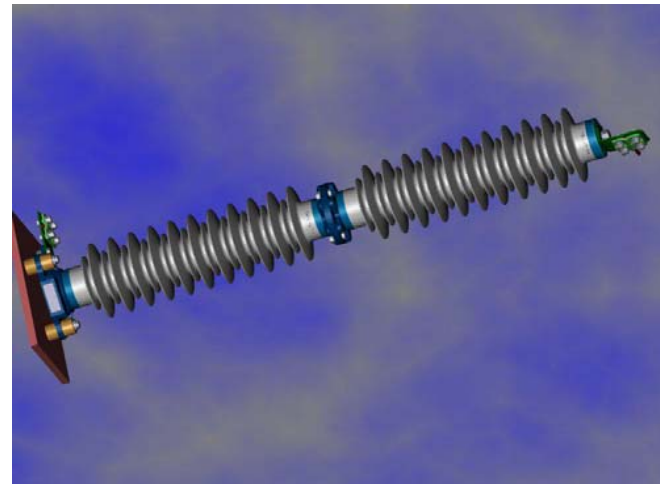


Surge Arrester

Type series SBKC 30...444 / 10.3

For indoor and outdoor application

Assembly, transport, operating and maintenance instructions



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8. DISPOSAL

Surge arresters in silicone housings are environmentally compatible products and therefore safe to dispose of.

The components are:

- Silicone rubber
- Aluminium
- Metal oxide varistors
- Glass fiber reinforced plastic rods
- Installation parts of steel or stainless steel

Silicone rubber can decompose to SiO_2 and CO_2 .

The metal oxide varistors are made of sintered ceramic which is 98 % ZnO. Other ingredients are:

- abt. 1 %: Bi_2O_3 and Sb_2O_3 ,
- abt. 0.1 % to 1 %: NiO and Cr_2O_3
- abt. 0.1 % glass coat containing lead oxide

The substances in the metal oxide varistors are oxides. There is no health or environment risk.

Specifications may change as design revisions take place.

7. MAINTENANCE, REPAIRS

Surge arresters do not have parts subject to wear and tear and require **no maintenance**.

Spare parts are not needed.

Replacement after overload or damage by animals

Overload during operation can cause damage to the arrester and leave e. g., fire or cracking.

Minor damage which animals cause to the silicone encapsulation (e. g., birds, martens, mice, etc.) do not affect the function of the arrester. Severe damage reduces the insulation resistance of the encapsulation.

Damaged surge arresters are no optimal protection for the switchgear and should be inspected for function and replaced if necessary.

Cleaning

The silicone housing is water-repelling and therefore normal dirt or dust has no effect on the insulation resistance of the housing. Thick coats of dirt or dust and obstinate smudge should be removed from the arrester. Do **not** use solvent or abrasive cleaner, only clean with warm water.

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1. SCOPE

This operation manual is an important document for the use of the surge arrester. It describes the function and application in all phases of service.

Surges can be caused by lightning or switching operations in the switchgear. Surge arresters protect the isolation of high and medium voltage equipment from overload and destruction due to over voltage.

The manufacturer is not responsible for damage caused by use other than or beyond that for which the surge arrester is intended. The risk is solely borne by the user.

2. SAFETY

The arrester has been designed and built according to best safety practice and is a state of the art product.

Despite this, risks of injury and damage of assets cannot completely be avoided.

Arresters must only be used in good technical state and as described in these operation instructions.

An overloaded or damaged arrester must be removed and replaced.

Principles to observe for work with surge arresters:

- Work to be carried out only by qualified, trained personnel.
- Personnel to be instructed regularly in proper and safe work practices for high and medium voltage equipment.
- Safety instructions of the operator of the HV and MV system and all requirements of national safety agencies to be followed.

Grounding

Connect the arrester as near to the system ground as possible. Observe maximum cross sections:

Copper	80 mm ²
Aluminium	150 mm ²

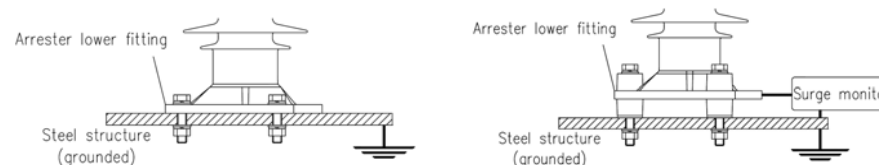
Grounded connection

Connect the system ground at the ground terminal of the arrester.

