



LOW VOLTAGE CAPACITOR BANK SWITCHED BY CONTACTORS OPTIM SERIES

(OPTIM 3, OPTIM 3A, OPTIM 4, OPTIM 6, OPTIM 8, OPTIM 12, OPTIM SC8,
OPTIM SC12, OPTIM SC16)



INSTRUCTION MANUAL (M98248601-20-12A)



SYMBOLS AND WARNINGS

Pay attention to the warnings in this manual, which are shown with the following symbols.



DANGER: Warns of a risk, which could result in personal injury or material damage.



WARNING: Indicates that special attention should be paid to a specific point.

If you must handle the equipment for its installation, start-up or maintenance, the following should be taken into consideration:



Incorrect handling or installation of the unit may result in injury to personnel as well as damage to equipment. In particular, handling with power applied may result in electric shock, which may cause death or serious injury to personnel. Defective installation or maintenance may also lead to the risk of fire.

Carefully read the manual prior to connecting the equipment. Follow all the installation and maintenance instructions for the equipment throughout its working life. In particular, follow the installation standards indicated in the Low Voltage regulations and additional technical instructions.

The installation, operation and maintenance of LV equipment must only be carried out by authorised installers. LV regulations (Art. 22) specifically define the requirements that authorised installers must meet.

If in order to install the equipment, you must work in areas that have high-voltage (HV) equipment installed, then the personnel handling equipment in this area must be authorised to work in HV installations. Refer to Royal Decree 55/2004 dated 18-06-2004, which regulates the requirements and the operation of high-voltage installation and maintenance companies.

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1 INTRODUCTION

The purpose of this manual is to assist during the installation, start-up and maintenance of low voltage (LV) capacitor banks switched by contactors. Carefully read the manual to achieve the best equipment performance.

2 SAFETY HAZARDS AND WARNINGS

2.1 Hazards encountered during the installation and start-up of electrical equipment.

	<p>The installation, operation and maintenance of low voltage (LV) equipment must only be carried out by authorised installers. LV regulations (Art. 22) specifically define the requirements that authorised installers must meet.</p> <p>Do not access the active parts of a capacitor bank that has power supply applied until a minimum of 5 minutes has elapsed from the time the power was disconnected.</p> <p>Do not touch the terminals or active parts of the unit until you have verified that voltage is not present. If you must handle or touch the terminals or other components of the control panel, use adequately insulated personal protection equipment and tools.</p> <p>After maintenance and before re-applying power to the unit, check that its enclosure is properly closed and that no items or tools were left inside that could cause a short-circuit.</p> <p>Do not disconnect the current transformer secondary without short-circuiting it first. The operation of a current transformer with an open secondary will cause an overvoltage that can damage it and electrocute the person that is handling it.</p>
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2.2 Safety warnings

Apart from the general standards listed above, the standards and applicable laws of the country where the capacitor bank is installed or operated should be strictly followed.

Installation or maintenance personnel should read and understand this manual before operating the equipment.

A copy of this manual should always be available to maintenance personnel for reference.



Connecting the equipment to the public grid will be carried out in compliance with standard EN-IEC60204-1, regarding the safety of LV electrical installations.

It is recommended that several personnel be present when manipulating the equipment for its installation or maintenance.

If damage or faults are detected during equipment operation, or in circumstances that may compromise safety, immediately stop work in that area and disconnect the equipment in order to check it while it is de-energized.

Modifying, upgrading, or rebuilding the equipment without written authorization from the manufacturer is prohibited.

3 RECEPTION, TRANSPORT, HANDLING AND STORAGE

3.1 Reception protocol

- Make sure that the unit has not been damaged during transport.
- Check that the unit received matches the order and that its electrical characteristics are suitable for the grid where it is to be connected.
- Check the shipping documentation. The dispatch note number must coincide with the number marked on the outer part of the unit.
- Unload and transport the unit in accordance with the instruction listed in section 3.2
- Perform an external and internal visual inspection of the equipment prior to disconnecting it.
- Check that all items on the packing list are present.



If any discrepancy is noticed upon reception, immediately contact the transport company or CIRCUTOR's post-sales services.

3.2 Transport, loading and unloading, handling and storage

The transport, loading and unloading and handling of the equipment must be carried out while taking the proper precautions and using the proper manual or mechanical tools in order to prevent damaging the equipment.



If the equipment is not to be immediately installed, it must be stored at a location with a firm and level floor and the storage conditions listed in the technical features section must be followed. In this case, it is recommended that the equipment be stored with its original protective packaging.

In order to move the equipment a short distance, the unit's floor support profiles facilitate handling with a pallet jack or forklift.



The centre of gravity of some units may be found at a considerable height. Therefore, when handling with a forklift, it is recommended that the equipment be securely fastened and that no abrupt manoeuvres are carried out. The equipment should not be lifted more than 20 cm over the ground.

