

INSTRUCTIONS GEI-18370-C

PRESSURE RELIEF DEVICE

FOR

POWER TRANSFORMERS

GENERAL ELECTRIC COMPANY

SCHENECTADY, N. Y.

April 1945

Supersedes GEI-18370-B

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PRESSURE RELIEF DEVICE

This pressure relief device is used on top of the main cover of power transformers for the purpose of relieving any sudden pressure such as may accompany an arc under the insulating liquid. The device is used on completely sealed, gas-seal and gas-oil-seal transformers.

The pressure relief device may be installed on a manhole cover or directly on the main cover. Refer to Fig. 1 which shows the parts of this relief device with the device flange installed on a manhole cover. The relief diaphragm (Item 2) is a thin disc of molded material (G-E compound 2029B) firmly held between clamping rings with a gasket joint. These clamping rings are the flange (Item 1, on the manhole cover and the ring (Item 3). A metal cap or cover (Item 4) provided over the diaphragm is held down by a relief pin. The underside of this cover has a grid with its edges located just above the diaphragm. A metal lid (Item 7) held in place by three guide studs is provided over the complete diaphragm assembly to protect it from the weather. Should a sudden pressure occur within the transformer tank, the relief diaphragm will be forced up against the several edges of the grid, breaking the relief pin and allowing the cap to lift. (The relief pin is designed to break at approx. 10 pounds tension). This permits the diaphragm to come against a cutting edge which immediately ruptures the diaphragm. This process also lifts the protective metal lid and the pressure is relieved. After this, the cap and protective lid drop back in place again to close the diaphragm opening, thus reducing the possibility of moisture entering the transformer tank after the diaphragm has been ruptured.

To renew the relief diaphragm after it has been ruptured it is necessary to remove the protective lid by unscrewing the three guide studs from the cover flange. Lift off the metal cap that has the relief pin in the center. Remove the clamping ring by taking out the six hex. head screws and remove the broken diaphragm. When putting in a new diaphragm (Item 2) a new gasket must be used in the flange (Item 1). Brush the gasket on both edges and one side with a thin coat of G-E compound 880 or 1276 and allow to set. They apply a fresh coat of the compound to the gasket ring in the metal flange and put the gasket in place. No compound should be used on the gasket surface which comes against the diaphragm. Put the new diaphragm (Item 2) in

place over the gasket. Remove the broken part of the relief pin from the central bar of the clamping ring (Item 3) and then bolt clamping ring firmly in place over the diaphragm. Replace the metal cap (Item 4) over the diaphragm with the edges of the grid down. Remove the broken part of the relief pin from the cap by taking out the small brass screw and washer (Item 5). Install new relief pin by inserting it through central hole in cap (Item 4) and carefully screwing it in place, using very light twisting effort on the screw. For this reason the relief pin is designed to be screwed in with the fingers.

Replace the washer and small brass screw (Item 5) to lock the relief pin. Replace the protective lid (Item 7) over the relief cap (Item 4) making sure that the treated pressboard disc (Item 6) is in place between the cap and the lid. The purpose of this disc is to provide a moisture proof covering over the head of the relief pin. Screw the three guide studs into the flange to hold the protective lid in place. Be sure the two rubber bumper washers are in place on each guide stud. Adjust the height of the three guide studs to 3 inches between the underside of the bolt and the top of the clamping ring as shown in A, Fig. 2. Tighten lock nut to maintain adjustment. One of the rubber bumper washers on each stud can be pushed down against the lid to hold lid firm.

When this pressure relief device is used on a *Pyranol transformer to be installed indoors a high metal cover is used over the pressure relief in place of the protective lid. This cover has a flange at the top with a large round opening and a temporary plate is provided over the opening, bolted on with six screws. When the transformer is installed the temporary plate must be removed and a gas absorber or a vent pipe to the outside air should be installed on top of the cover. (Refer to B, Fig. 2). Use the six screws and lockwashers to fasten the gas absorber or vent pipe to the flange at the top of the cover.

The relief diaphragm assembly is removed for foreign shipment and a temporary cover is used over the opening. The assembly can be installed on the cover as previously explained for installing a new diaphragm. A new gasket must be used.

For domestic shipments the pressure relief device is left assembled in place on the transformer and a temporary round wood block 1-3/4" thick is placed under the protective lid. When a high metal cover is used over the relief device on a Pyranol transformer, a temporary wood block 6" long is used under the metal cover. These temporary shipping blocks must be removed when the transformer is installed and the protective lid or cover must be replaced. The recess in the center of the relief cap for the relief pin is temporarily covered with a sealing tape. This tape can be removed.

*Registered Trade-mark for G-E Askarel

When installing the transformer examine the relief diaphragm to be sure it is intact. To do this it will be necessary to remove the protective lid, or the cover if provided for vent pipe connection. Remove the relief pin and metal cap and examine the diaphragm. Replace the cap and relief pin as previously explained, also replace the protective lid or cover.

