



POWER TRANSFORMERS UK



INSTRUCTION AND MAINTENANCE MANUAL FOR OIL IMMERSED TRANSFORMERS

TRANSPORT, LOADING AND UNLOADING

Transformers must always be carried in an upright position from the moment they leave our warehouse, this is to avoid any damage to the oil tank or porcelain bushings.

On taking delivery please check the transformer and accessories for damage caused during transportation. In the result of contrary please inform carrier immediately.

During loading/unloading operations it is necessary to hook the transformer by pull ropes from the provided lifting lugs on the transformer's cover. Do not use short ropes as this may cause instability when unloading causing damage.

It is very important to take extra care when loading/unloading as the transformer tanks and bushings are very delicate and prone to damage on impact.

INSTALLATION

The transformer must be positioned in an area large enough to ensure appropriate cooling. The minimum distance between a transformer and cell wall is 30 cm. The minimum distance between a transformer in the same cell is 100 cm.

There should be adequate ventilation within the cell to avoid overheating of the transformer. A ventilation of about 4/5 m³/min for every kw losses is recommended. If there space is limited it is necessary to install a ventilation outlet that can allow suitable circulation of the surrounding air.

OIL LEVEL

The transformer is delivered full of oil for quick start.

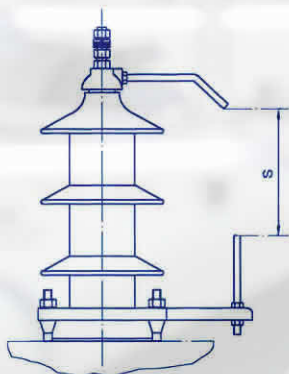
The optimum level of oil is as follows:

1. Transformer with oil keeper: The hand of the indicator has to be within +20°C and -20°C.
2. Transformer without (hermetic): Oil must be visible to the level of the cover, this is done by unscrewing the filling valve.

In the event of insufficient oil level it is necessary to restore to correct level.

ARCHING HORNS

The distance between arching horns as below:



<i>Voltage rating</i> KV	<i>Distance</i> "S" mm
12	70
17,5	100
24	100
36	200

SILICAGEL BREATHER

The silicagel breather is supplied exclusively for a transformer with an oil keeper. Remove the 1/2" cork from the weld pipe and insert (screw) the silicagel breather. The silica should be yellow and dry however if the colour is green, heating up to a temperature of about 90-100°C should change it back to yellow. If this doesn't work please replace the silica.

THERMOMETER

The thermometer is provided with two electric contacts; the first (alarm) must be set at 90°C; the second (trip) that is used to uninstall the transformer, must be set at max 110°C. In the case the thermometer's alarm should sound check temperature, ventilation and load factor.



Thermometer electric wiring diagram

ENVIRONMENT TEMPERATURE

In accordance with CEI 14.4 Standard (IEC 76) the temperature of the environment has to be as below:

1. Minimum temperature: -25°C
2. Maximum temperature: +40°C
3. Daily average ambient temperature: +30°C
4. Yearly average temperature: +20°C

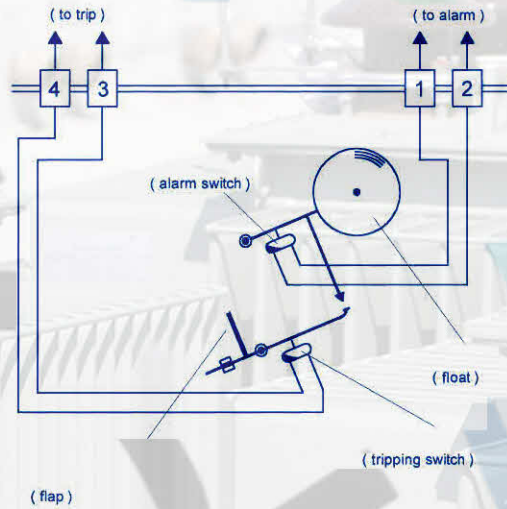
BUCHHOLZ REALY

A buchholz relay can be applied exclusively to a transformer with an oil keeper.

There are two types of relay, flanged on the cover or on cover/oil keeper pipe. In both cases the relay is always provided with two contacts. The first signals gas formations in the tank and then they serve from the alarm. The second contact is closed only in case of damage to the transformer and it has to operate on MT switch to take off the transformer from the net.

Before the transformer is installed and under operation it is necessary to perform the following:

1. Remove the provisional spacer from inside the mechanical control unit.
2. Release the air from the relay by unscrewing the cap and opening the faucet.



**Buchholz relay electric wiring diagram:
contact position when the relay
is oil filled (normal position)**

DGPT 2 / RIS

The DGPT 2 is an accessory for hermetically sealed transformers. It is essentially a protection tool for the transformer controlling the oil level, pressure gauge and formation of gas. The DGPT comes with the following settings:

1. Pressure: 0,2 bar
2. Temperature: T1 100°C - T2 110°C

STARTING THE TRANSFORMER

The below must be carried out before installing the transformer:

1. Check that the tap changer is in the correct position, if the transformer is to operated in parallel with others it is important to check that the phases correspond with eachother.
2. Check the oil level (oil keeper) and the indicator level.
3. Check all the gaskets are correctly shut and that there are no oil leakage.
4. Check the distance of the arching horn, according to the table on page 2.
5. Check the connections of the accessories, Thermometer, Buchholz relay, Silicagel breather, DGPT 2/RIS ect.....
6. Connect the transformer to earth using a special earthing clamp according to ruling standard.

CHECKS AND MAINTENANCE

**ATTENTION - VERY IMPORTANT
DISCONNECT THE TRANSFORMER FROM THE NETWORK
BEFORE EVERY OPERATION.**

1. Check the oil temperature. This can be 60°C higher than ambient temperature.

Note: If the ambient temperature exceeds 40°C it is necessary to improve the air circulation around the transformer.

2. Check the oil level, if low it must be controlled as per page 2.
3. Check the salt colour of Silicagel breather as per page 3.
4. Check there has not been any oil leakage from the gaskets and bushings; adjust clamping as required.
5. Check the clamping of HV and LV connections.
6. Every 3 years from operation we advise to take a sample of the oil to check the characteristics.
7. Always maintain and clean the transformer in particular the bushings.