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The supplier does not assume any responsibility for the use or inappropriate use of the products mentioned in this manual.

This guide does not cover all the details or possible variations of the entire series of connections, installation and possible operations. For further information or to solve specific problems that are not included in this guide, contact Legrand. **THIS ENTIRE DOCUMENT BEFORE YOU COMMENCE THE INSTALLATION.**

1. Safety guidelines



A cast resin transformer is an electrical equipment. It must be installed, protected and used in compliance with the existing national and international Standards and Regulations. The possible improper installation and use of a cast resin transformer may cause risks of electric shock or fire.



Please, read this installation manually carefully before: lifting, moving or energising the transformer.



Every operation on the transformer must be performed when the transformer is not energised..



Do not get close to the cast resin transformer before having connected the windings to earth.



Before operating on the CRT, make sure that the transformer cannot be put under voltage without your permission..



Do not energise the transformer before having connected the core to earth..



Do not energise the transformer before having carefully and completely inspected it.



Do not access the transformer operation area or remove the protection devices when the transformer is under voltage..



Each transformer generates a magnetic field. For this reason, any carrier of metallic devices as pacemakers should not get closer than 3 m to an energised transformer.



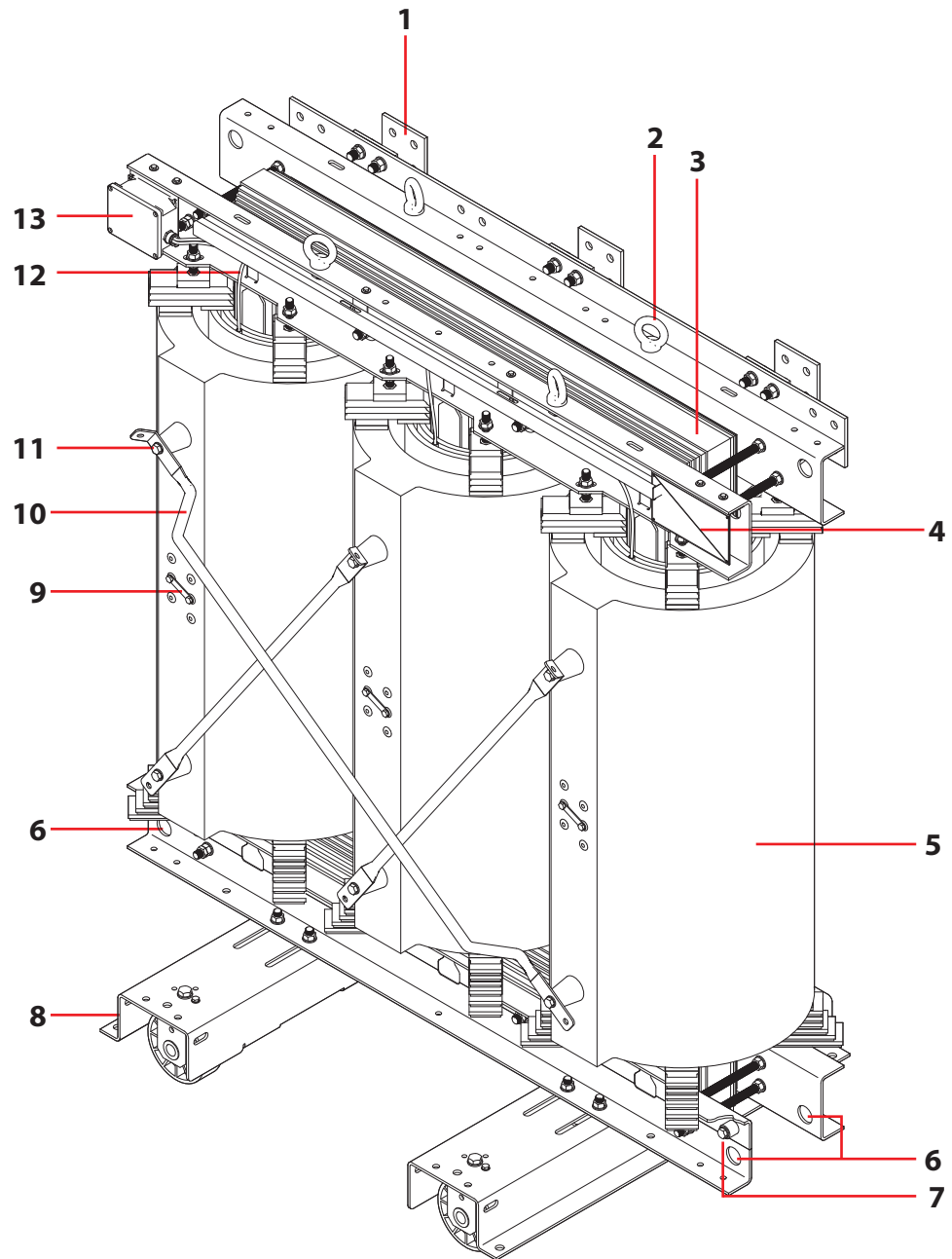
This transformer must be installed according to the installation directions and preferably by a skilled and qualified HV electrician.
Do not open, disassemble, alter or modify the transformer with the exception of special indications reported in the Installation Manual.
All Legrand products must be opened and repaired only by personnel trained and authorized by Legrand. Legrand is not responsible for any non-authorized opening or repair.



When moving the transformer or its components, always be aware of the risk of crushing.



When lifting the transformer, do not stand under suspended loads.



1. Low Voltage Terminal (LV)
2. Lifting eye bolt
3. Magnetic core
4. Rating plate
5. High Voltage (HV) winding
6. Horizontal movement hooking points
7. Connection earthing
8. Trolley with swivel rollers
9. Voltage switch
10. Delta connection
11. High Voltage Terminals
12. Temperature probe
13. Auxiliary circuit box for probes

2. Reference standards

- IEC 60076-11 – Power transformers – Part. 11: Dry-type transformer.
- IEC 60076-1 – Power transformers – Part 1: General.
- IEC 60076-2 – Power transformers – Part. 2: Temperature rise.
- IEC 60076-3 – Power transformers – Part 3: Insulation levels, dielectric tests and external clearances in air.
- IEC 60076-5 – Power transformers – Part. 5: Ability to withstand short circuit.
- IEC 60076-10 – Power transformers – Part. 10: Determination of sound levels.
- IEC 60085 – Electrical insulation – Thermal evaluation and designation.
- IEC 60270 – High-voltage test techniques – Partial discharge measurements.
- IEC 60529 – Degrees of protection provided by enclosures (IP code).

3. Rating plate

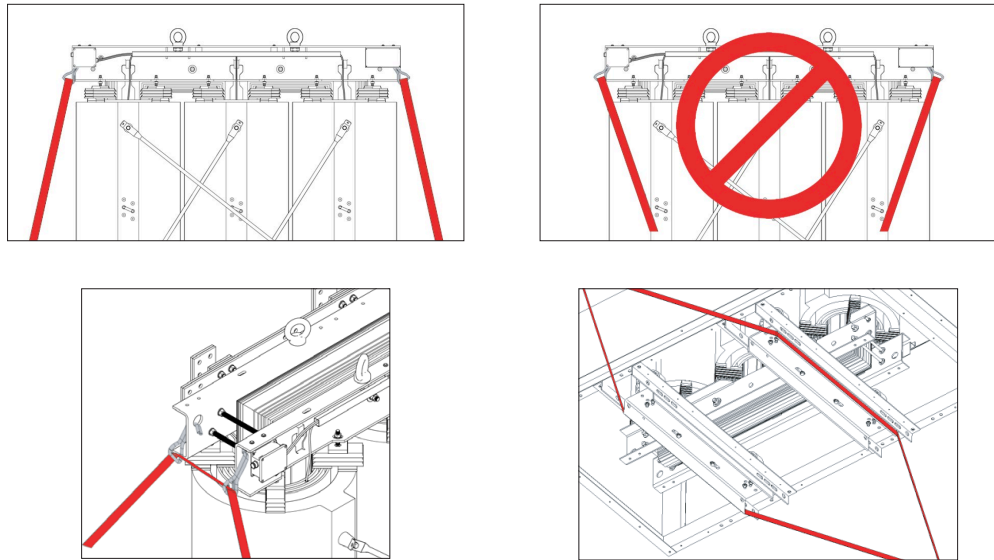
A rating plate showing nominal values and serial number is applied on each transformer.

3.1 Conditions for the correct operation of the transformer

- Respect of all the instructions reported in this manual.
- Operation of the transformer in accordance with the rating plate data.
- Earth connection of the transformer with the correct terminals.
- Protection of the transformer against: chemical agents, pollution, atmospheric pollution, sun radiation, vegetation and animals that could influence the normal operating conditions.
- Protection of the transformer against mechanical damages during installation and operation.
- Protection against overvoltages.

