INSTRUCTIONS

SEALED TANK TRANSFORMERS

TYPE SL DISTRIBUTION TRANSFORMERS, in order to insure operation, satisfactory are provided with means to prevent the deterioration of oil and insulation by the exclusion of oxygen and moisture.

When hot transformer oil comes in contact with air, the inevitable result is oxidation and moisture absorption, which causes the formation of acid and sludge. These impurities are extremely harmful to transformer insulation. They are the underlying cause for most of the trouble and expense of maintaining oil-insulated transformers.

Oil preservation equipment, because of its cost, has not been practicable for small transformers. The sealed-tank transformer provides effective protection, consistent with economy, for these lower ratings. Constructed with a sealed tank, the air space above the oil is sealed, eliminating breathing and the entrance of moisture. The oxygen originally present in the space above the oil is absorbed. This quantity of oxygen is so small that even though the transformer tank is opened annually for inspection, it has a negligible effect upon the oil characteristics over a period of many years. After this absorption occurs, the cushion of gas above the oil becomes inert, since no further air is permitted to enter the transformer.

Sufficient gas space is provided above the insulating liquid to prevent excessive pressures due to expansion and contraction with temperature changes.

Explosive gases are reduced to a minimum within sealed-tank transformers due to the negligible oxygen content after the unit has been in service for a comparatively short time.

High acidity of the oil and sludge which is formed under certain operating temperatures when there is a continued supply of oxygen, is reduced to a minimum.

Hot spots in the winding due to oil sludge are reduced to a minimum.

Periodic filtering of the oil is materially reduced with reasonable care and maintenance of sealed-tank transformers.

In the mechanical design of the sealed tank transformers, special consideration has been given to all of the details which would have any effect on the ability of the tank to remain tight during years of service under all conditions of operation. Properly designed gaskets and gasket surfaces are used to provide the best insurance for a tightly sealed tank.

MAINTENANCE

The sealed-tank transformer is completely tested for leaks before it leaves the factory and should require very little maintenance. Should it be necessary to open the transformer after it has been in service, care should be exercised in reclosing handholes, valves and plugs tightly and promptly so no leakage results. If the transformer cover or any of the bushings have been removed, the gaskets should be replaced according to directions given in instruction leaflet "Gaskets".

If a source of *dry* air pressure or compressed nitrogen is available, it is desirable as part of a regular program of inspection to make an eight pounds per square inch pressure test for a period of six hours to detect leakage. The upper filter press connection with proper fittings can be used for attaching the pressure supply. The test pressure can best be limited by the use of a regulating valve on the air or nitrogen cylinder. A check for leaks above the oil level may be made with a solution of soap and water applied to all gasketed joints and screwed fittings.

SUPERSEDES I.L. 46-115-4

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INSTRUCTIONS

SEALED TANK TRANSFORMERS

TYPE SL AND LD SUBSTATION TRANSFORMERS, in order to insure satisfactory operation, are provided with means to prevent the deterioration of oil and insulation by the exclusion of oxygen and moisture.

When hot transformer oil comes in contact with air, the inevitable result is oxidation and moisture absorption, which causes the formation of acid and sludge. These impurities are extremely harmful to transformer insulation. They are the underlying cause for most of the trouble and expense of maintaining oil-insulated transformers.

Oil preservation equipment, because of its cost, has not been practicable for small transformers. The sealed-tank transformer provides effective protection, consistent with economy, for these lower ratings. Constructed with a sealed tank, the air space above the oil is sealed, eliminating breathing and the entrance of moisture. The oxygen originally present in the space above the oil is absorbed. This quantity of oxygen is so small that even though the transformer tank is opened annually for inspection, it has a negligible effect upon the oil characteristics over a period of many years. After this absorption occurs, the cushion of gas above the oil becomes inert, since no further air is permitted to enter the transformer.

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In the mechanical design of the sealed tank transformers, special consideration has been given to all of the details which would have any effect on the ability of the tank to remain tight during years of service under all conditions of operation. Properly designed gaskets and gasket surfaces are used to provide the best insurance for a tightly sealed tank.

MAINTENANCE

The sealed-tank transformer is completely tested for leaks before it leaves the factory and should require very little maintenance. Should it be necessary to open the transformer after it has been in service, care should be exercised in reclosing handholes, valves and plugs tightly and promptly so no leakage results. If the transformer cover hand hole cover or any of the bushings have been removed, the gaskets should be replaced according to directions given in instruction leaflet "Gaskets".

If a source of *dry* air pressure or compressed nitrogen is available, it is desirable as part of a regular program of inspection to make an eight pounds per square inch pressure test for a period of six hours to detect leakage. The upper filter press valve with proper fittings can be used for attaching the pressure supply. The test pressure can best be limited by the use of a regulating valve on the air or nitrogen cylinder. A check for leaks above the oil level may be made with a solution of soap and water applied to all gasketed joints and screwed fittings.

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