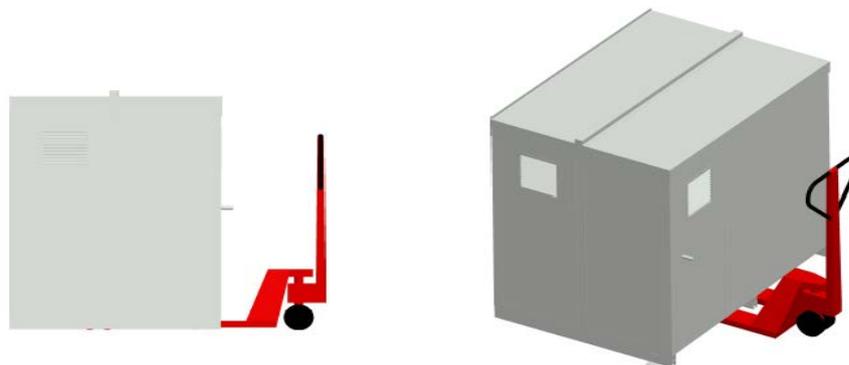


Fig. 3-1 .-Transport with pallet jack

When unloading and moving the equipment, use a forklift with forks long enough to support the entire length of the base. Otherwise, the forks should be long enough to support at least $\frac{3}{4}$ of said depth. The forks must be flat and must be laid firmly on the base. The cabinet must be raised by placing the forks underneath the profile that supports the equipment. (Fig.3-2).



As regards the distribution of loads within the equipment, its centre of gravity may be displaced from the centre of the cabinet. The necessary precautions must be taken to prevent the equipment from tipping over during abrupt movements.

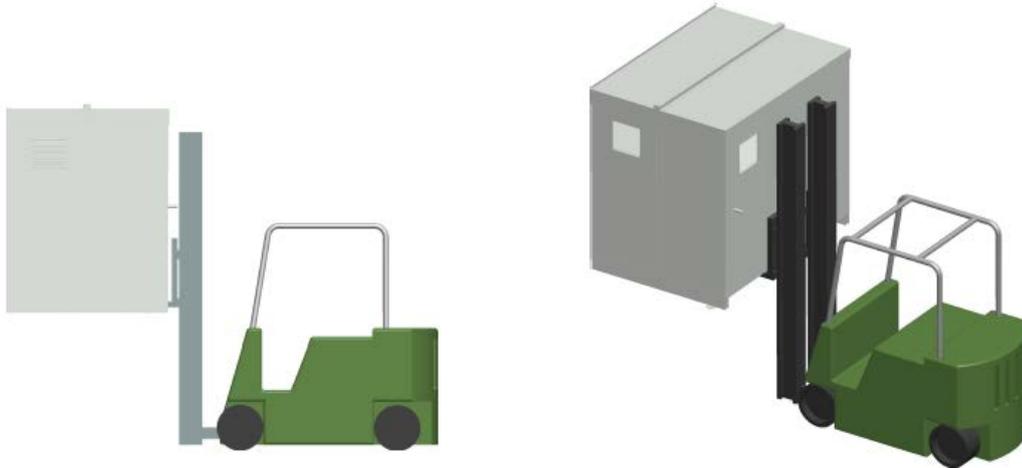


Fig. 3-2 .-Unloading with a Forklift

3.3 Storage

The following storage recommendations shall be followed for the capacitor bank:

- Avoid placing it over irregular surfaces.
- Do not store in outdoor areas, humid areas or areas exposed to projected water.
- Avoid hot spots (maximum environmental temperature: 45 °C)
- Avoid saline and corrosive environments.
- Avoid storing the equipment in areas where a lot of dust is generated or where the risk of chemical or other types of contamination is present.
- Do not place any weight on top of the equipment cabinets.

4 TECHNICAL FEATURES

4.1 Label with the unit's features

The label with all the equipment features is located inside the equipment, generally next to the PF regulator (refer to Fig. 4-1)