4. Transport, receipt and storage

During transport, the transformers must be adequately fixed as indicated in the explanatory images. HV and LV connections must not be stressed by the retaining straps.



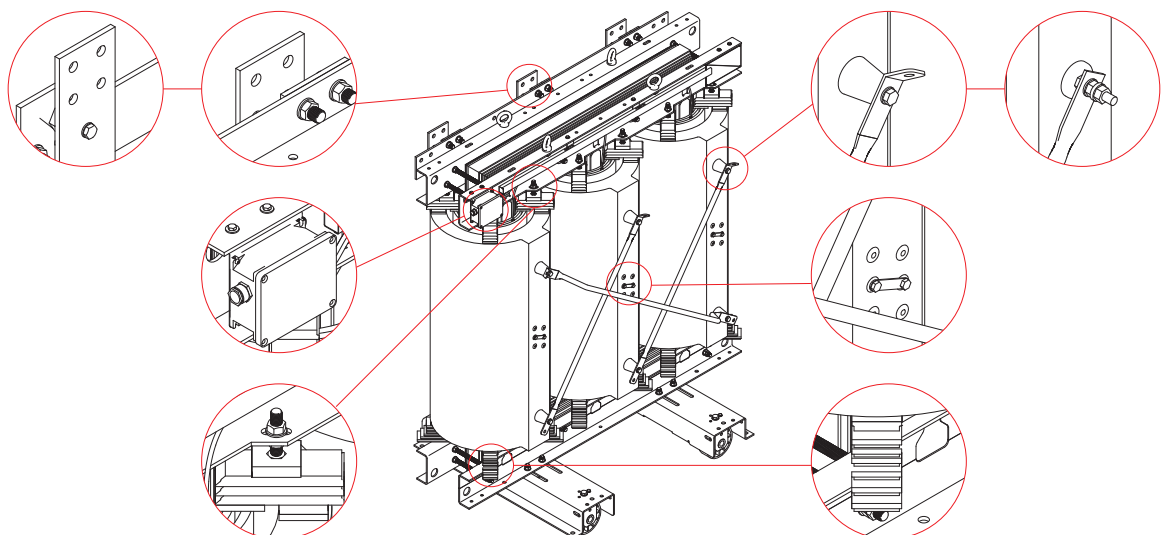
Once the transformer is at its destination, it is highly recommended to carefully examine it.

In particular the following details have to be verified: HV and LV terminals and connections, presence of scratches and/or cracks on the windings of HV and their centering with respect to the windings of LV, integrity of the protection enclosure (if present), presence of impurities, dirt, foreign body, moisture or water.

It has to be verified that the data on the rating plate are the same data reported on shipping documents and test reports of the transformer.

It has to be verified that each transformer is provided with contractual accessories such as rollers, temperature sensors, control thermometer, etc. ...

Any non-conformity must be recorded on the delivery note and notified to the forwarding agent or to Legrand.



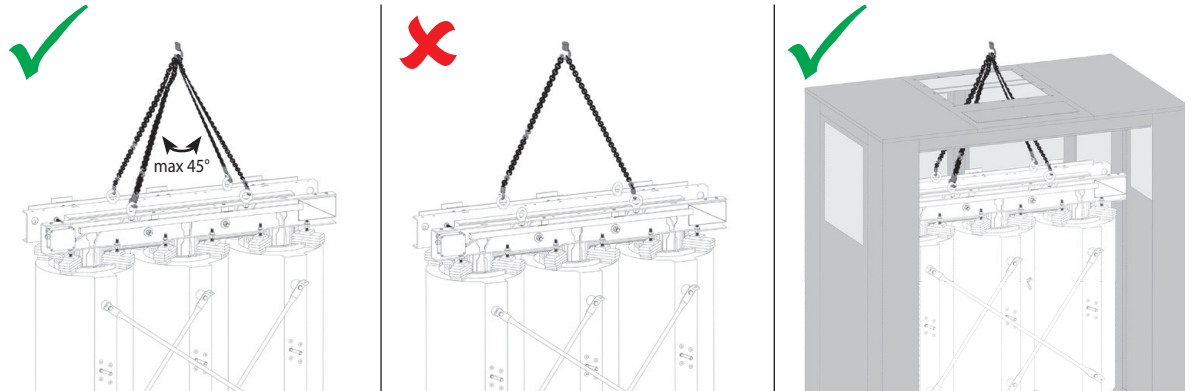


4.1 Lifting the transformer

Use all 4 eye bolts during lifting. Do not allow that the angle between the ropes to exceed 60°. The attachment point must be at least equal to the distance between the eyebolts.

Gradually increase the tension on the lifting cables to avoid sudden shock or stress to the transformer.

If the transformer has a protective enclosure, remove the centre panel of the roof to allow the eyebolts to be attached.

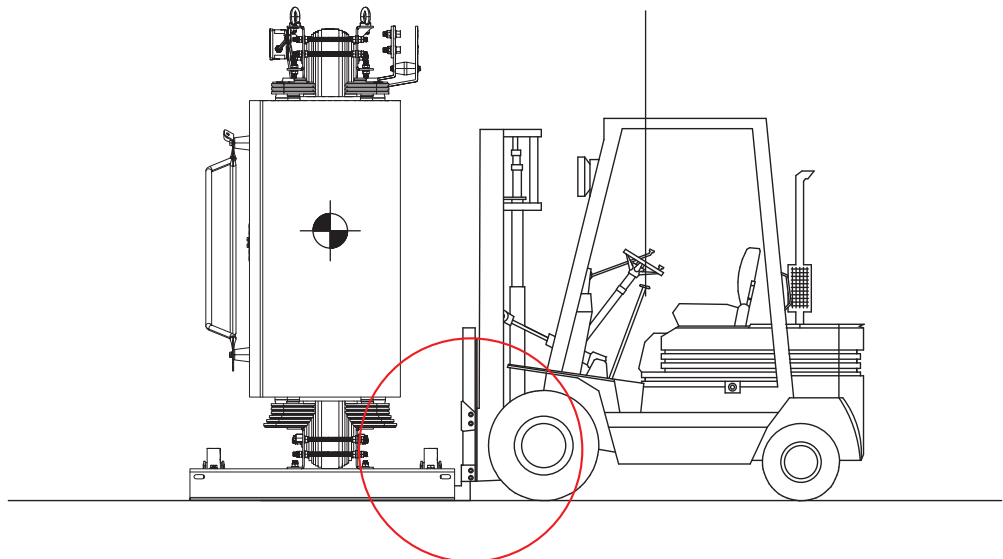
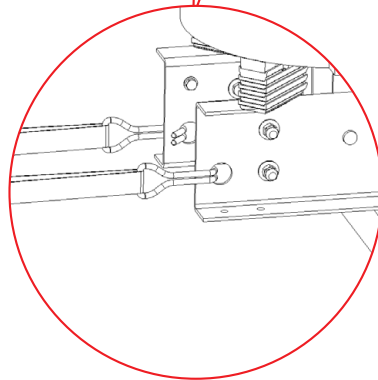
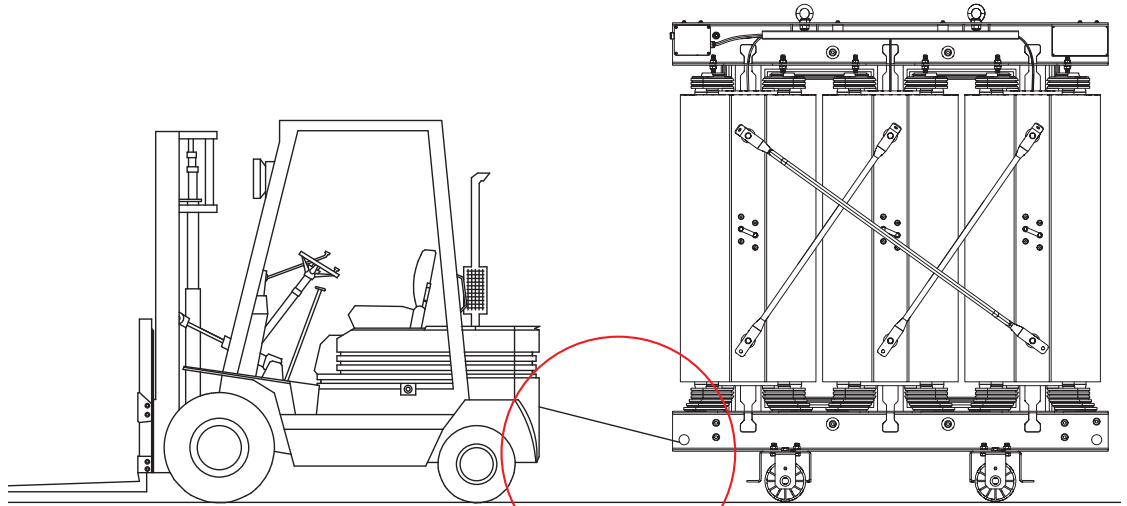


