



GYSPOT 125L & 93R Repair Procedure

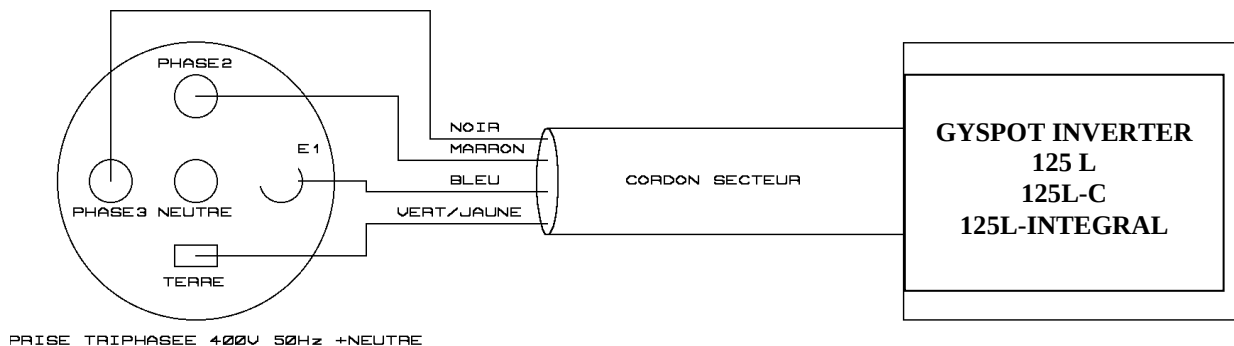
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1) Control of the conformity of the electrical line and the compressed air network

The electrical line must comply with the following requirements :

- Check the electrical line voltage : you must have **400V** with a **32 A delayed circuit breaker, curve D (or fuse of aM type)**.
- Check the cable section which arrives until the connecting plug : it should be **4x6 mm²**. If the electrical line from electrical board is superior to 10m, use a conductor size of 10mm². If you use an electrical extension cord, use a 6mm² conductor size (10mm² if electrical line + extension cord total length is superior to 10m). Connect a 3 phase + Earth plug (minimum 32A) on the supply cable.



- Be careful : in order to avoid voltage drops which can generate bad welding spots, you must never have overloaded electrical lines, nor a not large enough conductor diameter, and the mains plugs must not be too far from the circuit breaker.
- If the machine is not sufficiently supplied, it is not possible to ensure a good welding quality.

If the machine trips the circuit breaker of the electrical installation, check whether the right size and type of circuit breaker is equipped (must be D-curve).

If the machine, just after switch ON, displays the error message “Power Fault”, there are 3 possible causes :

- The neutral cable can be connected instead of a phase.
- A phase is missing in the plug.
- If the message is displayed 5 seconds at the end of the welding point, this means the electrical line is bad (too much power loss).

The compressed air network must comply to the following requirements :

- Check that the air **compressed network** can deliver a **minimum of 7 bars** (dry air), then connect the compressed air network at the rear side of the machine. The machine must not be used on an air compressed network with a pressure inferior to 3 bars.

2) The message « Power Fault » appears on the display

Check whether the electrical line complies to the requirements described in paragraph 1. Check whether the 3 phases are correctly connected to the machine.

Perform the following test in monopoint welding mode, in order to test whether the issue comes from the electrical line :

- with the gun in the air, press the trigger. You should hear a BEEP coming from the machine. No error message should appear on the display.
- then, try and make a welding point on a metal sheet. If the error message appears after the welding point, this means the current from the electrical line drops because the line cannot supply enough current. Check the electrical line according to paragraph 1, and ask advice to a qualified electrician.
- if the message appears constantly, refer to paragraph 8 of this procedure.

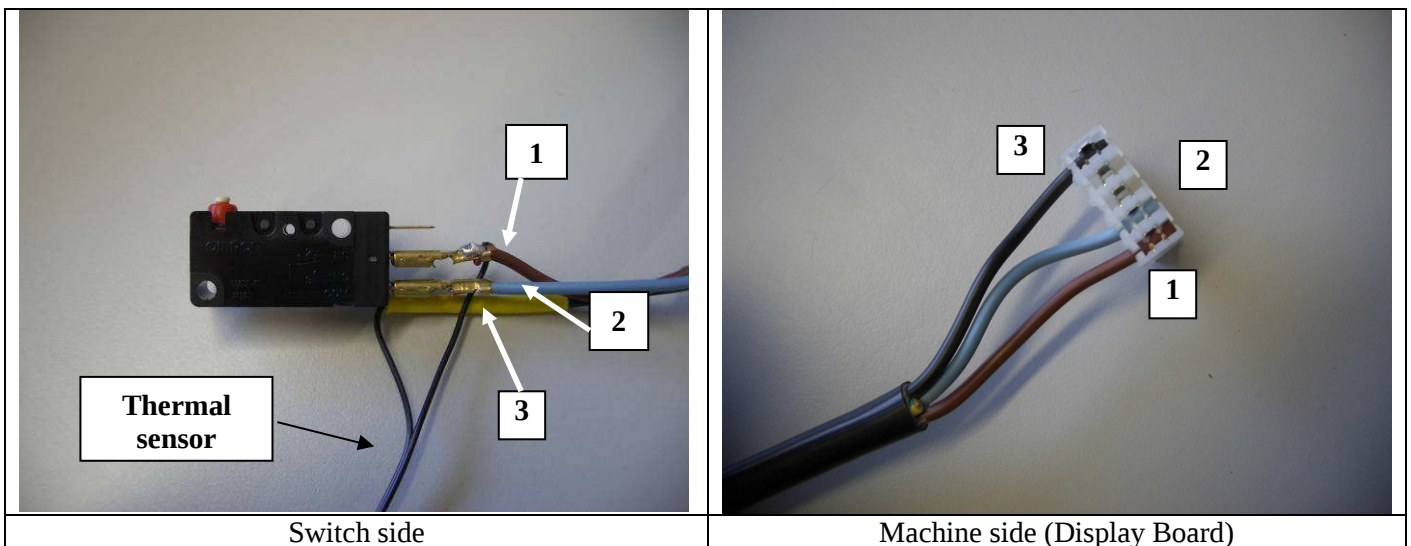
3) Wire cut on the gun command cable

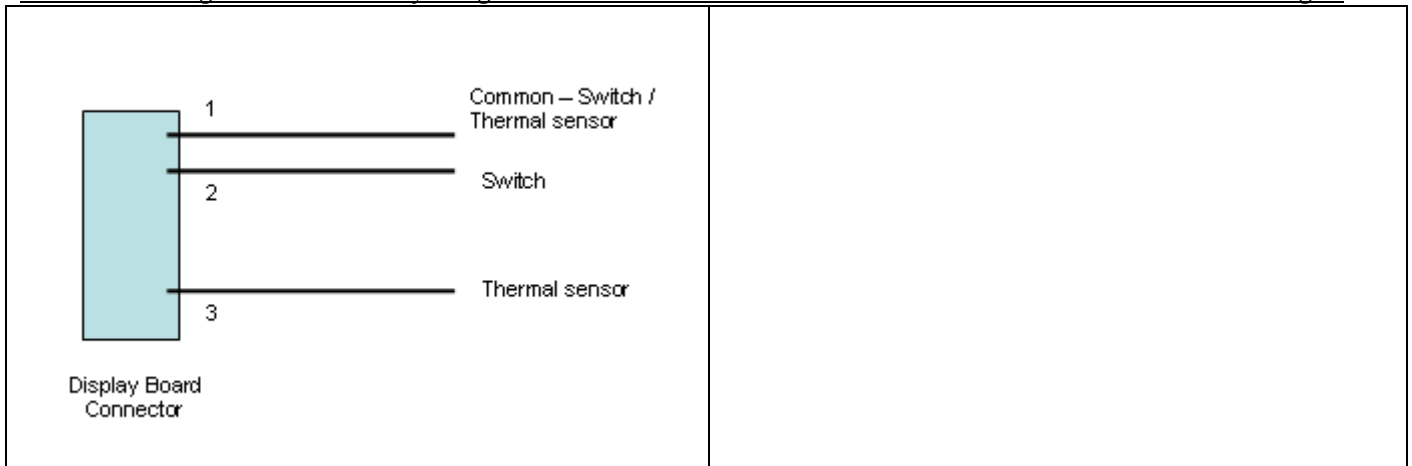
The gun command cable sends to the machine the information regarding the switch and the thermal sensor inside the gun. Depending on which wire is cut, the consequence can be :

- pressing the trigger of the gun does not have any effect
- an error message “Sensor Error Gun” appears on the display, because no signal comes from the thermal sensor.

