

OLICORP

MAINTENANCE AND SUPPORT GUIDE FOR PWR24 and PWRSDL

Version Beta 1.3 - May 13, 2009
Comments are welcome : support@olicorp.ch

1) INFORMATION ABOUT THE MAINTENANCE :

| MODEL | SOFTWARE VERSION | HARDWARE VERSION |
|---------------------|------------------|------------------|
| PWR-SDL 10 channels | 10.54 | 101 |
| PWR24B 12 Channels | 4.28 | 12 |

On the Web site you will find :

- Online access to spare parts store :
www.olicorp.ch/osc
- List of spare parts with codification :
http://www.olicorp.ch/support/misc/price_list_2009_04_25.pdf
- List of known problems with the PWR :
http://olicorp.ch/support/pwrdocs/PWR_Failures_1_2.pdf
- Detailed users manual :
<http://olicorp.ch/support/pwrdocs/>
http://www.olicorp.ch/support/pwrdocs/pwr_technical_manual_3_3.zip

IMPORTANT NOTE :

During the maintenance of a PWR-SDL, we strongly recommend to upgrade it by adding a protective module WP35.X.

The WP35.X module has been designed to protect the PWR against external perturbations.

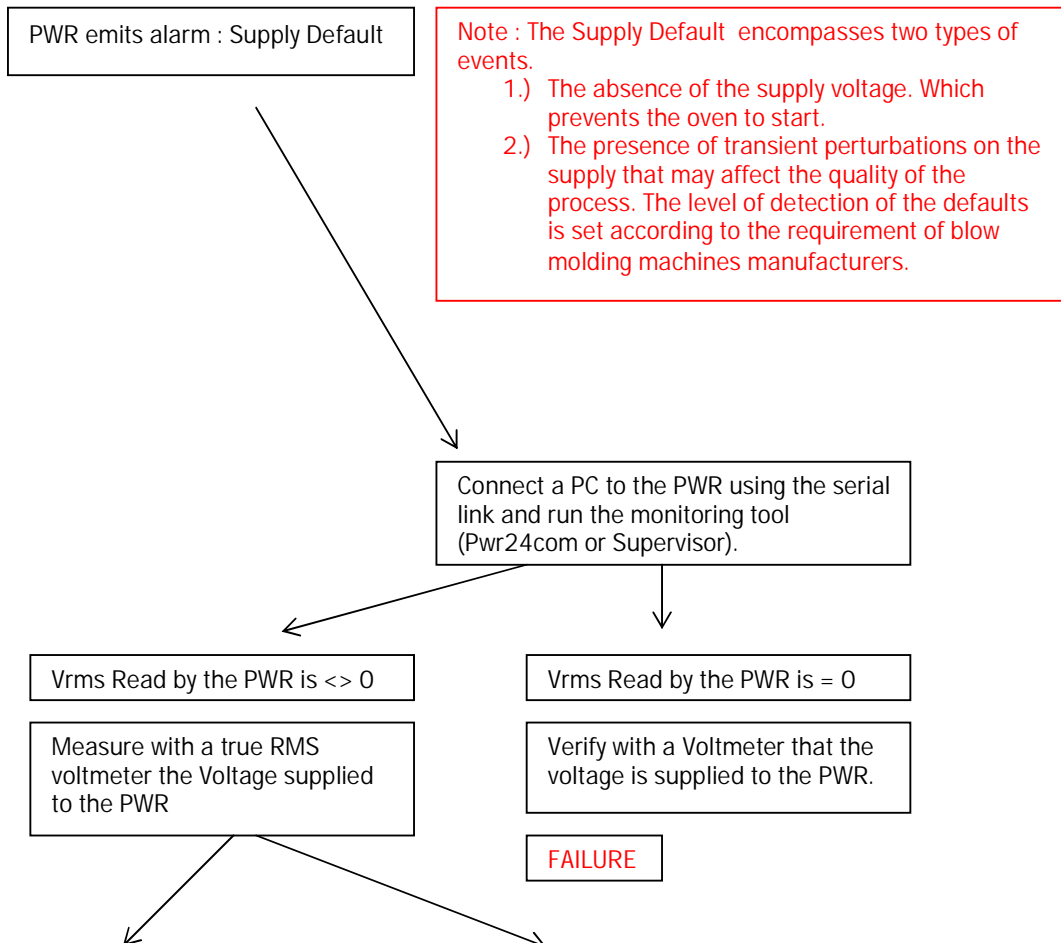
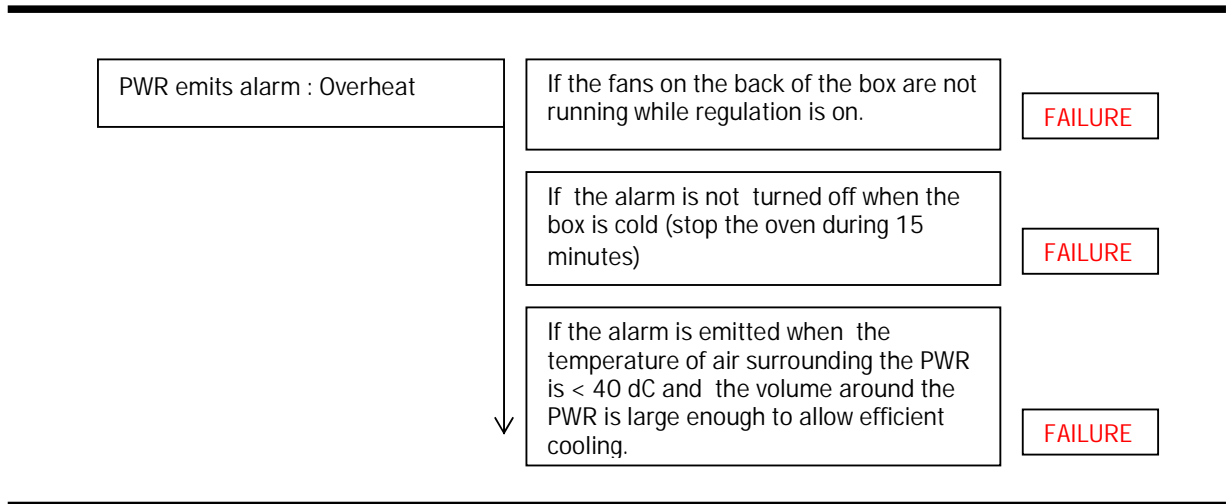
The WP35.X is available from our online store.

