



INSTALLATION • OPERATION • MAINTENANCE INSTRUCTIONS

"DE-ION" ARRESTERS

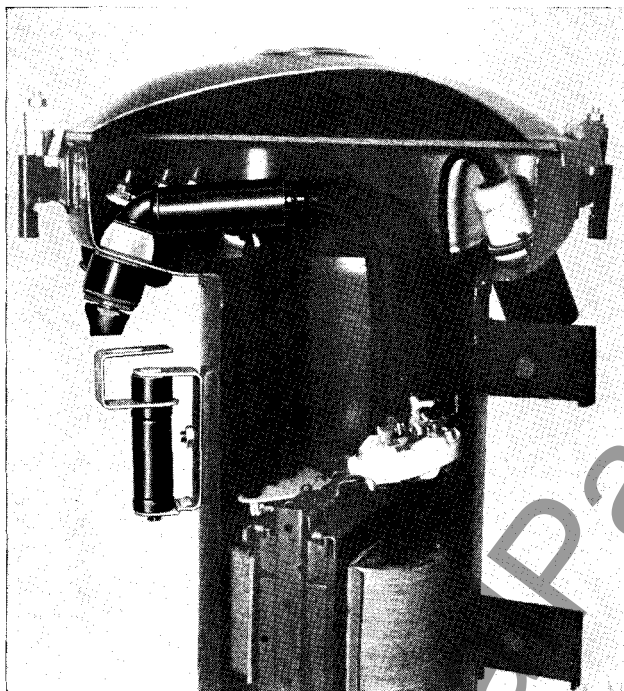


FIG. 1. "De-ion" Arrester Mounted Internally

THE "DE-ION" ARRESTER is a device which provides surge or lightning protection for electrical equipment. It differs from a plain gap in that it interrupts any power follow current within one-half cycle. It is designed to handle exceptionally high surge currents and will even discharge direct strokes of lightning successfully. Internally and externally mounted units are shown in Figures 1 and 2, respectively.

RECEIVING

"De-ion" arresters will normally be shipped assembled with the apparatus with which they are to be used. In any case where they are not, care should be taken to see that they are not stored in any place where water could enter the discharge opening of the arresters or where their packing may become water soaked. Humidity should also not be excessive (over 80% R.H.) for extended periods of time.

INSTALLATION

The "De-ion" arresters will normally be installed and adjusted at the factory on the apparatus with which they are to be used. However, when received, the air gaps should be checked to make certain that they still are in adjustment. The series gap should be set at $\frac{1}{2}$ inch and the shunt gap at $\frac{9}{16}$ inch as shown in Fig. 3.

The sketches in Figure 3 show typical internal and external mountings; mechanical details will differ on some apparatus.

OPERATION

The "De-ion" arrester consists of two metal electrodes separated by a slotted fiber diffuser section. When an excessive voltage appears across the terminals of the arrester, a flashover takes place from one electrode through the slots of the diffuser section to the other electrode. The voltage between the two electrodes then drops immediately to a very low value. Should this flashover