In order to repair, a new cable must be fitted along the gun cable.

Description of the gun command cable :



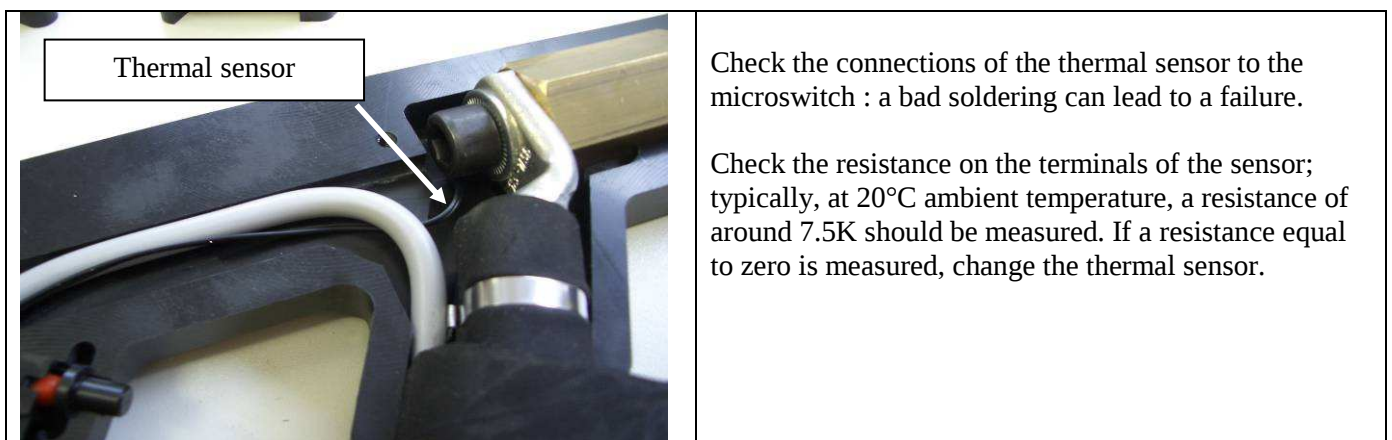


Check the continuity of the wires going from the microswitch to the connector on the display board inside the machine.

4) Issues around the thermal sensor inside the gun

The thermal sensor inside the monopoint gun provides information to the machine regarding the temperature inside the gun. Different types of failure can occur :

- one of the 2 wires of the thermal sensor is not soldered properly on the microswitch, therefore the thermal sensor is not connected => the machine displays an error message **“Sensor Error Gun”**.
- the thermal sensor is damaged, and gives a wrong information to the machine => the machine displays the error message **“Overheating of the cables”**.



The sensor is placed between the mandrel and the plastic housing of the gun. When assembling back the gun, take particular care not to pinch the sensor, and therefore damage it.

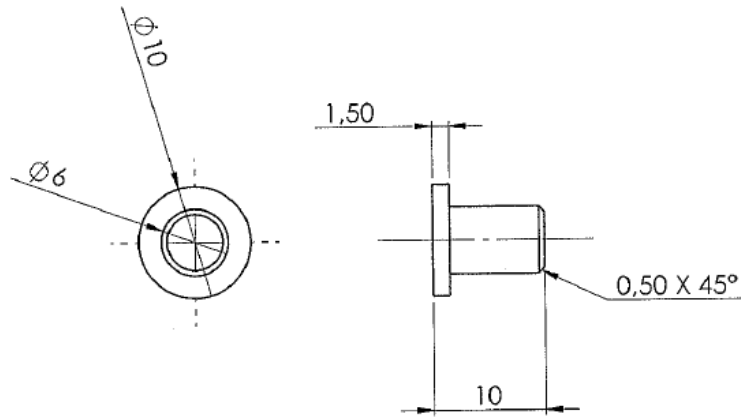
5) The display of the machine is blocked

When the machine is switched ON, the initialisation sequence runs normally. If the display is blocked and pressing the buttons of either the gun or the clamp does not have any effect, it is most probable that a command button remains stuck somewhere. It can be:

- the gun of the trigger
- or one of the buttons of the clamp.

In order to check whether the issue comes from the trigger of the gun, open the gun and see whether the error message disappears.

It has been observed that the button of the gun trigger sometimes remained stuck against the plastic housing of the gun, because the basis of the button is too thick.



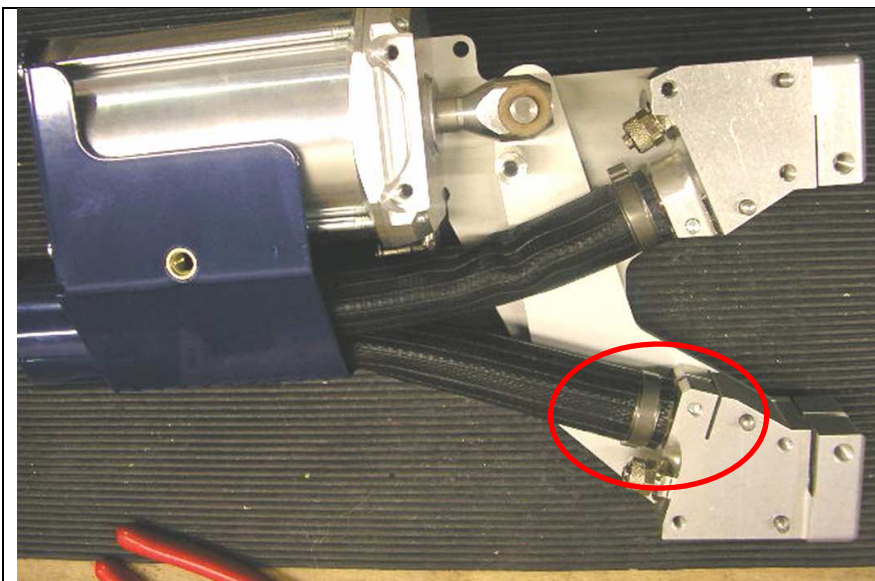
The basis of the button initially 2.0mm thick has been reduced to 1.5mm, as indicated on the drawing above. This modification has been introduced in production in May 2007. As a consequence, if the thickness of the basis of the button is reduced by a few tenth of a millimetre, using abrasive paper, it can solve this issue and bring back a good operation of the trigger of the gun.

The GYS reference of this button is 51186. If necessary, it can be provided if using abrasive paper does not solve the issue.



If the issue does not come from the button of the trigger, check also the buttons on the clamp.

6) Cooling liquid leaks



Cooling liquid leaks are sometimes observed at the extremity of the power cable, as shown on the photograph left.