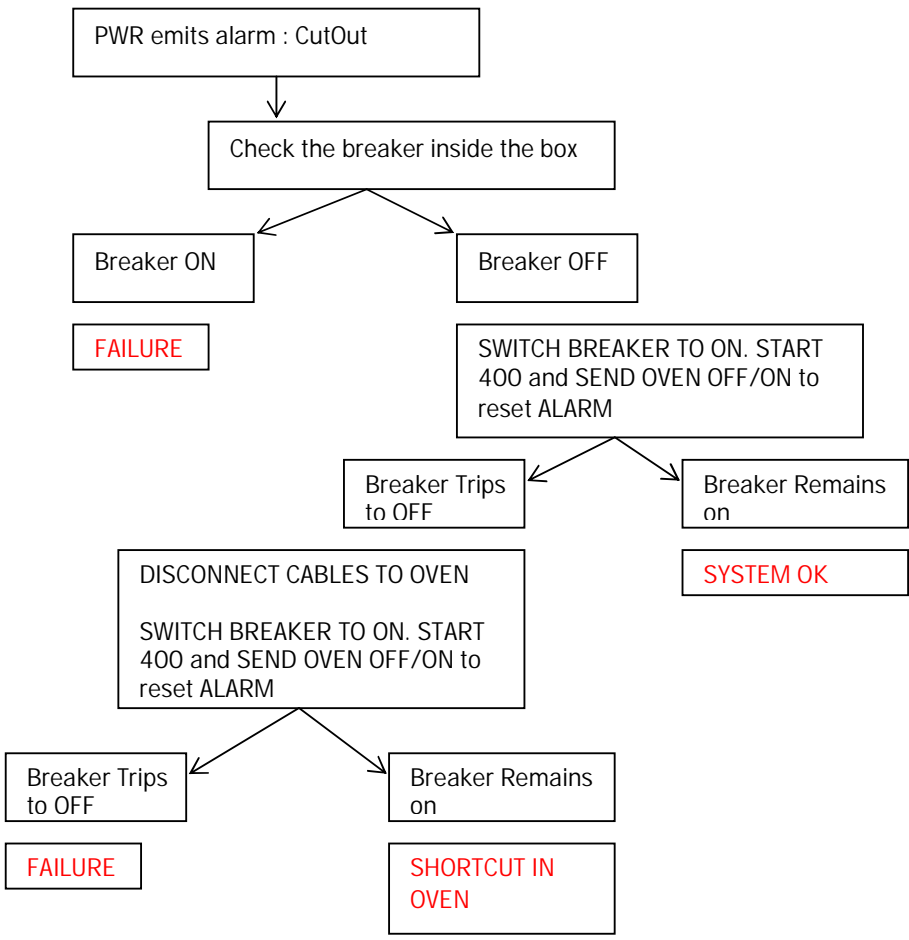
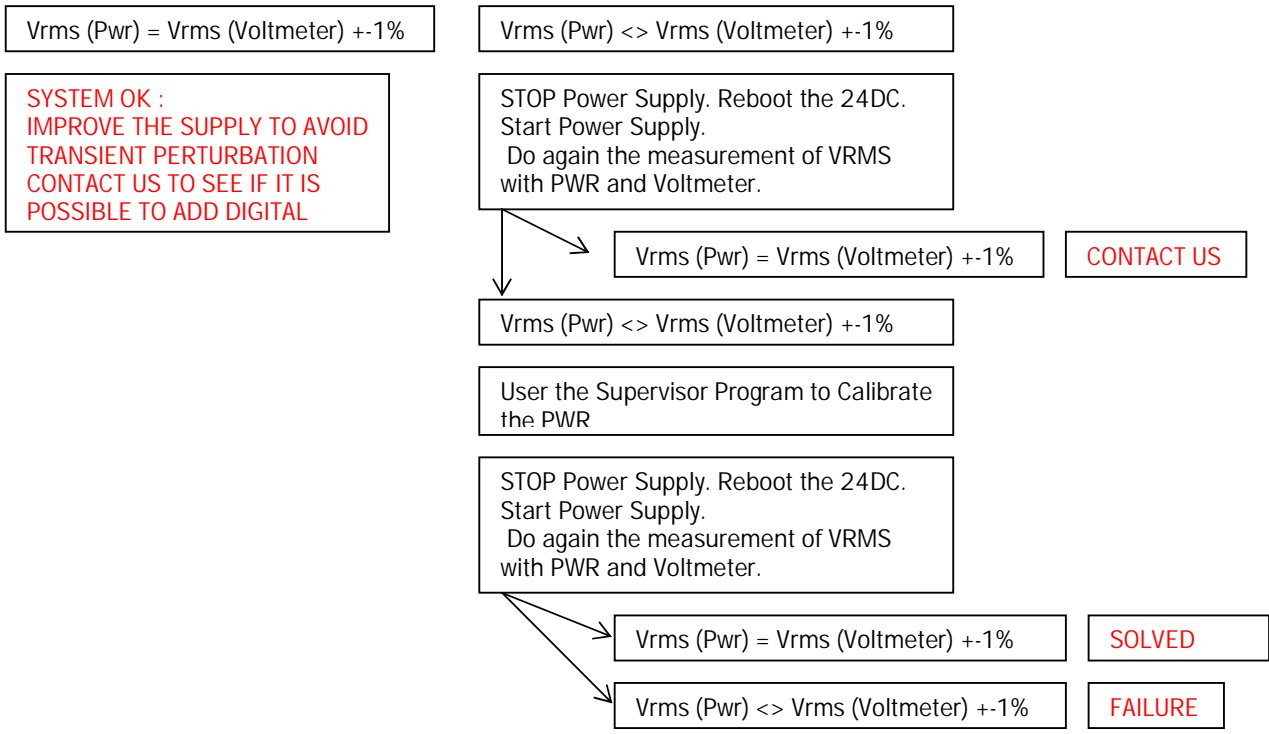
**CHECKING IF THERE IS REALLY
A FAILURE**

