

Distribution Class Surge Arresters – Brochure

Overview

AK Power solutions has been a major supplier of polymeric distribution surge arresters in Australia over the past 10 years.

Construction

The construction of the AK Power Solutions arresters is based on a series of varistor blocks with spacers. AK Power Solutions uses Metal Oxide Varistor's (MOVs) from reputable suppliers.

The manufacturing process is as follows:

- Assemble the varistor blocks, aluminium spacer blocks and end studs
- Wrap the core in tape and 60 cycles of glass epoxy wrap
- Prime the core
- Pre-heat and then mould the core
- Complete the assembly (cleanup of the studs and add nuts and washers etc)
- Test the arrester (voltage reference tests etc)
- Pack as appropriate with leads and bird cap if required
- Despatch to customer

The prime reason for the use of the glass epoxy wrap is to contain the forces of the short circuit current and thus ensure that there is no catastrophic failure of the arrester during its operation.



Following manufacture, each arrester is subject to a Reference Voltage Test prior to being packed and dispatched. The test consists of applying a 5mA current to the arrester and measuring the reference voltage required to achieve the 5mA current and ensuring it is between acceptable limits. The tests should also indicate that there is a smooth sinusoidal wave and that there is no radio noise present. Any surge arrester that shows signs of an unusual current wave shape, radio noise or does not comply with the minimum or maximum reference voltages must be rejected.

Application

- 10kA Distribution Class – ratings 6kV to 36kV

Features

- Highly reliable and effective
- Operates with safety to the public
- Single piece construction provides a hermetically sealed unit.
- Environmentally acceptable

Features (Cont.)

- Competitively priced
- Connections and leads can be tailored to suit individual company needs
- T Bracket or insulated mounting brackets available
- Earth lead disconnects available
- Bird caps available

Long term environmental testing has verified the lifetime superiority of silicone rubber when compared to other polymeric insulating materials. The superiority of silicone rubber in terms of non-wetting surfaces, resistance to UV degradation and surface tracking, performance in contaminated environments, chemical inertness, temperature stability and other important insulating properties is well recognised. The silicone rubber will not support algae and mildew growth, is non-flammable and will not support combustion.

An optional insulated mounting bracket is available as is an earth lead disconnect. This disconnect removes the earth terminal from the arrester in the unlikely event of arrester failure, thus preventing a permanent system fault. An earth disconnect that has operated gives visual indication of internal damage to the arrester and the need for arrester replacement.

AK Power Solutions also provide a “bird cap” and connection leads specific to customer needs.

Description of Operation

During steady state conditions, line-to-ground voltage is applied continuously across the arrester terminals. When surges occur, the arrester immediately limits the over-voltage to the required protective level by conducting the surge current to ground. Upon passage of the surge, the arrester returns to its initial state, conducting minimal leakage current.

The protective characteristics of the arrester provide excellent over-voltage protection for distribution system equipment.

Selection

The rating of an arrester is the maximum power frequency line-to-ground voltage at which the arrester is designed to pass an operating duty-cycle test.

Under fault conditions and other system anomalies, higher voltages can be experienced by the arrester. To ensure that the arrester ratings will not be exceeded, due consideration must be given to system maximum operating voltage and system grounding conditions. Grounding conditions depend upon whether the system is solidly grounded, whether it has a neutral impedance or is ungrounded.

Technical Specifications

Type	Rated Voltage	MCOV	Residual Voltage					Dimensions			Weight
			1micro second Steep front 10kA	8/20 microsecond Waveform				Height	Creepage	Strike	
				2.5kA	5kA	10kA	20kA				
EQ 6 EQ 9 EQ 10.5 EQ 12 EQ 15 EQ 18 EQ 21 EQ 24 EQ 27 EQ 30 EQ 33 EQ 36	kV RMS	kV RMS	kV	kV	kV	kV	kV	mm	mm	mm	kg
	6.0	5.1	21.5	17.5	18.6	20.0	22.4	280	510	223	1.8
	9.0	7.6	32.7	26.0	28.0	30.0	34.0	280	510	223	1.8
	10.5	8.9	38.0	30.0	32.0	35.0	39.0	280	510	223	1.9
	12.0	10.2	43.0	35.0	37.0	40.0	45.0	280	510	223	1.9
	15.0	12.7	54.0	44.0	47.0	51.0	56.0	280	510	223	2.0
	18.0	15.3	65.0	52.0	56.0	61.0	67.0	380	745	329	2.8
	21.0	17.8	76.0	61.0	65.0	71.0	78.0	380	745	329	2.9
	24.0	20.4	87.0	70.0	75.0	81.0	89.0	380	745	329	3.0
	27.0	23.0	98.0	79.0	84.0	91.0	101.0	500	1020	446	3.9
	30.0	25.5	109.0	87.0	93.0	101.0	112.0	500	1020	446	4.0
	33.0	28.0	120.0	96.0	102.0	111.0	123.0	600	1255	552	4.8
36.0	30.6	131.0	105.0	117.0	121.0	134.0	600	1255	552	4.9	

Ordering Information

When ordering please state your requirements for the following options:

- Arrestor Type
- Bird Cap
- Lead (nominate length)
- Bracket
- Earth Lead Disconnect