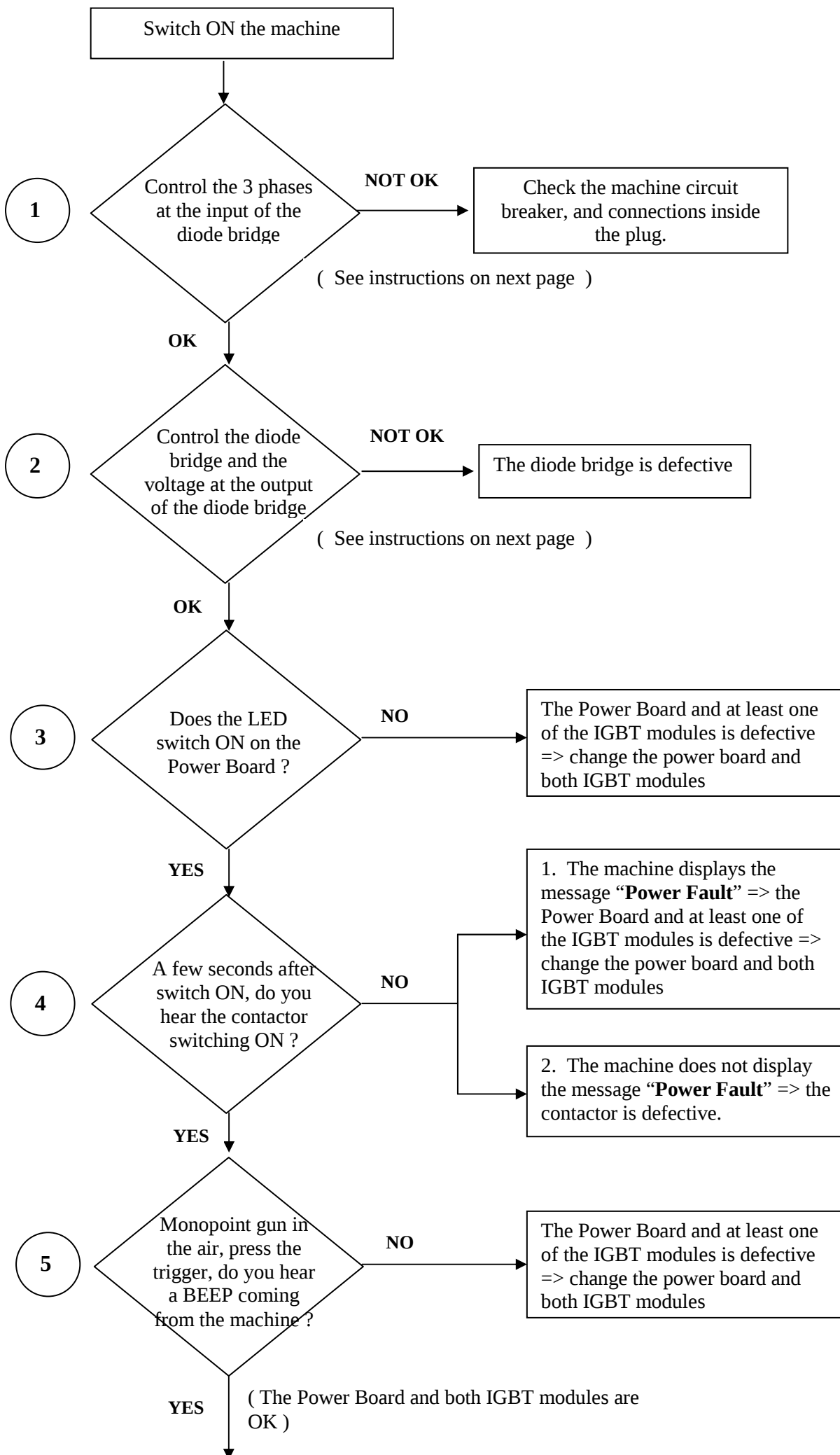
A standard collar, with screw, diameter 25 to 30mm, and width 8mm, can be used to tighten the sheath at the extremity (see photograph below).



If the power cable has to be replaced, refer to the procedure to replace the power cable of the X-clamp.

7) Diagnosis of the Power Functions of the machine

In this section, it is considered that the electrical line is compliant, and that the 3 phases are present on the machine. The following tests allow making a diagnosis on the power functions of the machine.



Control of the 3 phases at the input of the diode bridge :

Check, using a multimeter, that the 3 phases are present at the input of the diode bridge. Check between inputs 1 and 2, between inputs 2 and 3, and finally between inputs 1 and 3. The diode bridge test procedure in this document might help you identify the inputs and outputs of the diode bridge.

Control of the diode bridge and the voltage on the output of the diode bridge :

Control the diode bridge using the Diode Bridge Test Procedure.

Connect all the cables back after the test, and check, using a multimeter, that the voltage on the output of the diode bridge is correct. A DC voltage should be measured between the (+) and (–) of the diode bridge. It will be equal to the voltage at the input of the diode bridge times square root of 2 (1,414).

If an IGBT module is defective, it has most certainly damaged the main electronics board. As it is extremely difficult to know which IGBT module is defective, it is recommended to change both the main board and the IGBT modules at the same time. If the main board is changed without changing the defective IGBT module, the new board might be damaged. To perform the replacement, refer to the procedure for the replacement of main board and IGBT modules.

8) Auxiliary power supply issue on the main board

Some failures of the auxiliary power supply on the main board have been observed. Generally speaking, the symptom is that there is no display on the machine at all, or the display is switching ON and OFF continuously and the machine does not start.

In order to know whether there is an auxiliary power supply issue, switch ON the machine, and check whether the LED on the PCB lights ON. A few seconds later the contactor will switch ON. Then, the fan, supplied directly by the auxiliary power supply of the board, should start. If this is not the case, this means the power board has an auxiliary power supply issue (this is considering, of course, that the fan is fully functional).

To repair the machine, simply replace the main electronics board. The IGBT modules do not need to be changed.

9) Messages in foreign languages

FRENCH :	SURCHAUFFE DES CABLES
ENGLISH :	OVERHEATING OF CABLES
GERMAN :	UBERHITZUNG VON KABEL
SPANISH :	RECALENTAMIENTO CABLES

FRENCH :	DEFAULT ALIMENTATION PUISSANCE
ENGLISH :	POWER FAULT
GERMAN :	DEFEKTE VERSORGUNGSLEIS
SPANISH :	DEFECTO ALIM POTENCIA

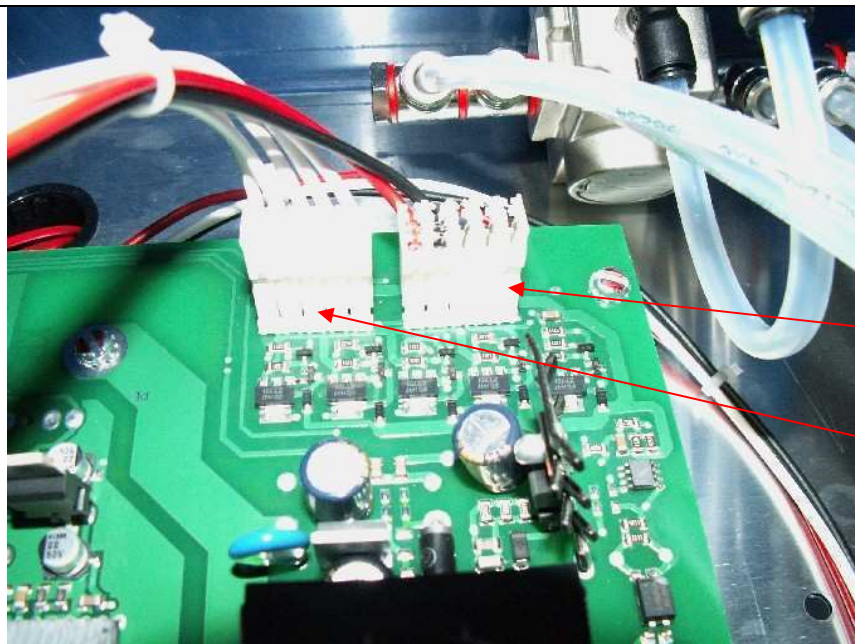
FRENCH :	DEFAULT CAPTEUR PISTOLET
ENGLISH :	SENSOR ERROR GUN
GERMAN :	DEFEKTE SENSOR PISTOLE
SPANISH :	DEFEKTO CAPTOR PISTOLA

FRENCH :	ERREUR OUTIL
ENGLISH :	TOOL FAULT
GERMAN :	WERKZENG FEHLER
SPANISH :	ERROR UTIL

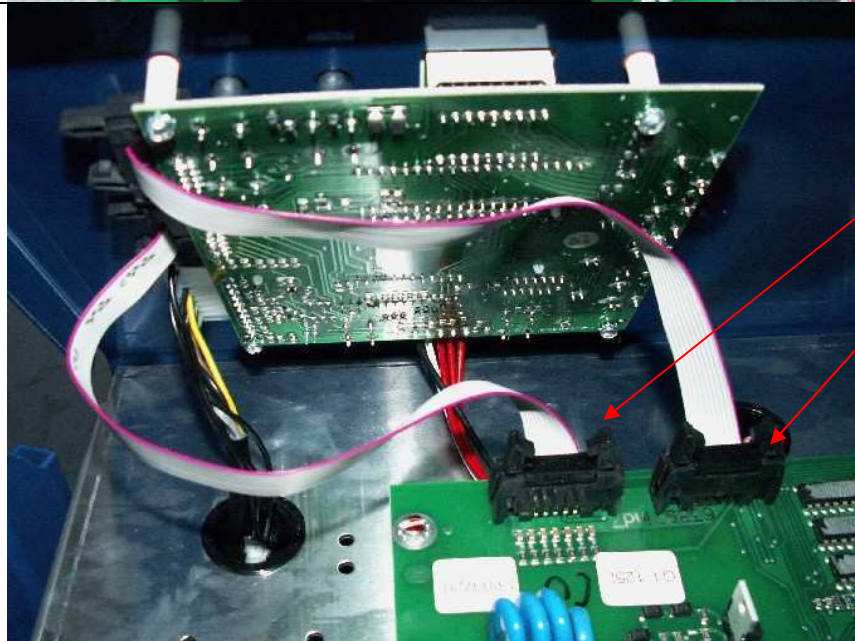


GYSPOT 125L / 93R : Replacement of the power board and IGBT modules

- 1) Unplug the machine from the mains power supply.
- 2) Remove the top metallic cover of the machine.
- 3) There is an earth cable connected between the top metallic cover and the inside of the machine : pay attention to it when you remove the top cover.