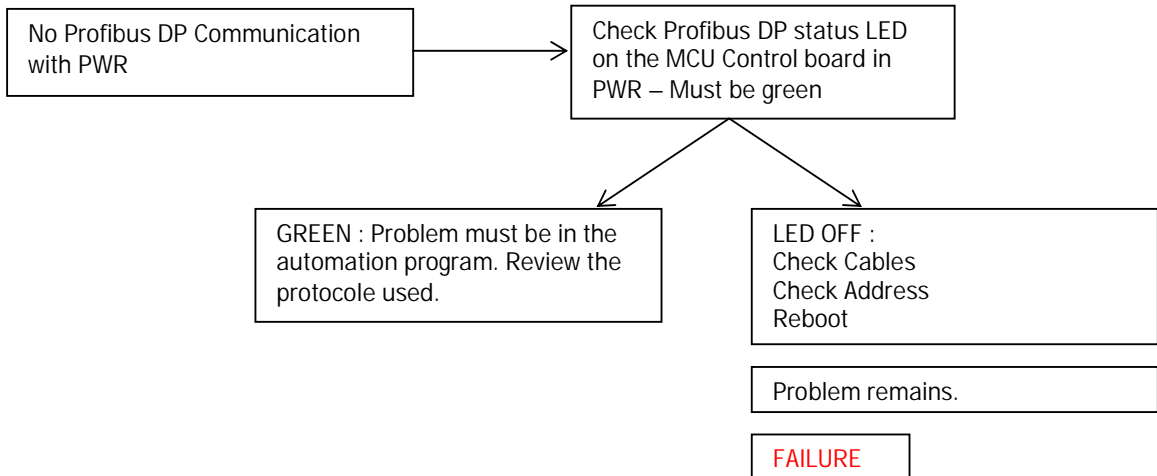
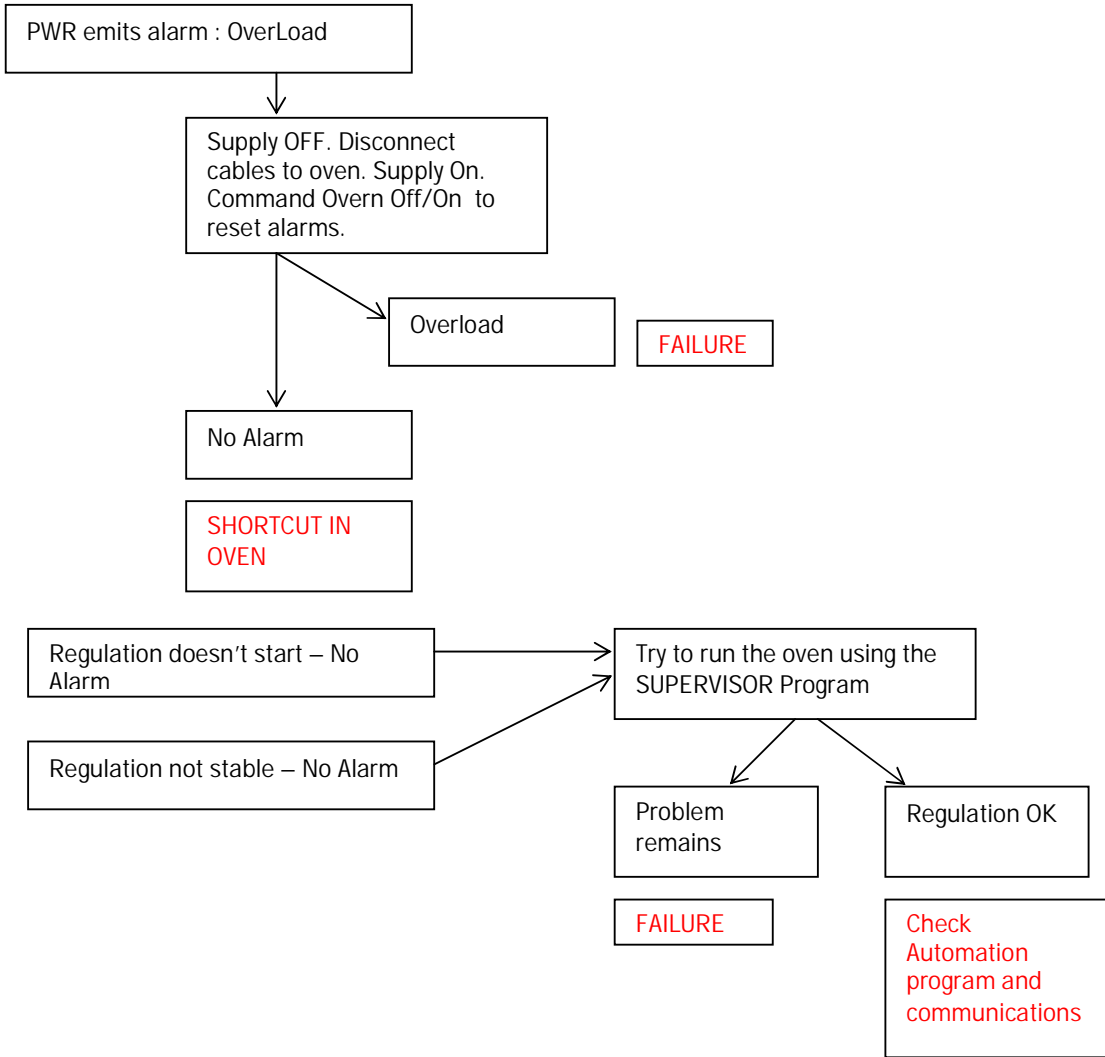
2) What to do in case of system failure ?

Check that there is a **real failure** of the system

The following procedure will help you to define if there is a failure







SENDING THE PWR BACK TO OLICORP

3) Returning goods to OLICORP or asking for local support :

a. Returning the PWR to one of our local technical centers :

SUISSE : DHL Stock OLICORP, Route des jeunes, 23. CH1208 Carouge Suisse.

UE : ADTP Stock OLICORP. Av du capitaine Anjot. 74960 Cran Gevrier, France

UE : DHL OLICORP Lager. Ludwig Winter St. 8. 77967 Appenweier. Germany.

CHINA : Company Shanghai Wanqing. No.88, Fangsi Road, Sijing Town, Songjiang District. Shanghai China 201601

RUSSIA and CIS OLICORP UI Mira 45A. office 313. PERM 614045 Russia.

+41 22 309 1540
+7 342 227 4666
support@olicorp.ch

b. Organizing a visit of one of our technician on site, if you have several units to be repaired.

Please contact us.

REPAIRING THE PWR BY YOURSELF

4) Repairing the PWR system by yourself.

