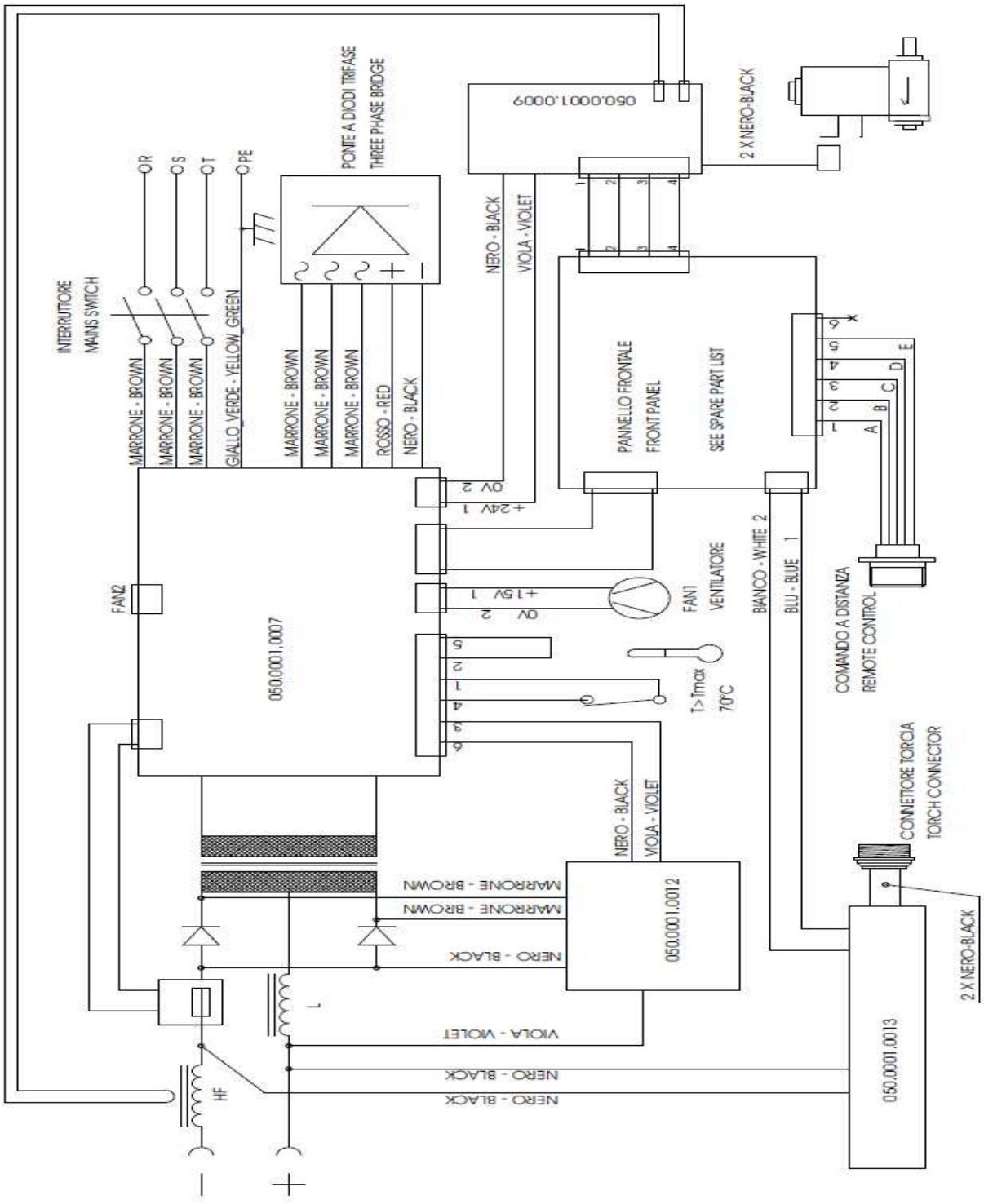
SERVISNÍ MANUÁL ALFIN 200 TIG HF	SERVICE MANUAL ALFIN 200 TIG HF

1. VAROVÁNÍ	WARNING
UPOZORNĚNÍ – Pouze osoba splňující kvalifikaci danou zákonem je oprávněna opravovat stroj.	**NOTE Only trained personnel are permitted to work inside the machine.**
PŘED OTEVŘENÍM KRYTU STROJE JEJ ODPOJTE VYTAŽENÍM SÍŤOVÉ VIDLICE ZE SÍTĚ.	**BEFORE OPENING THE MACHINE, CUT OFF ITS ELECTRICAL POWER BY REMOVING THE PLUG FROM THE MAINS SUPPLY SOCKET.**
Každé 4 měsíce otevřete stroj a jemně ho vyfoukejte stlačeným suchým vzduchem POZOR, NEPOUŽÍVEJTE STLAČENÝ VZDUCH O PŘÍLIŠ VYSOKÉM TLAKU, ABY NEDOŠLO K MECHANICKÉMU POŠKOZENÍ ELEKTROSOUČÁSTEK.	**Every six months, open the machine and clean it inside, using compressed dehumidified air. CAUTION. DO NOT USE COMPRESSED AIR AT TOO HIGH A PRESSURE. YOU COULD DAMAGE THE ELECTRONIC COMPONENTS.**
Každé 4 měsíce zkontrolujte řádný stav svařovacích kabelů a síťových kabelů.	**With the same frequency, check the welding cables and the supply cables.**
Není povolena žádná modifikace svařovacího stroje.	**No modification, of any type, may be made to the welding machine.**
Pro Vaši bezpečnost je nutné posečkat se sundáním krytu ze stroje po odpojení ze sítě po dobu minimálně 5 minut, kdy klesne napětí na kondenzátorech na hodnotu pod	**For safety while maintaining the machine, please shut off the supply power and wait for 5 minutes, until**