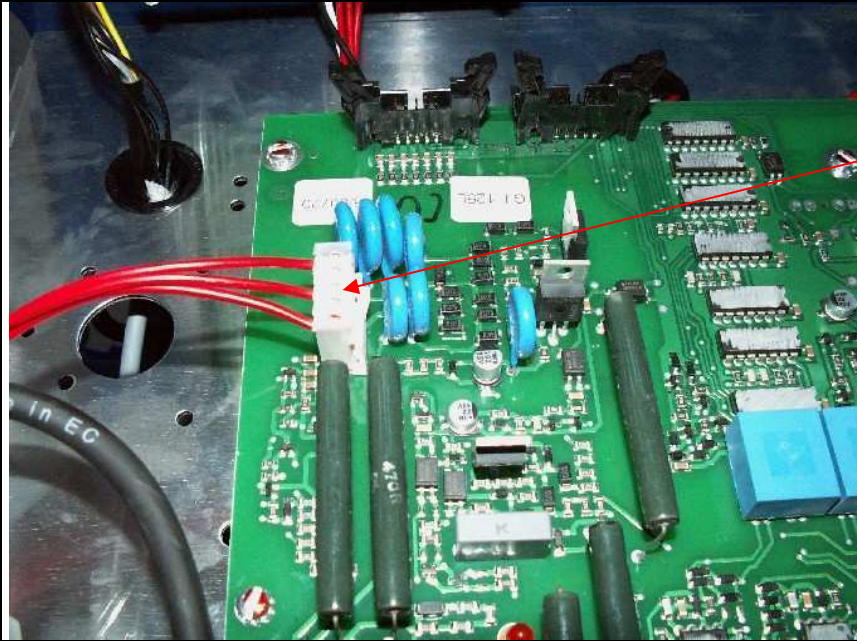


Unplug these 2 connectors

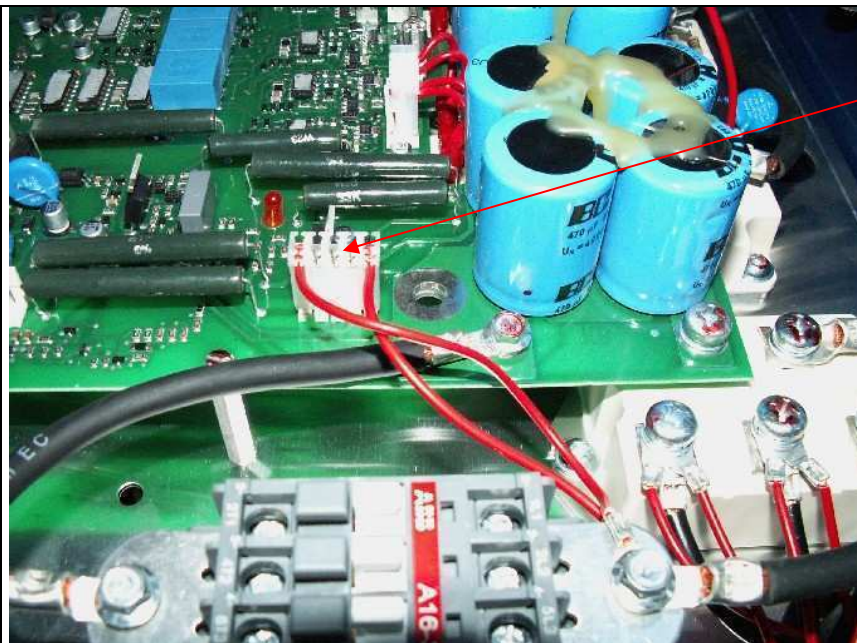


Unplug these 2 connectors.

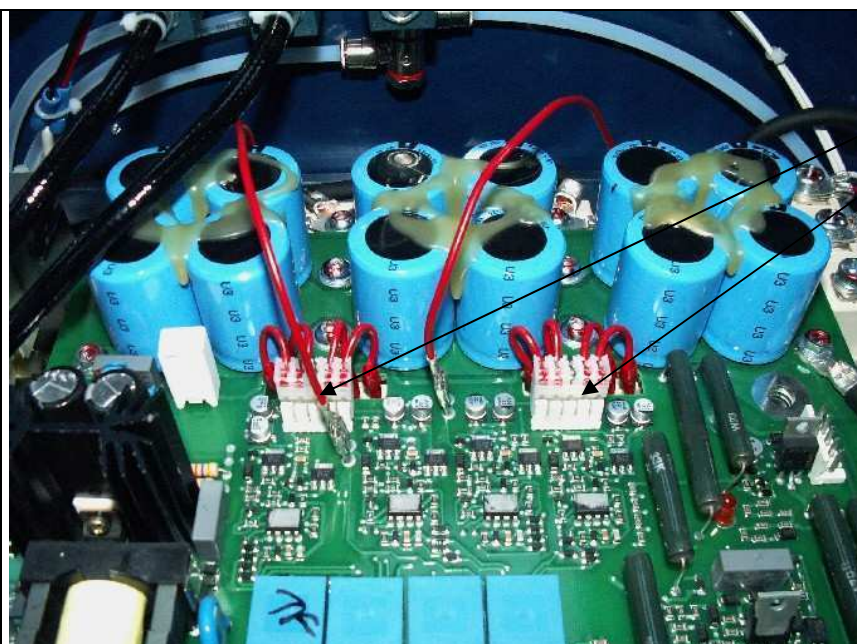
Make sure you plug them back in the same position !



Unplug this connector

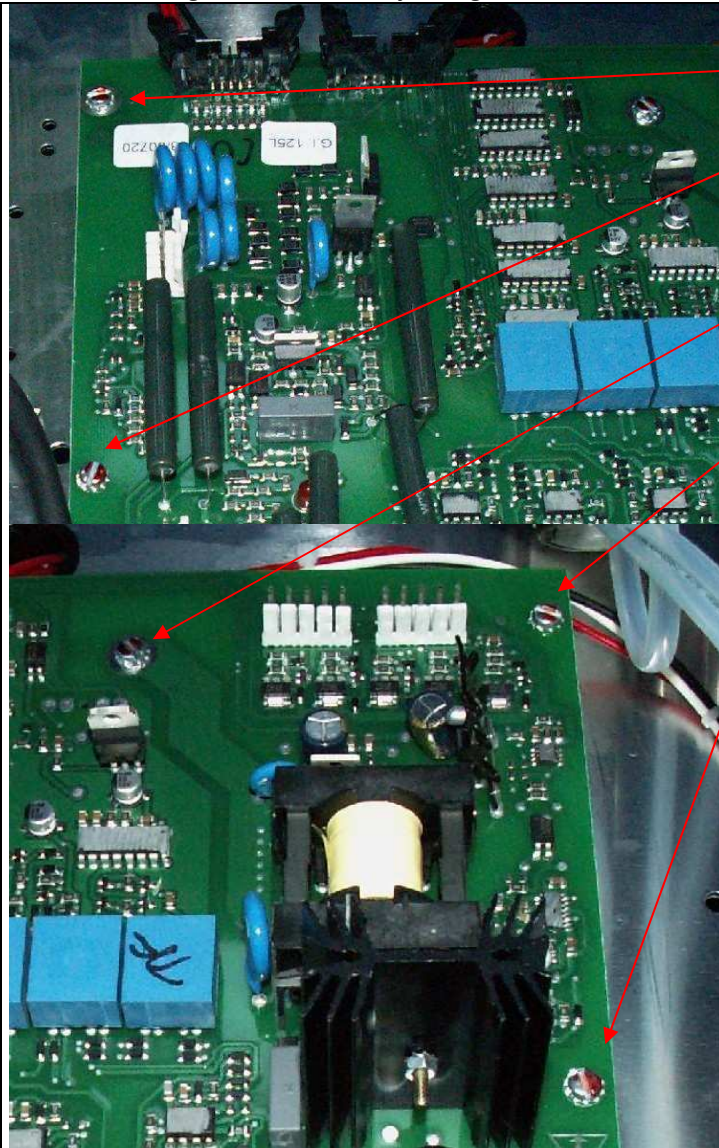


Unplug this connector



Unplug these 2 connectors from the board

Remove terminals from the connector under the board.
(be careful to plug every wire back correctly)