Documents available in the support section www.olicorp.ch :

- Electrical schematics of boards.
- Technical manual
- List of spare parts and components
- List of known issues and problems

Components available on-line at : www.olicorp.ch/osc

Minimal facilities to test the PWR :

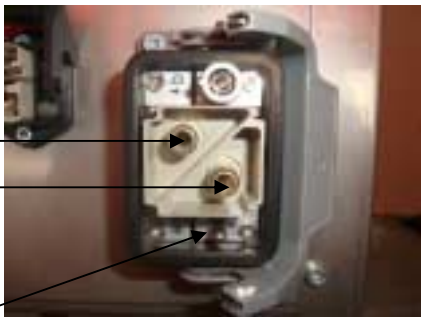
- A PC with the SUPERVISOR program and null modem cable.
- A 200-500 V power supply to power up the PWR
- A 24 DC power supply to power up the PWR
- A few lamps to test the functions

Tools that could be useful :

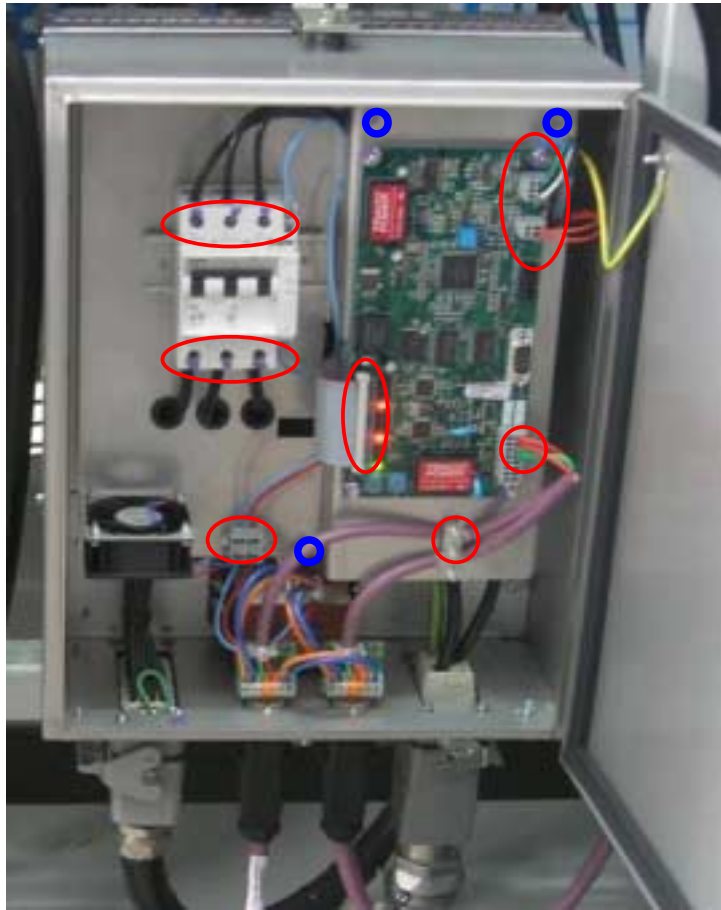
- Metric pipe and BTR wrenches
- Screw driver
- True RMS voltmeter

a) CHECKING THE POWER PART :

By following these steps, one can check and repair the power elements of the PWR systems.

| | |
|----------------------------|---|
| What do we test ? | RECTIFIER PE1.1 / TRANSFORMERS |
| How to test it ? | <p>Measure the Resistance between the two input phases.</p> <p>228 Ohms</p> <p>You can also test the isolation between phase and ground. $R > 1$ Mohms</p> <p>Ground</p>  |
| What to change or repair ? | If these values are not correct, the rectifier PE1.1 or the Primary circuits of transformers are certainly damaged. It is necessary to test them. |

For the next steps, it is necessary to open the box and to remove the Control layer to access the power components.



Unsecure the cables and wires marked in Red.

Remove the bolts securing the intermediate plate (blue)

Remove the intermediate plate to reach the power layer :



What do we test ? TRANSFORMERS - PRIMARY CIRCUITS

How to test it ?



Unplug the 4 wires on the Wago terminator lying on the top of the filter board.

Once the 4 wires disconnected, the resistance measured between the input phases should be now 4.8 kOhms.

Otherwise, the primary circuit of the small transformer on the WE9.1 board is certainly damaged, and the board must be replaced.

The resistance between the two white wires must be 235 Ohms
Otherwise the primary circuit of the transformer 82703 is damaged.



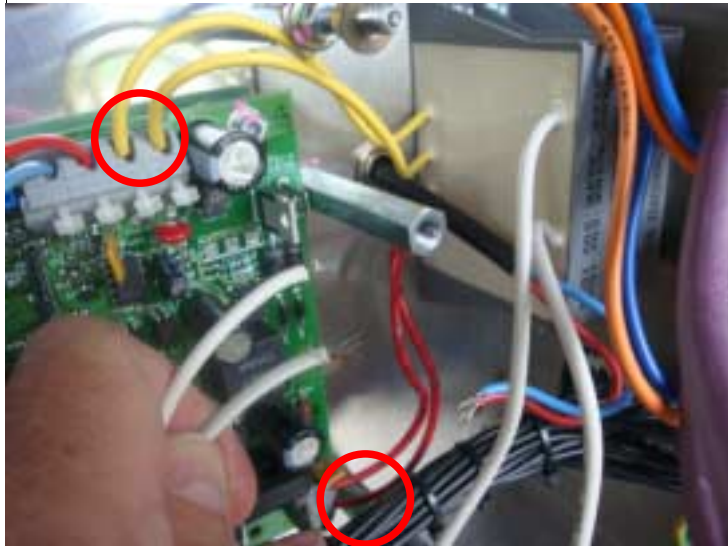
The resistance between the two black wires must be 23.7 or 15 kOhms.
Otherwise the primary circuit of the transformer 82000 is damaged.



| | |
|----------------------------|------------------------|
| | |
| What to change or repair ? | Replace the components |

| | |
|-------------------|---------------------------------|
| What do we test ? | TRANSFORMERS SECONDARY CIRCUITS |
|-------------------|---------------------------------|

How to test it ?







The secondary circuit of transformer 83703 is connected to the power board (red and yellow wires). The resistance of these circuits are 2 Ohms.