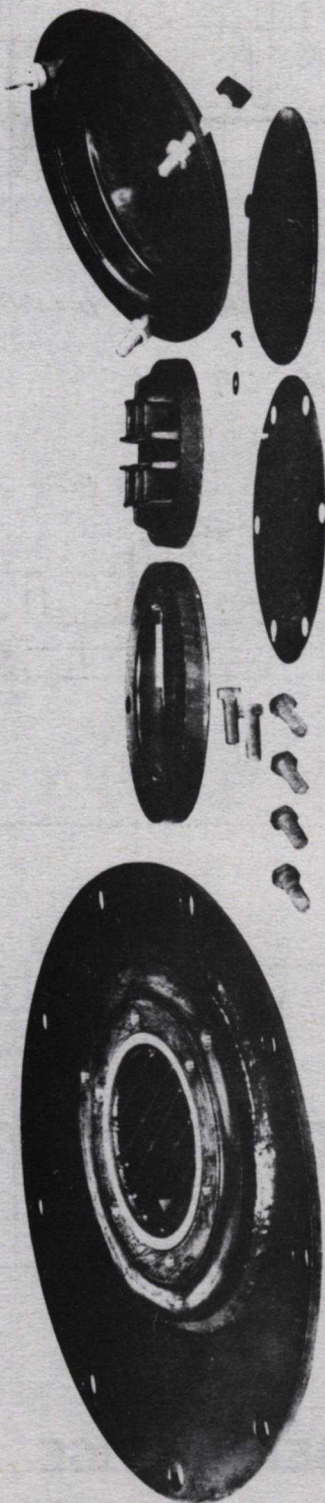
A pressure-vacuum gauge (scale 3 lbs. vac. to 5 lbs. press.) is provided at the top of completely sealed transformers. It is usually mounted on one of the top cooler tube headers or on the cover. This gauge provides an indication of the condition of the transformer tank seal. When the transformer is in service and carrying load the gauge will indicate a pressure which will vary depending on the temperature of the transformer. With the transformer out of service and at a low temperature the gauge will indicate a vacuum. When the temperature of the transformer is 25 C the gauge should show approximately zero pressure. If the gauge remains at zero under load or low temperature conditions of the transformer, a leak in the transformer seal is indicated.

The sealed type transformer is designed to be sealed at zero pressure at 25 C and under all normal conditions the pressure, plus or minus, in the tank will be well within the limits of the gauge scale, which might be reached only under extreme conditions.

The pressure relief diaphragm can be installed on the tank cover, sealing the tank, when the temperature of the transformer is approximately 10 degrees above or below the nominal 25 C. However, at the first opportunity, the tank should be vented by opening an air vent valve near the top of the tank when the transformer is at 25 C. Close air vent valve tight to seal tank. This also applies when installing the pressure-vacuum gauge if it has been removed for shipment.

REFERENCE

Pressure Relief Device Parts Fig. 1
 Details of Pressure Relief Fig. 2



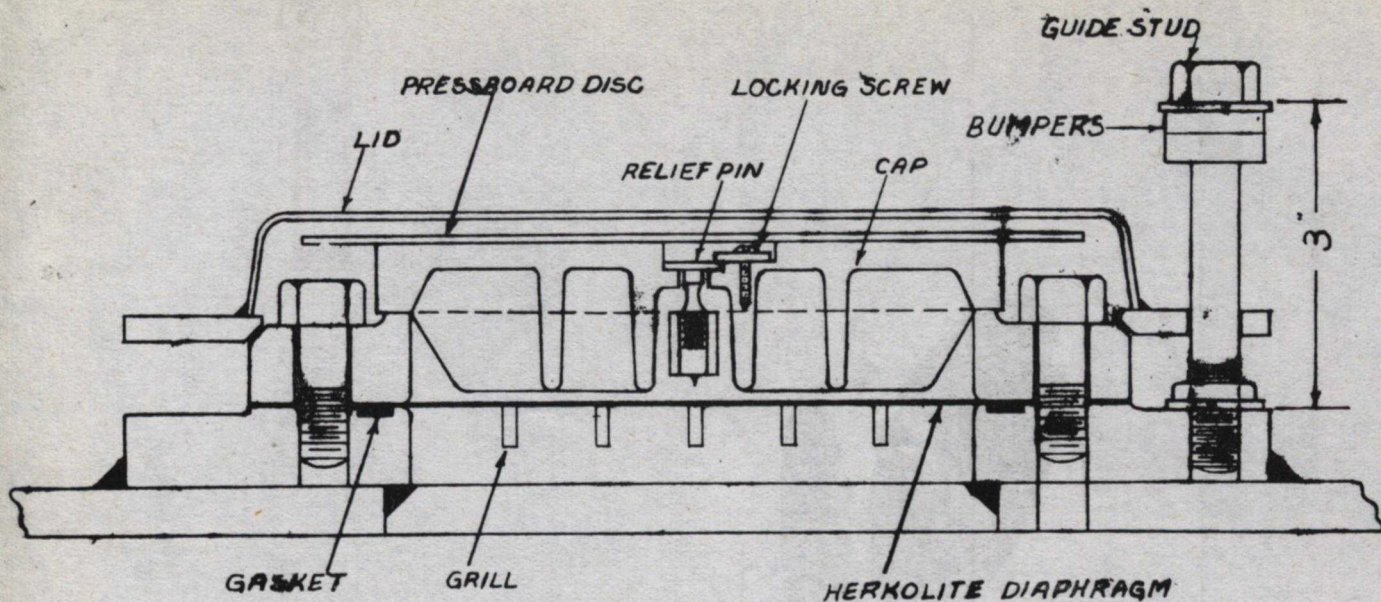
790746 DISASSEMBLED MANHOLE COVER WITH PRESSURE RELIEF, FOR TRANSFORMER.