1

2

3

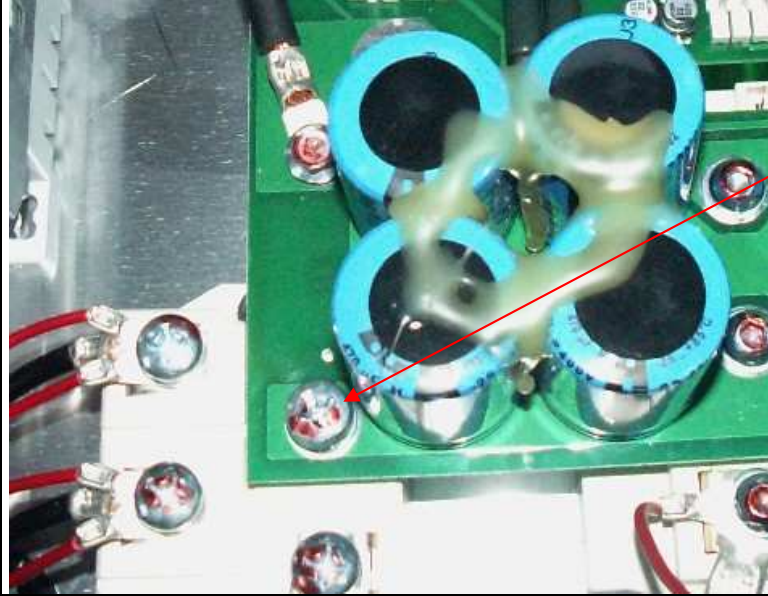
4

5

5x Screws, for Flat end screw driver. Make sure you collect the washers also !



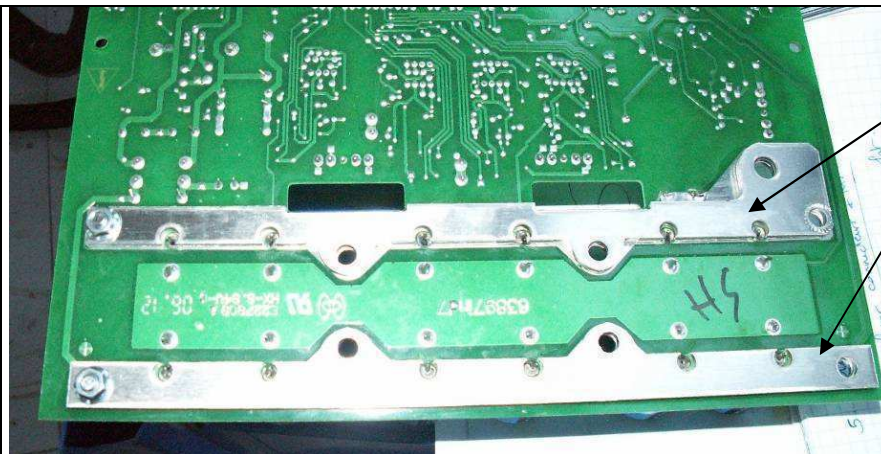
4 Allen key head screws, on the IGBT modules.



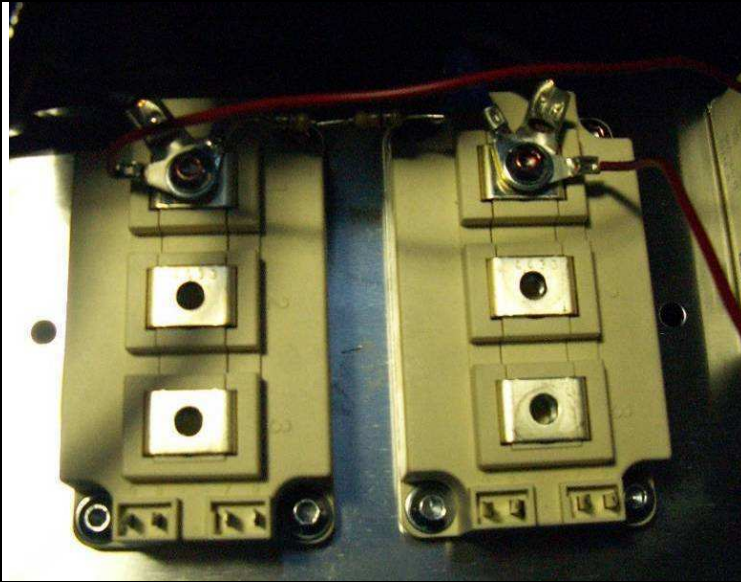
1 PHILIPS head screw, on Diode bridge.



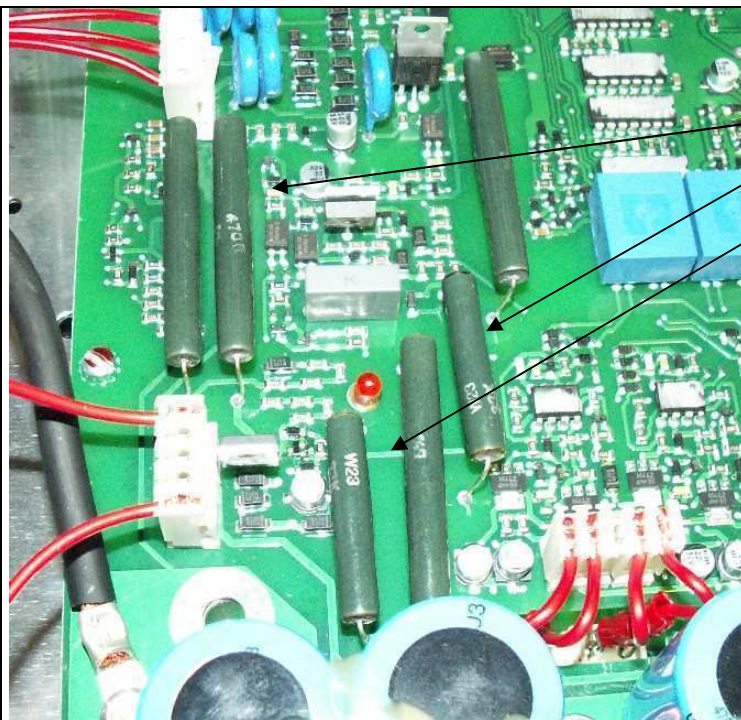
1 bolt.



Take these bars off and fix them on the other board.



Unscrew the IGBT modules, and replace them.



Make sure, when you put another board in the machine that there is space between each green resistor (a few mm in between).

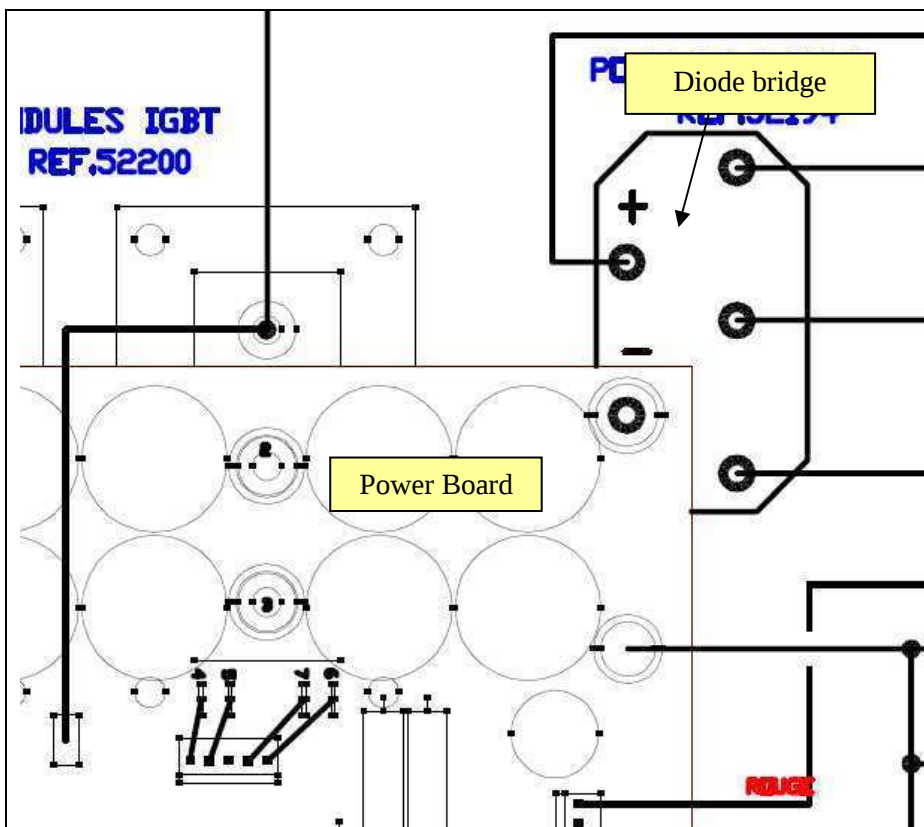
Make sure all screws are tightly fastened, otherwise bad power transmission will occur, causing failure. Also make sure you have not forgotten any washers.