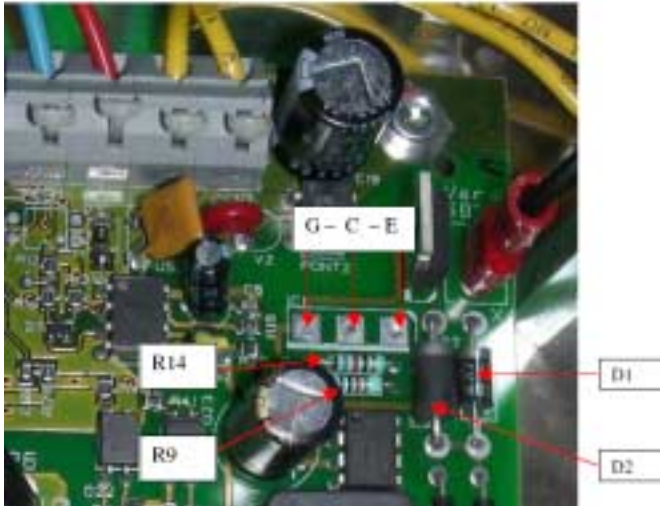


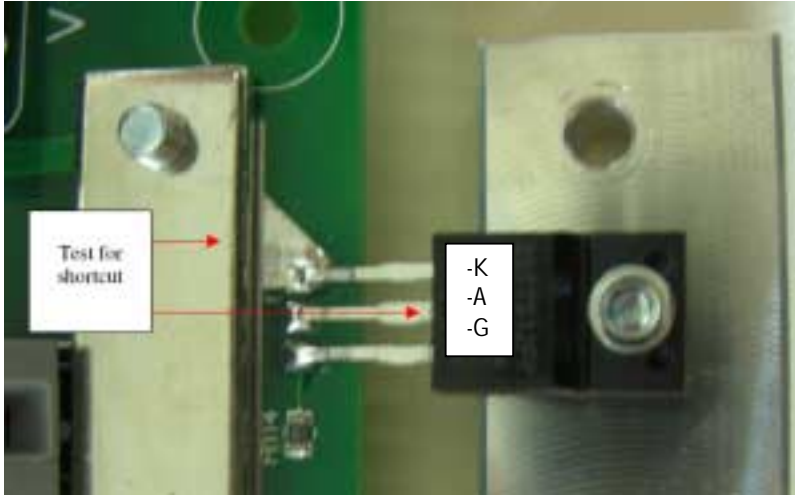
The secondary circuit of transformer 82000 was connected to the Main control board. (2 red wires). The resistance in this circuit should be 4.7 or 6 Ohms.

| | |
|----------------------------|----------------------|
| What to change or repair ? | Change transformers. |
|----------------------------|----------------------|

| | | |
|----------------------------|--|---|
| What do we test ? | FILTER BOARD WE9.1 – TESTING THE R2 Resistor | |
| How to test it ? | <p>There are two components that could be damaged on the WE9.1 board :</p> <p>The Transformer :</p> <p>The R2 Resistor</p> |  <p>This section aims to test the R2 Resistor.</p> <p>The resistance of R2 is 47 Ohms.</p>  |
| What to change or repair ? | <p>If the resistor value is different, or the surface of the resistor is damaged the WE 9.1 board must be replaced.</p> <p>If so, it is also necessary to check the IGBT IC2 on the power board, as well as the main IGBT PE2.1 (see next steps).</p> <p>If it happen frequently check that the DC-24v is not shutdown when the AC is on</p> | |

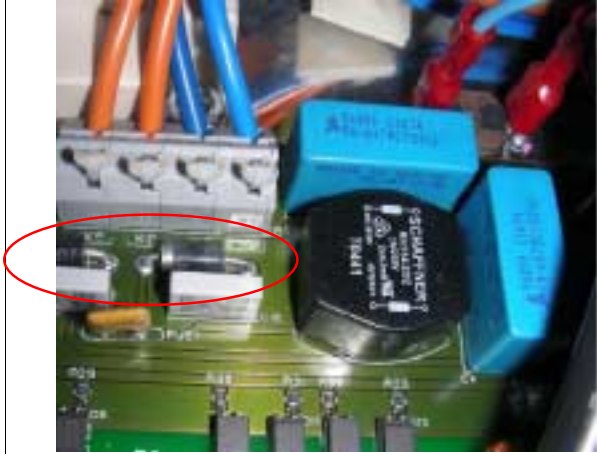
| | |
|----------------------------|---|
| What do we test ? | MAIN IGBT |
| How to test it ? | Measure the resistances according to the following diagram. |
| |  |
| | <p>Test all diods on the IGBT control board. Check if R3 is burn</p> |
| What to change or repair ? | <p>If R Gate-Emitter \leq 940 Ohms or if there is a shortcut between the three IGBT poles, the IGBT PE2.1 should be replaced (take care to ESD).</p> <p>If $R3 \leq 5.6\Omega$. The IC3708 component and R3 on the WE8.1 board should be replaced.</p> <p>If diods are shortened or cut, the WE8.1 board should be replaced.</p> |
| What do we test ? | CURRENT SENSOR – WE10.1 |
| How to test it ? | |
| |  |
| | <p>Check that there is no discontinuity between in/out pads of the current sensor.</p> |
| What to change or | Replace WE10.1 |

| | |
|----------------------------|---|
| What do we test ? | POWER BOARD - IGBT |
| How to test it ? |  <p>Look for shortcuts between Gate, Collector and Emitter of IGBT BUP213.</p> <p>Test Diode D1 for shortcut Test Diode D2 for shortcut – R= 1kOhms Test R14=82 Ohms and R9=1 kOhms</p> |
| What to change or repair ? | Replace the board. WE7.1 (10 channels) or WE12.1 (12 Channels) |

| | |
|----------------------------|---|
| What do we test ? | POWER BOARD THYRISTORS |
| How to test it ? |  <p>Test every Thyristor for shortcut. And test the Gate and the Kathode R = 40 Ohms</p> |
| What to change or repair ? | Replace the board. WE7.1 (10 channels) or WE12.1 (12 Channels) |

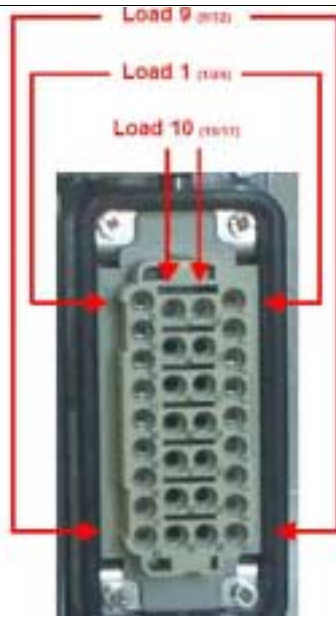
What do we test ? POWER BOARD – GENERAL

How to test it ?
Check that the Schaffner component on the Power board has not been overheated (not melt).
Check the two diods reverse voltage must be 0.5V if you measure 0.15V the cpu on the board is shortcut



Check the wiring.



