"HCL" DETECTOR

INSTRUCTIONS

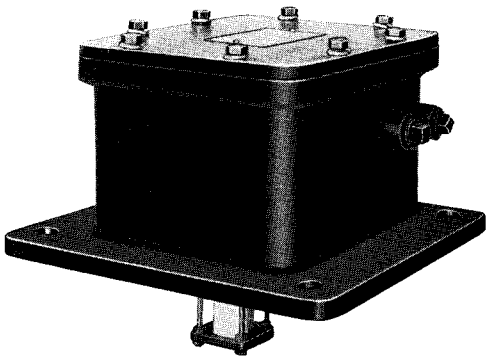

FIG. 1—EXTERNAL VIEW OF "HCL" DETECTOR FOR MOUNTING ON HAND HOLE COVER.

GENERAL

The HCL detector is a protective device developed by Westinghouse engineers for application to Inerteen filled transformers. When Inerteen is decomposed by an electric arc hydrogen chloride is liberated. The detector will operate whenever a very small amount of HCL comes in contact with the detector coil which is mounted in the gas compartment of a tank, terminal or switch chamber. The relay for making contact in an external alarm circuit is mounted in a small case sealed from the main gas compartment. It is only necessary to check the condition of the coil every six months or replace it when it has been operated by the presence of HCL gas.

CONSTRUCTION

Fig. 1 shows the HCL detector as it appears when ready for mounting on the transformer. All Westinghouse Inerteen transformers equipped with HCL detectors are specially designed to incorporate this device.

The HCL detector may be applied to existing transformers as well as to transformers especially designed for this device. In the former case it is necessary to mount the detector on one of the existing handhole covers. A special adapter flange will be supplied with the detector in order to fit the existing handhole boss. If the transformer has an existing standard handhole boss of 9" diameter the detector will fit on this boss without an adapter flange.

Four possible methods of mounting the HCL detector are:

1. Complete assembly mounted over a 9" standard handhole.
2. Complete assembly for welding to the transformer cover.
3. Complete assembly for welding to the tank wall.
4. Complete assembly—Detector coil mounted on the transformer cover. Relay mounted remote from the transformer.

Method No. 1 should be used where possible on all existing transformers provided the transformer is equipped with a 9" handhole or larger. Methods 2, 3, and 4 will be used on transformer supplied with HCL detector. In some special cases it may be necessary to adapt one of the methods 2 or 3, to an existing transformer. In this case a drawing showing the special welding and machining required will be shipped with the HCL detector.

The detecting-element consists of two bare electrodes wound on an insulated spool and separated by an insulator coated with material sensitive only to hydrogen chloride. Whenever hydrogen chloride is present, it is absorbed by the coating and due to the ensuing chemical reaction the material becomes conducting and short-circuits the electrodes. This will complete the relay circuit, energizing the coil and closing the contacts. A sealing contact is provided so that the relay cannot drop out after having once closed.

The fittings located on the HCL detector consist of diagram nameplate on the cover and two pipe plugs in the wall of the detector housing for conduit connections.

SHIPMENT

The HCL detector, when supplied with the transformer, is shipped completely assembled in its proper place on the transformer. When shipped to be placed on an existing transformer it will appear, as shown in Fig. 1, after the crating is removed.

UNPACKING

The HCL detector, supplied for an existing transformer, will be shipped crated. The first step in unpacking is to remove all crating and bracing supplied for purposes of shipment only. Care must be taken not to damage the coil on the underside of the flange during this unpacking process.

No unpacking operation is necessary on HCL detectors supplied with trans-

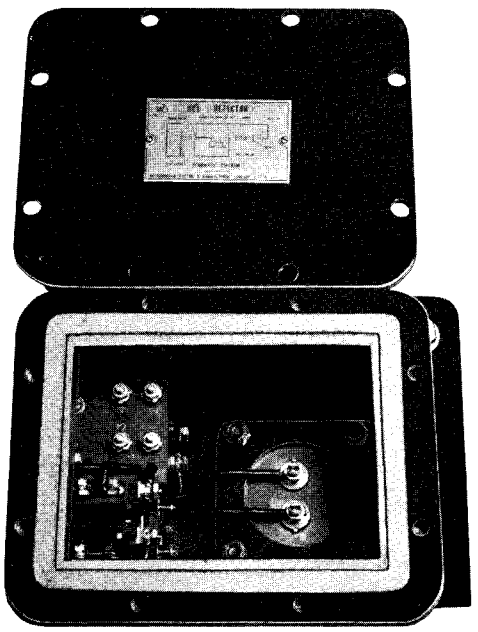

FIG. 2—INTERNAL VIEW OF "HCL" DETECTOR SHOWING PARTS IN PLACE

"HCL" Detector—Continued

INSTRUCTIONS—Continued

formers as the HCL detector is shipped properly installed on the transformer.