36 V.	**capacity voltage already drops to safe voltage 36V.**
2. BLOKOVÉ SCHÉMA	**ELECTRICAL PRINCIPLE DRAWING**



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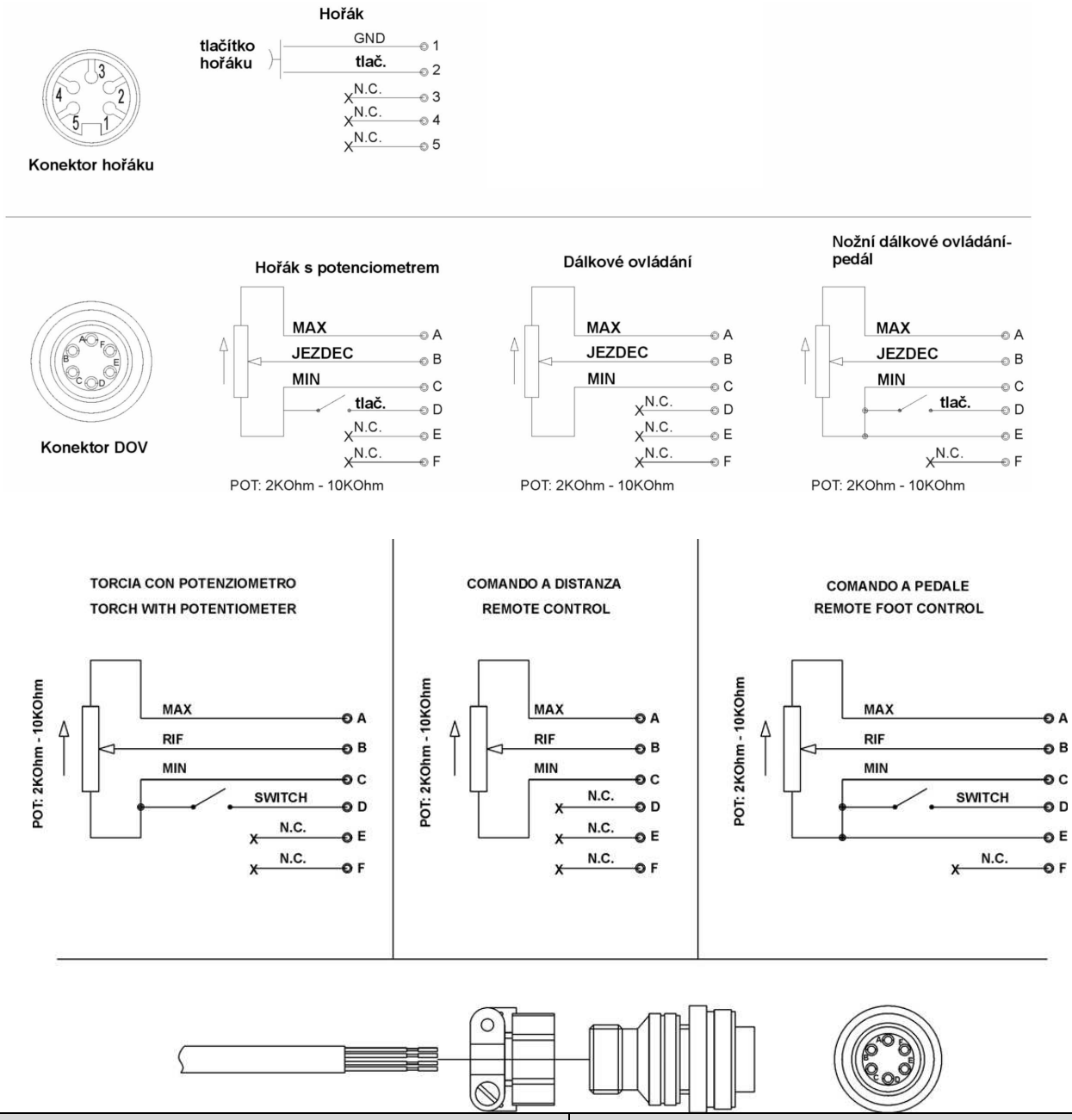
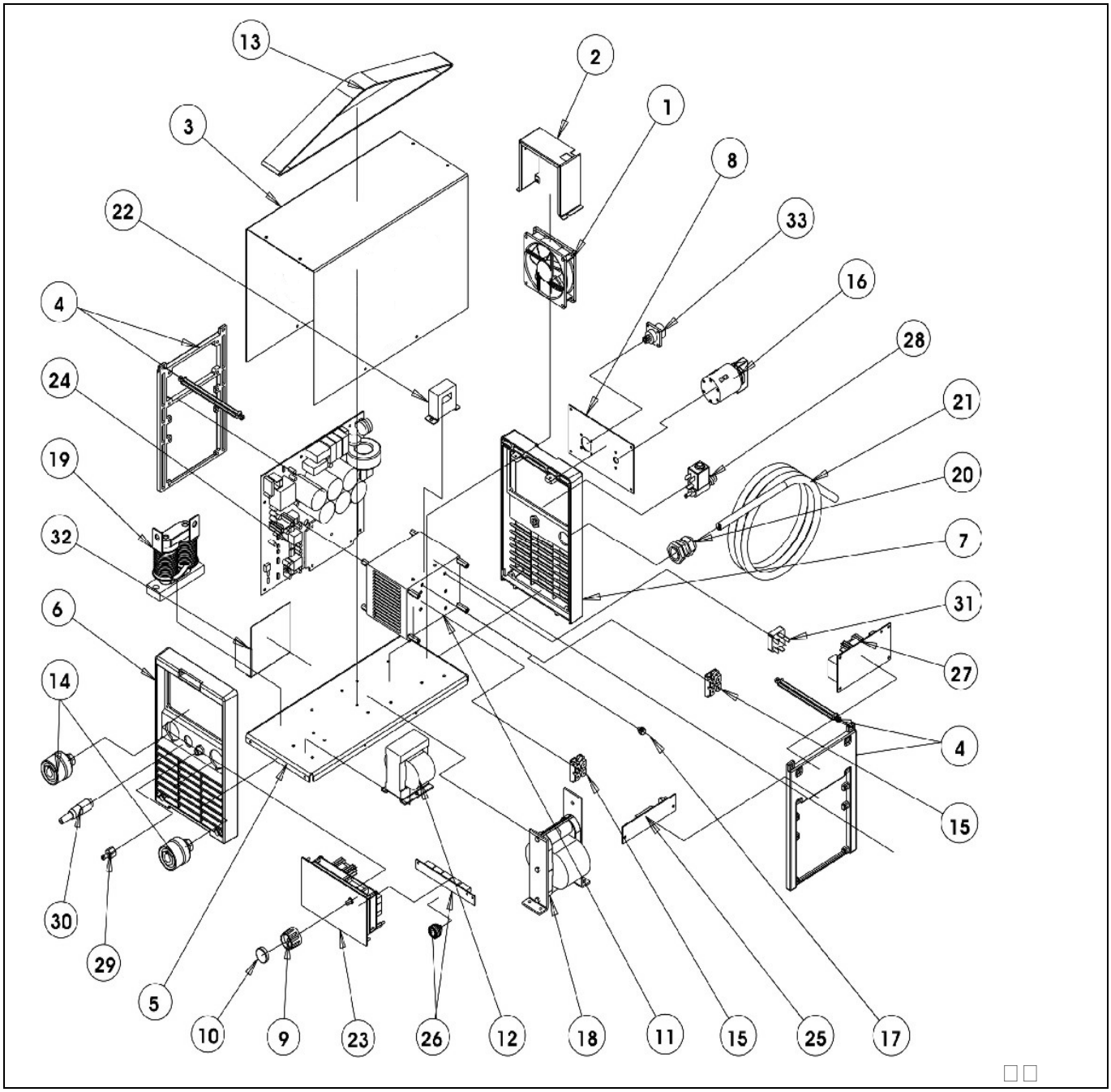