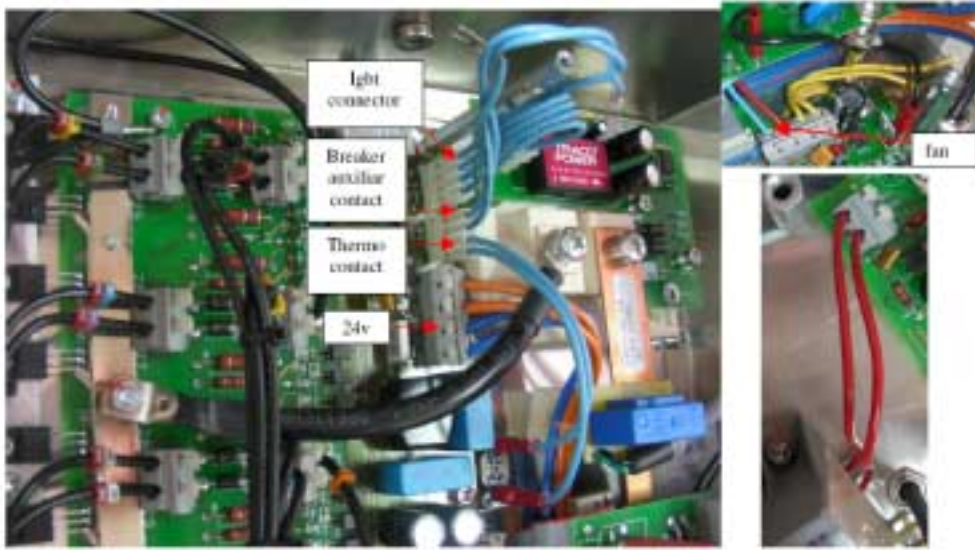


An finally look for shortcuts on the output plug.

What to change or repair ?

A shortcut on the output plug indicates that the SKM1/16 diode is shortened. It is possible to change it (or to remove it at least).

The schaffner components can also be replaced.

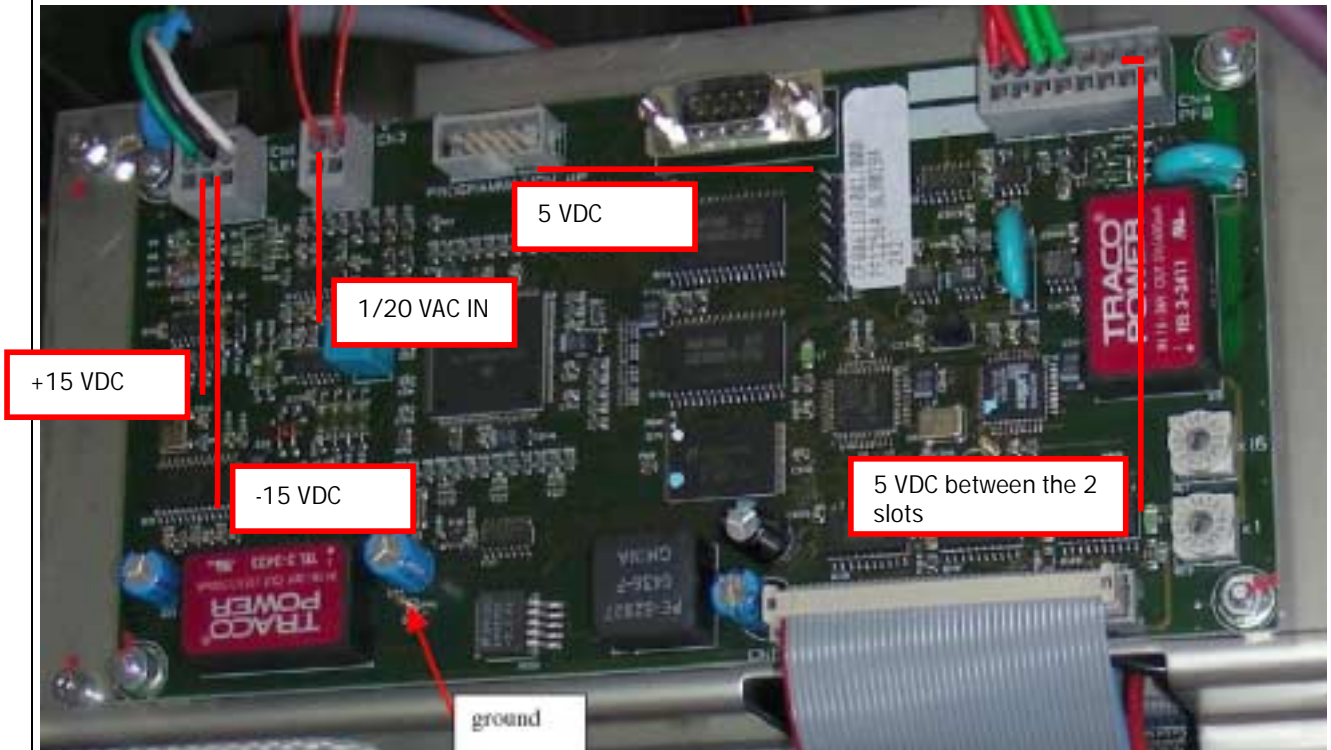
| | |
|----------------------------|---|
| What do we test ? | POWER BOARD – I/OS CIRCUITS AND 24DC |
| How to test it ? | <p>It is also possible to test the basic I/Os functions of the power board. The CutOut and Overheat Signal are given by the “breaker Auxiliary contact” and “thermo contact” plugs.</p> <p>The 24V terminator on the following figure is used for 24DC input. The orange cable is for +24DC, while the blue one is for 0.</p> <p>The Fan supply is provided by the Red/blue wires marked fan on the figure.</p>  |
| What to change or repair ? | |

b) CHECKING THE CPU PART :

The CPU can be tested on a running unit.

What do we test ? CPU WE6.X

How to test it ?



If 24 DC is supplied to the board, it is possible to check the misc DC supplies of the processor board.

What to change or repair ?

