	5 kA(a)	10 kA(a)	10 kA(b)
175	175	1.1	1.2	1.4	1.7	3.1
350	350	1.6	1.7	1.0	2.3	3.5
650	650	2.2	2.4	2.7	3.1	4.0

(a) 1.5" Leads.

(b) 18" Leads.

Features and detailed description

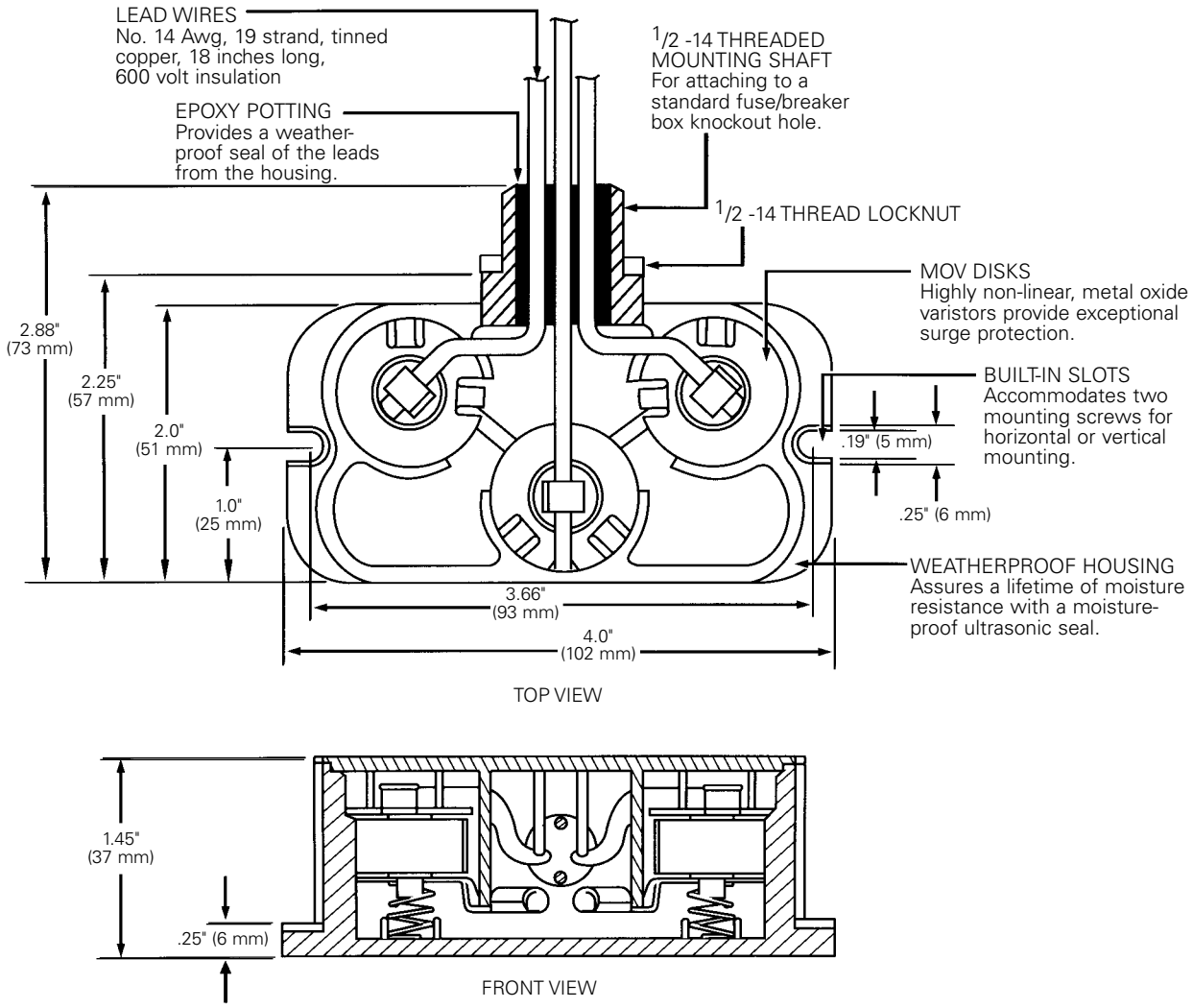


Figure 1. Cutaway Illustration of Storm Trapper Arrester

Note: Dimensions are given for reference only.

Table 2. Performance Test Characteristics*

Description	Characteristics
Duty Cycle	20 current surges of 1.5 kA crest 8/20 µs waveshape followed by 2 current surges of 1.5 kA crest 8/20 µs waveshape
High Current, Short Duration Discharge	2 current surges of 10 kA crest 4/10 µs waveshape

* Per IEEE Std C62.11™-1993 standard.