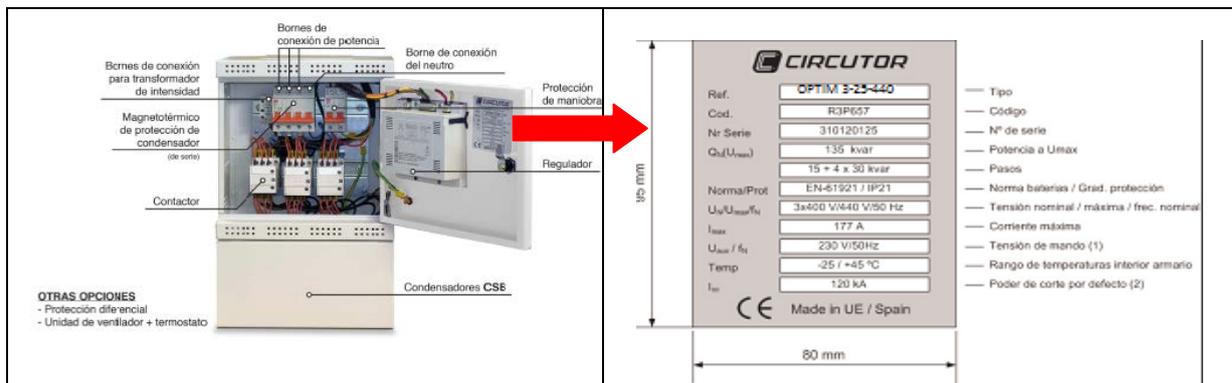


Fig. 4-1.- Label with the unit's features

4.2 Electrical features

- Operating voltage and nominal frequency: U_n / f , listed on the label
- Design voltage: $U_n + 10\%$ (440 V for 400 V equipment)
- Nominal power and distribution of steps: Q_n and make-up, listed on the label
- Total loss: Less than 0.5 W/kvar
- Residual discharge voltage: 75 V after 3 minutes
- Overload capacity: $1.3 I_n$ in all items
- Contactor operating voltage: U_{aux} , listed on the label.
NOTE: In general, use a 1.5 mm² cable to supply external power.
If "Internal", is marked, this circuit does not require external power.
- Current transformer Input: 5 A, ($I_n/5A$ transformer)
NOTE: Minimum cable section 2.5 mm².
- Compliance with Standards UNE EN 61921
- Capacitor characteristics:
 - Capacity tolerance: $\pm 10\%$
 - Insulation level: 3 kV /50 Hz
 - Impulse test: 15 kV , 1.2/50 μ s type wave
 - Protection elements: Internal fuses and over-pressure system
 - Compliance with Standards UNE EN 60831

4.3 Environmental Characteristics

- Capacitor max. temperature Category C in accordance with EN 60831-1
 - Maximum for 1h 50 °C
 - 24h average 40 °C
 - Annual average 30 °C
- Ventilation For T_{amb} exterior > 30 °C, the cabinet requires ventilation
- Maximum relative humidity: 80%
- Altitude: 1000 m (For higher altitudes, always maintain ventilation)

4.4 Mechanical characteristics

- Protection degree: Marked on the label:
- Paint Oven dried epoxy type
- Standard colours RAL 7035 Grey ; RAL 3005 Maroon

4.5 External dimensions and weights.



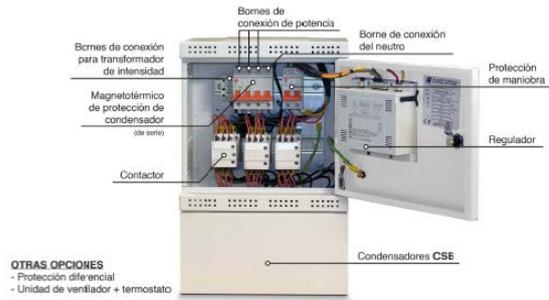
Model	Dimensions (mm)			Max. Weight (kg)
	Width	height (*)	Depth	
OPTIM 3	290	464	170	33
OPTIM 3A	335	560	170	37
OPTIM 4	460	930	230	68
OPTIM 6	615	1330	400	87
OPTIM 12	1180	1340	360	155
OPTIM 8	1180	1650	360	260
OPTIM SC8	1180	1805	460	305
OPTIM SC12	1930	1805	460	585
OPTIM SC16	2360	1805	460	605

Fig. 4-2 .- Dimensions

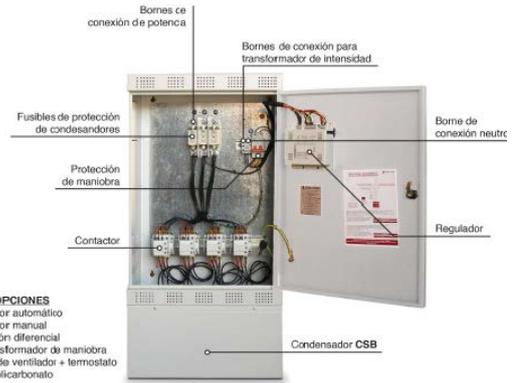
4.6 Capacitor bank components

Fig. 4-3 shows the different capacitor bank models and their essential components. Note that some protection elements are optional