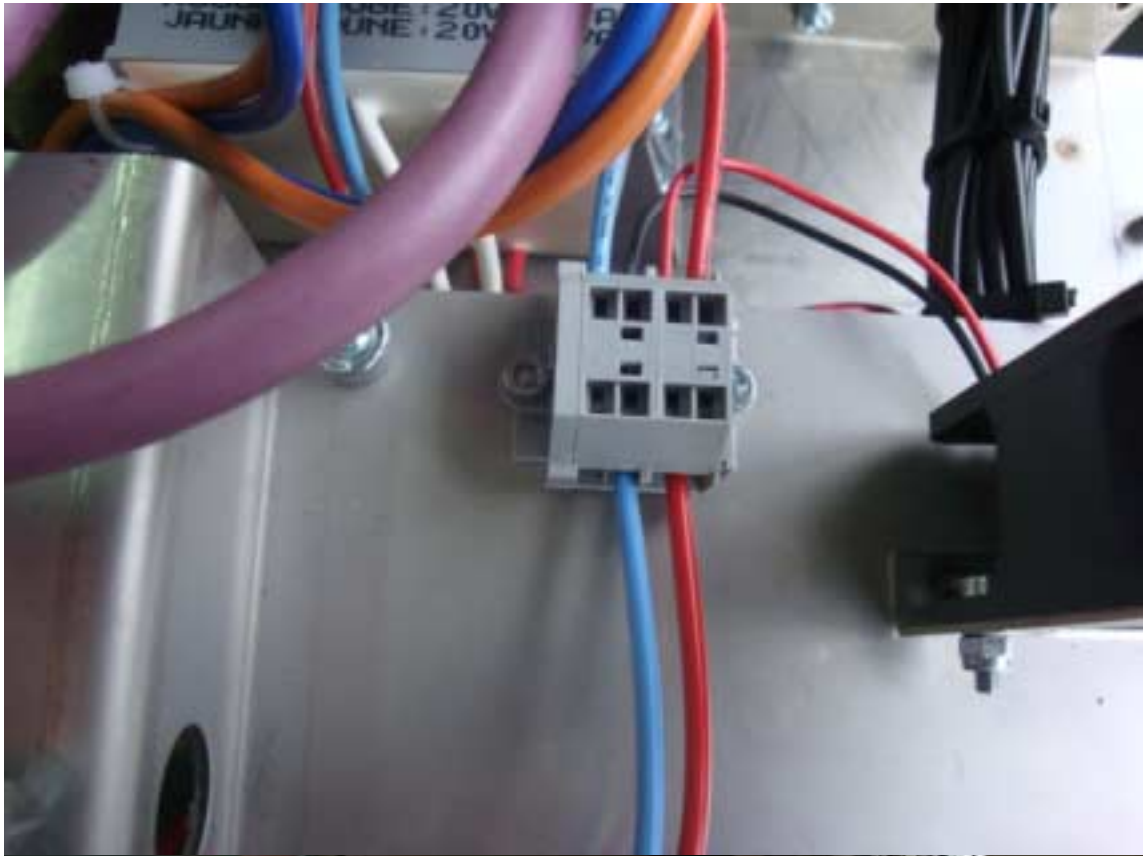
c) TESTING THE PWR :

Just to give you an idea of how simple could be the testing bench when working abroad :

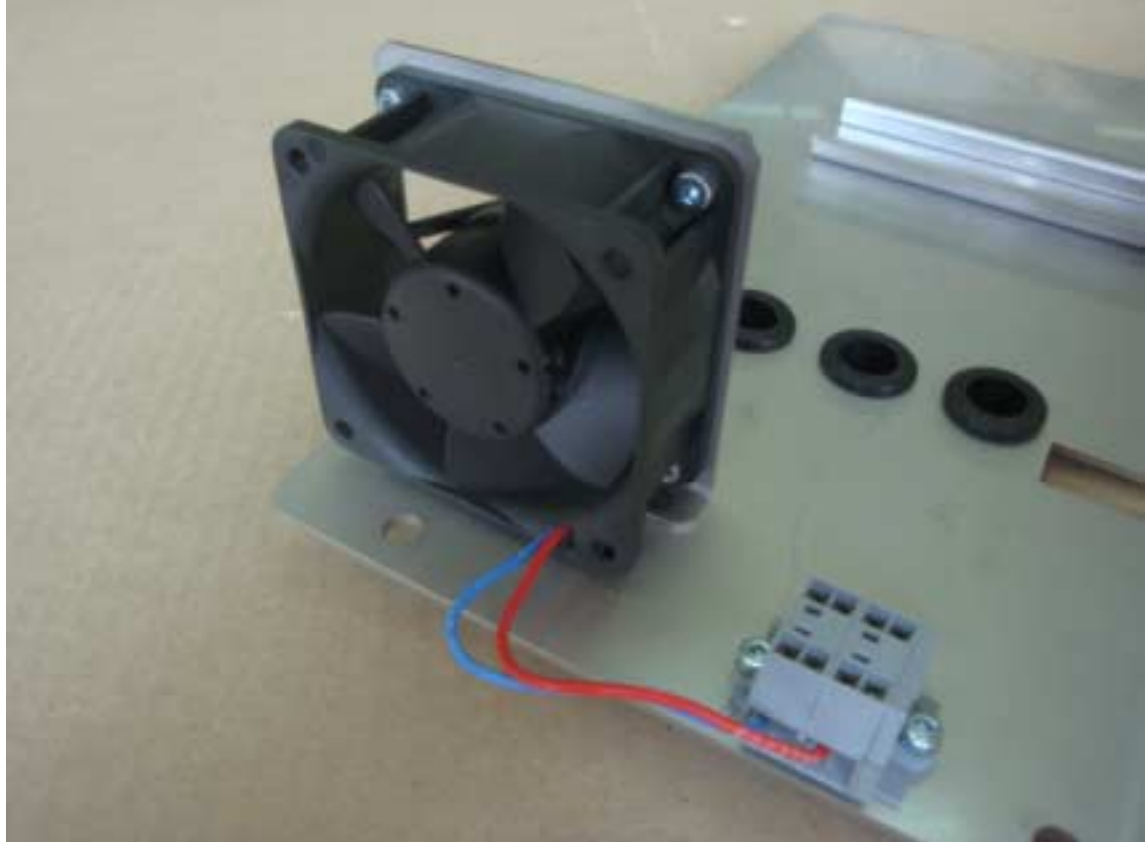
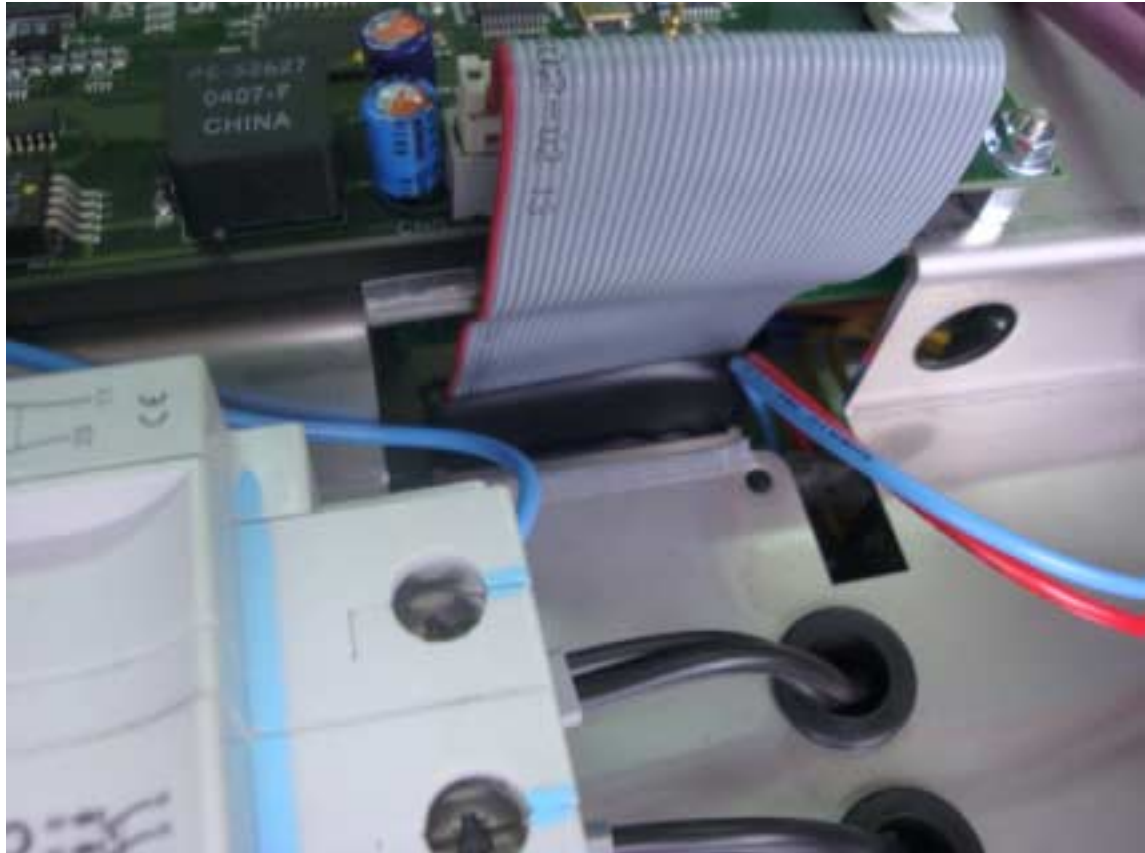


