INSTRUCTIONS

GEK-34527
Supersedes GEK-33269

ALUGARD® II STATION ARRESTERS

MODEL 9L11M-SERIES 3-312 KV

MODEL 9L16B-SERIES ABOVE 312 KV

CAUTION: THE EQUIPMENT COVERED BY THESE INSTRUCTIONS SHOULD BE INSTALLED AND SERVICED ONLY BY COMPETENT PERSONNEL FAMILIAR WITH GOOD SAFETY PRACTICES. THIS INSTRUCTION IS WRITTEN FOR SUCH PERSONNEL AND IS NOT INTENDED AS A SUBSTITUTE FOR ADEQUATE TRAINING AND EXPERIENCE IN SAFE PROCEDURES FOR THIS TYPE OF EQUIPMENT.

The ALUGARD II Station Arrester is of single-phase design, suitable for outdoor service. Three arresters are required for three-phase installations. Smaller, lower-rated models are shipped assembled, while the larger, higher-rated models consist of four to six individual units which must be assembled. The arresters require no testing before being placed in service, and are completely self-supporting.

Each ALUGARD II arrester unit contains a number of THYRITE® valve and alurite gap elements permanently sealed in a porcelain housing provided with pressure-relief construction. Metal end fittings, cemented to the housing, provide a means for bolting the arrester units together or to a foundation.

APPLICATION

Arresters are designed to limit surge voltages to a safe value by discharging the surge current to ground, and to interrupt the power-frequency follow current. The ability to interrupt power-follow current is limited to applications where the power-frequency voltage at the arrester never exceeds the arrester's continuous or short-time rating. In case of doubt concerning application, consult your local General Electric Company representative.

INSTALLATION

INITIAL INSPECTION

ALUGARD II arresters are designed to withstand severe shipping shocks. In addition, each unit is shipped in a carefully designed container. If the crate or carton shows signs of rough handling upon receipt, the porcelain housing should be inspected for chips or cracks. If damage is apparent, the arrester should not be installed. Claims for such damage should be registered immediately with the common carrier.

The model number and continuous voltage rating of each complete arrester are identified on the nameplate which is attached to the lower end fittings. The nameplate information should be checked against the shipping memorandum. If at any time it is necessary to correspond with the General Electric Company, complete nameplate data should be furnished in order to expedite replies.

LOCATION

Install the arrester electrically as close as practicable to the apparatus being protected. Keep line and ground connections short and direct.

FOUNDATION

The footings of all outdoor piers or supports should extend below the frost line and be elevated above the ground line sufficiently to meet personnel safety requirements.

ASSEMBLY

Single-unit Arresters

Each arrester, except those requiring grading rings, is shipped completely assembled. When grading rings are needed, bolt them securely on the line end, before electrical connections are made.

All single-unit ratings can be suspension mounted if the line connection is made to the top of the arrester. The top cap of each standard ALUGARD II unit has provisions for attaching an insulator clevis fitting. Special ALUGARD II arresters rated 258 kV and below can be supplied for rigid suspension mounting from station structural members.

Install the arrester on the foundation, using care to see that it is perpendicular, shimming under one or two feet if necessary. It is important that all three feet rest solidly on the foundation before the foundation bolts are drawn down to avoid unnecessary stresses in the castings. Tighten the bolts firmly. The opening for pressure-relief should be oriented so as to minimize damage to adjacent equipment by incandescent gases in the remote event of arrester failure.

Multi-unit Arresters

It is important that the individual arrester units be erected in the exact order specified on the outline drawing shipped with each arrester. The model number of the arrester unit is given on the unit nameplate which is attached to the bottom end casting. The base unit also bears the larger arrester nameplate.

Install the base unit on the foundation, using care to see that it is perpendicular, shimming under one or two feet if necessary. It is important that all three feet rest solidly on the foundation before the foundation bolts are drawn down to avoid unnecessary stresses in the castings. Tighten the bolts firmly. The opening for pressure-relief should be oriented so as to minimize damage to adjacent equipment by incandescent gases in the remote event of arrester failure.

Select the next unit carefully by reference to the outline drawing and bolt it securely to the base unit. The end fittings are carefully affixed at the factory to assure parallelism, so no further shimming should be required provided it was carefully done when the base unit was installed.

The line terminal cap has a central lifting hole and it may be used, if desired, as an aid to erection by bolting it temporarily to each unit in turn.

Be sure to install the grading rings at the points called for on the outline drawing.

LINE AND GROUND CONNECTIONS

Connect the arrester ground to the apparatus ground and the main station ground, utilizing a reliable common ground network of low resistance.

Connection to the line should be made through a suitable line connector. Line connections should be made in such a manner that no excessive mechanical stress is placed on the arrester. When connecting the arrester to an energized line, it is imperative that a quick, positive, continuous action be made to avoid possible damage to the arrester.

CAUTION: ALWAYS BE CERTAIN THAT THE GROUND CONNECTION IS FIRMLY MADE BEFORE CONNECTING THE ARRESTER TO AN ENERGIZED LINE. IF AN INSULATING UNIT IS USED AT THE GROUND END TO PERMIT USE OF A DISCHARGE COUNTER, THE DISCHARGE COUNTER MUST BE CONNECTED (OR THE INSULATING UNIT SHORTED OUT) BEFORE CONNECTING THE ARRESTER TO AN ENERGIZED LINE.

CLEARANCE

The term "clearance" means the actual distance between any parts of the arrester at line potential and any object at ground potential or other phase potential.

Clearances listed in the appropriate outline print packed with each arrester are the minimum recommended for conventional outdoor substations. Arresters rated 96 kV and below may be enclosed completely using the same clearance values. The values shown are suitable for altitudes up to 3300 feet (1000 meters). At higher altitudes, add 3 percent for each additional 1000 feet of elevation. The arrangement of the foundation plans shown on the outlines can be modified if proper clearances are maintained.

ALTITUDE

3-48 kV models 9L11M arresters can be used from 0-18,000 feet altitude.

60-312 kV arresters can be used from 0-10,000 feet altitude. ALUGARD II arrester sealing would allow these units to be applied to 18,000 feet, but they must be limited to 10,000 feet because reduction of air density increases the possibility of external flashover on these 9L11MHA series arresters.

ALUGARD II arresters, 9L16B series can be used from 0-10,000 feet altitude.

PERIODIC INSPECTION AND MAINTENANCE

Before inspecting or handling, disconnect the arrester from line and, as a safety precaution, ground the line end. *Remove this temporary ground before reconnecting the arrester onto the line.*

ALUGARD II arresters require no special care. They may be hot-washed, subject to the usual care and techniques used in hot-washing insulation to avoid external flashover.

These arresters do not require testing, and no test which applies power voltage in excess of maximum arrester voltage rating should be made without consulting the General Electric Company. There is no single field test which will indicate the complete operating characteristics of the arrester.

PORCELAIN TOP UNITS

Porcelain top arresters with center line terminals are available and are particularly suited for use in metal cubicles. These arresters can be mounted in any position when installed in a reasonably clean and dry indoor location.

DISCHARGE COUNTERS

An insulating base is required when installing a discharge counter with arresters. Both of these are accessories and are described in Handbook Section 5920. Install the discharge counter and insulating base as shown on the outline drawing furnished with the counter.