3. NÁHRADNÍ DÍLY | SPARE PARTS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Pozice	Kód	Název	DESCRIPTION	Ks
1	003.002.0001	ventilátor	**FAN**	1
2	011.003.0002	kryt ventilátoru	**FAN SUPPORT**	1
3	011.001.0102	kryt skříně	**CASE**	1
4	012.003.0000	vnitřní rám	**INTERNAL FRAMEWORKS**	2
5	011.003.0001	dno skříně	**BASE**	1
6	012.003.0150	Panel přední Alfin 160/200T	**FRONT**	1
7	012.003.0100	Panel zadní Alfin 160/200	**BACK**	1
8	013.005.0000	zadní panel	**REAR ON-OFF PANEL**	1

9	014.001.0002	knoflík kodéru	**HANDLE WITHOUT POINTER**	1
10	014.001.0011	krytka knoflíku	**COVER FOR HANDLE**	1
11	015.001.0005	chladič	**DISSIPATER**	1
12	044.004.0001	cívka	**INDUCTOR**	1
13	005.001.0004	popruh	**BELT**	1
14	711P001204	Rychlost. TEB 35-70 panel samice	**FIXED SOCKET 400A**	2
15	032.002.0255	výstupní usměrňovač	**ISOTOPE DIODE**	2
16	040.001.0015	síťový vypínač	**TWO-POLE SWITCH**	1
17	040.003.1070	termostat	**THERMAL CUT-OUT**	1
18	042.003.0010	transformátor	**TRANSFORMER**	1
19	044.003.0002	HF transformátor	**HF TRANSFORMER**	1
20	045.000.0001	kabelová vývodka	**CABLE GRIP**	1
21	045.002.0003	síťový kabel	**NEOPRENE CABLE**	1
22	041.004.0300	Hallova sonda	**HALL SENSOR**	1
23	050.506.1400	PCB řídící A200T s pan	**FRONT PANEL**	1
24	050.001.0007	PCB silová A200E	**POWER BOARD**	1
25	050.001.0012	RC člen	**SNUBBER BOARD**	1
26	050.001.0013	odrušovací deska	**FILTER BOARD WITH TORCH CONNECTOR**	1
27	050.001.0009	HF deska	**HF BOARD**	1
28	017.001.5512	plynový ventil	**SOLENOID VALVE**	1
29	021.000.0000	sada pro přípojku plynu hořáku	**KIT FOR GAS CONNECTORS**	1
30	021.004.3360	konektor hořáku	**TORCH CONNECTOR**	1
31	032.001.3612	Usměr.vstupní Alfin200	**SINGLE-PHASE JUMPER**	1
32	011.003.0003	kryt- odstínění	**POWER BOARD SCREEN**	1

4. ZÁVADY - ŘEŠENÍ

Poř.	Závada	Příčina	Řešení
1	Stroj je zapnutý, ventilátor funguje, LED zapnutí nesvítí	LED nebo její připojení je vadné.	Opravte připojení nebo vyměňte LED poř.23
		Silová PCB je vadná.	Opravte nebo vyměňte PCB poř.č24
2	Stroj je zapnutý, LED zapnutí svítí, ventilátor neběží.	Překážka rotace ventilátor.	Odstraňte
		Motor ventilátor poškozen.	Vyměňte ventilátor