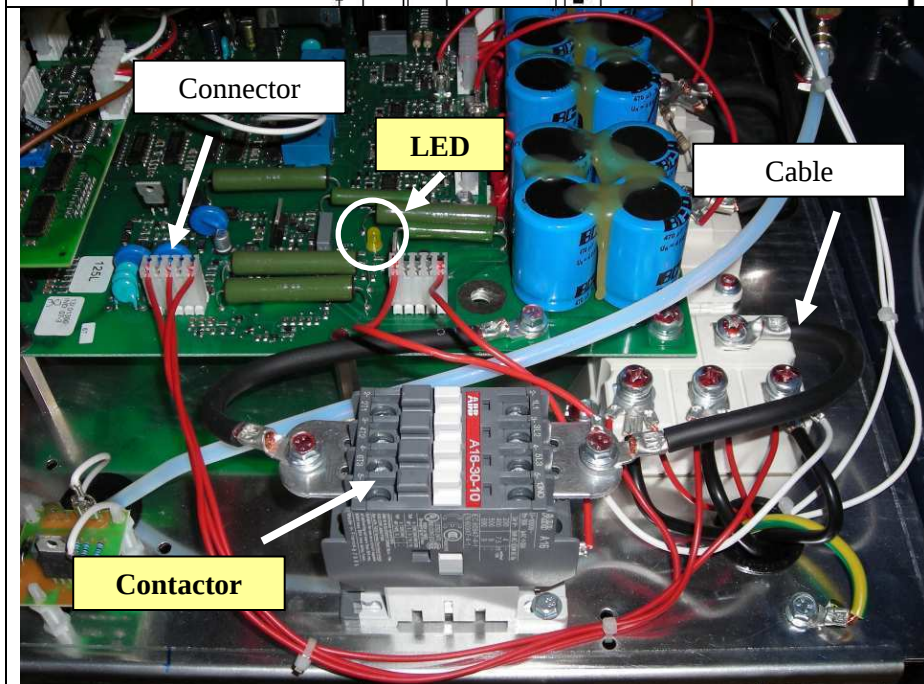
GYSPOT 93R and 125L : Test of the diode bridge

The following procedure describes how to test the diode bridge on GYSPOT 125L machines.

First of all, switch off the machine, and unplug from the mains power supply.

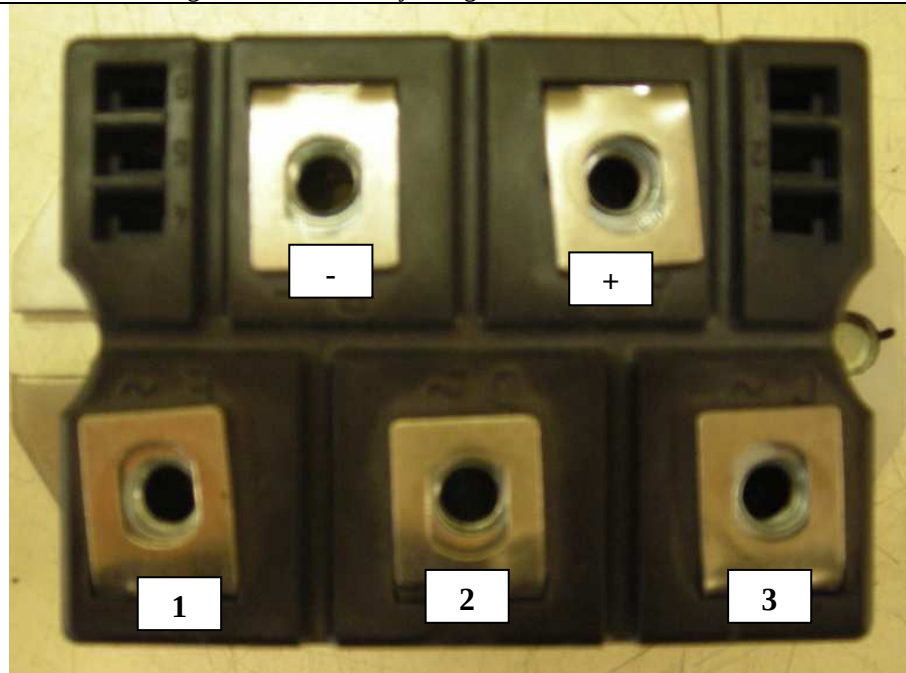


The diode bridge is located on one corner of the main electronics board.



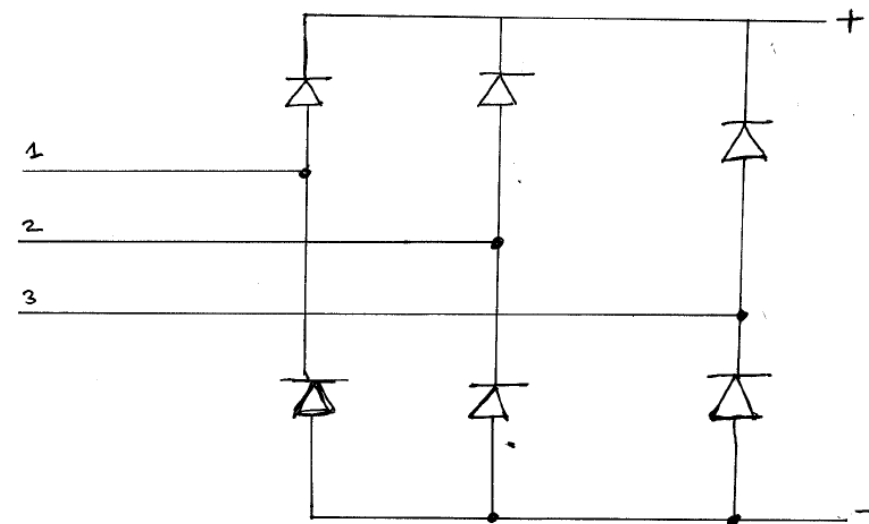
Disconnect the black cable, and the connector shown on the photograph left.

Then you can check directly the diode bridge, without taking it off the machine.



The photograph left, and the diagram below show how the diodes are connected inside the bridge.

Using a multimeter in diode position, check that each and every diode is functional.



Check that each diode conducts on one polarity, and blocks the current on the other polarity.