Table 3. Insulation Characteristics

Arrester Rating (V rms)	1.2/50 µs Impulse (kV crest)	1 min. Dry (kV rms)	10 sec. Wet (kV rms)
175	10	6	6
350	10	6	6
650	10	6	6

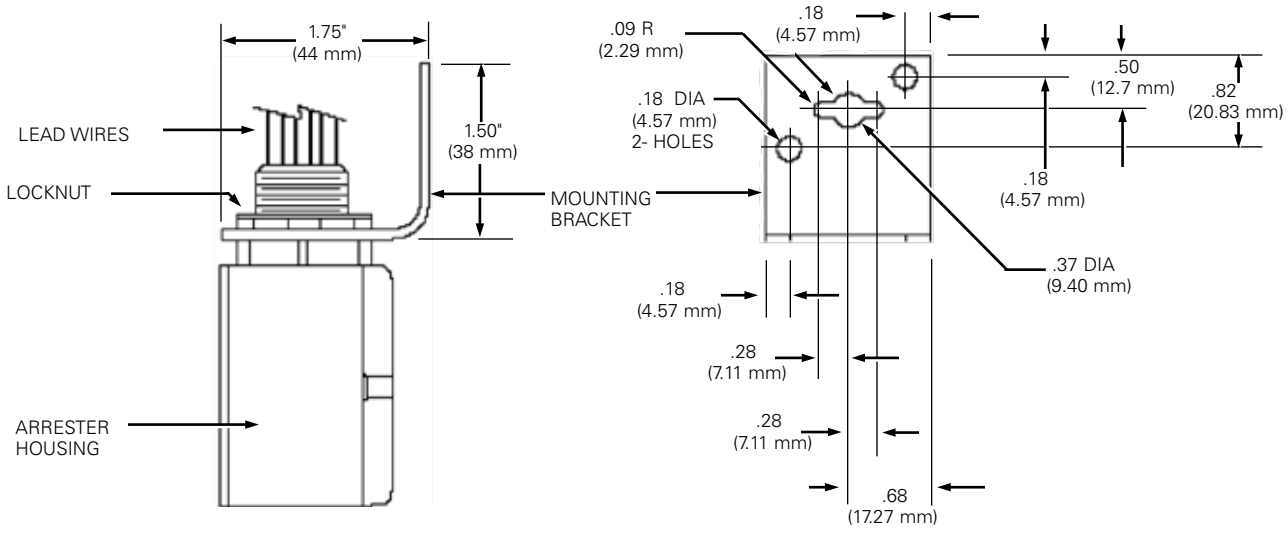


Figure 2. Side View of Storm Trapper Arrester with Mounting Bracket

Table 4. Storm Trapper Catalog Numbers

Arrester Rating (V rms)	Number of Poles	Catalog Number without Mounting Bracket	Catalog Number with Mounting Bracket
175	1	ASZ175B1	ASZ175B11
175	2	ASZ175B2	ASZ175B21
175	3	ASZ175B3	ASZ175B31
350	1	ASZ350B1	ASZ350B11
350	2	ASZ350B2	ASZ350B21
350	3	ASZ350B3	ASZ350B31
650	1	ASZ650B1	ASZ650B11
650	2	ASZ650B2	ASZ650B21
650	3	ASZ650B3	ASZ650B31

Ordering information

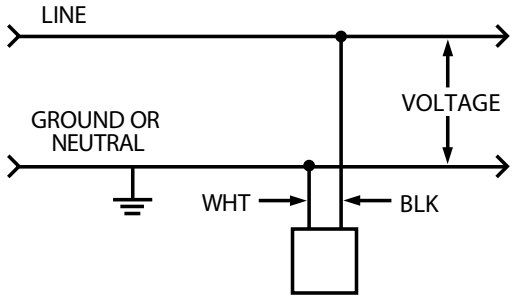
To order a VariSTAR Storm Trapper secondary class MOV surge arrester, determine the voltage rating for the intended application using Table 5 and the applicable wiring diagram per Figure 3. Specify the appropriate catalog number from Table 4. Contact your Eaton representative for applications not listed.