Isolated connection

If a surge counter or other monitoring equipment is connected, isolate the arrester. Connect the system ground terminal of the arrester via the monitoring device. Observe minimum cross sections:

Copper	80 mm ²
Aluminium	150 mm ²



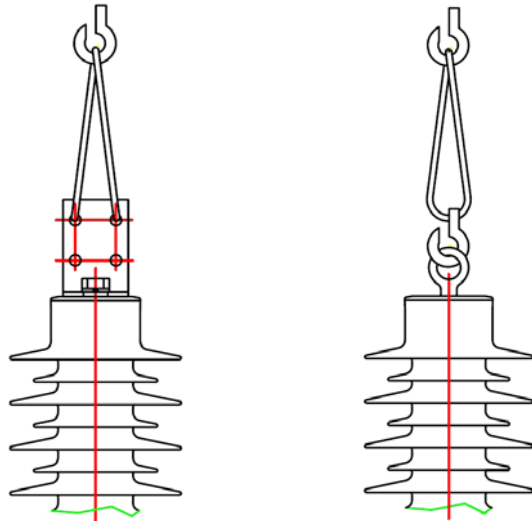
If the surge arrester has as a grading ring, install the ring as shown in the drawing.

Transport for installation

Depending on the weight and the installation site of the arrester, a crane may be required. Depending on the arrester design, it is attached to the crane as follows:

Attach to flat-type connection Attach to ring lug

Attach the rope as shown.



3. CONSTRUCTION AND FUNCTION

At operating (continuous) voltage, U_c , only a small capacitive current (mA range) flows through the surge arrester. As voltage increases, the varistors adopt conducting state almost without delay. The energy of the over voltage wave is converted in heat in the arrester; the voltage rise is limited to within the residual voltage of the arrester. After conduction, the varistors return immediately to the weak conduction state.

Surge arresters consist of a number of series-connected non-linear varistors proportionate with the operating voltage. The varistors are held together by head and foot metal parts and glass fiber reinforced plastic rods. The silicon encapsulation protects the arrester from weather and environmental effects.

Due to their low weight, high mechanical strength and excellent arresting characteristics, arresters of the SBKC type series are preferred for the protection of transformers, cables, capacitors, generators and other high and medium tension equipment.

SBKC series arresters can be installed vertically (standing or suspended) or horizontal or skewed.

4. SPECIFICATION

Technical data, dimensions, weights and connection and installation versions are described in the product literature and drawings.

Nameplate data

Nameplate data is as follows:

TRIDELTA = manufacturer
IEC 60099-4 = international test specification

U_c = max. permitted continuous voltage in kV
 U_r = rated voltage in kV
 I_{sn} = nominal discharge current in kA
 I_k = nominal short-circuit current (0.2 sec) in kA
Frequency range in Hz
Serial number
Year of production

5. TRANSPORT, DELIVERY AND STORAGE

Packing and transportation

Surge arresters are transported in wooden cases, standing and secured against toppling or displacement. Product test reports, installation instructions and accessories are included in the case. The safety instructions printed on all packages must be observed for proper handling and transport.

Delivery

When the product is delivered, check for short delivery immediately.
If the delivery is incomplete or otherwise not as ordered, inform the supplier or forwarder without delay.
Inspect the consignment for damage.
The forwarder and the manufacturer should be notified if damage is found.

Caution:
Do not use a damaged arrester.

Storage

The arrester can be stored in original packaging. Store the arrester in a well ventilated and dry place.

6. ASSEMBLY AND START-UP

Surge arresters must be installed and commissioned by authorized technical personnel.

Always install the surge arrester as close as possible to the equipment it protects. The length of the connecting lines is decisive.

The support or foundation for the arrester should be level, clean and sufficiently load-bearing. Clean all contact surfaces thoroughly and apply acid free terminal grease before installation. Install the arrester with the screens down.