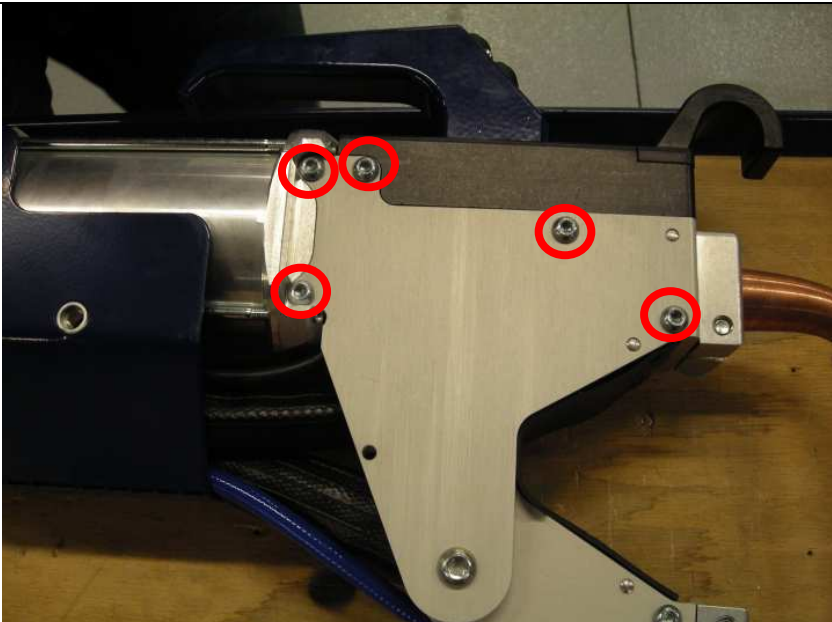
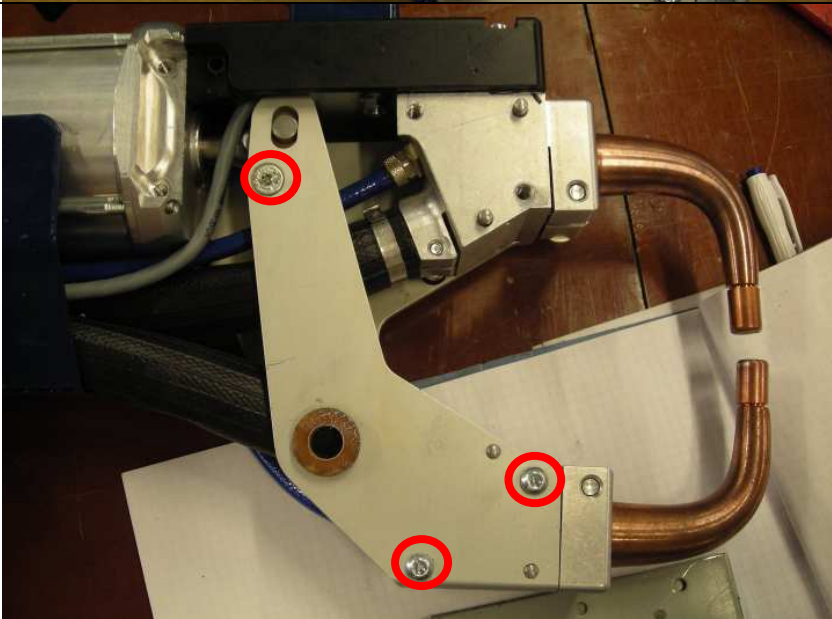


GYSPOT 125L : Procedure for the replacement of a power cable on an X-clamp

This procedure describes how to change the power cable of an X-clamp. It applies both to GYSPOT 125L-X and 125L-Integral machines.

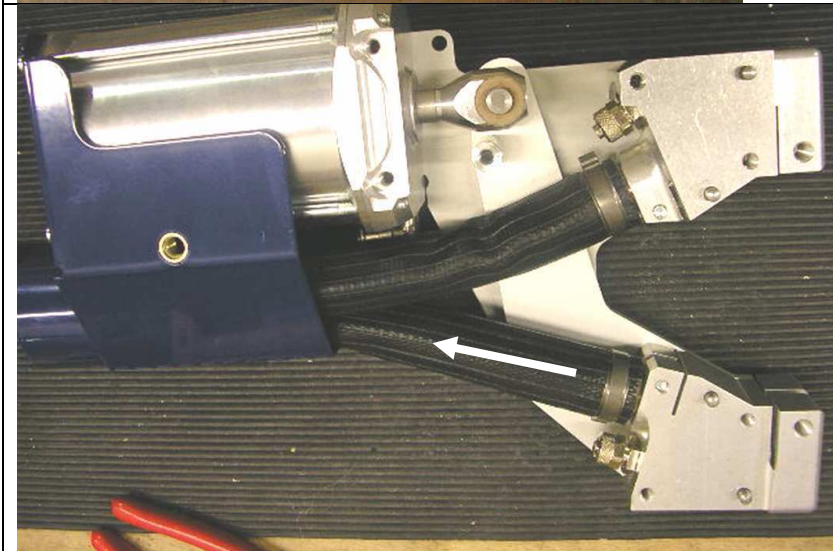
First of all, disconnect the machine from the mains power supply. Place the cable and the clamp on a table, so that it lies horizontally.

To remove the defective cable :

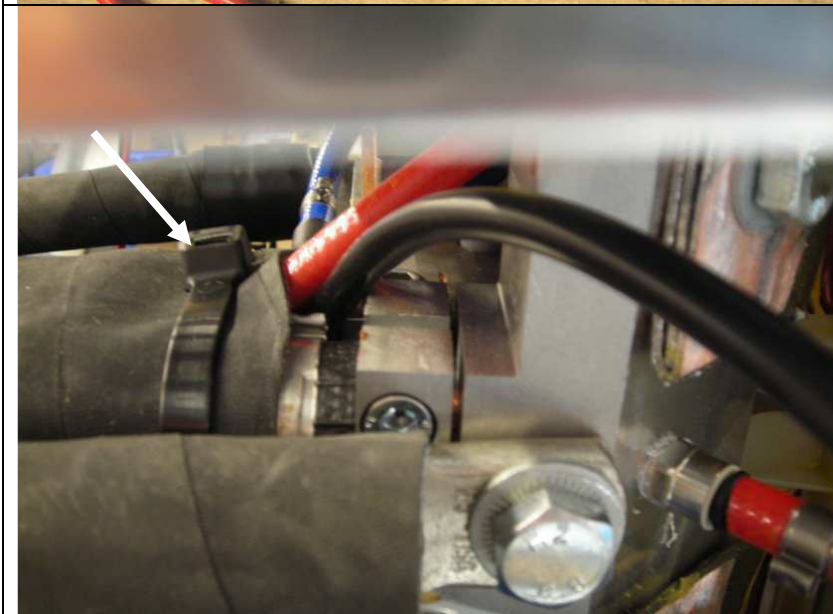
	Remove the side plate shown left. Unscrew the 5 screws shown on the photograph. If some screws are difficult to loosen, use a flat chisel and a hammer.
	Remove the 3 screws shown left to remove the inside metal plate.



Then, remove the lateral screw to be able to take the cable off its housing.

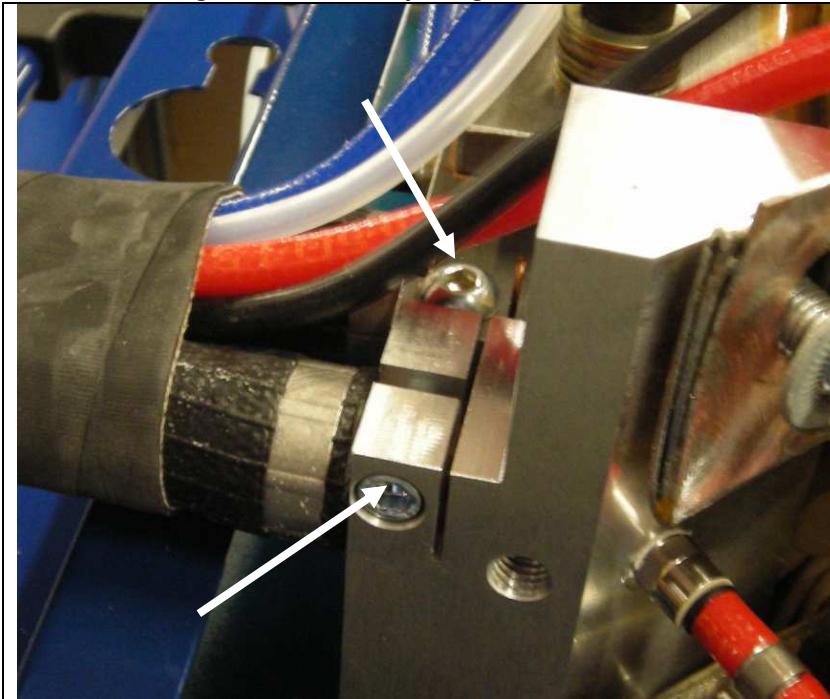


Pull the cable in order to remove it from its housing, as shown with the arrow.



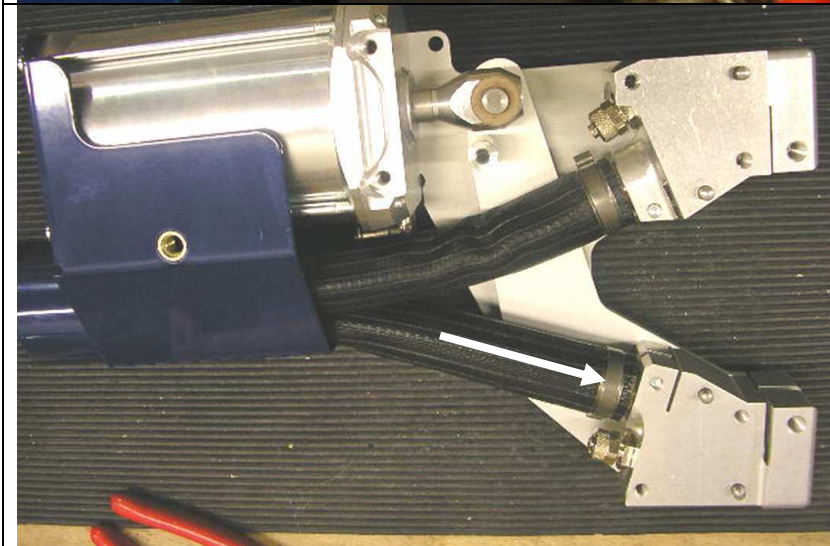
On the machine side :

Remove the collar around the sheath. The sheath will have to be pulled in order to access the cables.