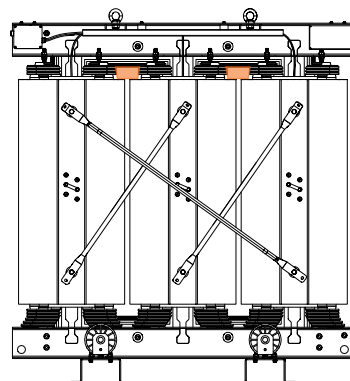
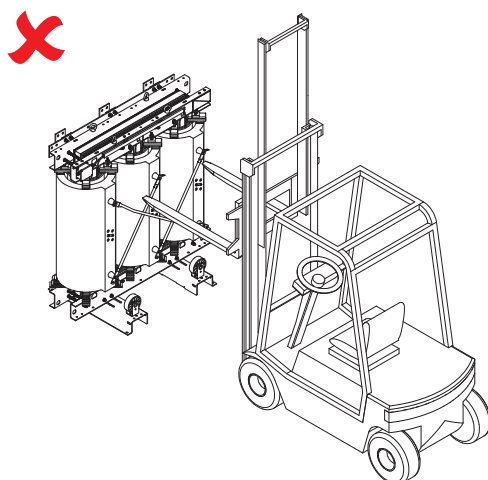
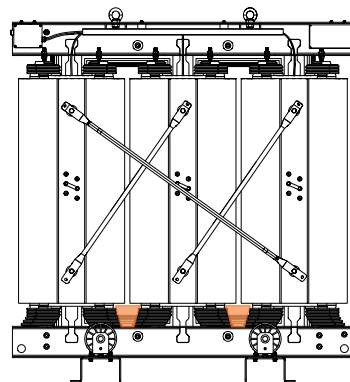
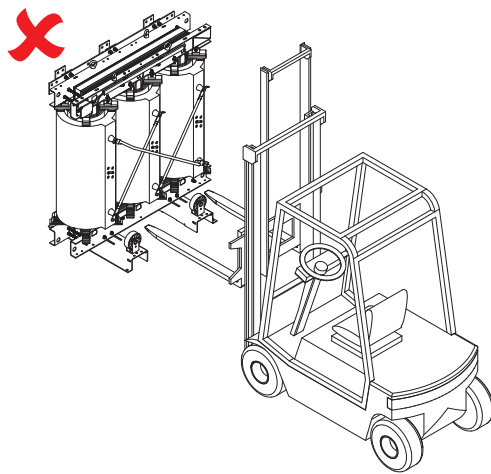
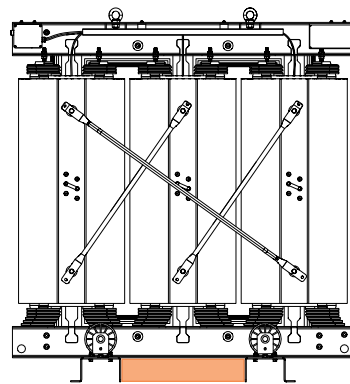
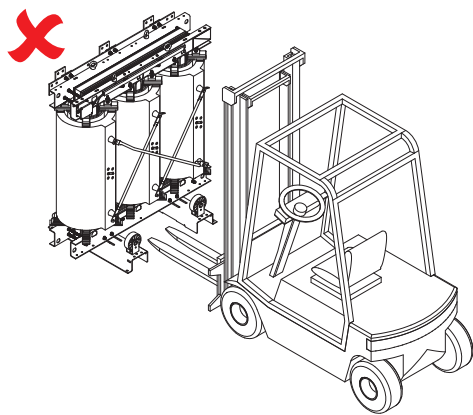
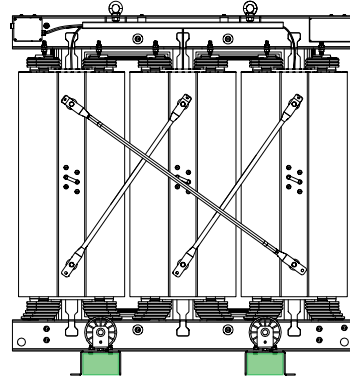
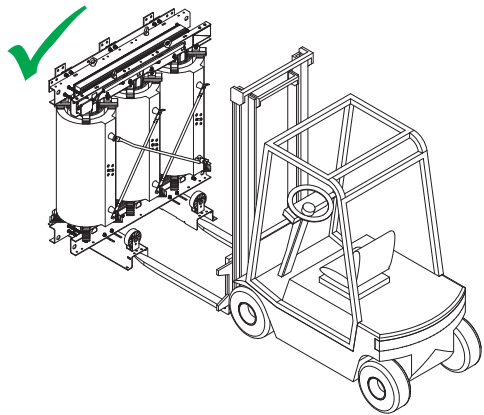
Do not stand under suspended loads.

Move the transformer only in vertical position

Lift the transformer avoiding improper lifting (that may cause it to tip over); be careful about the high centre of gravity of the transformer.

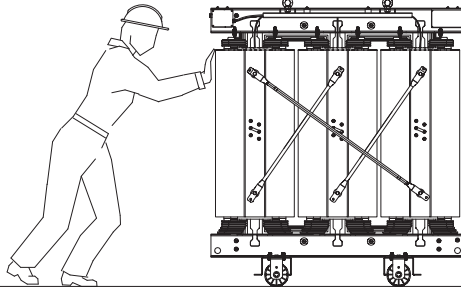
It is forbidden to lift the transformer by inserting the forks of the forklift under the upper yoke of the core.







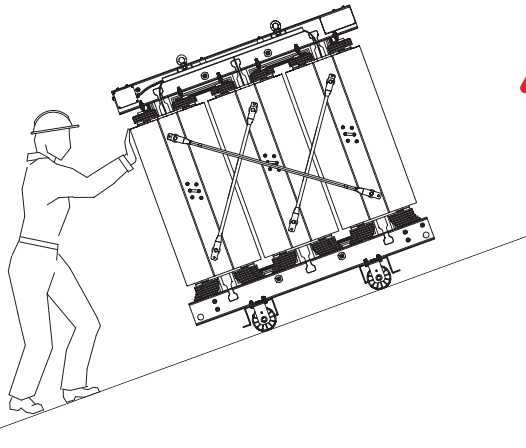
4.2 Moving the transformer



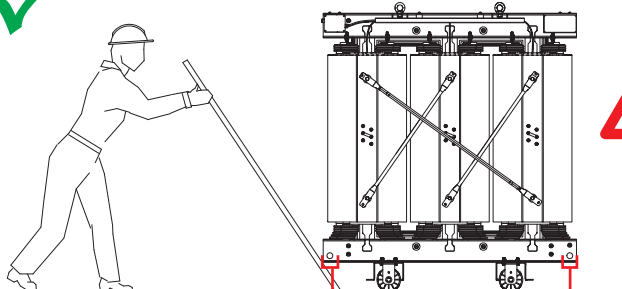
The transformer (with or without enclosure) must be moved using the track or lower joles where the proper holes are located.



Do not move the transformers by applying force on the windings or on their connections.



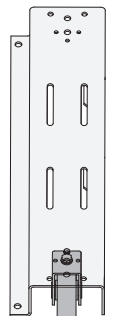
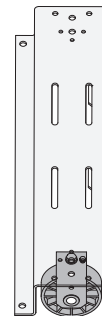
Avoid moving the transformer on sloping surfaces.



It is recommended to avoid moving the transformer on the rollers more than 10 m.

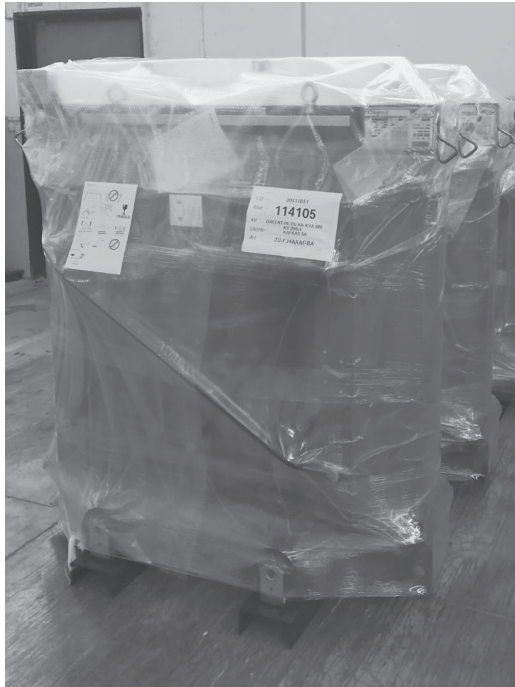
Movement can be made only in two directions, according to the rollers orientation.