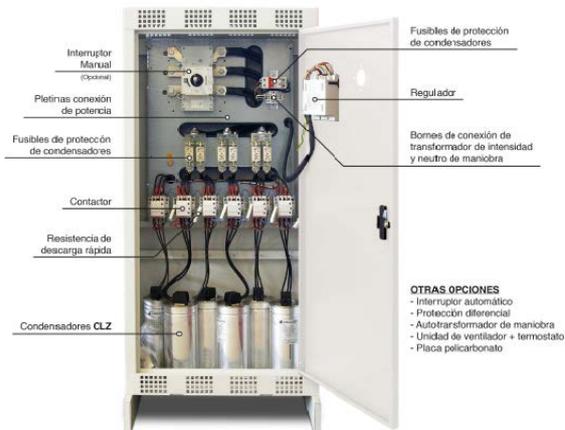
OPTIM 3 / OPTIM 3A



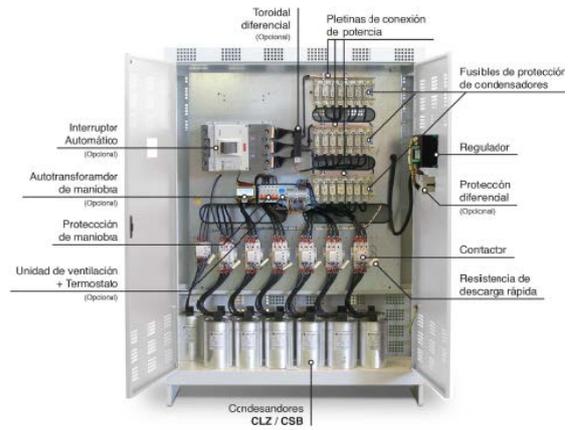
OPTIM 4



OPTIM 6 / OPTIM 12



OPTIM 8



OPTIM SC8 / OPTIM SC12 / OPTIM SC16 (2 x OPTIM SC8)

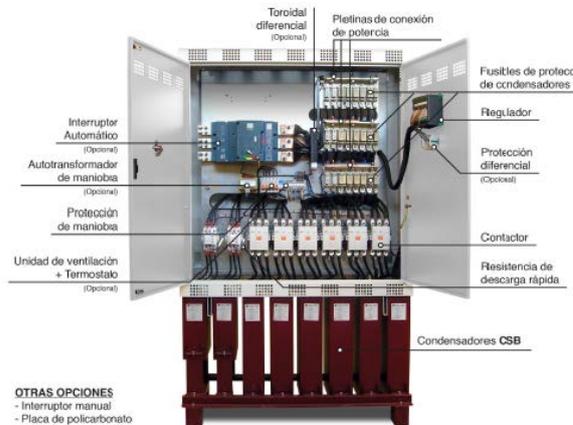


Fig. 4-3.- Parts of the different types of banks.
(Note: Some of the protections are optional)

5 Installation

5.1 Preparation

The **CIRCUTOR** capacitor banks are prepared for an easy installation and start-up.

Remove the equipment's packaging and verify that the unit's electrical characteristics are suitable for connection to the available grid. To accomplish this, check the characteristics label located inside the cabinet, next to the regulator, refer to Fig. 4-1, for an example. Key data to be checked:

- Grid voltage and mains frequency, U_n / f .
- Nominal power of the capacitor bank, Q_n (kvar) and composition
- Current consumption, I_n (see label). This current must be taken into account in order to select the proper size of the equipment's power supply cable and eventually, the circuit breakers that are to be connected before it.
- Auxiliary control voltage, U_{aux} (See section 5.3.3)
- Environmental conditions. (See section 4.3)

5.2 Installation location

It is important to keep a certain distance around the equipment clear of any items in order to facilitate cooling. In self-supporting cabinets, the back and front sides of the cabinet must be kept at least 50 cm away from walls and other equipment in order to facilitate cooling. Regarding the sides, it is recommended that a separation of 10 cm be maintained between adjacent equipment. On wall mounted cabinets, it is recommended that at least 20 cm of separation be maintained between the sides of adjacent equipment.

Make sure the equipment can be accessed easily.

The environmental conditions of the location where the equipment is installed must not surpass the limits established in the technical features (See section 4.3)

In order to ensure proper ventilation, the unit must be installed in a vertical position..

in accordance with LVR, once the unit is installed, it must be protected against direct and indirect contacts; therefore, a circuit-breaker and an earth leakage protection for the capacitor bank's power supply line should be installed.

5.3 Connection of the capacitor bank to the grid

	<p>Check that the nominal voltage of the capacitor bank coincides with the voltage between phases of the grid where it is being connected. Also check the operating circuit voltage (contactors). Regarding this issue, refer to section 5.3.3</p> <p>For feeding cables into the capacitor bank cabinet, always use the entry points</p>
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available for this purpose.

Do not drill holes into the cabinet for feeding cables through them or for installing support brackets. Drilling produces metal shavings that may enter the contactors or other devices and cause short-circuits.

5.3.1 Power circuit.

- Connect input terminals L1, L2 and L3 (power circuit) to the grid using proper sized cable in accordance with the LVR, ITC-BT-19. Generally, the cables of the three phases follow the following colour code: L1 (black), L2 (brown), L3 (grey). If auxiliary voltage is required, the neutral cable will be connected to N (colour blue, refer to section 4.9.3)
- In order to determine the size of the phase cables, the nominal current I_n must be taken into account, which is indicated on the equipment label and it should be able to withstand an overload in transients of 1.5 times I_n . The neutral cable will be a minimum of 1.5 mm^2

5.3.2 Isolation and external protection items

- In the case that the capacitor bank does not have an internal switch or isolation switch, the capacitor bank must be connected to a line that has a switch or external isolation switch.



The protection elements, isolation switches and/or switches that are added externally to the capacitor bank must be of a minimum size to withstand a current 1.5 times greater than what is indicated on the label (REBT, ITC-BT-48)

In the case that an earth leakage detector for the capacitor bank is installed, its sensitivity and trip delay must be adjustable.