Unscrew the screw of the corresponding cable you want to extract.

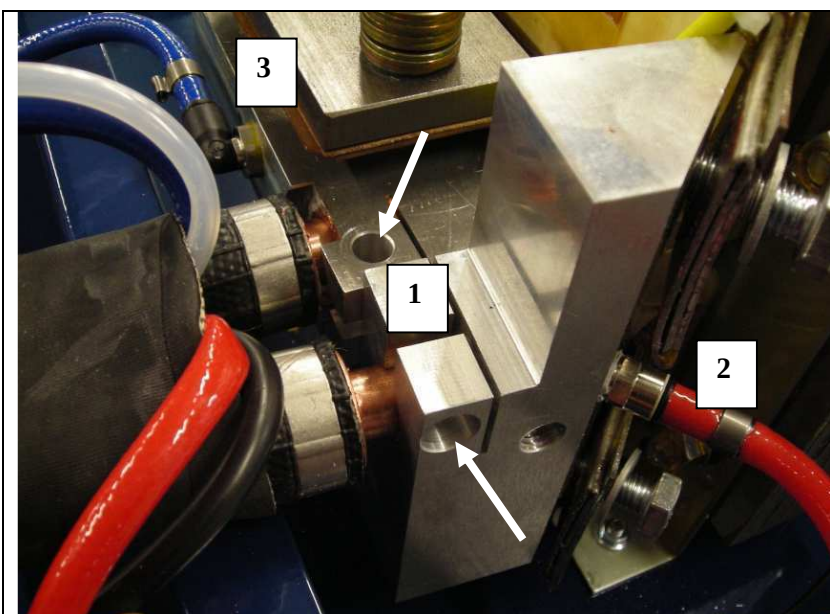
The cable must be extracted from the clamp side.



Extract the cable from the sheath by pulling in the direction of the arrow on the photograph.

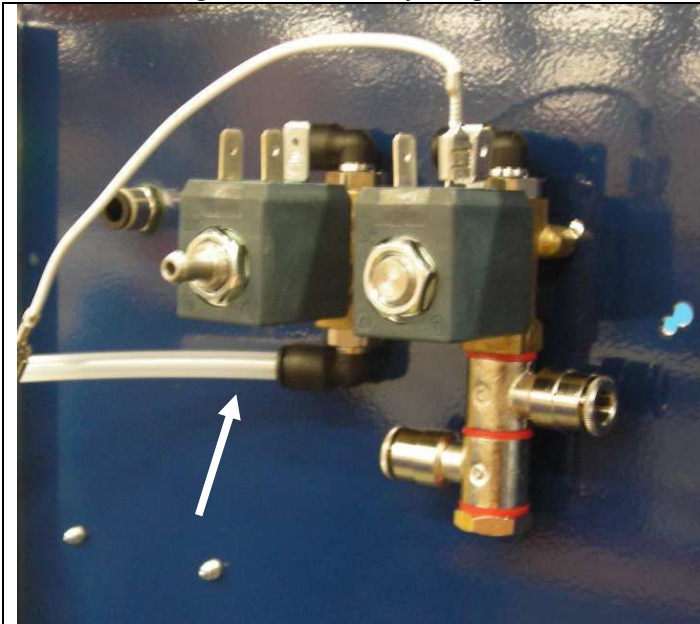
Assembly of new sheath and new cable :

In order to assemble the new sheath (GYS reference 11216), it is best to disconnect the remaining cable and pipes from inside the machine.



(1) when both screws are removed, the remaining cable can be extracted from the machine side.

Pipes (2) and (3) should be disconnected. You should prepare a rag or a towel, because some cooling liquid will come out.



Disconnect the white pipe from the solenoid valve.



Disconnect the connector on the display board.

Then the old sheath can be removed.

Connect the new cable to the clamp.

Place the cables and clamp on a table, so that it lies flat : this is the best conditions to assemble the new sheath on both cables.

Connect back the cables and the pipes inside the machine; the above photographs will help to connect back everything in the right place.



GYSPOT 125L : Replacement of gun command cable

This procedure describes how to perform the replacement of the gun command cable on GYSPOT 125L machines.

The idea is to cut the existing command cable on both ends, and assemble a new command cable on the outside of the sheath of the gun cable. This new cable will be protected by a new wider sheath covering the existing gun sheath.

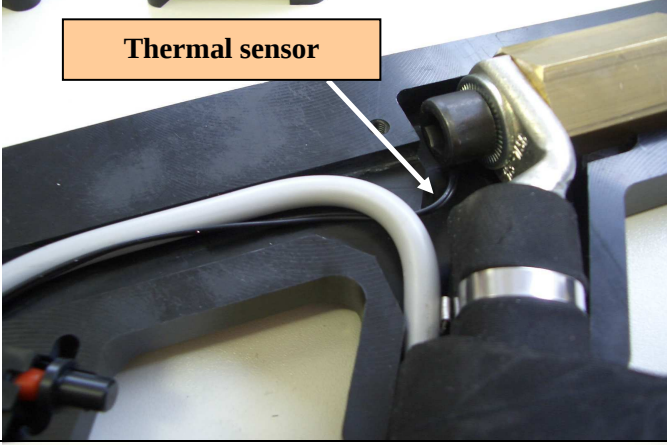
Before you start :

1. Unplug the machine from the mains power supply
2. Remove the screws from the top metallic cover
3. Remove the top metallic cover, sliding it backwards; pay attention to the earth cable connected to the top cover !

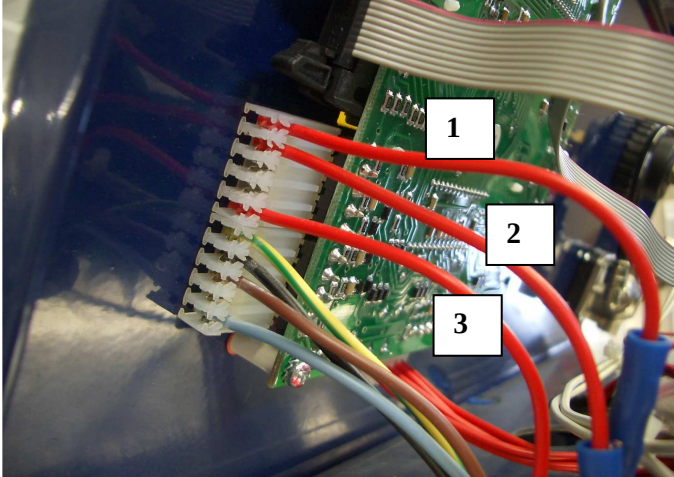
Description of the command cable :

On the switch side	On the machine side

On the Gun side :

 Cut the command cable	Open the gun plastic casing. Remove the power cable and mandrel from their housing. Remove the command cable and switch. Cut the old command cable at the location shown on the photograph left. Attach the new command cable along the power cable and bring it to the gun. Slip the new sheath on the gun cable.
	Place the new command cable in the gun plastic casing as shown on the photograph left.
 Thermal sensor	Put back the power cable and the mandrel in their initial position. Make sure that the thermal sensor is placed between the mandrel and the gun plastic casing, as shown on the photograph (place the mandrel first, then insert the thermal sensor underneath the mandrel).
	Close the gun plastic casing. Beware not to pinch the control cables when you close the plastic casing. Use a collar to maintain the new sheath under the edge of the gun plastic casing.

On the machine side :

	The gun cable is located on the right side of the machine The command cable on this side comes with 3 wires connected on a connector. There are 2 possibilities to insert inside the machine : 1. Dismantle, and lift slightly the front panel in order to enable the insertion of the connector inside the machine. 2. Cut the wires at the edge of the connector, and connect back on the wires of the previous command cable inside the machine. If option 1 is chosen, then connect back directly to the display board inside the machine.
	If option 2 is chosen, proceed as follows : Cut the 3 black wires inside the machine so as to keep a sufficient length in order to connect to the new cable. 7 to 8 cm under the aluminium plate.
	Connect the 3 wires with quick couplers, according to the numbers 1, 2, and 3 on each wire.