Attachment points for horizontal movement using ropes.





4.3 Storing the transformer



If the transformer is not installed immediately, it has to be protected against water, dust, humidity and sunlight even if provided with enclosure.

In case of storage the packaging supplied with the transformer must not be removed.

If the transformer has been lifted using eyebolts, restore the integrity of the packaging with adhesive tape.



The temperature during storage and installation must not decrease below -25°C (unless otherwise agreed order stage).

After a long storage at very low temperatures or in an environment with high humidity, the transformer must be dried before being placed in service.



5. Installation



During the operations for the connection and installation, always protect the windings to avoid external parts such as bolts, washers, cable parts, etc. following into the windings and jeopardizing the insulation capability of the transformer.

Dry type cast resin transformers are designed for indoor installations, in a site protected from direct sunlight, in clean and dry environments, without risk of water intrusion. Standard installation must be:

1. At a sea level height not above 1000 m
2. At a temperature of the cooling air not exceeding the following values:
 - a. 20 °C yearly average
 - b. 30°C warmest month average
 - c. 40°C maximum
3. According to all other normal operating conditions as per IEC 60076-11 Standard.

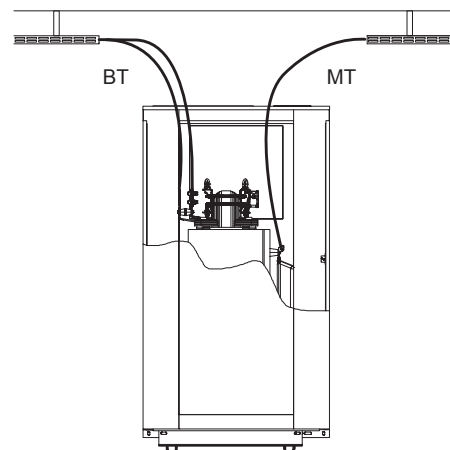
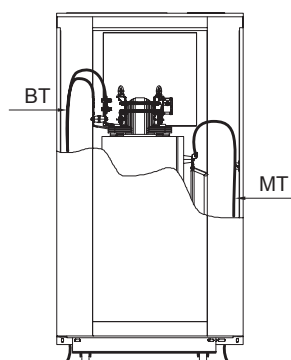
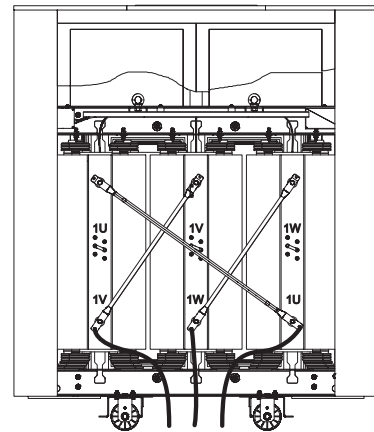
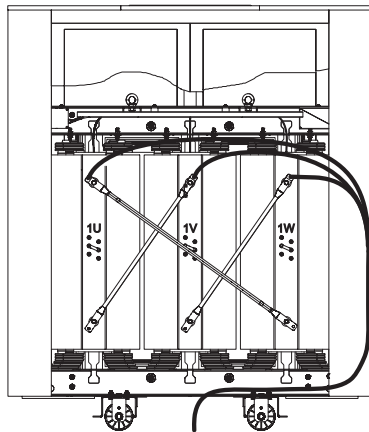
During the installation refer to the safety rules existing in your country.



5.1 Installation examples

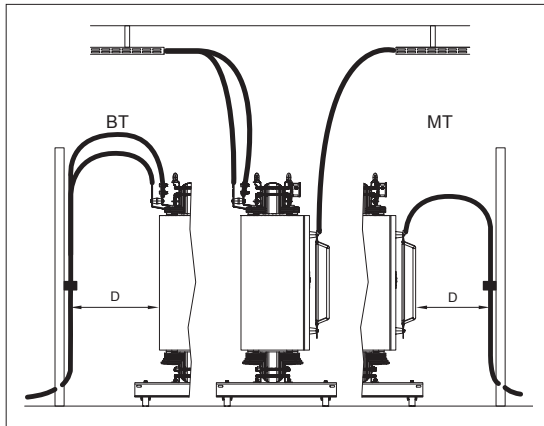
The cable connections of High and Low Voltage can be done with cables coming from the bottom or the top. Some examples are listed below.

5.1.1 Installation in protection enclosure





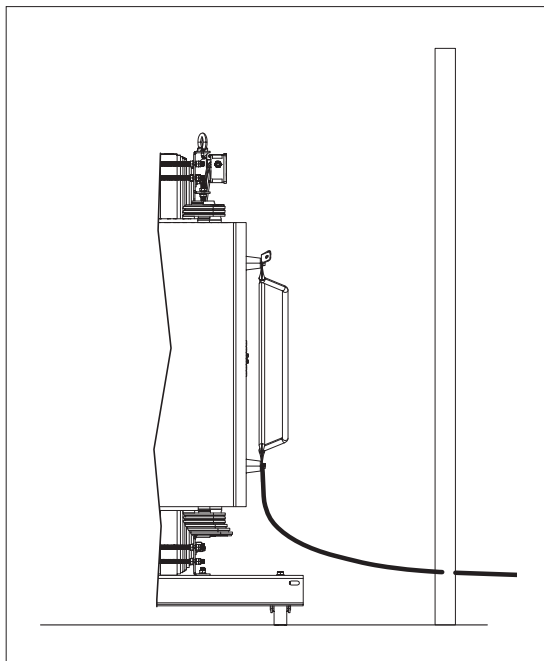
5.1.2 Installation without protection enclosure/box (IP00)



Between HV and LV connections and transformers' windings and delta connections, the minimum distances shown in the table must be respected.

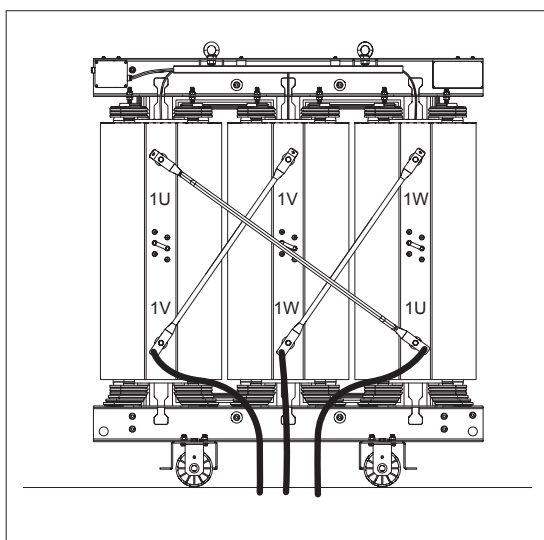
HV and LV cables must always be supported to avoid mechanical stress on the terminals.

kV	D (mm)
≤ 12	≥ 125
≤ 17,5	≥ 170
≤ 24	≥ 225
≤ 36	≥ 320



HV cable from	Sequence of the phases	Activities to be performed
Top	U - V - W	None
Bottom	V - W - U	Move the bolts from the top to the bottom terminals

HV cables, even if shielded, must not pass inside delta connection on HV side.