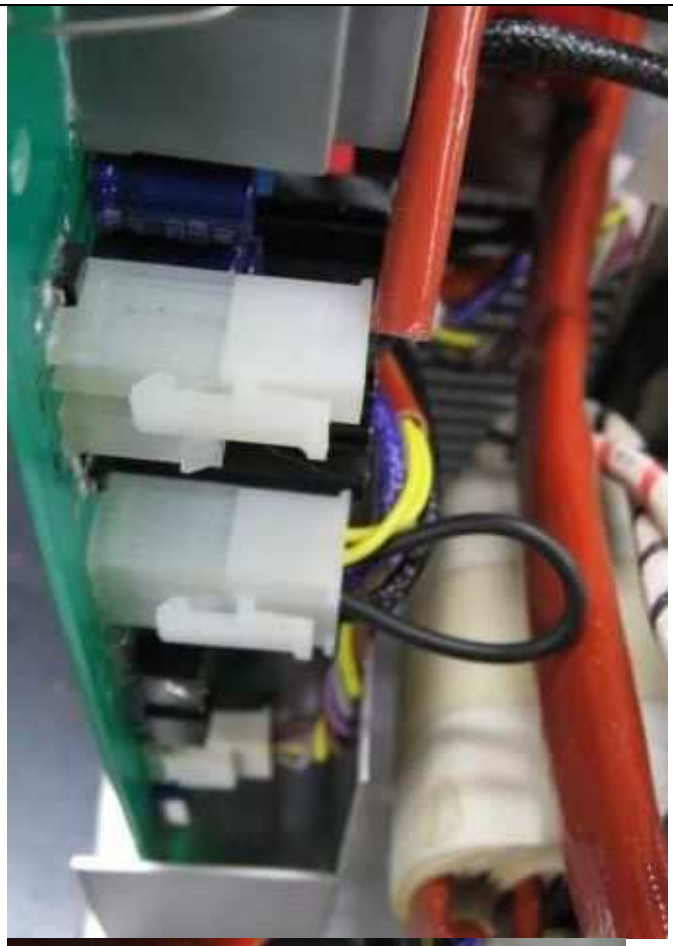
3	Stroj je zapnutý, LED zapnutí nesvítí, ventilátor neběží.	Není napětí v síti		Zkontrolujte, jestli je v síti napětí.
		Přepětí nebo podpětí v síti.		Zkontrolujte síťové napětí.
4	Žádné napětí na prázdno	Závada generátor.		Zkontrolujte hlavní vypínač
5	Žádný svařovací proud na svorkách	Svařovací kabely nejsou připojeny do konektorů.		Připojte svařovací kabely do rychlospojek na stroji.
		Poškozený svařovací kabel.		Vyměňte nebo opravte svařovací kabel.
		Zemnící kabel není připojen nebo je špatně připojen.		Zkontrolujte zemnící kabel
6	Obtížně se zapaluje oblouk nebo dochází k lepení elektrody.	Špatně utažené svařovací kabely.		Zkontrolujte utažení svařovacích kabelů.
		Svařenec je znečištěn olejem nebo prachem.		Očistěte svařenec.
		MMA/TIG výběr je špatný.		Vyberte MMA svařování.
7	Svařovací proud nelze nastavit.	Poškozený potenciometr předního panelu.		Opravte nebo vyměňte potenciometr.
8	Penetrace tavné lázně nedostačující.	Svařovací proud je nastaven příliš nízko.		Zvyšte svařovací proud
9	Nestabilní oblouk	Nepříznivý vliv průvanu		Použijte zástěnu.
		Excentrická elektroda		Změňte úhle uchycení elektroda
				Vyměňte elektrodu
		Vliv magnetismu		Nahněte elektrodu proti směru magnetického vlivu.
				Změňte pozici zemnícího kabelu nebo přidejte zemnící kabel na opačnou stranu svařence.
10	LED ALARM svítí	Přehřátí	Stroj příliš zatížen	Počkejte, až se stroj vychladí
		Ochrana přepětí	Nestandardní proud na hlavním obvodu.	Otestujte a opravte hlavní obvod PCB poř.č24