- When the bank is connected to the grid, it is recommended that the current transformer (CT) is placed on the phase going to L1 (black cable). outputs S1 and S2 of the CT must be connected to the terminals with the same name

5.3.3 Auxiliary control voltage.

Control circuits are defined as those related with regulator output relays and the capacitor's operating contactors. These circuits are usually fed to a 230 Vac auxiliary circuit (most common case) or other voltages such as 110 Vac (common in the case of capacitor banks at 500 v or 690 V). There are two possible ways of feeding the circuit

- **Bank with auxiliary voltage obtained from an internal AUTOTRANSFORMER**
Does not require connection of the external neutral. The label indicates U_{aux}/f ... internal
- **Bank with auxiliary voltage obtained between PHASE-NEUTRAL**

Requires connecting the external neutral to terminal N (see

Fig. 5-2 and Fig. 5-4 The label indicates U_{aux}/f ... (control voltage)

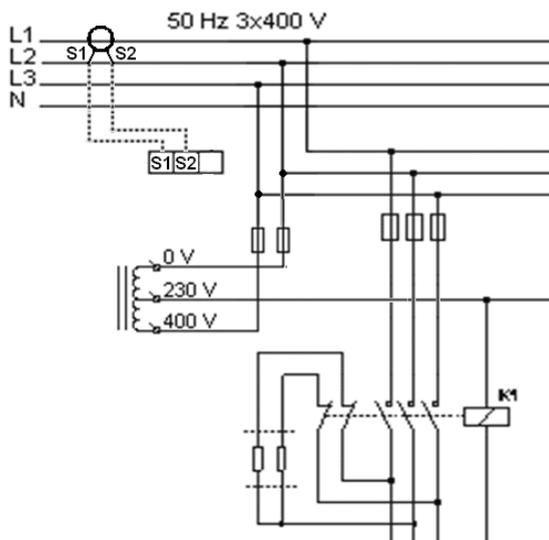


Fig. 5-1 .- Auxiliary power supply with autotransformer

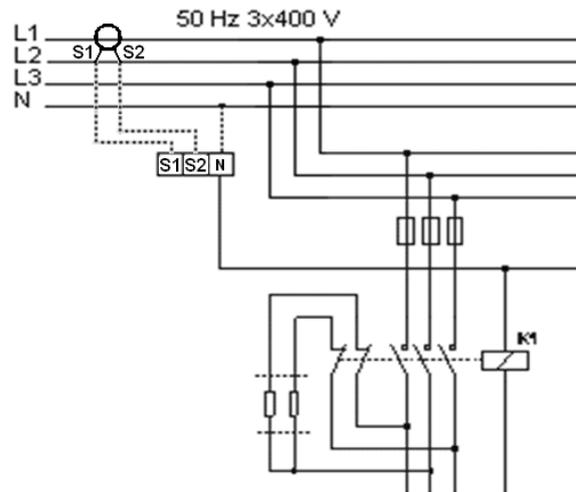


Fig. 5-2 .- Auxiliary power supply with neutral

5.3.4 Earth cable connection

Connect the earth cable to the capacitor bank's earth terminal located on the equipment operating panel. The cable size will be selected in accordance with the admissible current limits established in the REBT (ITC-BT-19 – Internal or receiver installations) for each type of cable and their location.

5.3.5 Connecting the current transformer (CT)

	<p>A current transformer (CT) that is external to the bank must be installed to measuring the total load current plus the bank (see Fig. 5-3).</p> <p>The standard transformer has a nominal output of 5 A at the secondary winding. It is recommended to connect the CT to phase L1 in the direction of the current flow from P1 to P2 (see Fig. 5-3) and connect the secondary winding (terminals S1, S2) to the terminals with the same name on the bank (see Fig. 5-3). Avoid current flow through the CT primary winding prior to connecting it to terminals S1 S2 of the bank. If the CT must be installed while recharging the installation, short-circuit S1 and S2 as long as they are not connected to the bank.</p>
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- The current value of the CT primary winding must be equal or somewhat greater than the size of the installation's mains switch. Therefore, the CT must be able to measure the maximum current that is foreseen will be consumed by all the loads to be compensated.

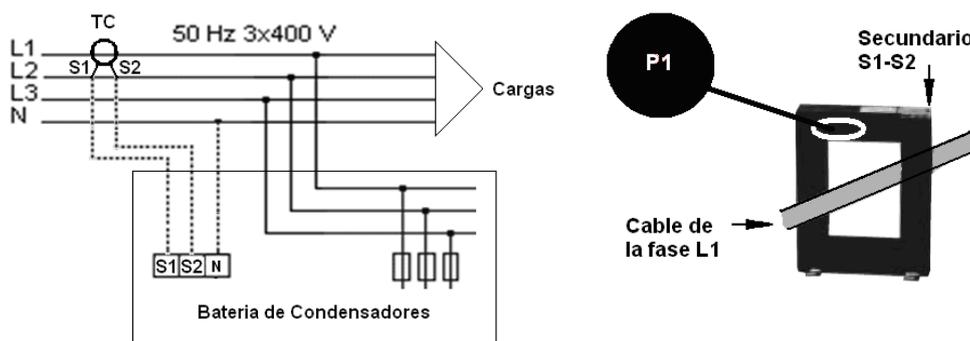


Fig. 5-3 .- Installation of the current transformer (CT) (external)

- The connection point of the CT for a bank that compensates an entire installation is after the installation's mains switch.
- To prevent excessive attenuation of the signal, the minimum secondary winding cable size (terminals S1, S2) is recommended to be at least 2.5 mm².