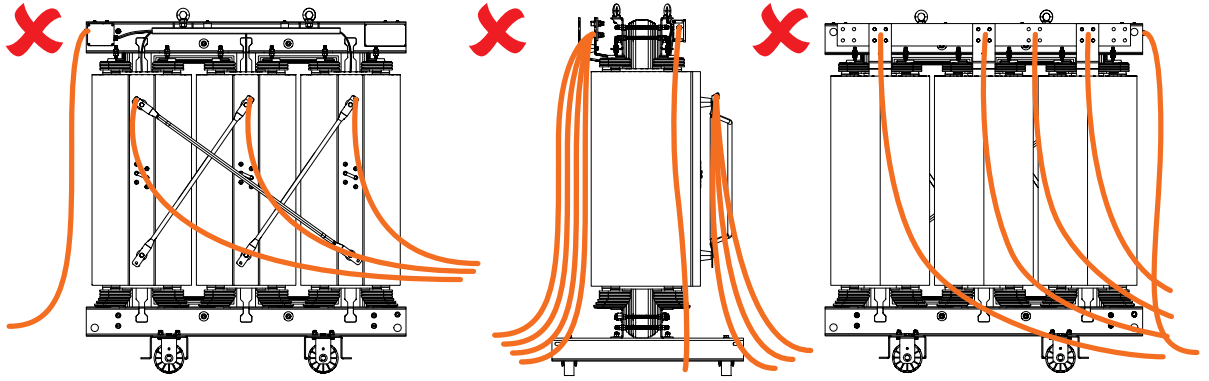


5.1.3 Examples of wrong installation

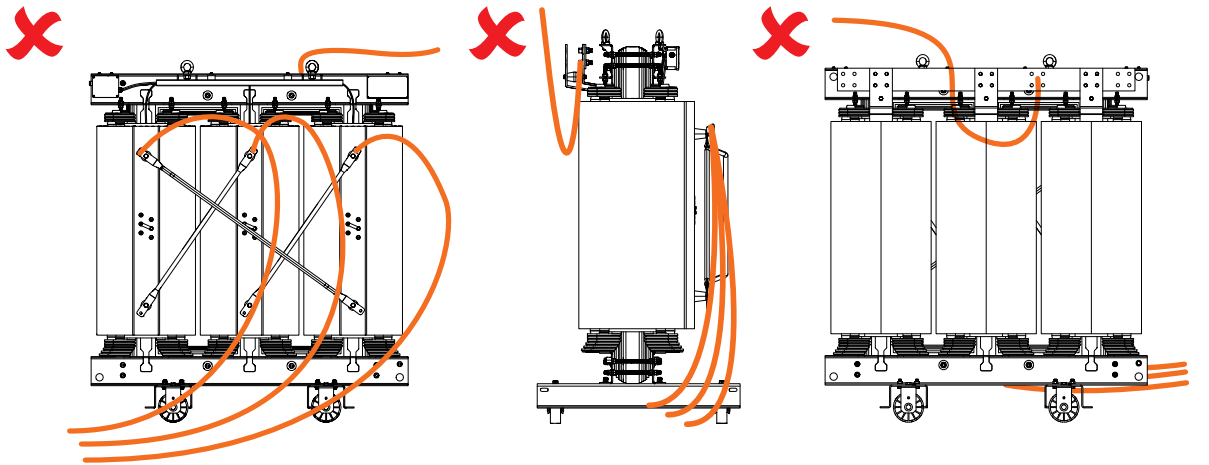


High voltage connection cables must not be laid inside the triangle connection and must not touch it. The connection cables must not touch the windings, or any other active parts of the transformer.

Example 1

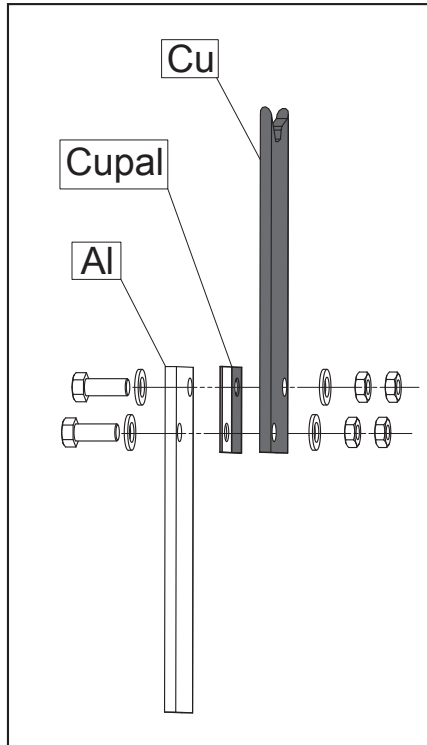


Example 2



5.2 Connections on the Low Voltage side - LV

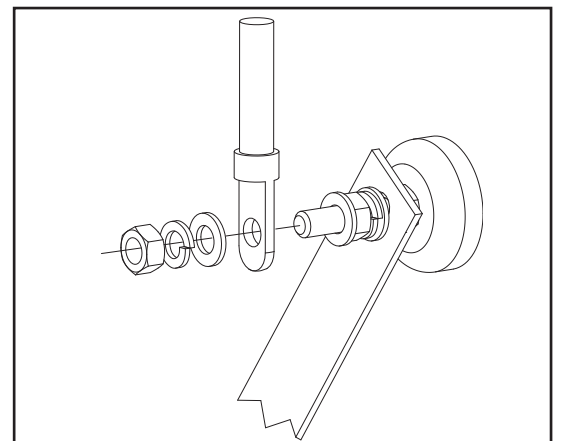
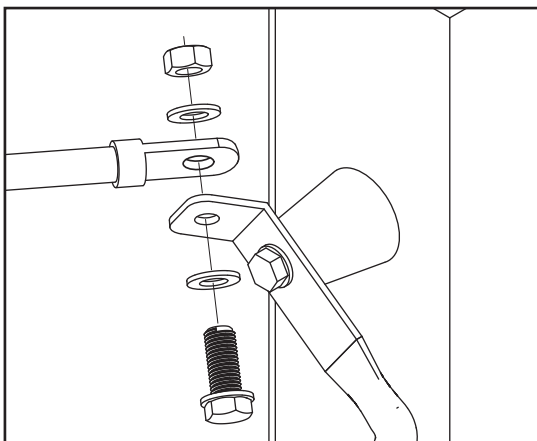
LV terminals are positioned on the upper part of the transformer and they are in aluminium as standard. We recommend to make the cable connection with tinned-copper cable terminals, connecting one or two cables in each hole.



In the case of connections with busbar it is necessary to use flexible connections to mechanically isolate the transformer from busbars.

In order to prevent corrosion caused by the direct connection between copper and aluminium, it is necessary to use Cupal intermediate plates (supplied on request) when connecting untreated copper busbars to the LV aluminium terminals.

5.3 Connections on the High Voltage side - HV



The HV terminals positioned on the opposite side to the LV terminals, are made with brass bolts placed at the two ends of the winding.

In case of connection of cables from the bottom, the upper pins can be inserted on the lower end by inverting the sequence of phases in accordance to the example previously reported in the figure.

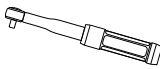


Do not replace the brass bolts with bolts of a different material: this could alter the connection.

5.4 Tightening torque for electrical and mechanical connections

Tighten screws and bolts of electrical and mechanical connections in accordance with the values reported in the table: it is recommended to re-test after a few hours of operation to eliminate the effects of any adjustments.

During the operations of clamping always use two wrenches to prevent distortion or damage.

Screw / Bolt	Electrical connection [Nm]		Mechanical connection	 (mm)
	Steel	Brass	[Nm]	
M 6	10 - 15	5 - 10	20	10
M 8	30 - 40	10 - 15	35	13
M 10	50 - 60	20 - 30	45	17
M 12	60 - 70	40 - 50	60	19
M 14	90 - 100	60 - 70	100	22
M 16	120 - 130	80 - 90	150	24
M 18	-	-	200	27
M 20	-	-	270	30
M 22	-	-	360	32
M 24	-	-	460	36



5.5 Positioning

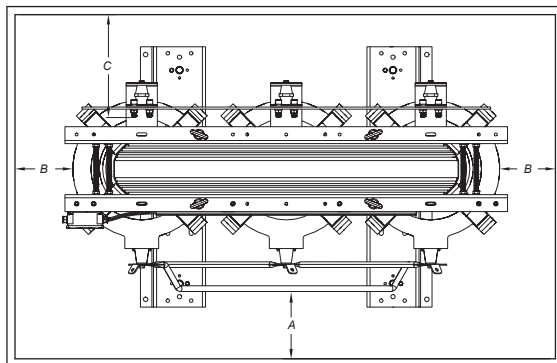
Cast resin transformers do not ensure contact insulation.



It is absolutely forbidden to touch the windings while the transformer is energised.

Therefore the transformer must always be installed in a metal enclosure, inside a cage or in a room with doors enabling access only when the transformer is de-energised.

Inside this electrical enclosure the transformer has to be positioned complying with minimal insulation distance from the walls. They are related to the insulation class shown in the Rating plate.



kV	A (mm)	B (mm)	C (mm)
≤ 12	≥ 125	≥ 60	(*)
≤ 17,5	≥ 170	≥ 80	(*)
≤ 24	≥ 225	≥ 120	(*)
≤ 36	≥ 320	≥ 200	(*)

C=B except when there is a voltage switch present on the LV side whereby C = A

In order to prevent horizontal movement of the transformer the mounting direction of the wheels can be modified.

5.6 Ventilation

The transformer during its operation generates losses due to the passage of current through the windings and the effect on the core of the magnetizing current. The losses, the values of which are shown on the test report, are transformed into heat that must be dissipated from the room in which the transformer is installed to comply with the conditions of normal use and prevent over-temperature limits being exceeded.

The room must be equipped with an opening at the bottom part S , to ensure an adequate flow of fresh air and an aperture S' on the opposite wall in the high part, to extract the hot air that rises due to the chimney effect.

To determine the dimensions of the openings required use the following formulas (valid for an annual average temperature to 20°C).