Table 5. Commonly Applied Voltage Ratings of the Storm Trapper Arrester

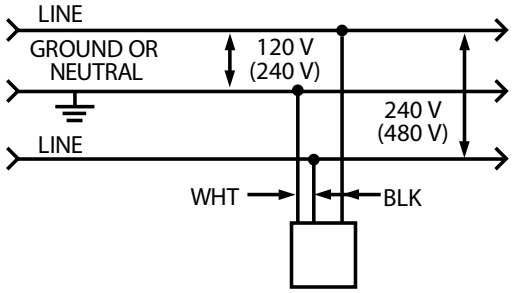
System Configuration		Storm Trapper Arrester			
Phase/Wiring	Voltage (Volts rms)	MCOV* (Volts rms)	Number of Pole(s)	See Wiring Diagram (Figure 3)	Catalog** Number
Single-Phase/Two-Wire	120	175	1	1	ASZ175B1
	240	350	1	1	ASZ350B1
	480	650	1	1	ASZ650B1
	600	650	1	1	ASZ650B1
Single-Phase/Three-Wire	240/120	175	2	2	ASZ175B2
	480/240	350	2	2	ASZ350B2
Three-Phase (ungrounded)/Three-Wire	240	350	3	3	ASZ350B3
	480	650	3	3	ASZ650B3
Three-Phase (one-phase grounded)/Three-Wire	240	350	2	4	ASZ350B2
	480	650	2	4	ASZ650B2
Three-Phase (one-phase center-tap grounded)/ Four-Wire	240/120	350	3	5	ASZ350B3
	480/240	650	3	5	ASZ650B3
Three-Phase/Four-Wire	208Y/120	175	3	6	ASZ175B3
	480Y/277	350	3	6	ASZ350B3

* Maximum continuous operating voltage (MCOV) is the maximum designated rms value of power frequency voltage that may be applied continuously between the terminals of the arrester.

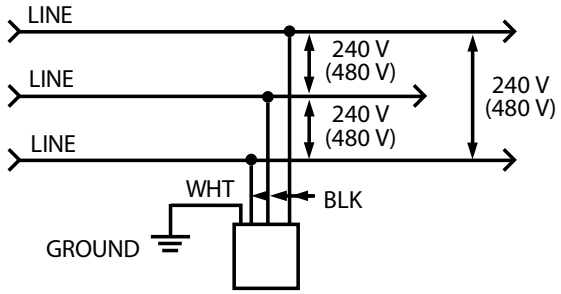
** Mounting bracket option available. Add suffix 1 to change catalog number (Example: A5Z175B11).



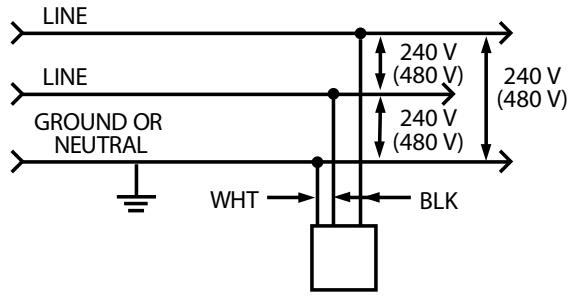
Wiring Diagram 1:
Single-phase/two-wire system.



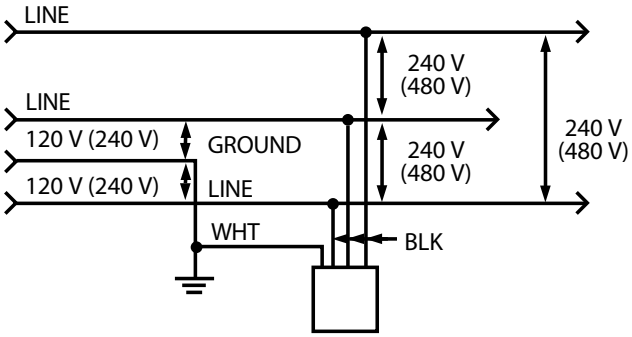
Wiring Diagram 2:
Single-phase/three-wire system.



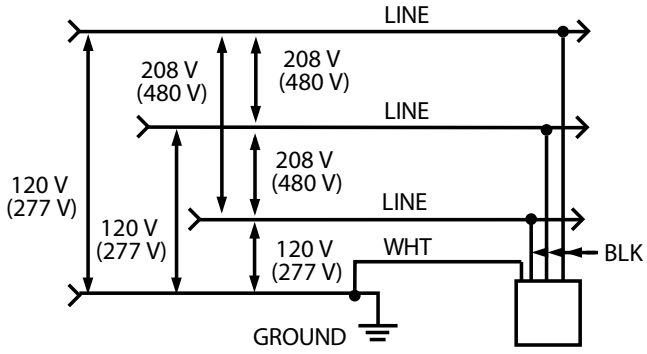
Wiring Diagram 3:
Three-phase (ungrounded)/three-wire system.



Wiring Diagram 4:
Three-phase (one-phase grounded)/three-wire system.



Wiring Diagram 5:
Three-phase (one-phase center-tap grounded)/four-wire system.



Wiring Diagram 6:
Three-phase/four-wire system.

Figure 3. Wiring diagrams.

Note: Black leads to line: white leads to ground.
Voltage between a white lead and any black lead should not exceed the arrester MCOV.

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