Fig. 5-4.- CT and neutral connection terminals if required

- Once the cables are installed, disconnect the jumper connecting terminals S1 and S2 of the bank (seer Fig. 5-5)

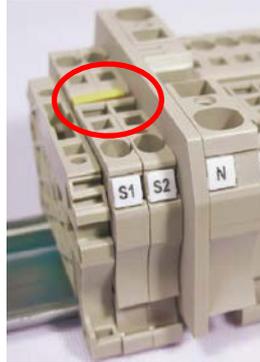


Fig. 5-5.- Jumper for short-circuiting the secondary winding of the current transformer (CT).

	<p>Any time you wish to change or disconnect a current transformer that is already installed, it is important to install the jumper connecting S1 and S2.</p>
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6 CAPACITOR BANK START-UP

6.1 Before start-up

The automatic capacitor banks include a power factor regulator. Prior to start-up, the operation of said regulator must be known; for this reason, all the banks **incorporate a specific manual of the regulator used. Ensure you have this manual available for the start-up process.**

	<p>In order to carry out the adjustment of the regulator incorporated to the capacitor bank and carry out an optimum start-up, requires the charge of the installation be at least 30% or 40% of the nominal charge the bank has been sized for. In the case that all the stages are not included, they may be manually connected in order to check them all.</p> <p>During low charge periods, manually connecting the entire bank is not recommended, as in some cases resonance with the installation power transformer could occur.</p> <p>the capacitors are connected in manual mode, first allow enough time for the capacitors to discharge (as indicated in the bank's specifications tag) before reconnecting them to the power grid. Otherwise, they could start-up out of phase with a voltage of up to $2xU_n$ causing destruction of the capacitor.</p>
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6.2 Start-up

	<p>Safety Apply the safety regulations listed in section 2 of this manual before operating the equipment. The standards and applicable laws of the country where the capacitor bank is installed or operated should be strictly followed.</p>
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- Ensure the inner circuit breaker that starts the regulator (shown as the operating protection in fig. 4.3) is connected
- Apply power to the panel and check that the regulator display illuminates immediately. Otherwise, stop and check the previous step.
- Check the regulator's $\cos \varphi$ indication. If the indication is out of range 0.5 to 1, it may be possible that the current transformer and / or the power supply to the regulator are improperly connected. Most of the regulators use only one current transformer. In this case, connect as per fig. 6-2 (place the current transformer on phase L1 and take the power voltage from phases L2 and L3)



Fig. 6- 1.- computer **Max regulator** (picture provided as an example. It may not coincide with the model used on your unit).

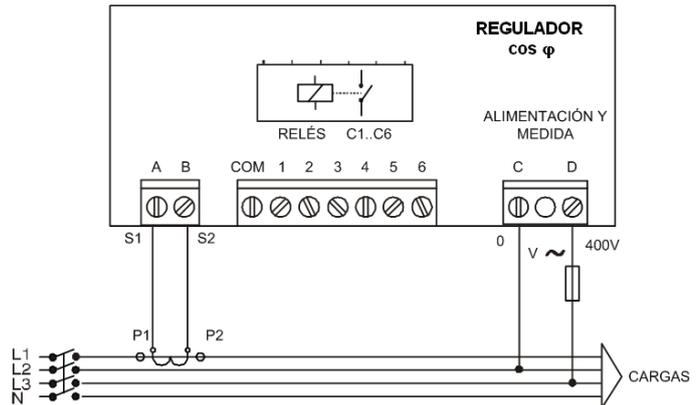


Fig. 6-2 .- Type connection of a regulator with only one CT (If using **computer Plus**, 3 current transformers are used. Refer to the **computer Plus** specific manual)

- Once ensured that the regulator is properly connected, adjust the regulator parameters for the installation you are attempting to compensate. To accomplish this, follow the regulator's instructions manual included with the battery.

6.3 Checks once the bank is connected and the regulator has been adjusted

- After start-up, make sure that the equipment is operating correctly. A sign of proper operation is a $\cos \varphi$ next to a 1 indicated on the display. In addition, the reactive meter must stop.
- Check that the power supply voltage does not go above the nominal value +10% (IEC 60831-1)
- Check the current absorbed by each capacitor. Under normal conditions, it must be close to the nominal value indicated on its characteristics plate and never exceed 1.3 times this value constantly. A continuous consumption over the nominal value may be caused by the presence of harmonics in the grid or an excessively high power supply voltage. Both circumstances are harmful for capacitors.
- In accordance with the IEC 60831-1 Standard, the capacitor is prepared to operate continuously at up to 10% overvoltage for up to 8 hours, every 24 hours.



