

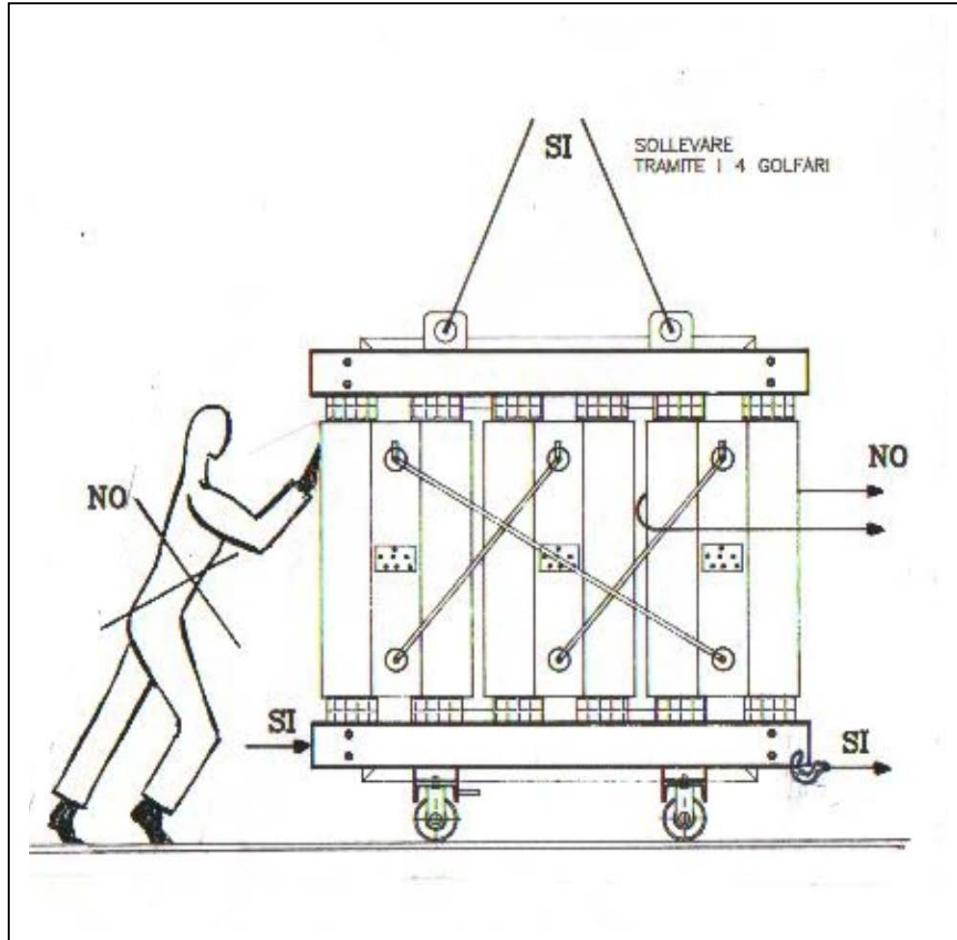
# **ELETRAFO** SNC

## **TRASFORMATORI ELETTRICI**

VIA KENNEDY N. 31 20010 - MESERO (MI)

TEL. 02/97285540 Fax 02/97830021

e-mail: [info@eletrafo.it](mailto:info@eletrafo.it) web: [www.eletrafo.it](http://www.eletrafo.it)



### **USE AND MAINTENANCE INSTRUCTIONS FOR CAST RESIN DRY-TYPE TRANSFORMERS**

**DO NOT PUSH THE COILS**



**DO NOT TOUCH THE COILS WHEN  
POWERED**

## TABLE OF CONTENTS

1.	<u>TRANSPORT</u>	<u>3</u>
2.	<u>HANDLING</u>	<u>3</u>
3.	<u>STORAGE</u>	<u>4</u>
4.	<u>PLACE OF INSTALLATION</u>	<u>4</u>
5.	<u>COMMISSIONING</u>	<u>6</u>
6.	<u>MAINTENANCE</u>	<u>7</u>
7.	<u>TECHNICAL SUPPORT SERVICE</u>	<u>7</u>

- never place the shielded cables near the power cables to avoid any possible interference;
- never power the control unit directly from the LV terminals of the transformer.

- **Parallel operation.**

Make sure the MV and LV voltages are equal and that all other electrical features are compatible, especially those of the connection unit and of the short-circuit voltages. Also make sure that the pins of the tap changers (located inside the transformer) that are to be mated are in the same position.

- **Checks to be carried out before powering the transformer.**

- Check all the connections made (positioning, distances, tightening torque).
- Make sure the busbars have the same position on all three phases, according to the diagram shown on the rating plate.
- Check the general condition of the transformer and use a megger set at 2500 V to measure the windings insulation resistances MV/ground - LV/ground - MV/LV.
- The measured values should be approximately as follows:
  - MV/ground: 250 M ohm
  - LV/ground: 50 M ohm
  - MV/LV : 250 M ohm

If the values measured are significantly lower, dry the transformer.

## **6. MAINTENANCE**

Under normal operating conditions, we recommend general cleaning of the transformer and verification of the connections tightening and of the tap changers once a year using dried compressed air or nitrogen.

Particular attention should be paid when cleaning the cooling channels in order to avoid any local overheating during transformer operation.

If the transformer is installed in polluted environments, increase the frequency of the maintenance operations as necessary.

## **7. TECHNICAL SUPPORT SERVICE**

For more information on the transformer or to order spare parts, contact our Sales Department mentioning the main information on the rating plate, especially the serial number.

