



SPX1280CL

Introduction Guide for “CL”

REVISION		0	
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APPLIED TO MODELS	SPD-SERIES	☐ SPD265	☐ SPD360	☐ SPD500	☐	☐
	JF-SERIES	☐ JF30	☐ JF40	☐ JF365	☐ JF545	☐ JF990
	SPX-JUNIOR	☐ SPB209	☐ SPX312	☐ SPX424	☐ SPX429	☐
	SPX-SENIOR	☐ SPX527	☐ SPX536	☐ SPX1040	☐ SPX1275	☐
	MPK-SERIES	☐ MPK20	☐ MPK50	☐	☐	☐
	NEW SERIE	☐ SPX532	☒ SPX1280	☐	☐	☐
	OTHERS	☐ SPK 60	☒ OTHER (CL)	☐ TOOLS	☐ INSTRUMENT	☐



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1. HAZARD – RISK OF ELECTRICAL SHOCK – 96VDC SYSTEM

BE AWARE THIS A 96VDC SYSTEM THAT IS HIGHLY DANGEROUS: HIGH RISK OF ELECTRICAL SHOCK!

ONLY WELL TRAINED AND SPECIALIZED TECHNICIANS ARE AUTHORIZED TO CARRY OUT SERVICES ON THE ELECTRICAL MAIN PANEL AND ON THE 96VDC COMPONENTS. EACH DEALER HAS TO CONTROL THE MANDATORY REQUIREMENTS FOR OPERATE ON SUCH HIGH VOLTAGE SYSTEMS.

Cause of the lack in the standard, there isn't a proper or specific Training/Specialization valid in all the European countries. It is mandatory and an obligation for the dealer to control the standard and the Training/Specialization necessary to be authorized to operate on High Voltage Systems.

[E.g. in Italy only the technicians who has attended a specific training on CEI11 27 has the knowledge and the necessary preparation to operate on the high voltage systems.]

FOR THE PART RELATED TO THE 96VDC JEKCO HAVE APPLIED THE HARMONIZED EU STANDARD 60204-32 – 2009 - Safety of machinery – Electrical equipment of machines – Part 32: Requirements for hoisting machines.

In order to fulfill the Standard, the 96VDC system has been designed as a IT system where both 96VDC “+” and “–” have been kept insulated from the body/mass of the machine. Only the Auxiliary Battery



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12VDC has the “-” connected to the body/mass of the machine. All the “bodies/masses” of the machine have been connected each other through copper braids. An integrated “insulation control device” has been installed: this keep monitored the IT system and assure that the insulation of the 96 VDC is respected and into the required range. Moreover, all the electrical parts have been installed with a minimum IPXXB contact protection level.

The IT insulation control keeps under control the insulation level and each time this level is not respected, this is recognized as “fault” it shuts off the 96VDC and the red led on back side cabinet turns ON. After 15-20 seconds, the 96VDC power is set to ON again and a new insulation test is performed (and repeated constantly if the cause of the issue is still there).

Because of a lack in the standards, where there isn’t a specific standard which could be applied to the 96VDC lithium mobile machines/lifting equipment, Jekko has applied an International Standard ISO standard that is currently in use for the design of the electrical vehicles:

ISO 6469-3 - ELECTRICALLY PROPELLED ROAD VEICHLES (2011) – SAFETY SPECIFICATION PART3
PROTECTION OF PERSONS AGAINST ELECTRIC SHOCK

On chapter 10 (at the end of this introduction) and indication about the minimum service that could be carried out and the conditions that must be fulfilled to carry the service out.

2. RESCUE SWITCH/MAIN SAFETY SWITCH/RESCUE Q-R CODE

On the left back side there is located the “Rescue Main Safety Switch”.

This must be in “ON” (close circuit position) in normal working condition of the mini-crane.