Check the working temperature of the capacitors after they have been operating for 24 hours. The capsule must be below 40 °C

7 MAINTENANCE

7.1 Safety regulation



SAFETY

Apply the safety regulations listed in section 2 of this manual before operating the equipment.

The standards and applicable laws of the country where the capacitor bank is installed or operated should be strictly followed.

7.2 Maintenance with the bank disconnected

7.2.1 Basic maintenance protocol

Monthly

- Perform a visual inspection of the capacitors
- Check the protection fuses
- Control the environmental temperature (average of 30 °C. In accordance with IEC 60831).
- Control the service voltage (especially during moments of low charge, it must not exceed the nominal +10%).

Six-monthly

- Maintain the capacitor terminals clean.
- Verify the state of the contacts of operating elements.
- Check that the capacitor current is not lower than 25% or greater than 120% of the nominal value by phase and that there is no phase unbalance greater than 15%.

Annually

- Carry out a dielectric rigidity test by applying 2.5 kV for 1 s between the capacitor's terminals and earth.
- Check the capacity of the different steps. One indirect check may be to check that the consumption is manual.
- Check the tightness of all terminal connections.
- Inspection of the fuses.
 - Power circuit: NH fuses. Check continuity and temperature.
 - Control Circuit: Neozed fuses. Check continuity and temperature

7.2.2 Tightening the electrical connections.

- The connections must be tight. The following tightening torques for the fuse bases and contactors are listed in tables 7-1 and 7-2

Table 7-1.- Tightening torques of the cables to the fuse bases

FUSE BASE	TORQUE (Nm)
NEOZED 63 A	3.6
NH-00	15.2

Table 7-2.- Tightening torques of the cables to contactor terminals

MODEL	Auxiliary (Nm)	POWER (Nm)
MC-12	1.3	1.6
MC-18	1.3	2.2
MC-32	1.3	2.9
MC-40	1.3	2.9
MC-50	1.3	4.5
MC-65	1.3	4.5
MC-75	1.3	4.5
MC-85	1.3	4.5
MC-150	1.3	9

7.2.3 Key points for inspecting contactors.

- Check that the plastic parts are not blackened and do not show signs of burning or hardening.
- Check that the head is properly inserted
- Check the tightness of cables and terminals, as shown on table 7-2
- The terminals must be clean.
- In the case that the bank includes RD discharge resistors, check they are in good condition (they are not open or show signs of burning).

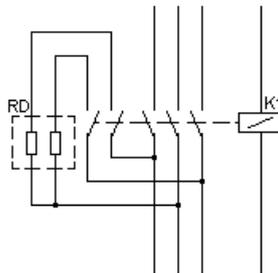


Fig. 7-1.- Connection of the discharge resistors

- Cleaning the contactors: In dirty environments (dust, sawdust, rust particles, etc.) vacuum the contactor periodically. There is no estimated time frame for cleaning, it depends on the amount of dirt that is inside the bank.

7.2.4 Key points for inspecting capacitors.

- Inspect the cables and terminals. They should not be overheated or blackened.
- The terminals must be clean.
- The slow discharge resistor must be in good condition (they should not be open or show signs of burns)
- Check the tightness of capacitor terminals, as shown on table 7-3

Table 7-3.- Tightening torques of the cables on the capacitor bank terminals

Capacitor	Power terminal (Nm)	Earth terminal (Nm)
CSB	21	6.2

CLZ CAPACITORS		
Diameter (mm)	Power terminal (Nm)	Earth terminal (Nm)
2.5	0.33	0.463
3	0.57	0.8
4	1.3	1.83
5	2.59	3.62
6	4.49	6.2
8	10.9	15.2
10	21	30
12	37	50

7.2.5 Key points for inspecting the regulator

- Check that the regulator does not show signs of deterioration and the display is lit as normal.
- Inspect the cables and terminals. They should be clean and should not be hardened or overheated.
- Inspect the connections and the insertion of removable terminal strips:
 - The terminal strips must be well fastened on removable regulators.
 - Check that the terminals are tightened properly. The recommended torque is 0.6 Nm.

7.2.8 Cleaning the cabinet.

- Remove possible metallic and non-metallic particles.
- Clean the inside of the cabinet
- Clean ventilation grilles

7.3 Maintenance with the battery connected.

- Check that the mains switch connects and disconnects, without having to force the mechanism
- If there is an individual earth leakage protection for the bank, check its proper operation by pressing the test button.
- Check that the auxiliary control voltage is within the tolerance limits. If the bank has an autotransformer, check it is in good condition and does not show signs of deterioration.
- Force the connection and disconnection of the capacitors in manual mode.(refer to the regulator manual before carrying out this action) and perform the following checks:
 - Check that the contactors connect and disconnect properly.
 - Check that the contactor, once connected, does not rattle or vibrate.
 - Check the capacitor consumption in each of the phases. The normal values are provided in table 7-4