TROUBLESHOOTING

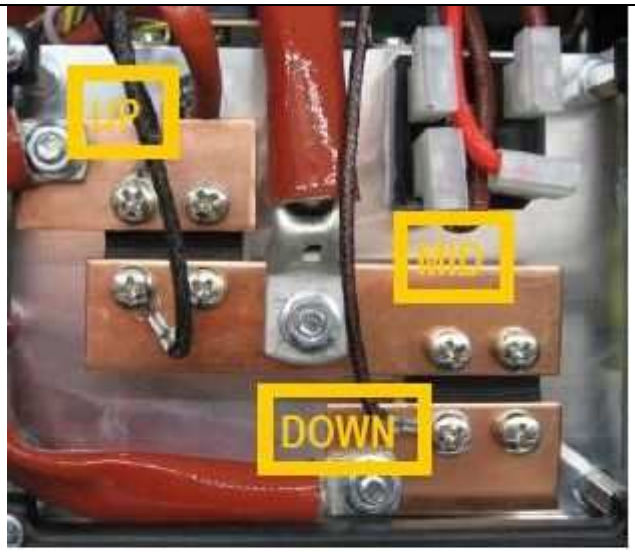
S/N	Troubles	Reasons	Solutions
1	Turn on the power source, and fan works, but the power light is not on.	The power light damaged or connection is not good	Test and repair the inside circuit of power light s/n 23
		Power PCB failures	Repair or change power PCB s/n 24
2	Turn on the power source, and the power light is on, but fan doesn't work	There is something in the fan	Clear out
		The fan motor damaged	Change fan motor

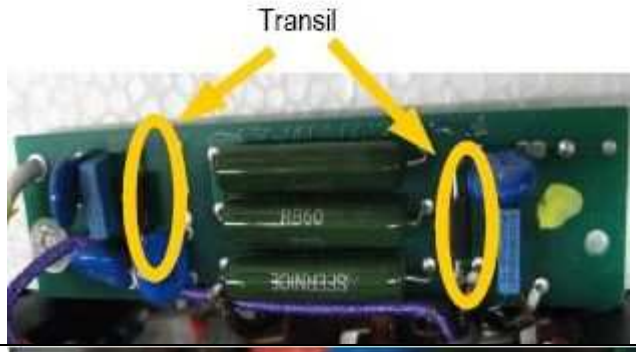
3	Turn on the power source, and the power light is not on, and fan doesn't work	No input voltage		Check whether there is input voltage
		Overvoltage (Input voltage is too much or not)		Check input voltage
4	No no-load voltage output	There is trouble inside the machine		Check the power switch
5	No current output in the welding	Welding cable is not connected with the two output of the welder.		Connect the welding cable to the welder's output
		Welding cable is broken		Wrap, repair or change the welding cable
		Earth cable is not connected or loosen		Check the earth clamp
6	Not easy to start arc in the welding, or easy to cause sticking	The plug loosen or connect not well		Check and tighten the plug
		Oil or dust covered the workpiece		Check and clear out
		MMA/TIG welding selection is wrong		Selecting the MMA welding
7	The welding current can not be adjusted	The welding current potentiometer in the front panel connection not so good or damaged		Repair or change the potentiometer
8	The penetration of molten pool is not enough(MMA)	The welding current adjusted too low		Increase the welding current
9	Arc blow	Airflow disturbance		Use the shelter from airflow
		The electrode eccentricity		Adjust the electrode angle
				Change the electrode
		Magnetic effect		Incline the electrode to the opposite way of the magnetic blow
				Change the position of earth clamp or add earth cable in the two side of workpiece
				Use the short arc operation
10	The alarm light is on	Over heat protection	Over welding current	Induce the welding current output
			Working time too long	Induce the duty cycle (interval work)
		Over current protection	Unusual current in the main circuit	Test and repair the main circuit and drive PCB s/n 24

5. KONTROLA SILOVÉ PCB — CHECKING THE POWER PCB

Obrázek 1	 	Pozice kontaktů v konektoru • teplotní čidlo (žluté dráty): pozice 3,6 Zkontrolujte spojení kontaktů tepelné ochrany pomocí testeru diod, teplota chladiče nesmí být vyšší než 40°C.