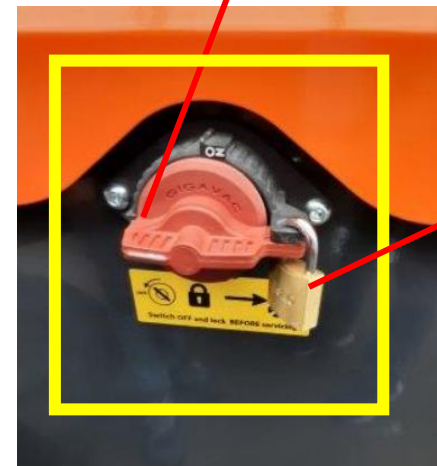
When a massive maintenance, or in case of big issue with the power supply, the “Rescue Main Safety Switch” must be on “OFF” position (open line) and a lock must be placed in the locking ring to ensure no one will turn it on “ON” position unexpectedly.



ON POSITION
NORMAL POSITION
(THIS IS THE NORMAL
POSITION OF THIS SWITCH)

REMOVE LOCK

OFF/SERVICE/RESCUE POSITION
(ONLY WHEN STRICTLY NECESSARY OR
MANDATORY)



SECURED WITH LOCK



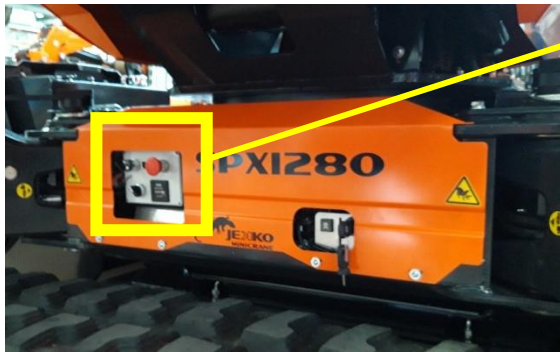
RESCUE CARD – Q-R CODE



The rescue card is a QR Code containing the information for the rescue team in case of accidents to power off the mini-crane.

3. RIGHT SIDE POWER ON PANEL/TURN ON THE POWER

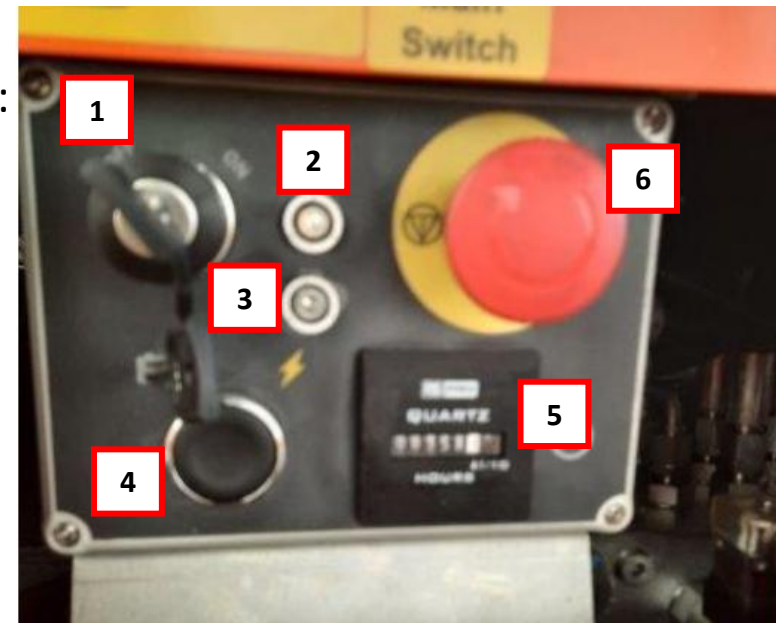
Go to the right side of the machine's central frame, where the main switch is placed.



RIGHT SIDE PANEL

On the right side panel there are the following devices:

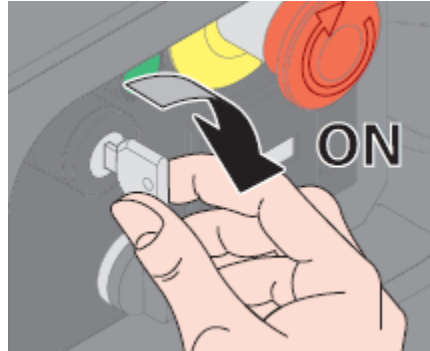
- *main power switch (1);*
- *aux 12VDC OK led indicator - blue (2);*
- *safety chain OK led indicator - green (3);*
- *wake up button for lithium batteries (4);*
- *hour counter (5);*
- *emergency button (6).*



Release the **Emergency Button**.