Table 7-4.- Nominal consumption of the capacitors, according to the power

Power	CURRENT	
	230 V	400 V
	In	In
2.5 kvar	6.28 A	3.6 A
5 kvar	12.56 A	7.2 A
7.5 kvar	18.85 A	10.8 A
10 kvar	25.12 A	14.4 A
12.5 kvar	31.41 A	18 A
15 kvar	37.7 A	21.6 A
20 kvar	50.24 A	28.8 A
25 kvar	62.82 A	36 A
30 kvar	75.4 A	43.2 A
40 kvar	100.48 A	57.6 A
50 kvar	125.64 A	72 A
60 kvar	150.8 A	86.4 A
70 kvar	175.92 A	101.1 A
80 kvar	200.96 A	115 A

NOTE: If the consumption is below $\pm 25\%$, and the voltage is normal, this is usually a symptom of degradation of the capacitors. In case this is detected in a capacitor, it should be replaced with another capacitor.

7.3.3 Regulator Checks.



Refer to the manual of the specific regulator used in the battery. This manual is always supplied with the bank.

- Check that there are no faulty segments on the display.
- Check that the keyboard is operating properly:
 - Enter Setup and check the adjusted values
 - Force the manual connection and disconnection of a step.

7.4 Environmental Conditions:

- Check that the maximum environmental conditions listed in section 4.3 are observed

8 GUARANTEE,

CIRCUTOR guarantees its products against any manufacturing defect for two years after the delivery of the equipment.

CIRCUTOR will repair or replace any defective factory product returned during the guarantee period.



No returns will be accepted and no unit will be repaired or replaced if it is not accompanied by a report indicating the defect detected or the reason for the return.

The guarantee will be void if the equipment has been improperly used or the storage, installation and maintenance instructions listed in this manual have not been followed. "Improper usage" is defined as any operating or storage condition that is not in compliance with LV Regulations or surpassing the limits indicated in the technical and environmental features of this manual.

In particular, capacitor units are very sensitive to adverse environmental conditions, to temperatures above the established limits and overloads produced by the absorption of harmonic currents. Therefore, special care must be taken to not surpass these usage conditions.

CIRCUTOR accepts no liability due to the possible damage to equipment or other parts of the installation, nor will it cover any possible sanctions derived from a possible failure, improper installation or "improper usage" of the equipment.

Consequently, this guarantee does not apply to failures occurred in the following cases:

1. Over
2. voltages and/or electrical disturbances in the supply;
3. Water, if the product does not have the appropriate IP classification;
4. Poor ventilation and/or excessive temperatures;
5. Improper installation and/or lack of maintenance;
6. Buyer repairs or modifications without the manufacturer's authorisation.

9 TECHNICAL ASSISTANCE AND DECLARATION OF CONFORMITY

CIRCUTOR provides advice and technical assistance services throughout Spain for the planning and installation of capacitors, automatic power factor correction equipment and harmonics filters.

CIRCUTOR, SA

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Declaration of conformity



DECLARACION DE CONFORMIDAD CE
CE DECLARATION OF CONFORMITY
DECLARATION DE CONFORMITE CE

Por la presente
We hereby
Par le présent

CIRCUTOR, S.A.

Con dirección en:
With address in:
Avec adresse à:

Vial Sant Jordi, s/n
08232 VILADECALLS (Barcelona)
ESPAÑA

Declaramos bajo nuestra responsabilidad que el producto:
We declare under our responsibility that the product:
Nous déclarons sous notre responsabilité que le produit:

Batería automática de condensadores, BT
Automatic capacitor bank. LV

Serie: OPTIM 3, OPTIM 3A, OPTIM4, OPTIM6, OPTIM8,
OPTIM12, OPTIM SC8, OPTIM SC12, OPTIM SC16

Marca CIRCUTOR

Siempre que sea instalado, mantenido y usado en la aplicación para la que ha sido fabricado, de acuerdo con las normas de instalación aplicables y las instrucciones del fabricante,
Provided that it is installed, maintained and used in application for which it was made, in accordance with relevant installation standards and manufacturer's instructions,
Toujours qu'il soit installé, maintenu et utilisé pour l'application par laquelle il a été fabriqué, d'accord avec les normes d'installation applicables et suivant les instructions du fabricant,

Cumple con las prescripciones de la(s) Directiva(s):
Complies with the provisions of Directive(s):
Accomplie avec les prescriptions de la (les) Directive(s):

2006/95/CE
2004/108/CE

Está en conformidad con la(s) siguiente(s) norma(s) u otro(s) documento(s) normativo(s) :
It is in conformity with the following standard(s) or other normative document(s) :
Il est en conformité avec la (les) norme(s) suivante(s) ou autre(s) document(s) normatif (ves) :

IEC 61010-1:2010
IEC 61000-6-2:2005
IEC 61000-6-4:2011
IEC 60831-1:2002
IEC 61439-1:2011

Año de colocación del marcado "CE": 2012
Year of affixing "CE" marking:
An de mise en application du marquage "CE":

Revisado en Viladecavalls
Fecha: 08/11/2012

Nombre y Firma :
Name and signature :
Nom et signature :



Francisco Rosique Gil
General Manager

