GENERAL • REMOVAL • REPLACEMENT

INSTRUCTIONS

SOLDERSEAL BUSHINGS

GENERAL

Solderseal bushings of the types normally furnished on Westinghouse transformers are shown in the cross-section sketches, Figure 1 to 4 inclusive. If it becomes necessary to remove or replace a solderseal bushing, proceed as indicated for each figure.

REMOVAL

Fig. 1 to 3

1. Remove outer adapter or contact nuts by unscrewing from the stud. Be sure all external leads are disconnected.

2. Obtain access to the underside of the bushings by removing a handhole cover near the bushing.

3. Remove all inner adapters, contact nuts, terminals, and leads from the inside of the bushings.

4. For Figure 2 bushings, remove the bushing plate from the main case so that the bushings can be placed in the vertical position shown by Figure 2, Ref. IL 47-600-21.

5. Wrap wet asbestos packing around the porcelain to mounting ring solderseal.

6. Apply heat to the low temperature solder joint between the ring boss or plate and the busing mounting ring. Avoid overheating the porcelain by applying heat only to the ring boss or plate.

7. When the solder starts to flow, twist the bushing slightly and remove.

Fig. 4

When it becomes necessary to remove the porcelain of this bushing, proceed as follows:

1. Remove outer adapter and spider nut by unscrewing it from the stud.

2. Remove stud solderseal by heating with torch and wiping solder off with cloth or stiff brush. Protect porcelain solderseals from excessive heat with wet asbestos packing.

3. Remove flange solderseal by heating with torch and wiping molten solder off with cloth or stiff brush.

4. Pull porcelain off the stud.

REPLACEMENT

Since the principal bonding elements, lead and platinum, in soldersealed porcelains amalgamate under excessive heating, it is important to handle this type of porcelain with extreme care. We recommend the following procedure as being the safest means of soldering these porcelains to covers or tank walls for figures 1 to 4 inclusive.

1. Preheat cover, boss, or tank wall to about 350°F with a noxy-acetylene torch (a) (a stick of solder (60-40(b) will flow at about this temperature). Clean out groove in tank wall or mounting ring with rag or brush.

2. Preheat the porcelain bushings to about 150°F in an oven.

3. For all bushings, wrap wet asbestos packing or cord around the porcelain to protect porcelain to metal solderseal from excessive heat.

4. For figure 1, place bushing or porcelain on mounting ring boss while parts are still hot and apply flux (c) freely to surfaces to be soldered.

For figure 2, the bushing plate should be removed per "Removal", paragraph 4. Insert this bushing in the hole and center the ring in the groove after filling the groove with molten solder.

For figure 3, turn the surface to which the bushing is to be attached so that it is horizontal, if possible. If this is not convenient, tip the transformer so that the surface makes an angle of at least 30° to the vertical. Fill the groove with molten solder, insert the bushing in the hole and center the ring in the groove.

For figure 4, check to see that the cushion gasket is in place. Place the new porcelain on the stud and rotate until slots engage projections from