Turn on the **Main power switch**.

Press the **Wake up button** (if needed) to energize the machine.



Aux 12VDC OK led indicator (blue): this indicates that the 12VDC from the aux battery is ok and the safety devices are power supplied and also that the system could be started. Without the auxiliary source of 12VDC it is not possible to start the machine (the lithium 96VDC will supply 12VDC volt only once activated but need this external source to be activated each time the unit is powered off). All the electronic control **logic** (safety and drive – as display, master units, etc.) are powered on.



Safety chain OK led indicator (green): this indicates that the safety control on the system is ok and everything works properly, but this doesn't mean that the power from 96VDC lithium battery is available. The green led gives information on :

- Insulation control OK
- Micro-switches on main electrical cabinet door OK
- Interlocks on connectors OK

BE AWARE THAT THIS SAFETY GREEN LED DOESN'T INDICATE THE 96VDC IS PRESENT AND MINICRANE IS READY TO START WORKING.

Go to the back side of the machine's central frame, where the main switch is placed and check the status lights on it (chapter 5 – Main Electrical Cabinet).

[An useful information to understand if everything is working properly, moreover the lights on the right side and the lights on the back side main electrical cabinet is to check:

- Green light “ON” on the Tower Lamp
- Relais clicking into the Main Electrical Box
- Remote control “READY” indication on the screen (this means safety ok, insulation ok, 96VDC ok)

[Check the next chapter]



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4. HIGH BATTERY 96VDC AND LOW BATTERY 12VDC

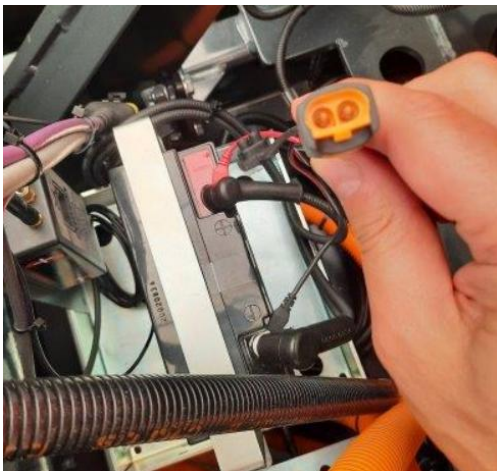
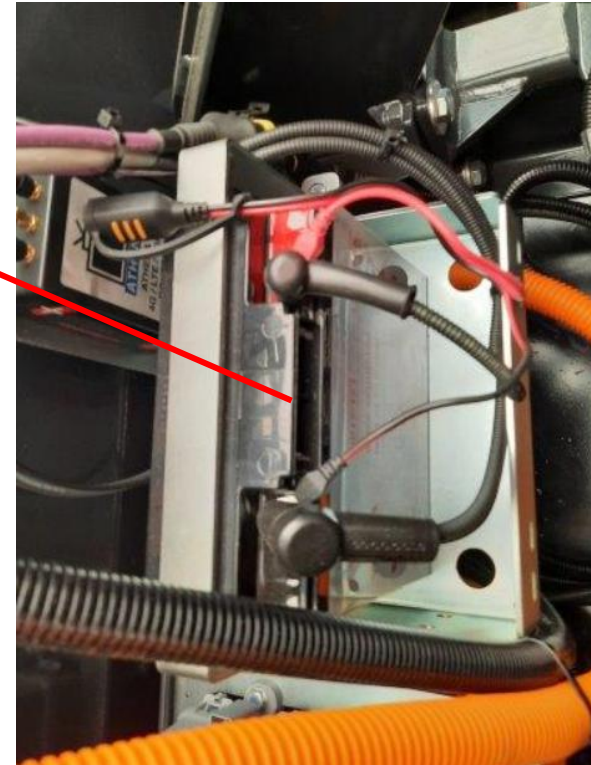


THE MAIN (96VDC) LITHIUM
BATTERY IN THE LITHIUM
POWERED SYSTEM IS ALSO
KNOWN AS
"HIGH BATTERY"



