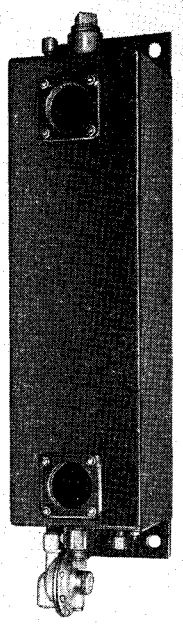
INSTALLATION • OPERATION • MAINTENANCE

INSTRUCTIONS

DEHYDRATING BREATHER



THE DEHYDRATING BREATHER is designed to remove moisture from the air breathed into a transformer. It consists of a rectangular steel container with a glass observation window and a connection pipe located at the top, a breather regulator and another observation window at the bottom.

RECEIVING

When clearances permit, the breather is shipped completely installed on the tank with the dehydrating material in place. If clearances prevent such shipment, the breather is dismantled and shipped as a unit along with the other apparatus. When shipped in this manner, the dehydrating material is removed from the breather and placed in separate containers which are packed and shipped along with the breather.

INSTALLATION

To mount the breather when shipped disassembled: (See Fig. 1).

1. Bolt the dehydrating chamber to the pads provided on the tank wall.

2. Connect the pipe between top of the breather and top of transformer case. The screw joints in the pipe connections must be air tight.

3. Remove the 1-inch pipe plug in top of the dehydrating chamber and fill the chamber with dry dehydrating material.

Note: Use a high temperature grease on the screw joints to prevent rust and permit the parts to be readily removed when necessary.

OPERATION

The breather regulator normally consists of two diaphragm type relief valves which are factory set at either 1, 5 or 8 psi. Both valves may be set at the same values or any combination of the values. One valve permits in-breathing only and one permits out-breathing only, when the internal pressure of the transformer exceeds the predetermined value, positive or negative. With relief valves, the breather regulator eliminates breathing for pressure changes between the relief valve settings,

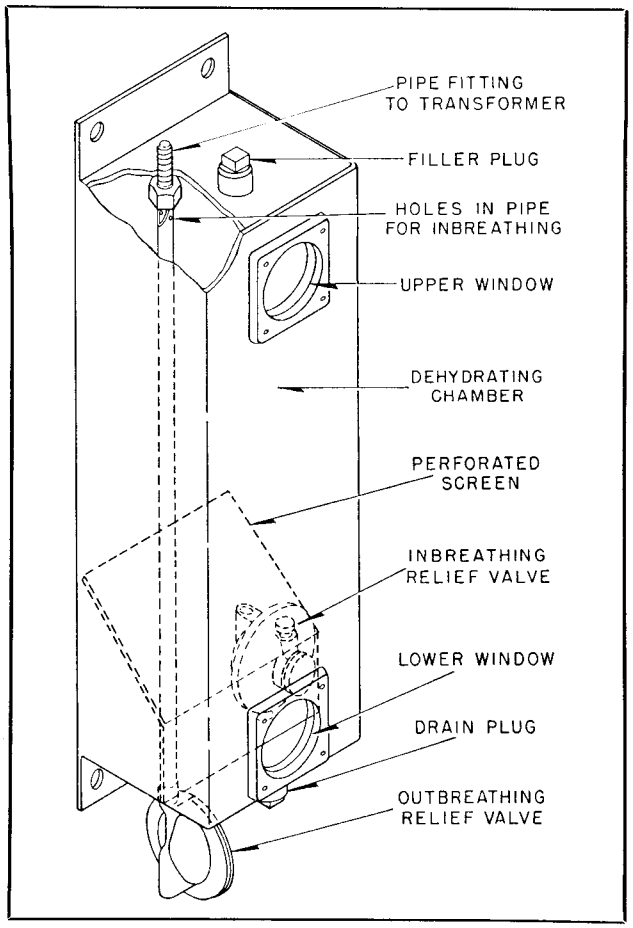


FIG 1. Breather Assembly

thus protecting the dehydrating material from humid atmosphere.

The breather regulator can also be ordered without relief valves, permitting free breathing through the dehydrating material.

During "in-breathing" of the transformer, air passes in through the air intake, up through the relief valve within the housing into the dehydrating chamber. The air then passes up through the dehydrating material which adsorbs all the moisture allowing only dry air to pass into the transformer.

During "out-breathing" of the transformer, air passes down the air exhaust pipe by-passing the dehydrating material and out through the relief valve located outside of the housing. Exhausting directly to the atmosphere prevents contamination of the dehydrating material by oil vapors from the transformer.

The container is filled with a quantity of dehydrating material which is blue in color when in the dry state, but as it becomes saturated with moisture, its color changes to a whitish pink, the color change working up from the bottom.

Note: Two dehydrating materials are available as follows:

1. Cobalt chloride impregnated silica gel, 6 to 16 mesh. This is the material usually packed in the breather as it leaves the factory, and has the color characteristics described above. It is obtainable from the Davison Chemical Corporation, Baltimore, Maryland.

2. Activated alumina, 4 to 8 mesh, grade "E". This material may be obtained from the Aluminum Company of America, or its Agencies.

MAINTENANCE

The quantity of dehydrating material in the breather is sufficient to last from six months to a year before drying is necessary. This time depends upon the size of the transformer, the load cycle of the transformer and the atmospheric conditions. It is advisable that the color of the material behind the lower window be checked frequently at first to determine the approximate length of time that the breather will operate on the particular transformer.

When the whitish pink color begins to appear in the lower part of the top observation window, it is an indication that the dehydrating material should be changed or dried out in the near future.

A recommended method is to have a second charge of dry dehydrating material kept on hand in a sealed container. Then it is only necessary to remove the damp material and replace it with dry material. The damp material removed can be dried out and stored for the next change.

To replace the charge, remove the 3/4" bronze pipe plug at the bottom of the housing, and catch the material as it flows out of the 3/4" coupling. Replace the 3/4" pipe plug and pour the dry charge in through the 1" pipe coupling at top of chamber.

In those cases where a free breathing dehydrating breather is required, the following modifications are made. The two relief valves are removed and the exhaust pipe, on which the external relief valve is mounted, is sealed with a pipe cap. The dehydrating material will require more frequent reactivation and in time the dehydrating material may become contaminated with oil vapors. Practically all the oil is removed when the dehydrating material is reactivated and therefore the material may be used many times before it needs to be replaced.

The damp material should be placed in an open pan and dried at a temperature of between 150°C and 200°C for about 2 hours. When dry, the material is blue in color. The initial change in color should not be considered as complete reactivation. Since the particles dry from the outside toward the center, the outer surface changes color first. During reactivation the temperature of the material is nearly constant at a value less than the temperature of the oven. As the reactivation approaches completion, the temperature of the material rises rapidly toward final temperature.

RENEWAL PARTS

When ordering renewal parts, include all information contained on the nameplate attached to the transformer. Address all correspondence to the nearest Westinghouse District Office.

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