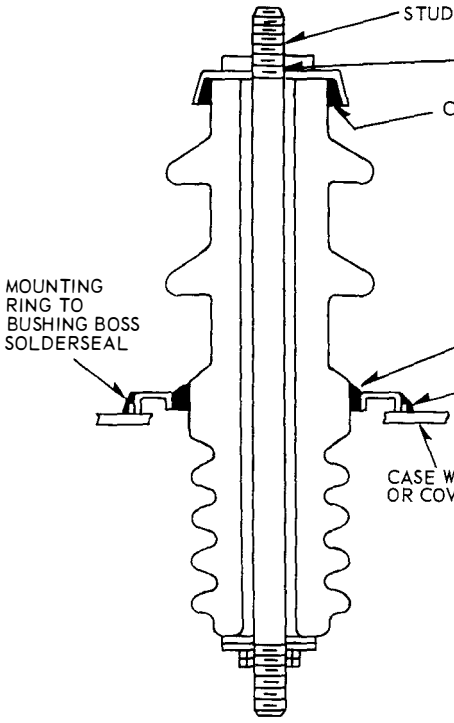

FIG. 1 - 15 KV BUSHING

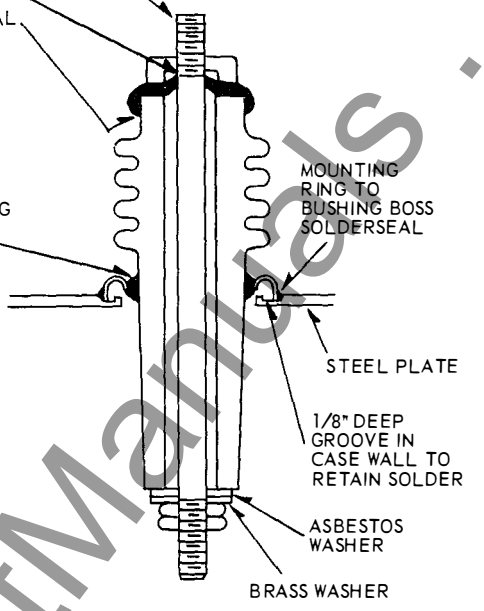

FIG. 2 - 5.0 & 8.66 KV BUSHING

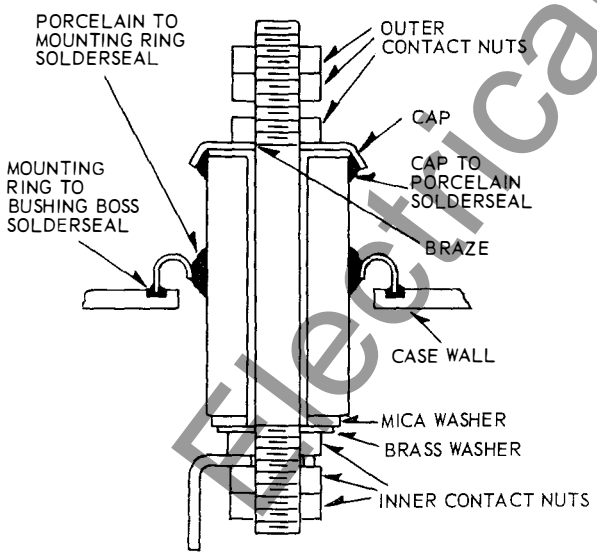

FIG. 3 - 1.2 & 5.0 KV BUSHING

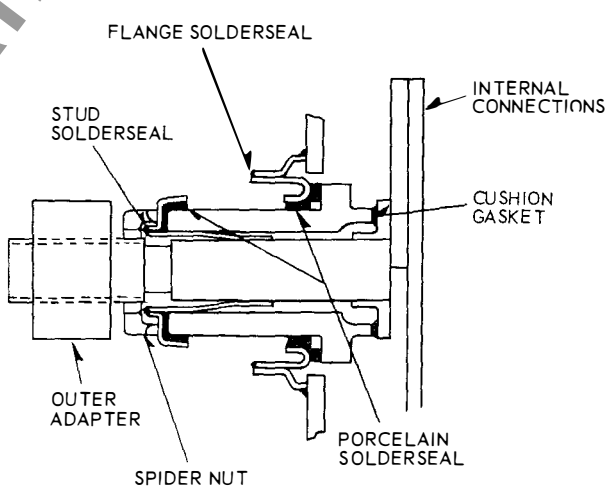

FIG. 4 - 1.2 KV BUSHING

Figs. 1 to 4—Solderseal Bushings

the inner nut. Push the porcelain against the cushion gasket and pull up snug using the spider nut.

5. Solder parts together by torch method (d), playing flame on boss or cover, and NEVER on the porcelain or solderseal. As little time as possible should be consumed in soldering so as to reduce the hazard of "burning off" the solderseal. Figure 4 bushing will require two solder joints. Make the flange solderseal first. When it has cooled, close the stud solderseal.

6. After all solder joints have been allowed to cool, test the joints for tightness.

If the bushings have been soldered to a bushing plate **which is off the tank**, they should be tested by applying 30 psi air pressure. Joints may also be checked through the use of soap solution. After this test, replace the bushing plate on the tank, restore all internal connections, reseal the case, and test for tightness at a safe pressure as indicated by the nameplate pressure note.

If the bushings have been soldered to rings, bosses or flanges **on the tank**, replace all internal connections, reseal the case, and test at a safe pressure indicated by the instruction plate pressure note.

Dry nitrogen should be used for tank tests and the test made according to directions included in this book.

7. Restore all external adapters and connections.

NOTES:

a. Oxy-acetylene equipment consists of a torch, hose, Oxygen Regulator, Acetylene Regulator, and cylinders of oxygen and acetylene. These can be obtained from any reputable supply house such as National Cylinder and Gas Company, Airco or Linde Air Products Company.

b. A commercial 60-40 solder is recommended having 60% tin and 40% lead and melting at approximately 358°F.

c. A rosin alcohol flux should be used. In no case should an acid flux be used. A good mixture can be made of:

I 120cc Westinghouse #751 rosin flux
II 100 cc commercial alcohol
III 18 cc glycerin
IV 6 cc aerosal

d. The torch flame should be applied with a continuous circular motion around the entire area of the mounting boss or cover so as to get an even distribution of heat. Solder can be poured or used in stick form to make the seal. If liquid solder is used, it should be melted in a controlled temperature pot and held at 585°F + 5°. Good clean surfaces and ample flux help immeasureably.

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