12VDC AUXILIARY
BATTERY

THIS AUX BATTERY
IN THE LITHIUM
POWERED SYSTEM IS
ALSO KNOWN AS
"LOW BATTERY"



IF THE 12VDC AUX BATTERY IS FULLY DISCHARGED, IT IS POSSIBLE TO POWER ON THE 1280CL BY PROVIDING 12VDC WITH THE BATTERY CHARGER SUPPLIED WITH THE MACHINE – IT IS EQUIPPED WITH THE CONNECTOR FOR THIS PLUG. ALSO A GENERIC EXTERNAL 12VDC (E.G. ANOTHER 12VDC BATTERY COULD BE ENOUGH TO START THE SYSTEM). ONCE STARTED THE 12VDC WILL BE ALSO SUPPLIED BY THE 96VDC SYSTEM WHICH POWERS ON ITSELF THE AUX12VDC SYSTEM AND ALSO KEEP THE 12VDC AUX BATTERY CHARGED.



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230Vac – 12VDC BATTERY CHARGER SUPPLIED WITH THE 1280CL TO USE ONLY IN CASE OF THE 12VDC AUX BATTERY IS DICHARGED AND IT IS NOT POSSIBLE TO RUN THE WHOLE SYSTEM



5. MAIN ELECTRICAL CABINET

On the back side of the 1280CL it is located the main electrical cabinet which contains all the devices that control the insulation integrity of the IT system, the micro-switches of its door interlock and the connectors interlock.





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- *IT insulation level led indicator – red (1)*
 - OFF → insulation is OK
 - ON → insulation is not OK
- *right side key icon and led indicator - green (2)*
 - OFF → right side key activated and aux 12VDC/low battery present
 - ON → right side key not activated and/or aux 12VDC/low battery not present
- *battery charger/s icon and led indicator - green (3)*
 - OFF → no power supply or selector (6) in “0” position
 - ON → battery charger/s power supply OK
- *lithium “high” battery 96VDC “WAKE UP BUTTON” (same as right side) - (4)*
- *lithium “high” battery BMS display - (5)*
- *battery charger selector and plugs - (6);*

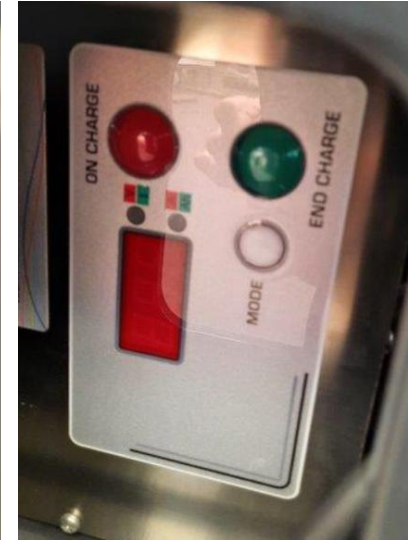
6. BATTERY CHARGERS

The 1280CL is equipped with 1 battery charger “Master” and 2 Battery chargers “Slaves”.
It is possible to recharge the 96VDC system by:

- using the 230Vac monophase line and only the master battery charger (current absorbed from the mono-phase grid: about 10-15A)
- using the 400Vac triphase line and all 3 battery chargers (current absorbed from the three-phase grid: about 10-15A)



230Vac – 50Hz – 16 A (1F+N+GND)
400Vac – 50Hz – 16 A (3F+N+GND)



Master Battery Charger
If this one is broken it is not possible to
recharge the high battery 96VDC
(also connecting the 3Phase line is useless)

