

Installation Instruction

Polymeric Medium Voltage ZnO Surge Arresters

Type:

BDA, CPA, HDA, NDA, OCP, SPA



ISO 9001 & 14001



EC 60099-4; Ammedment 2 2001

Safety Warning



Surge arresters should be installed only by competent personnel familiar with good safety practices and the handling of high voltage electrical equipment.

The enclosed installation instruction is not intended as a substitute for adequate training and experience in safe procedures nor to replace or supersede existing safety, operating and maintenance procedures.

Installation Note

Arresters are typically to be installed between the line conductor and ground.

Only in a few special cases (motor protection, cable sheath protection, ...) arresters may be installed in a different way. Please consult your system administrator for details if required.

Before Starting

- Check if all parts (surge arrester & accessories) are included in the box according to the description printed on the carton label.
- If the accessories come disassembled please assemble all parts as appropriate prior to the final installation. Please refer to the enclosed drawings for the correct torque.
- Check if the arrester or the accessories have been damaged during transport. Never install a damaged arrester. It may fail violently, causing severe personal injury.
- All surge arresters carry a nameplate giving details of arrester type and voltage rating. Check the voltage rating of each single arrester. Do not install arresters with voltage ratings other than specified by your system administrator.
- Check if the arrester and the accessories fulfill the local requirements in terms of mechanical dimensions. Do not alter the arrangement of the accessories or the accessory itself! Do not leave out any parts!
- Please ask your local system administrator about the minimum clearances you have to meet between live parts and ground. The values for outdoor substations do apply. If not available you may refer to Table 1 instead showing the values according to IEC 60071-2.
- If you are installing a special kind of surge arresters like SPA-I with insulated line lead,

shorter clearances may apply. Please refer to the relevant addendum covering those arresters.

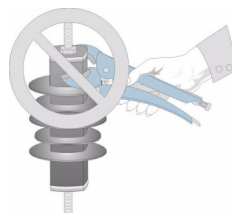
- If unsure about assembly sequence, please request and refer to relevant assembly drawing.

Arresters applied at voltages higher than rating may cause damage and injury. Check the arrester rating, marked clearly on the name plate, to ensure correct application!



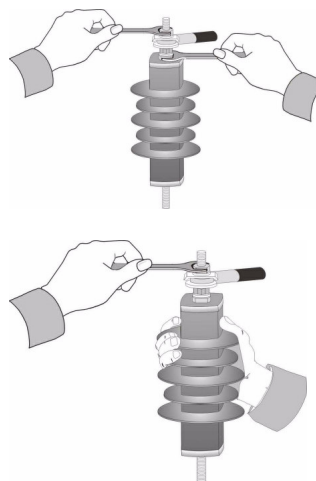
Installation

Do not handle the polymeric housing of the arrester with tools!



Certain type of arresters ave a protrusion at both ends of the arrester.

You can hold the arrester there safely with a second wrench to fasten the nuts included with some accessories. Use the protrusion on the side close to the nut to be fastened.



In case the arrester hasn't got a protrusion please support the arrester by hand.

- Make sure that the electrical system is de-energized and earthed.

- ✓ Strictly follow the local safety instructions and maintenance procedures.
- ✓ Select a mounting position as close as practicable to the equipment (transformer, cable termination, ...) to be protect in order to obtain the highest degree of protection.
- ✓ Connect the ground lead to the arrester ground terminal stud or accessory. Fasten the nut to the torque indicated in the relevant drawing.
- ✓ In case the arrester comes with a metallic bracket attached it is possible to connect the ground lead to the bracket. The line lead may also be left out if the bracket or the arrester terminal is directly mounted on the earthed tank or frame of the apparatus provided that the electrical contact is reliable and earthing interconnections are suitable. In doubt please use separate conductor cables or strip to connect the bracket or the arrester terminal to system earth.
- ✓ Connect the line lead to the arrester line terminal stud or accessory. Fasten the nut to the torque indicated in the relevant drawing.
- ✓ Make the arrester ground and line connections as short as possible avoiding sharp bends and loops. If the line connection cannot be made short, consider connecting the line directly to the arrester and continue from there.
- ✓ The continuous mechanical stress applied to the arrester i.e. via the connection shall not exceed the specified values. Mechanical overload may shorten the arrester's service lifetime significantly.
- ✓ In case the arrester is equipped with a disconnector device (a „D“ is shown in the middle of the description, e.g. ARR-ACC-BDM.) make sure that the ground lead is flexible enough to allow the disconnector to operate properly.
- ✓ Re-energize the electrical system. Avoid single-phase switching because this may lead to ferro-resonance of the transformer! If single-phase switching needs to be done, make sure that you are operating with protection as arresters may be destroyed in case of ferro-resonances.

Maintenance

Bowthorpe arresters are maintenance free. There are no serviceable parts inside.

Performance checks are not required during the expected service life.



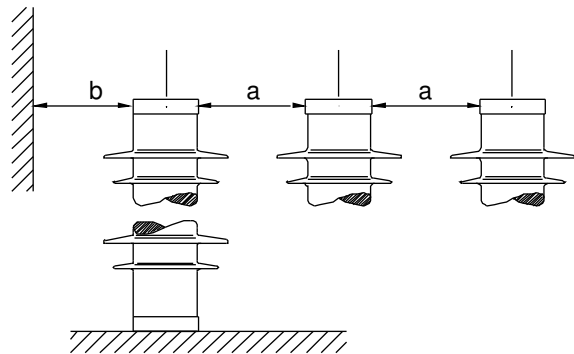
Removing Arresters

The polymeric housing of failed surge arrester sometimes is inflated. This can happen if the fault current is switched off fast before the housing ruptures!

This typically does not represent a hazard if the arrester is allowed to cool down to ambient temperature. Be careful anyway when removing such kind of arresters.

- ✓ Make sure that the electrical system is de-energized.
- ✓ Strictly follow the local safety instructions and maintenance procedures.
- ✓ Disconnect the line lead from the circuit.
- Ⓟ Disconnect the ground lead from the circuit.

Clearances



System Voltage U_m [kV]	ph/ph* (a) [mm]	ph/ground* (b) [mm]
7,2	152	121
12	182	151
17,5	222	191
24	282	251
36	382	351

* local regulations and standards may require wider clearances!

Table 1: Minimum clearances following IEC60071-2 for altitudes up to 1000 m (3300 ft).

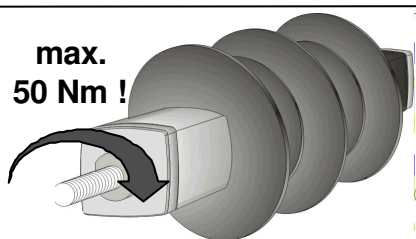


Fig 1: Max. torque at the terminals of the arrester

Other considerations: Altitude

The clearances quoted above are recommended min clearances required for applications up to 3,300 ft (1,000m metres). For installations at higher altitudes, the accepted practice is to add 3% to the clearance length for every 1,000 ft (300 metres) increase in altitude above 3,300 ft (1,000 metres). The 3% is also added to the external housing flashover distance of the arrester itself.

The information contained in this installation instruction is intended to describe the correct method of installation for this product. However, Tyco Electronics has no control over the field conditions which influence product installation. It is user's responsibility to determine the suitability of the installation method in the user's field conditions. Tyco Electronics only obligations are those in Tyco Electronics standard Conditions of Sale for this product and in no case will Tyco Electronics be liable for any other incidental, indirect or consequential damages arising from the use or misuse of the product.

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