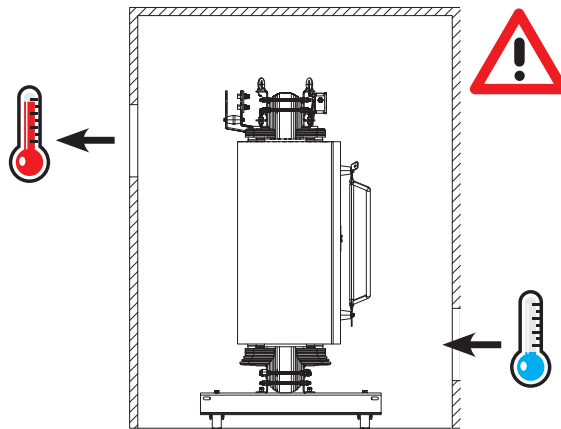
$$S = 0.185 \times (TL / \text{radq}(H));$$

$$S' = S \times 1.15 \text{ where: } S = \text{net surface of entry in m}^2$$

$$S' = \text{net surface of exit in m}^2$$

TL = sum of no-load losses and load losses expressed in kW and indicated on the test report

H = height between two opening in meter



For transformer directly fixed to the floor without rollers, it is good that they are still lifted off the ground to allow air circulation.

If provided with protective box, the transformers must be placed no closer than 0.2 m from the surrounding walls to allow air circulation.

In the case in which the enclosure was undersized or poorly ventilated it is advisable to install a forced ventilation system which can ensure a flow rate of 3.5 - 4 m³ of air per minute for each kW of losses.

If the transformer is equipped with ventilation bars please note that their useful life is approximately 20,000 hours and that after that period must be replaced. It is also advisable to start them with temperatures above 90°C and switch off when the temperature is stored at below 80°C.

5.7 Protection against overvoltages

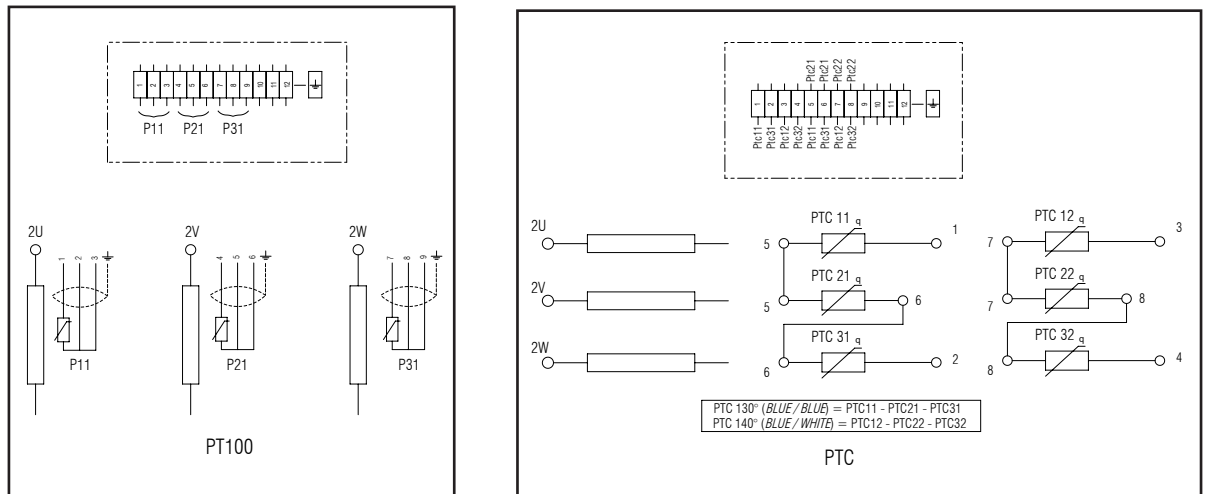
To protect the transformer from overvoltage at power frequency or of atmospheric origin, adequate surge arresters must be installed. They need to have technical characteristics depending on the level of insulation of the transformer and on the characteristics of the HV distribution system.

Possible equipment for the correction of the power factor connected close to the transformer must be equipped with limiters for the inrush current in order to prevent the generation of transient overvoltages.

5.8 Temperature monitoring systems

In standard execution the transformers are equipped with Pt100 temperature probes, realized in accordance with the IEC 60751 Standards. Other temperature sensors can be supplied on request, such as PTC sensors according to DIN 44081.

Connection diagrams of the terminal blocks in the probe connection box.



These are the recommended settings when the transformer is equipped with a temperature monitor device. They depend on the insulation class of the transformer, which is shown on the nameplate.

Recommended setting:

Insulation system temperature	Alarm	Trip
	°C	°C
180 °C (H)	140	155
155 °C (F)	130	140
130 °C (B)	110	120

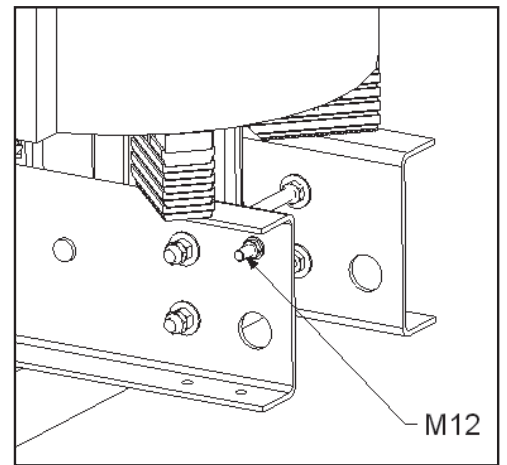
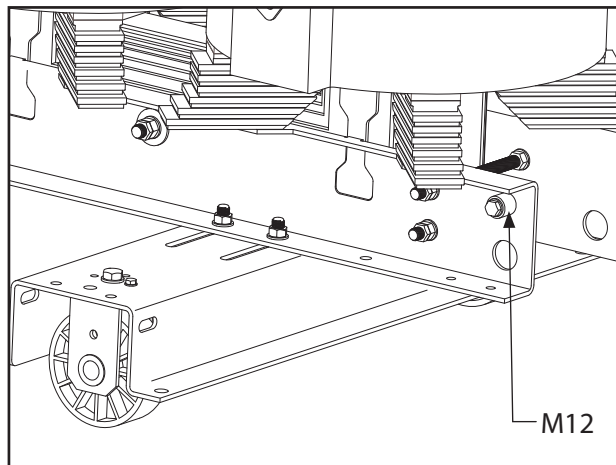
Electrical connection diagram, number and function of the electrical contacts, and terminals numeration are detailed on the manuals of the temperature control devices.

6. Commissioning

Legrand is not responsible for the installation of the transformer. Before energising the transformer, carry out the following checks and what indicated in the following paragraphs. These activities are listed in Chapter 7.

1. Verify the mutual position of the windings which must be according to our drawings. Verify that the compression bolts are centred on the spacers. The spacers must be slightly pressed.
2. Check the connections between cables and HV terminals and between cables or flexible and LV terminals. Tightening torques must be the ones indicated in the table.
3. Verify the correct operation of the temperature control device.
4. Do not attach accessories or conduits to the transformer windings and core.

6.1 Earth Connection



The earth conductor must be connected to the appropriate terminals which are on the transformer core.

The size of earth conductor must be defined according to fault current and to the current standards.

In any case the earth conductor should never be lower than the following sections:

- copper: 16 mm²
- aluminium: 35 mm²
- steel: 50 mm²

Insulation distances between earth conductor and live parts must always be respected.



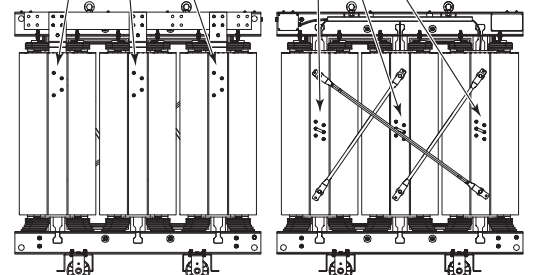
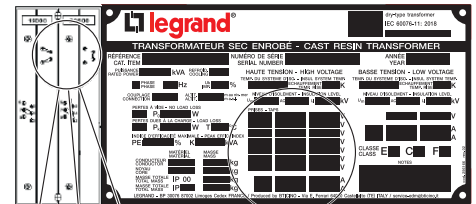
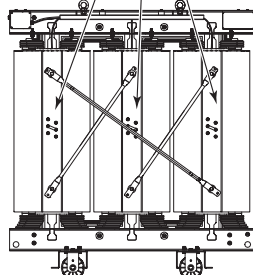
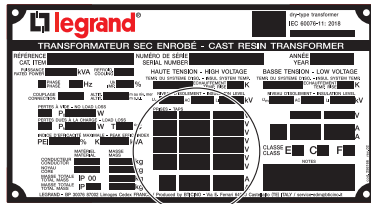
6.2 Tappings for voltage setting on HV windings

The variation of the nominal HV supplied by the electrical authority can be compensated by the tappings setting in order to keep the nominal LV required and detailed on the rating plate. The voltage setting is made by changing the position of the adjustment busbars on the tappings. This test must be carried out without load on the transformer.