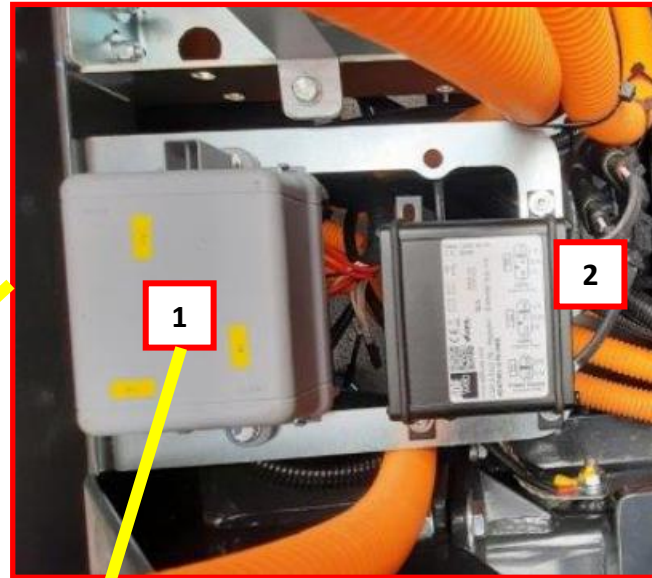
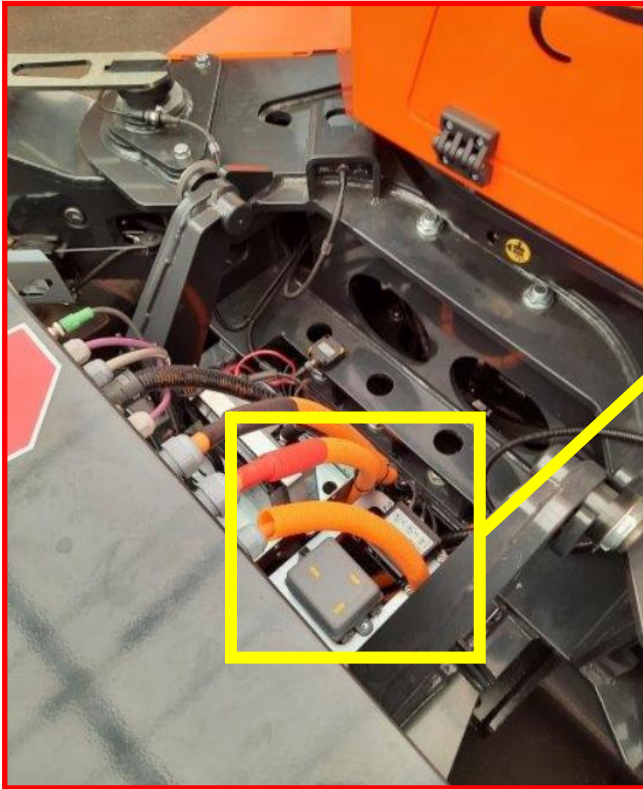


Slaves Battery Charger (right side)
These works only with the
400Vac 3Phase+N+GND
power supply
and if Master Battery Charger is OK

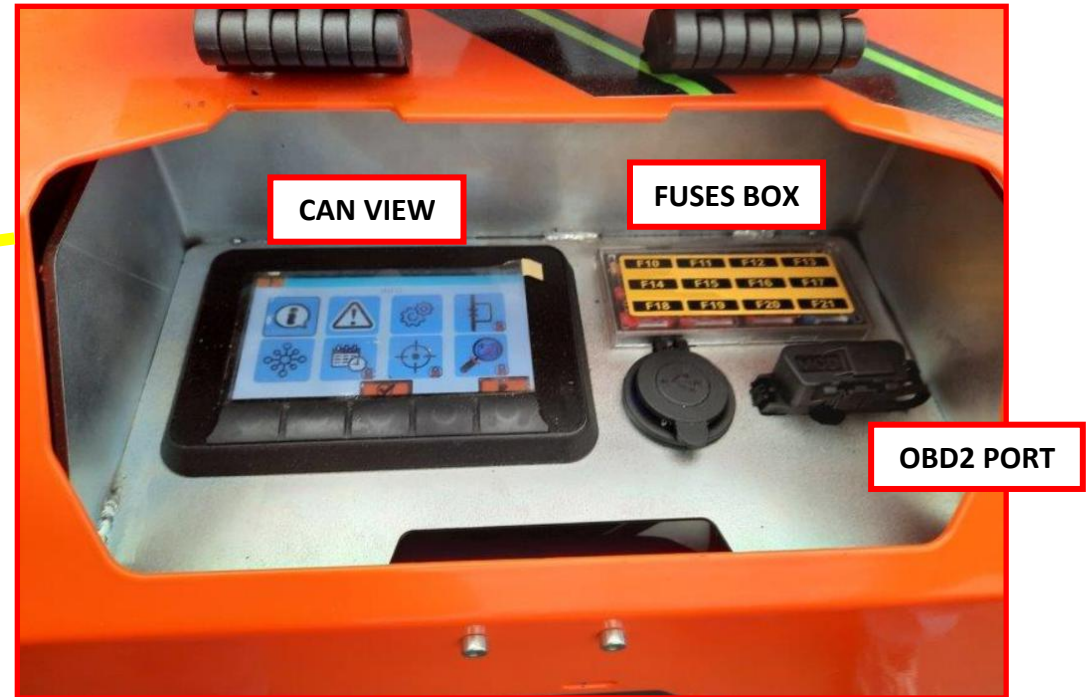
7. FUSE AND RELAY BOX AND CAN BUS INSULATOR

