



**INSTALLATION INSTRUCTIONS**  
**INSTRUCTION SHEET NO. 17-5156**  
 Rev 1 (10/13)  
**POLYMER-HOUSED ARRESTERS**  
**EVP - series**

**⚠ 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.

**⚠ WARNING**

Prior to installing this product, check the nameplate information to verify that it is the correct product for the application. Verify that the nameplate information corresponds to the information provided on the outline drawing.

**INTRODUCTION**

EVP surge arresters are designed to limit surge voltage by conducting the surge current to ground, and thus avoiding equipment damage. The arresters are of single pole design, suitable for outdoor use, and designed in accordance with the latest revision of industry Standards ANSI C62.11 and/or IEC 60099-4. Each EVP arrester contains a number of vertically stacked zinc oxide valve elements overwrapped with an epoxy-impregnated fiberglass filament wrap, contained within ESP® polymer weathershed housing(s). The metal end fittings attached to the housing(s) vary with the specific design ordered.

Three arresters are required for three-phase installation. With the exception of special multi-rated designs, arresters are shipped as a single assembled unit. Multi-rated arresters consist of separate units that must be stacked and bolted together in the field.

shipped in wooden crates.

Terminal hardware items are shipped unattached to the arrester, and will be contained inside the carton or crate. Install all hardware and accessories to the arrester as indicated on the outline drawing. During assembly please refer to the maximum recommended fastener tightening torque values listed below:

Stud Size	Maximum Recommended Tightening Torque (ft.-lb)
3/8"	20
1/2"	40
5/8"	90
3/4"	125

Grading rings (where applicable) are shipped separately, strapped to a wooden pallet.

**APPLICATION**

**⚠ WARNING**

EVP arresters must be applied where the continuous phase-to-ground voltage at the arrester location does not exceed the arrester continuous voltage capability as indicated on the nameplate. Arrester physical size may not determine the voltage rating. Do not install arrester if type, rated voltage and maximum continuous operating voltage are not exactly the same on the nameplate and packaging labels.

**INITIAL INSPECTION**

Rough handling can result in damage to the surge arrester. Arresters or arrester units should be carefully removed from the carton or crate for inspection. Careful inspection of individual polymer housings prior to installation is required to assure that no damage has occurred during shipment. *If damage is apparent, do not install the arrester.* Claims for shipping damage should be registered immediately with the common carrier.

The arrester model number, rated voltage and MCOV are identified on the arrester nameplate. The nameplate information should be checked against the shipping memorandum. If at any time it is necessary to correspond with HPS, complete nameplate data and order number must be furnished for all correspondence.

**ALTITUDE AND TEMPERATURE**

EVP-series arresters are designed for normal use from 0 to 1,800 meters (6000 feet) altitude. Higher altitude installations may require engineering analysis. EVP arresters can be used in locations where the peak temperature does not exceed 60°C and where the weighted average temperature does not exceed 40°C. Per Standards, the minimum usual operating temperature for arresters is -40°C.

**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 arresters horizontally or at an angle, taking into account that the weight of the arrester now

**PACKAGING FOR SHIPMENT**

Smaller, lower rated arresters are shipped in cardboard cartons; larger, higher rated arresters or arrester units are

becomes an additional component in the overall cantilever loading on the base attachment.

## **MOUNTING**

### **Single-rated arresters**

For base-mounted arresters, shim as necessary under all but one foot to obtain perpendicularity to the foundation. Ensure that all feet are firmly positioned before drawing down foundation bolts to avoid unnecessary stresses in the end fittings. Tighten the bolts firmly, to not more than 34 Nm (25 ft-lbs).

### **Multi-rated arresters**

Special **multi-rated** arresters have two or more units, of which one or more of the units can be shorted by a supplied shorting bar to obtain an arrester voltage rating that is lower than the voltage rating of the arrester with the shorting bar removed. The shorting bar is connected to the arrester using terminals provided. The outline drawing supplied with the arrester indicates the locations for installation of the terminals.

## **⚠ CAUTION**

**Units of multi-unit arresters must be erected in the exact order identified on the outline drawing and on the nameplate attached to the lower end fitting of the bottom unit.**

Install the base unit vertically on the foundation using care to see that it is perpendicular, shimming under all but one foot if necessary. Ensure that all feet are firmly positioned before drawing down foundation bolts to avoid unnecessary stresses in the end fittings. Tighten the bolts firmly, to not more than 34 Nm (25 ft-lbs).

Select the next unit carefully by reference to the unit model number and the stacking order shown on the arrester nameplate and outline drawing; then mount it on top of the base unit and secure it loosely with bolts provided. Carefully check that the unit is vertical, shimming under all but one foot if necessary. Repeat this procedure for additional units. Tighten all nuts firmly, to not more than 34 Nm (25 ft-lbs).

### **GRADING RINGS**

Depending on voltage rating, the EVP arrester design may require installation of a grading ring. The outline drawing identifies the proper location of the grading ring. Install the ring as indicated with the bolts provided.

### **LINE AND GROUND CONNECTIONS**

Install supplied line and ground terminals to the arrester as indicated on the outline drawing. Connect the arrester ground to the apparatus ground and the main station ground, utilizing a reliable common ground network of low resistance. Line connections should not place excessive mechanical stress on the arrester. No more than 34 Nm (25 ft-lbs) of torque should be applied while tightening any nuts.

## **⚠ WARNING**

**Always be certain that the ground connection is firmly made before connecting the arrester to an energized line. If an insulating sub-base 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 arrester 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.*

These arresters do not require testing, and no test that applies power voltage in excess of maximum arrester voltage rating should be made without consulting Ohio Brass. **There is no single field test that will indicate the complete operating characteristics of an arrester.**

## **STORAGE**

As all EVP 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 can rapidly deteriorate the packing material, it is recommended that arresters stored outdoors be removed from their packing materials and bolted (vertically) to a skid.

## **DISCHARGE COUNTERS**

An insulating base is required when installing a discharge counter with arresters. Both of these accessories are available through your HPS sales person. Install the discharge counter and insulating bases as shown on outline drawings.

## **RECYCLE PACKAGING**

Corrugated box material is recyclable as is wood crating following recycling industry standard practice. Any spacer foam can be recycled as LDPE.

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*These instructions do not purport to cover all details or variations in equipment or 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 Hubbell Power Systems.*