Standard transformers are equipped with 5 tappings: $\pm 5\%$ in steps of 2.5%.

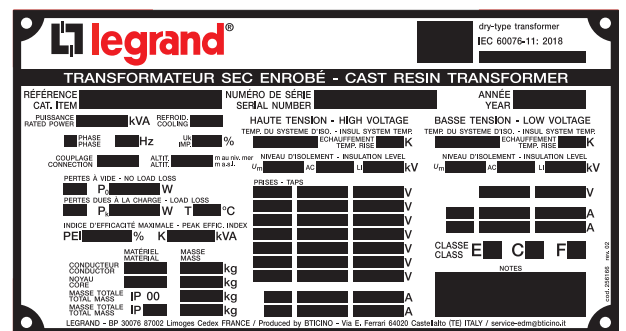
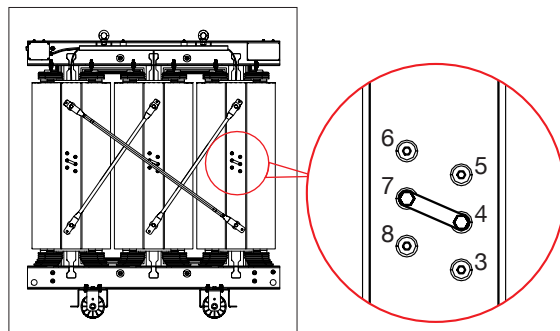
Before operating on the tappings and modifying the voltage setting, it is necessary that the transformer is off-load.

For transformers with one or two primary voltage windings, the voltage setting indications are detailed on the rating plate.

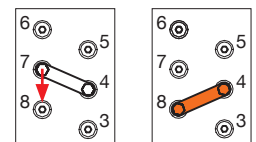


The transformer is normally shipped set to the nominal transformation ratio.

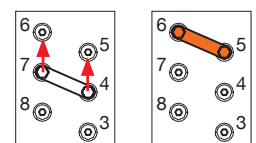
NOTE: Any changes made to the adjustments must be identically replicated on all windings.



Example 1: After energising the transformer with a nominal transformer ratio of 20000/400 V, a no-load secondary voltage of 390 V is detected: 2.5% lower. This means that the voltage at the primary is 19500 V, or 2.5% lower. To obtain the rated voltage of 400 V at the secondary, it will be necessary to move the adjustment bar from position 4-7 to position 4-8.



Example 2: The electricity distribution company indicates that in the area where the transformer will be installed the supply voltage will be 21000 V: 5% higher. To obtain the rated voltage of 400 V at the secondary, it will be necessary to move the adjustment bar from position 4-7 to position 5-6.



It is important to move the adjustment bars on all 3 HV columns so that they are in the same position and connected to the same socket. Any differences would lead to circulating currents that would irreversibly damage the transformer.

6.3 Cleaning

If the transformer has been stored for a long period, clean carefully LV and HV windings from dust, dirt and possible condensation.

Clean the HV and LV windings from dust deposits, dirt and condensation. Use a vacuum cleaner to avoid dispersion of dirt and dust on the transformer. Remove all condensation by drying the transformer with dry cloths and blowing hot dry air.

Make sure the room is dry, clean, with sufficient ventilation and without the risk of ingress of water.



6.4 Measurement of windings earth resistance

The measurement must be performed with a Megohmmeter (Megger), working up to 5000V. HV and LV terminals must be disconnected from the electrical system, during the measurement. The measured values should be approximately as follows:

- 5000 V for 60 s: Terminals HV / LV terminals to earth $\geq 20 \text{ M}\Omega$
- 2500 V for 60 s: Terminals LV / HV terminals to earth $\geq 10 \text{ M}\Omega$

If the measured values are significantly lower, dry the transformer and, if necessary, contact the after sales department.



6.5 Energising

When the transformer is connected to the electrical system, some sparkles could be visible close to the magnetic core. This physical phenomenon does not influence the correct working of the transformer and it is not related to the quality.

If the protection systems are not correctly set, inrush current will open the circuit breaker which protects the transformer. This can generate high voltages which can damage the windings. For this reason, it is recommended to activate the second harmonic restraint.

After checking the installation and ensuring that no object/tool has been left on the transformer, it is possible to close the circuit breaker on the HV side. After energising the transformer from the HV side, close the LV circuit breaker.

7. Reception, installation and initial energising of the transformer

Below are the checks to be carried out before putting the transformer into operation for the first time, in accordance with the instructions in this installation manual.					
TRANSFORMER SERIAL NUMBER:					
Installation site:					
Item	Type of control		Manual section	Check completed	
1	The information on the rating plate has been checked and meets the required specifications		3	<input type="checkbox"/>	
2	The protective packaging has remained on the transformer until the day of commissioning		4.3	<input type="checkbox"/>	
3	The protective packaging was intact and showed no signs of tampering		4.3	<input type="checkbox"/>	
4	HV and LV cables are secured with suitable mechanical supports without compromising the minimum insulation distances		5.1	<input type="checkbox"/>	
5	In the case of connections to LV busbars, the connections consist of flexible elements without mechanical stresses		5.2	<input type="checkbox"/>	
6	HV and LV connections and voltage switches are correctly tightened		5.4	<input type="checkbox"/>	
7	The minimum insulation distances between the transformer components and the surrounding elements are respected		5.5	<input type="checkbox"/>	
8	The conditions for proper transformer cooling are met		5.6	<input type="checkbox"/>	
9	The fans and their control circuit are working correctly.		5.6	<input type="checkbox"/>	
10	The temperature sensors are correctly connected to the control unit		5.8	<input type="checkbox"/>	
11	The temperature controller is correctly connected to the control panel and the alarm sequence has been verified.		5.8	<input type="checkbox"/>	
12	The earth terminals of the metalwork are connected to the earth at the points identified for that purpose		6.1	<input type="checkbox"/>	
13	The voltage switches of all phases are regulated according to the mains voltage		6.2	<input type="checkbox"/>	
14	The installation room is clean and not at risk of flooding		6.3	<input type="checkbox"/>	
15	No foreign bodies, condensation or dirt on the transformer (grease, dust, etc.).		6.3	<input type="checkbox"/>	
16	Insulation measurement	MT/earth [MΩ] :	BT/earth [MΩ] :	6.4	<input type="checkbox"/>

8. Maintenance

In normal operating conditions cast resin transformers do not require specific maintenance except for that indicated in the following table. All the operations performed must be recorded in order to be shown to Legrand in case of necessity.

Take advantage of any stops to perform checks even before they are due.

8.1 Indicative table on the main maintenance operations

Pos.	Control activity	Frequency of checks	Tools to be used	Result
1	Correct operation of the temperature sensors Pt100 / PTC	Every 6 months and after exceptional events	Heat blower for simulated heating / multimeter probe resistance measurement and comparison with calibration table*	Normal behaviour of the different temperature sensors
2	Correct operation of the temperature control device	Every 6 months and after exceptional events.	Hot air tool for simulated heating	Simulated alarm and trip
			Follow the instructions given in the installation manuals	
3	Cleaning of the windings from dust, dirt, grease and possible foreign bodies	Yearly. If the environment is particularly dusty, the frequency must be adequately increased	Clean, dry compressed air, maximum pressure 3 bar Dry rag	The ventilation gaps between the windings must be completely clean and open
4	Cleaning of the windings from condensation	After a period with no applied voltage	Dry cloths and dry compressed air at low pressure, max 3 bar / heating up to 80°C with industrial heat blowers / energising without load for at least one day	External and internal surfaces of the windings perfectly dry
5	Tightening of the bolts of HV and LV terminals and of all the electrical connections	Yearly / after exceptional events	Torque wrench	Tightening torque according to paragraph 5.4
6	Measurement of insulation resistance to earth of the windings	After a period with no applied voltage	Mega-ohmmeter (Megger)	See the paragraph 6.5
7	Verify that each couple of LV and HV windings is perfectly aligned	After exceptional events such as accidental shock or short circuit downstream of the transformer.	Flexometer	Uniform centering
8	Tightening of the upper spacer	Yearly / after exceptional events	Torque wrench	Tightening torque between 20 and 40 Nm
9	Tightening of mechanical parts and fixing to the floor	Yearly / after exceptional events	Torque wrench	Tightening torque according to paragraph 5.4

