

## MAINTENANCE INSTRUCTIONS BREATHING TRANSFORMER

### TRANSPORT

The unit is arranged lengthwise in the vehicle. The rollers must be removed and can be fastened the wrong way around on the substructures or packed in a cardboard box inside the box.



The unit must be on a wooden floor and rest on the substructures only. It must be carefully shored in both directions using wooden parts applied against the substructures. It must be securely slinged by lifting rings so as to seat it firmly on the floor and prevent it from tilting.

Take all the necessary precautions to prevent the load from knocking against the vehicle during transport.

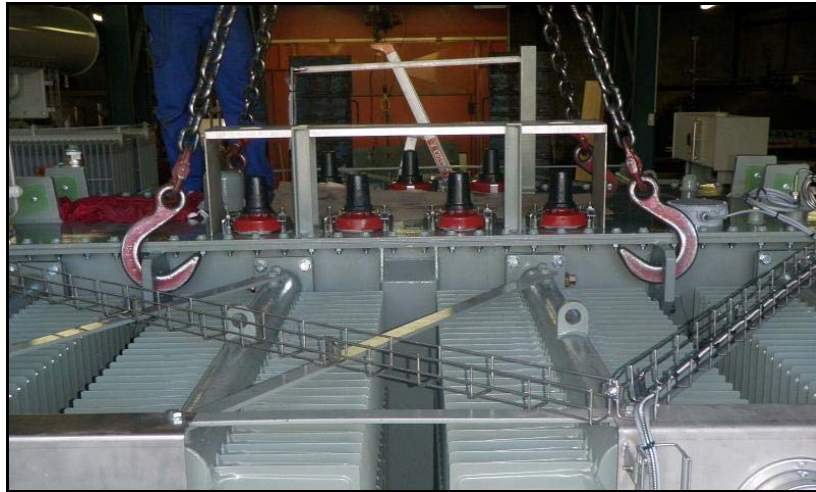


## MAINTENANCE INSTRUCTIONS BREATHING TRANSFORMER

### **HANDLING**

Take all the necessary precautions so that the unit is not submitted to impacts during the handling operations. It is prohibited to handle the transformer with an industrial lift truck unless it is fixed to a pallet.

For the hoisting operation, you must use the lifting rings of transformer to fasten the slings. They must not form an angle of more than 30° with respect to the vertical plane.



When unloading, the rollers must be mounted on the substructures and tilted in the desired direction. The yokes are stopped from turning using the envisaged screws. The unit must be laid down delicately on the floor.

For handling operations on the floor using a winch, only use the substructures as fastening points for the slings.



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### ACCEPTANCE

Check that the unit has not received any impacts during transport, otherwise make the reservations to the forwarding agent, to be confirmed within 48 hours by registered letter. Make sure the protective relay and the connection terminals have not received any impacts and that there is no sign of a leak on the tank.

Transformer with dehydrating breather EM2MB or EM3MB (mechanic) : remove the external plastic plug located under the dessicator.

Transformer with dehydrating breather EM2DB or EM3DB (hydraulic) : fill in the sump at the bottom of the dehydrating breather with oil (oil may be taken from the transformer using the sample valve).



The handling must be performed as indicated in the previous paragraph.

### STORAGE

The unit must be stored in a weatherproof room at a minimum ambient temperature of  $-25^{\circ}\text{C}$ .

The unit is protected from impacts and any splashes of any kind whether solid or liquid, particularly the cover with the bushings and protective relay as well as the other accessories.

Once the unit is in place, it shall rest on its substructure or the rollers which are shimmed. Stop the rollers from turning by a suitable device or turning two rollers  $90^{\circ}$ .

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## INSTALLATION

Use the bushings to make the connections. Provide cable supports so that there is no load on the bushings. Rigid connections are forbidden.

The earth connections are done on the terminals provided for this matter either on the cover (lifting rings) or the substructures.



Transformer with naturally cooled : for a properly cooling keep a free area around the equipment.

Perimeter = prescribed contour of the transformer (CEI 60076-10 §8) spaced 1m minimum

Height = height of the transformer (minimum)

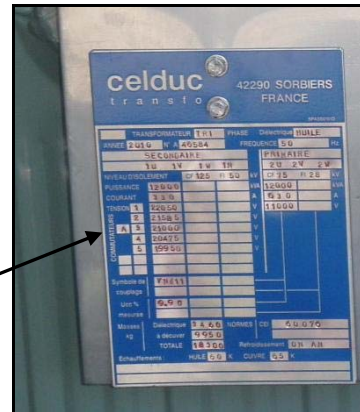
If the equipment is an indoor type, provide for an acceptable temperature in order to measure :

Air pulled out – Air intake < 10K

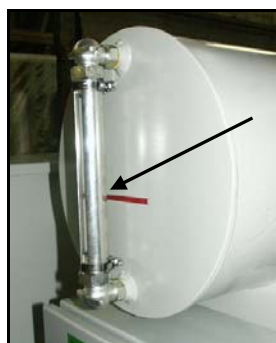
Ambiante temperature MAX : 40°C / 1 000 m above sea level.

## START-UP

When the connections are done in accordance with the previous paragraph, check that the position of the tap changer is correct using the rating plate.



Check the oil level in the conservator. For the dessicator refer to the indications in the acceptance paragraph.



Check also the earth connections.

## MAINTENANCE INSTRUCTIONS BREATHING TRANSFORMER

### **MAINTENANCE**

The unit is filled with mineral oil.  
Check the oil level regularly.

Dehydrating breather : every month check the state of the silica gel. Refer to the label located on the apparatus. Orange when dry, it becomes green and un-efficient when wet. In order to regenerate the product, unscrew the dehydrating breather, then turn it over and remove the nut which allows to get out the silica gel. It can be regenerated by putting it in an oven at 120-150°C until it turns back to orange colour.

Transformer with protection covers : every year check the seals.

Every year remove the dust from the porcelain bushings and sets of bars.

Transformer with ceramic bushings : every year, check the lugs and bushings are correctly tightened.



It is useful to check the quality of the dielectric once a year by taking samples.

Transformer with tap(s) changer :

every year, operate off voltage the tap(s) changer control device on all the positions by taking care to bring back it (them) in initial position.

### **DIELECTRIC QUALITY**

The dielectric rigidity must be at least equal to 35 kV (gap spark measurement with sphere dia. of 12.5 mm distance of 2.5 mm as per the standard NFC 27 221 / 1995 - CEI 60 156 / 1995).

If not, the oil must be purified. The recipient (made of glass) used for the sampling must be carefully cleaned and thoroughly dried as the slightest trace of humidity would distort the measurement completely.

**OIL** : draw off from the bottom of the tank (sample valve) after allowing a certain quantity to run out to remove any impurities in the drain device.