## 5. COMMISSIONING

The transformer should be installed in a dry, clean place, properly ventilated so that the heat resulted from the total losses can be eliminated and without risk of water intrusion.

- **Checking the condition of the transformer after storage.**

If the transformer is dirty or full of dust due to improper storage, you need to clean it using dry compressed air, paying particular attention to the isolators.

During installation, protect the transformer against any foreign objects that might fall into it (screws, nuts, washers etc.)

- **Transformer in protection enclosure.**

The protection enclosure should not support the load of the MV power cables of the transformer.

- **MV and LV side connection cables.**

Do not fix the cables on the active part of the transformer.

The distance between the MV cables, the LV cables or busbars and the MV windings surface should be of at least 120 mm, except for the medium voltage side, where the minimum distance to be considered is that starting from the outermost busbar.

- **Connections on the MV side.**

Lock the MV terminals and the pins of the tap changers by applying the following tightening torque values:

SCREWS	M8	M10	M12	M14
tightening torque (kgm)	1	2	4	6

- **Connections on the LV side.**

Lock the LV terminals applying the following tightening torque values:

SCREWS	M8	M10	M12	M14	M16
tightening torque (kgm)	1.25	2.5	4.5	7	10

- **Auxiliary circuits connections.**

Make the connections following the wiring diagram for the auxiliary circuits that can be found in the control box. If it is fitted with resistance thermometers (Pt100 sensors) and electronic control unit for temperature control you need to follow the warnings below:

- make the connections between the terminals of the Pt100 sensors fixed to the transformer and the temperature control unit usually installed on the panel

## 3. STORAGE

distribution by means of shielded cable with minimum section of 1.5 mm

## 1. TRANSPORT

The transformer is shipped fixed to the means of transport to avoid any damages.

Upon receipt, you should make sure that the transformer is in perfect condition and you should check for all the accessories you ordered (sliding rollers, temperature control unit, spare parts, etc.).

Should you notice any damages or any missing accessories, have the situation reported to the carrier and to our Commercial Office by sending us a registered letter within three days.

## 2. HANDLING

The transformers are equipped with the following devices to allow proper handling:

- **Lifting by means of ropes.**

Use the 4 eyebolts located on the upper reinforcements.

If the transformer is fitted with an enclosure, use the 4 eyebolts on the top of the enclosure.

The angle between the ropes should not exceed 60°.

- **Lifting by means of forklift truck.**

In this case you should insert the forks of the forklift truck inside the U-shaped bars forming the transformer trolley, after applying the removing the sliding rollers.

- **Moving the transformer.**

The transformer should be moved (regardless of whether it is fitted with metallic enclosure or not) using only the trolley.

It is fitted with appropriate holes. It can be moved in only two directions: according to the trolley axis or perpendicular on the this.

*Do not try to move it by pushing the coils!*

- **Mounting the sliding rollers.**

Use ropes or a forklift truck to lift and place the transformer on wooden plugs that exceed the height of the sliding wheels. Place appropriate jacks underneath it and remove the wooden plugs. Fix the wheels to the desired position, remove the jacks and let the wheels support the transformer.

The transformer should be stored in a dry and clean environment protected against water intrusion.

If the transformer is shipped in a plastic packaging, do not remove it during storage.

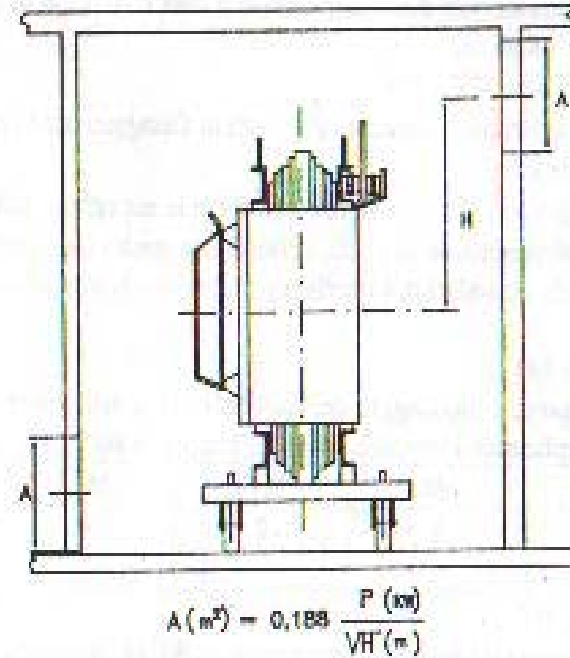
The temperature during storage should not decrease below -25° c.

Before powering the transformer, it should be placed in a room with temperatures exceeding -5°C.

#### 4. PLACE OF INSTALLATION

As already mentioned, the resin protects the windings from humidity, dusts and most of the chemical agents and therefore the MV cast resin transformer can be installed in any environment as long as the essential criteria below are met:

- The room where it will be installed does not present water intrusion risks;
- During operation, the transformer generates losses that are transformed into heat; each kW of losses results in a temperature rise of 10°C; therefore the room must be provided with appropriate openings that should ensure an air exchange of about 4.5 m<sup>3</sup>/min per each kW of losses to dissipate the generated heat from the room.
- Improve any ventilation shortcomings by installing a fan;
- Install the transformer at a suitable distance from the walls, according to its voltage class, as per the minimum distances set by the safety standards in force in the country of installation;
- Make sure no one can come in contact with live parts.  
*Not even the encased coil can be touched!*
- Avoid exposure to sunlight and to temperatures below -25° C (also and especially during transport and storage!).



**CONTROL UNIT TEMPERATURE SETTINGS T 154**

**ALARM : 130°C**

**RELEASE : 140 °C**

**Assessment of the openings area**