fuses and relay box - (1)

can bus insulator - (2)



8. CAN VIEW DISPLAY AND REMOTE CONTROL BATTERY CHARGER





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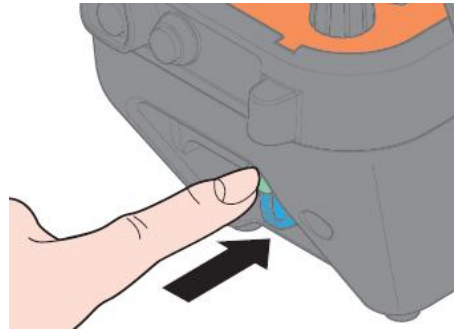
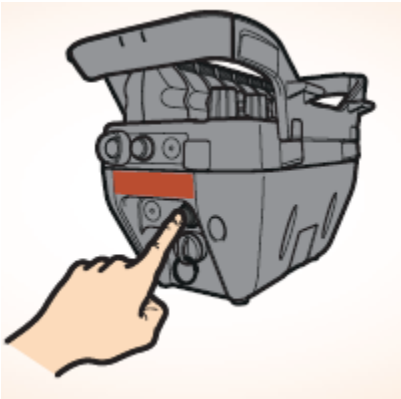


**REMOTE CONTROL
BATTERY CHARGER**

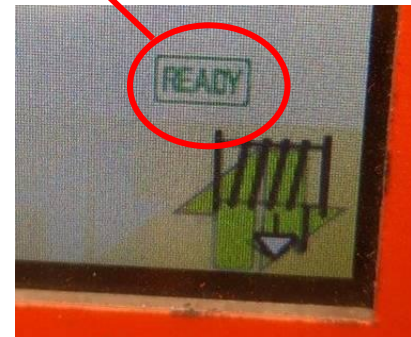
9. REMOTE CONTROL

Once the 1280 has been powered on (chapter 3 for the right side control panel and chapter 5 for the back side main electrical cabinet) proceed turning on the remote control.

Be sure the emergency button on the remote itself has been released and remote battery is fully recharged.



If everything is ok on the remote control a message “READY” will appear:



An useful information to understand if everything is working properly, moreover the lights on the right side and the lights on the back side main electrical cabinet is to check:

- Green light “ON” on the Tower Lamp
- Relais clicking into the Main Electrical Box
- Right Side Blue ON (12VDC OK)
- Right Side Green ON Safety OK (Door Switches/Interlock Connectors/ Insulation: OK)
- Back Side Red OFF (Insulation OK)
- Back Side Green Key ON (Side control panel powered on)
- Round BMS Display ON without alarms
- Remote control “READY” indication on the screen (this means safety ok, insulation ok, 96VDC ok)



10. MINIMUM AUTHORIZED SERVICE (ON 96VDC) AND CONDITIONS TO PERFORM IT

When a minimum service has to be performed on the 96VDC system of the 1280CL, and if it is necessary to open the back side main electrical panel, it is mandatory to respect and follow these steps:

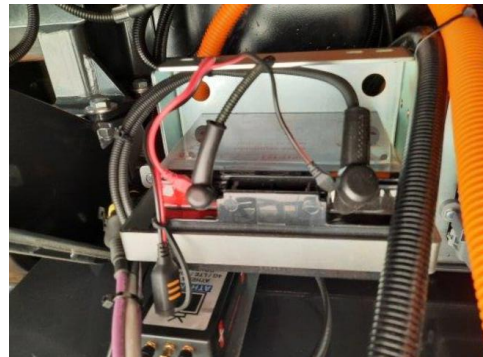
- KEY SELECTOR ON THE RIGHT SIDE: PUT IT IN “OFF POSITION”



- MAIN RESCUE ON THE LEFT SIDE: TURN IN “OFF POSITION” AND SECURE IT WITH THE LOCK (TO PREVENT UNDESIRED ACTION ON IT)



- 12VDC AUXILIARY BATTERY: REMOVE THE POSITIVE AND NEGATIVE POLES



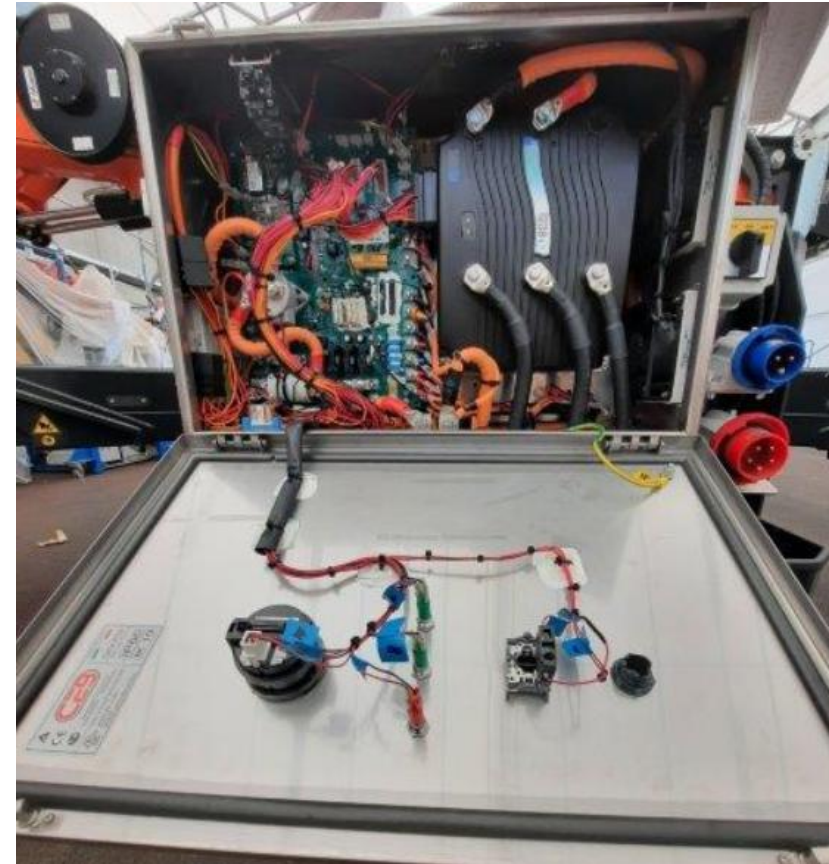
- BE SURE NO BATTERY CHARGER IS POWER SUPPLIED (230V NOR 400V)



- WAIT 15 MINUTES AFTER ALL THE ABOVE STEPS HAVE BEEN DONE TO BE SURE NO RESIDUAL POWER IS PRESENT IN THE CAPACITORS OR OTHER DEVICES.

**AT THIS POINT NO VOLTAGE SHOULD BE PRESENT
INTO THE ELECTRICAL CABINET**

- OPEN THE BACK SIDE CABINET TO CHECK THE MAIN FUSES AND MAIN RELAYS





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- REPLACE THE COMPONENTS THAT HAVE BEEN FOUND DEFECTIVE (IF ANY)
AND CLOSE THE ELECTRICAL CABINET
- GO BACK WITH THE ABOVE STEPS TO RESTORE THE NORMAL FUNCTIONS

No further operations are allowed or authorized.