* Calibration table for PT100 thermistors according to the IEC 751 standard

Thermometric resistance in absolute Ohm										
0	100,000	100,391	100,781	101,172	101,562	101,953	102,343	102,733	103,123	103,513
10	103,902	104,292	104,681	105,071	105,460	105,849	106,238	106,627	107,016	107,404
20	107,793	108,181	108,570	108,958	109,346	109,734	110,122	110,509	110,897	111,284
30	111,672	112,059	112,446	112,833	113,220	113,607	113,994	114,380	114,767	115,153
40	115,539	115,925	116,311	116,697	117,083	117,469	117,854	118,240	118,625	119,010
50	119,395	119,780	120,165	120,550	120,934	121,319	121,703	122,087	122,471	122,855
60	123,239	123,623	124,007	124,390	124,774	125,157	125,540	125,923	126,306	126,689
70	127,072	127,454	127,837	128,219	128,602	128,984	129,366	129,748	130,130	130,511
80	130,893	131,274	131,656	132,037	132,418	132,799	133,180	133,561	133,941	134,322
90	134,702	135,083	135,463	135,843	136,223	136,603	136,982	137,362	137,741	138,121
100	138,500	138,879	139,258	139,637	140,016	140,395	140,773	141,152	141,530	141,908
110	142,286	142,664	143,042	143,420	143,797	144,175	144,552	144,930	145,307	145,684
120	146,061	146,438	146,814	147,191	147,567	147,944	148,320	148,696	149,072	149,448
130	149,824	150,199	150,575	150,950	151,326	151,701	152,076	152,451	152,826	153,200
140	153,575	153,950	154,324	154,698	155,072	155,446	155,820	156,194	156,568	156,941
150	157,315	157,688	158,061	158,435	158,808	159,180	159,553	159,926	160,298	160,671
160	161,043	161,415	161,787	162,159	162,531	162,903	163,274	163,646	164,017	164,388
170	164,760	165,131	165,501	165,872	166,243	166,613	166,984	167,354	167,724	168,095
180	168,465	168,834	169,204	169,574	169,943	170,313	170,682	171,051	171,420	171,789
190	172,158	172,527	172,895	173,264	173,632	174,000	174,368	174,736	175,104	175,472
200	175,840	176,207	176,575	176,942	177,309	177,676	178,043	178,410	178,777	179,143

8.2 Guide for trouble-shooting

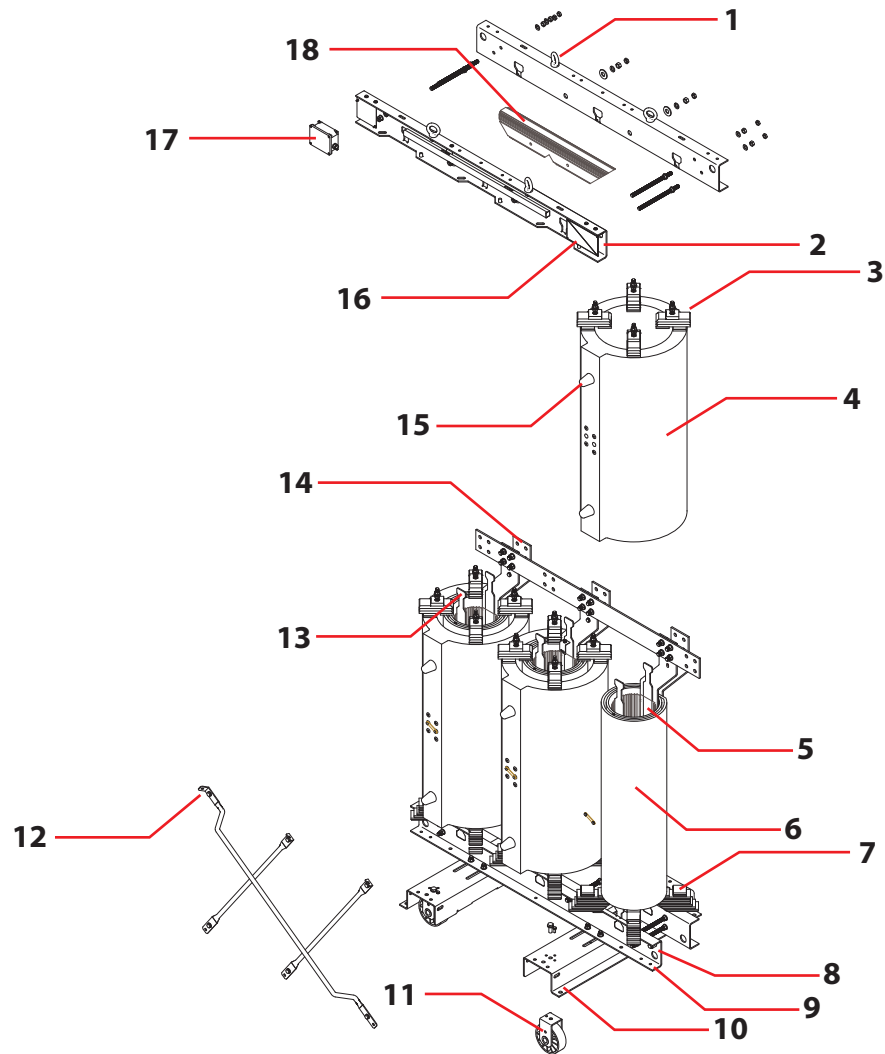
Pos.	Problem	Possible reason	Corrective action
1	Overtemperature of a single winding	Load is not distributed uniformly	Check the position of the connection on the tapings
		Faulty temperature sensors or temperature control device	Replace the faulty piece. Check the connections between the probe box and the control units / possible presence of false contacts between the individual connection cables
2	General overheating	High ambient temperature	Possible damaged fans. Clean possible openings of the room or of the box which have been blocked Check as per paragraph 5.4
3	Overheating in the core	Eddy currents in the magnetic core, due to a damage on the insulation of the ties	Contact Technical Assistance service After Sales.
4	Abnormal noise	Primary voltage too high	Verify that the voltage on the off-load secondary windings is lower or equal to the one written on the rating plate. Check as per paragraph 6.4
	Abnormal noise	Rigid connection with the Busbar. Rigid connection with the floor. Bolts of tie rods the lens nucleus.	Insert flexible connections between transformer and Busbar. Insert anti-vibration pads under the rollers. Tighten loose bolts of tie rods.
5	Intervention of the alarm and tripping relay of the temperature control device, due to overtemperature	Faulty temperature sensors or temperature control device	Replace the faulty piece
		Load current higher than the nominal value on the rating plate / high content of harmonics in the load current.	Reduce the load in order to have the nominal rated current or install the air circulation system
		Difficult or not enough ventilation air flow	Check as per paragraph 5.4
		Possible poor electrical contact of the temperature sensors	Check, clean and tighten all contacts of the sensors
6	Untimely intervention of the electrical system protections due to transformer insertion	The setting of the HV circuit breaker for the CRT insertion current is too low	Modify the protection setting paying attention to the H2 control (second harmonic)

8.3 Customer Care

For any information or spare parts do not hesitate to get in contact with our customer service. Call +39 030 2017100 or send a mail to : service-edm@bticino.it. Do not forget the serial number of your transformer.

9. Additional information

Exploded diagram of a cast resin transformer



- | | |
|------------------------|--------------------------------------|
| 1. Lifting eyes | 11. Bi-directional wheels |
| 2. Upper core clamp | 12. HV delta connection |
| 3. Upper spacer | 13. Core lifting rods |
| 4. HV windings | 14. LV terminals |
| 5. Magnetic core | 15. HV terminals |
| 6. LV windings | 16. Rating plate |
| 7. Lower spacer | 17. Auxiliary circuit box for probes |
| 8. Connection earthing | 18. Upper core yoke |
| 9. Lower core clamp | |
| 10. Truck | |

10. Environmental aspects



Legrand has always taken care of every detail relating to cast resin transformers to guarantee maximum performance to customers in terms of simplicity, safety and flexibility.

The new design criteria adopted also go in the direction of creating added values in terms of environmental aspects.

In compliance with regulations, the attention paid to new material technologies has led Legrand to play a primary role in reducing the environmental impact of dry-type transformers.

The following table shows the material of the components used in our products, useful to manage recycling operations, getting high-performance end-of-life recycling solutions

Due to the manufacturing complexity of the product, the table below provides the main materials of which it is composed, and the relative quantity by weight.

The precise data for each single transformer are indicated on the plate of the specific transformer itself.

WEIGHTS OF THE MAIN TRANSFORMER MATERIALS

<i>Range</i>	<i>Conductor material Aluminum [kg]</i>	<i>Core material CRGO (cold-rolled grainoriented steel) [kg]</i>
up to 630 kVA	da 100 a 500	da 200 a 1500
from 800 kVA to 1600 kVA	da 500 a 1100	da 1300 a 2700
from 2000 kVA to 3150 kVA	da 1100 a 1700	da 2700 a 6000

For its High Efficiency Green Transformers Legrand makes PEP (Product Environmental Profile) certificates available to offer customers environmentally friendly solutions.

