

"DE-ION" GAP ARRESTERS INSTRUCTIONS

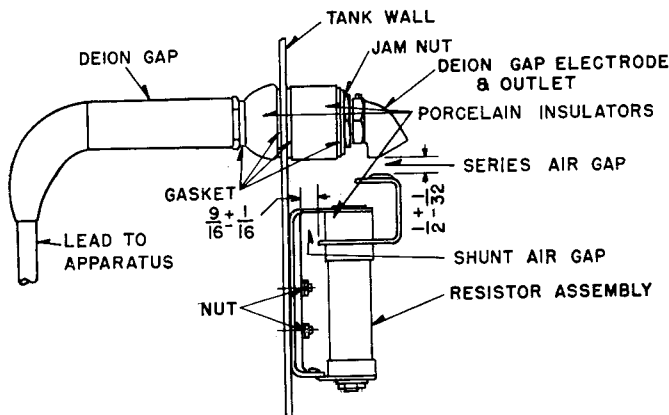


FIG. 1—TYPICAL INTERNALLY MOUNTED "DE-ION" GAP ARRESTERS.

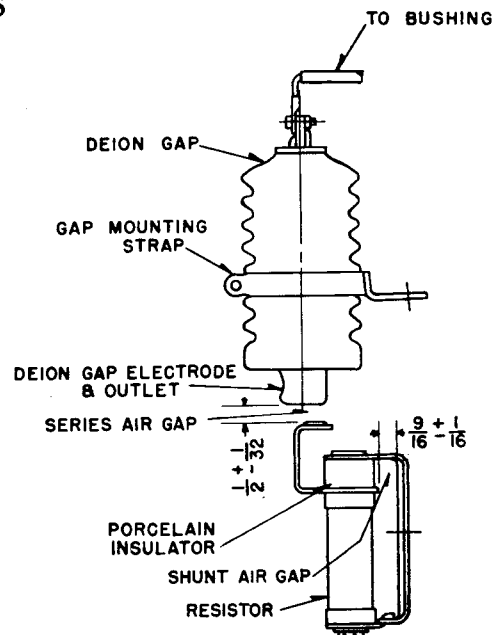


FIG. 2—TYPICAL EXTERNALLY MOUNTED "DE-ION" GAP ARRESTERS.

GENERAL

The "De-ion" Gap 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 successfully discharge even direct strokes of lightning.

CONSTRUCTION AND OPERATION

The "De-ion" Gap Arrester consists of two metal electrodes separated by a slotted fibre diffuser section. When an excessive voltage appears across the terminals of the gap, 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 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 gap, a flow of power current will follow the surge. This power current is limited to a value less than 500 amperes by the "De-ion" Gap resistor which is in series with the gap.

The heat from the current which flows through the slots of the fibre 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 current below which the gap will not interrupt.

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

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.

Internally and externally mounted "De-ion" Gap Arresters are shown in Figs. 1 and 2. Sketches show typical mountings; mechanical details will differ on some apparatus.

SHIPMENT

"De-ion" Gap 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 gap 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" Gap 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 $\frac{1}{2}$ " and the shunt gap at $\frac{9}{16}$ " as shown in Figs. 1 and 2.

MAINTENANCE

Normally, no maintenance is required of "De-ion" Gap Arresters. If the apparatus to which the "De-ion" Gaps are applied is reconditioned, care should be taken to keep paint off all porcelain surfaces. Neither the resistor nor the gap proper (internal mounted gaps) 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 Electric & Mfg. Co. office. A description of the part wanted should be given as well as the serial and stock order number appearing on the name plate of the complete apparatus. Due to manufacturing problems, repair part details will not be furnished for the "De-ion" Gap Arrester proper; instead a complete new gap will be shipped. Repair resistors or mounting details may be ordered however. When installing "De-ion" Gap Arresters inside other apparatus, care should be used to mount the gaps in exactly the same position as the original gaps so that adequate electrical clearances will be maintained from the high voltage ends of the gaps.