

INSTRUCTIONS FOR TRANQUELL® XE™ PORCELAIN SURGE ARRESTERS MODELS 9L11 & 9L16

CAUTION: THE EQUIPMENT COVERED BY THESE INSTRUCTIONS SHOULD BE INSTALLED AND SERVICED ONLY BY COMPETENT PERSONNEL FAMILIAR WITH LOCAL CODE AND 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.

WARNING: ARRESTERS APPLIED AT VOLTAGES HIGHER THAN RATING MAY CAUSE DAMAGE AND/OR INJURY. CHECK THE ARRESTER RATING, MARKED CLEARLY ON THE NAMEPLATE, TO ASSURE CORRECT APPLICATION.

INTRODUCTION

The TRANQUELL surge arresters are designed to limit surge voltage by conducting the surge current to ground, and thus avoiding equipment damage. The arrester is of single pole design, suitable for outdoor use, and designed in accordance with the latest revision of the ANSI/IEEE C62.11 standard. Three arresters are required for three-phase installation. Smaller, lower rated arresters are shipped assembled, while larger high rated models consist of two to five individual units which must be assembled.

Each TRANQUELL arrester contains a number of vertically stacked zinc oxide valve elements permanently sealed within a porcelain housing. Each housing is provided with a means of pressure relief in the unlikely event of an arrester failure. Metal end fittings, cemented to the housing, provide a means to bolt the arrester sections together and to a foundation.

CONTINUOUS OPERATING VOLTAGE

TRANQUELL XE arresters must be applied where the continuous phase-to-ground power frequency voltage at the arrester location does not exceed the arrester's maximum continuous operating voltage (MCOV) capability as indicated on the nameplate. In case of doubt concerning application, consult your local GE company representative.

ALTITUDE AND TEMPERATURE

The 9L11 & 9L16, series arresters can be used from 0 to 12,000 feet (3600m) altitude. These arresters can be used in locations where the maximum temperature does not exceed 60°C and where the weighted average temperature does not exceed 45°C. The minimum operating temperature is -40°C.

INITIAL INSPECTION

Although it is very unlikely, extraordinarily rough handling can result in damage to the TRANQUELL XE surge arrester. Careful inspection of each arrester housing prior to installation is required to assure that no damage has occurred during shipment. **If damage is apparent, do not install arrester.** Claims for shipping damage should be registered immediately with the common carrier.

The model number, rating, and maximum continuous operating voltage (MCOV) are identified on the nameplate attached to the lower end fitting. The nameplate information should be checked against the shipping memorandum. If at any time it is necessary to correspond with the GE Company, complete nameplate data should be furnished in order to expedite replies.

INSTALLATION

LOCATION

Install the arrester electrically as close as practicable to the equipment to be protected. Keep the arrester connections short and direct. 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.

It is permissible to mount some low voltage TRANQUELL arresters horizontally. However, the GE Company should be consulted for each application to be sure that horizontal mounting is permissible for a particular catalog number. When mounted horizontally, the pressure relief vents must be pointed downward.

ASSEMBLY

Single unit arresters

Each arrester is shipped completely assembled. Install the arrester vertically on the foundation ensuring that it is perpendicular, shimming under all but one foot if necessary. It is important that all feet rest solidly on the foundation before foundation bolts are secured to avoid unnecessary stresses in the end fittings. Tighten the bolts firmly. The pressure relief vents should be oriented to minimize damage to adjacent equipment by incandescent gases in the unlikely event of arrester failure.

Multi unit arresters

Important: Multi-unit TRANQUELL Arresters consist of units with identical serial numbers to be erected in the exact order as specified on the base unit nameplate. The base unit bears the complete arrester nameplate, which lists the unit assembly sequence top to base. Also, each unit has its own nameplate located on the upper end fitting. The serial and model numbers of each unit are given on this nameplate.

Special arresters consisting of two or more **parallel** units **must** have identical serial numbers (but may have different, sequential serial number suffixes) and **are not** interchangeable with units having different serial numbers.

Install the base unit vertically on the foundation using care to see that it is perpendicular, shimming under all but one foot if necessary. It is important that all feet rest solidly on the foundation before foundation bolts are secured to avoid unnecessary stresses in the end fittings. Tighten the bolts firmly. The pressure relief vents should be oriented to minimize damage to adjacent equipment by incandescent gases in the remote event of arrester failure.

These instructions do not purport to cover all details or variations in equipment nor to provide for every possible contingency to be met in connection with installation operation or maintenance. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to the GE Company.

Select the next unit carefully by reference to the serial number, unit model number and the outline drawing; then mount it on top of the base unit and secure it loosely with bolts. It must be checked carefully to determine that it is vertical, and shimmed under all but one foot if necessary. This procedure should be repeated as necessary for arresters composed of more than two units. Be sure to install the grading rings at the points called for on the outline drawing.

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. Any clearances given in the catalog are the minimum recommended and were determined such that the operation and capability of the arrester is not significantly affected. These clearances apply for conventional outdoor substations. These values should be used only after it has been determined that any local codes or standard practices do not require larger clearances.

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. No more than 25 ft.-lbs. Of torque should be applied while tightening down any nuts.

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.

PERIODIC INSPECTION, MAINTENANCE AND REMOVAL

Before inspecting or handling, disconnect the arrester from the line. When a metal-oxide arrester is disconnected from an energized line, it is possible for a small amount of static charge to be retained by the arrester. The energy available in the form of retained charge on the TRANQUELL XE porcelain arresters is imperceptibly small. After disconnecting the arrester from the line, a slight "pin-prick" type spark may be felt by anyone touching the line end. As a precautionary measure, install a temporary ground on the line end of the arrester after it is disconnected from the line. This will ensure that any retained charge is discharged to ground. *Remove the temporary ground before the arrester is re-installed.*

TRANQUELL 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 that applies power voltage in excess of maximum continuous operating voltage of the arrester should be made without consulting the GE Company. There is no single field test that will indicate the complete operating characteristics of the arrester.

WARNING: To avoid electrical shock when removing an arrester from service, consider it to be fully energized until both the line and ground leads are disconnected.

STORAGE

As all TRANQUELL XE arresters are designed for outdoor use, they may be stored outdoors if suitable precautions are taken to prevent deterioration of the packing material. The arresters may be covered with a polyethylene or other waterproof covering to keep them dry, clean, and free from litter until used. In climates where outdoor temperature and humidity extremes rapidly deteriorate the cardboard packing material, it is recommended that arresters to be stored outdoors be removed from their packing and be bolted (vertically) to a skid. *If the arresters units are stored in a horizontal position, the pressure relief vents must be pointing downward.*

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 environment.

DISCHARGE COUNTERS

An insulating base is required when installing a discharge counter with arresters. Both of these are accessories and are available through your local GE Sales Office. Install the discharge counter and insulating bases as shown on the outline drawing furnished with the counter.