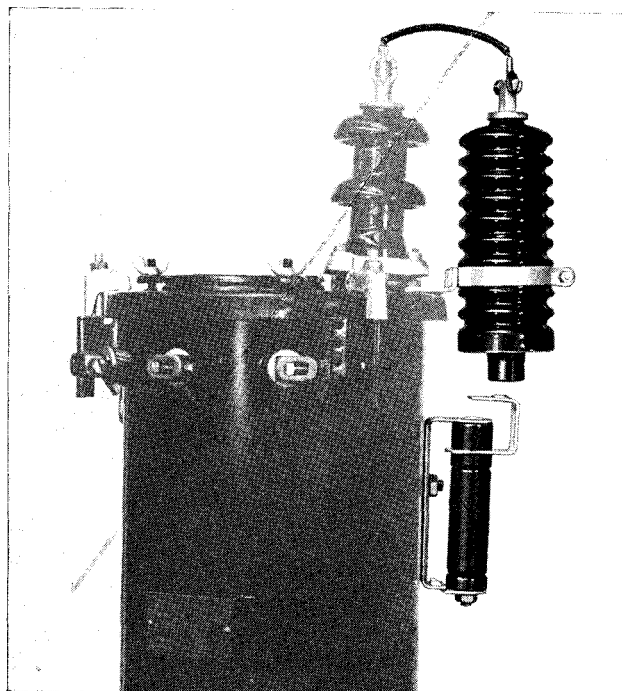


FIG. 2. "De-ion" Arrester Mounted Externally

"DE-ION" ARRESTERS

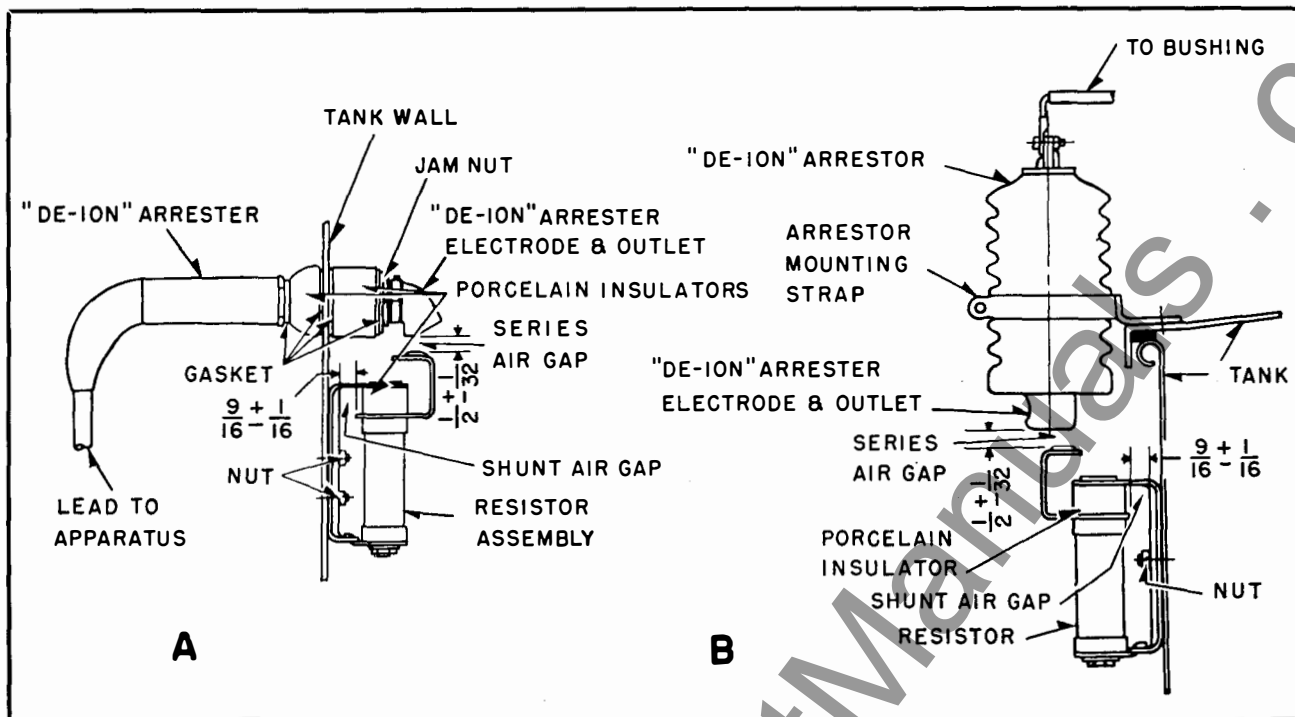


FIG. 3. "De-ion" Arrester: (A) Typical Internal Mounting; (B) Typical External Mounting

take place at a time when the power voltage is of sufficient magnitude to produce and maintain an arc against the deionizing action of the arrester, a flow of power current will follow the surge. This power current is limited to a value less than 500 amperes by the resistor which is in series.

The heat from the current which flows through the slots of the fiber diffuser causes gas to be driven off from the slot walls. This gas mixes into the electrical discharge in such a way that at the first current zero of the power current, the discharge is deionized by the un-ionized gas and the current is not built up in the opposite direction. There is no minimum power current below which the arrester will not interrupt.

There is a series air gap between the "De-ion" arrester and resistor. The purpose of this gap is to prevent any possibility of leakage current through the "De-ion" arrester.

The resistor is provided with a shunt protective gap which flashes over when the surge current reaches about 10,000 amperes. This limits the voltage, due to IR drop, which would be applied to the electrical equipment and also by-passes around the resistor the large amount of energy in a direct stroke. Experience has shown that when surge currents are in excess of 10,000 amperes, the deionizing action of the surge current alone is sufficient

to prevent power follow current so that the resistor is not needed and it can be shunted out by the gap.

MAINTENANCE

Normally, no maintenance is required of "De-ion" arresters. If the apparatus to which the "De-ion" arresters are applied is reconditioned, care should be taken to keep paint off all porcelain surfaces. Neither the resistor nor the arrester proper (internal mounted arresters) should be refinished with a type of paint which might have electrical conduction properties.

RENEWAL PARTS

In case renewal parts are required, these should be ordered through the nearest Westinghouse sales office. A description of the part wanted should be given as well as the serial and stock order number appearing on the nameplate of the complete apparatus. Due to manufacturing problems, repair part details will not be furnished for the "De-ion" arrester proper; instead a complete new arrester will be shipped. Repair resistors or mounting details may be ordered, however. When installing "De-ion" arresters inside other apparatus, care should be used to mount the arresters in exactly the same position as the original arresters so that adequate electrical clearance will be maintained from the high voltage ends of the arresters.



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