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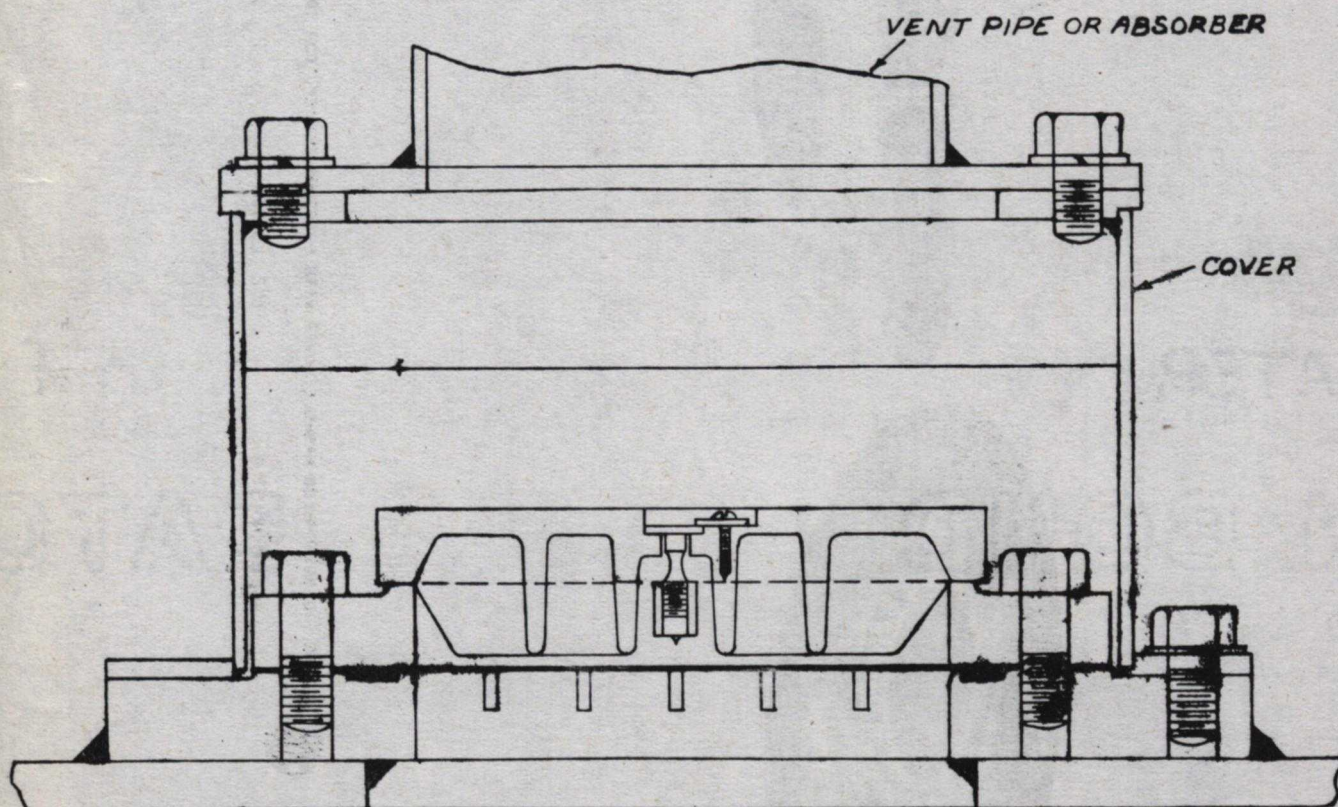
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FILING NO. 5155





A - OUTDOOR OR INDOOR TYPE



B - INDOOR TYPE

PRESSURE RELIEF DEVICE

FIG. 2

K-8397807

IF YOU REQUIRE SERVICE

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APPARATUS DEPARTMENT, GENERAL ELECTRIC COMPANY, SCHENECTADY, N. Y.