DETAILED VIEWS OF THE PWR

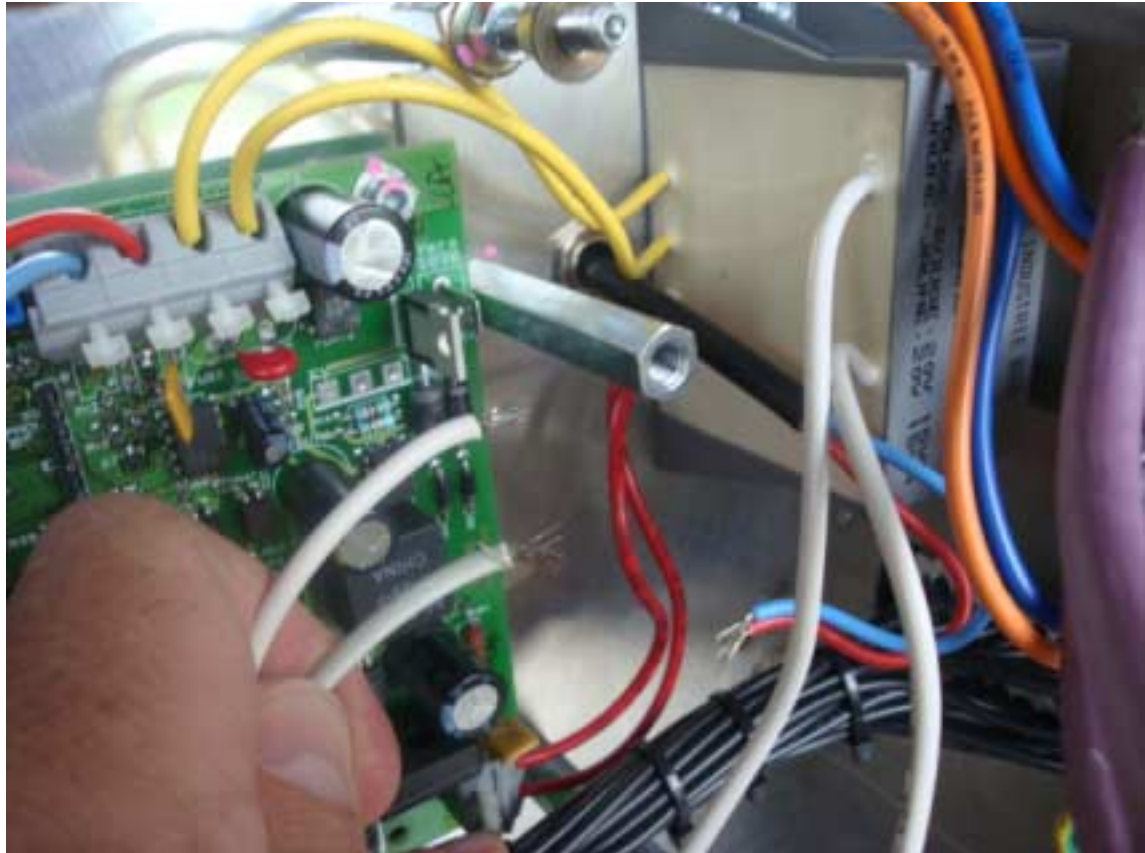




















ADDING THE WP35.X MODULE

ADDING THE WP35.X MODULE :

- a. The 3 blue capacitors on the filter board WE9.1 should be removed.
- b. Then the module WP35 must be secured inside the box
- c. The two cables form WP35 must be secured on the P1 and P2 bolts.