INSTALLATION

Two types of HCL detectors are to be considered for purposes of installation since the installation procedure is somewhat different for the two types. These two types are:

(1) HCL detector with detector coil, relay and condenser mounted together as a single unit.

(2) HCL detector with detector coil and relay—but the condenser mounted separately.

To install (1) make the conduit connections between the HCL detector housing and the supervisory point. One conduit connection may be used for the supply voltage and the other for the alarm circuit. Alarm contacts may be set to either make or break when the relay operates. Refer to Fig. 2. This contact is the right hand relay contact when looking down at the terminal panel inside the detector housing. For the proper connections refer to the diagram nameplate located on the cover of the detector housing.

To install the second type of HCL detector, in which the coil housing is separate from the relay housing it is necessary to use only one conduit from the coil housing on the transformer to the supervisory point. The relay housing may then be located on the switchboard or any other convenient remote location. Use the diagram located inside the relay housing cover for making proper connections.

MAINTENANCE

The only routine maintenance required on the HCL detector is to check the condition of the coil every six months. This is done by performing the following tests:

Test #1—(Made with power supply and signal circuits disconnected from the terminal board). Dielectric Test to Ground—Short circuit and ground terminals 1 and 2 to case. Short circuit and connect terminals 3 and 4 to a 2000 volt 60 cycle test circuit for one minute.

Test #2—(Made with power supply and signal circuits disconnected from terminal board). With terminals 3 and 4 open circuited connect a 1000 volt megger across terminals 5 and 6 and measure the resistance. If the resistance is below 100,000 ohms, the coil should be replaced.

Test #3—Relay operation test—With the power supply and signal circuits connected and normal voltage applied, short circuit terminals 5 and 6, and note relay operation. Relay should close both contacts.

Whenever the relay has operated in service or should the resistance of the coil fall below 100,000 ohms it will be necessary to replace the detector coil.

Remove the cover and old gasket from the detector housing. Disconnect the leads from terminals 5 and 6. Remove the terminal board flange and coil terminal board. Lift out the coil terminal board assembly. Loosen the four nuts located on top of the cup and unscrew the four tie rods from the coil terminal boards. See Fig. 3.

Unfasten the coil from its mounting by removing the locking nuts from the terminal studs. Put the new coil in place and tighten the terminal lock nuts. Bend the corners of the terminal strap over the edge of the nuts to prevent them from loosening. Replace the cup and tie rods and tighten the four upper nuts against the cup.

A new gasket, which is supplied with each replacement coil, should be cemented in the gasket seat using Wemco cement #7386 on both sides. Place the coil assembly and flange in position taking precaution to see that terminals are in the proper location. Tighten the flange nuts carefully with uniform pressure. Reconnect all leads to the proper terminals and test relay operation as per test #3.

RENEWAL PARTS

When information is required concerning the HCL detector, always give serial number of transformer on which the detector is mounted. The serial number of the transformer is engraved on the nameplate attached to the transformer tank.

ORDERING INFORMATION

Replacement of Detector Coil—Replacement coils, S#1150219, ready for installation, are obtainable from the Westinghouse Electric & Mfg. Co., Sharon Works, Sharon, Pa. When ordering give serial number of transformer.

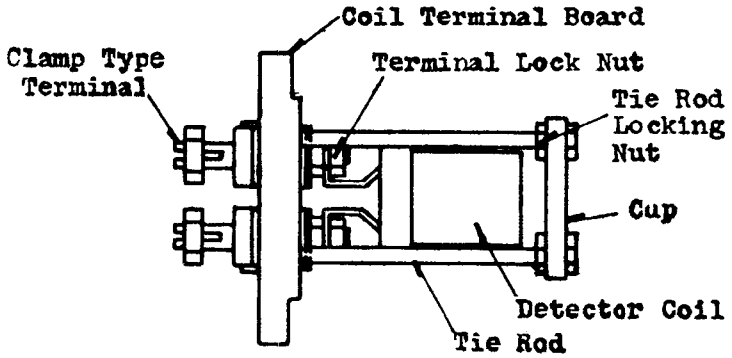

FIG. 3—COIL TERMINAL BOARD

Westinghouse Electric & Manufacturing Company

Sharon, Pa.

Westinghouse Press
Printed in U.S.A.