Obrázek 2



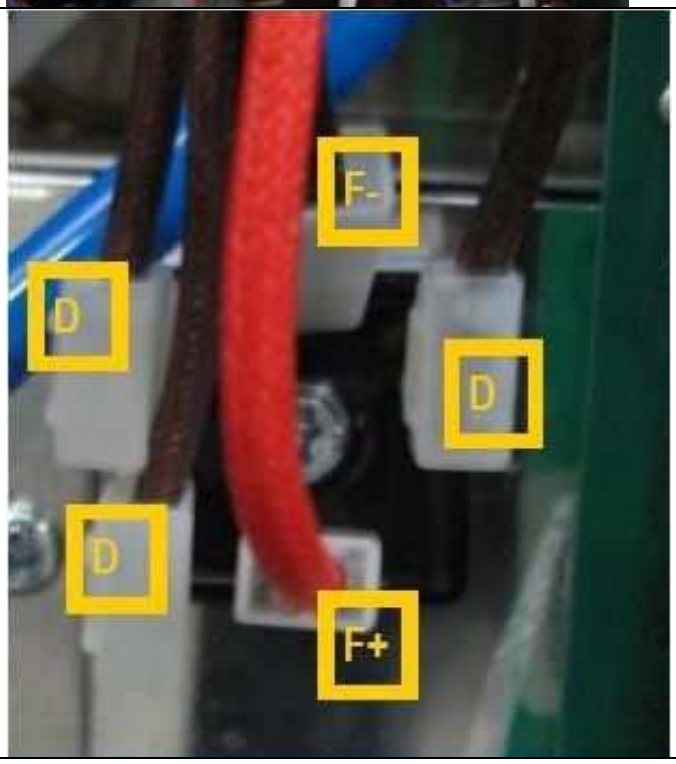


Před kontrolou výstupních usměrňovačů odpojte vývody k PCB RC filtr (černé a hnědý drát)

červený	černý	hodnota
UP	MID	OL
MID	UP	>.150
MID	DOWN	>.150
DOWN	MID	OL

Nakonec zkontrolujeme dva transily na PCB RC filtr. V obou směrech musí vykázat přerušený obvod

Obrázek 3



Vstupní usměrňovač na silové desce
Pro kontrolu můstku změřte tento podle následující tabulky testerem diod

Červený vodič	Černý vodič	Naměřená hodnota
F+	D	OL
D	F+	>0.450
D	F-	OL
F-	D	>0.450

Obrázek 4

Pro kontrolu tranzistorů změřte tyto podle následující tabulky testerem diod

červený	černý	hodnota
D	S	OL
S	D	>.350
G	S	>1.5
S	G	>1.5
G	D	OL
D	G	OL

Hodnoty jsou orientační. Naměříte-li zkrat, nebo rozpojený obvod (OL), je nutné PCB vyměnit

Obrázek 5

Varistory jsou blízko vstupu napájecího napětí na silovou PCB. Toto zařízení slouží k ochraně PCB před vstupním přepětím. Při přepětí "exploduje" a zkratuje vstup. Je-li rozsah zkratu velmi vysoký, obvod se přeruší

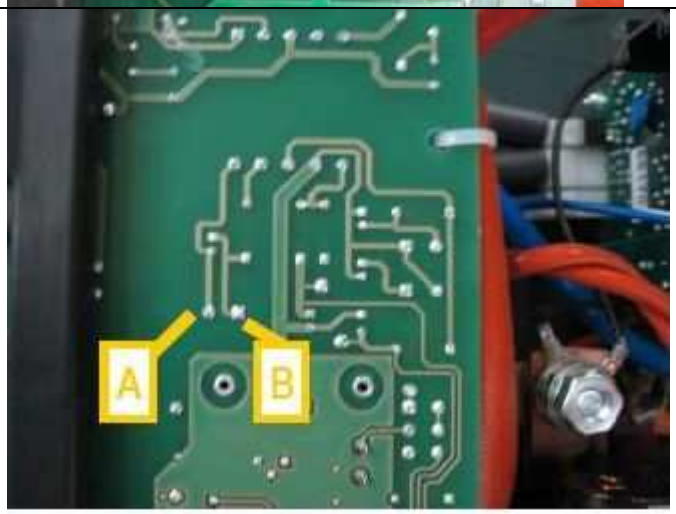
Obrázek 6

Pro kontrolu tranzistor změřte podle následující tabulky testerem diod

červený	černý	hodnota
D	S	OL
S	D	>.350
G	S	OL
S	G	>0.5
G	D	OL
D	G	OL

Hodnoty jsou orientační. Naměříte-li zkrat, nebo rozpojený obvod (OL), je nutné PCB vyměnit

Obrázek 7



Zkontrolujte testerem diod průchodnost mezi body A/B na silové PCB a pinů X/Y na propojce k PCB řídící.

Obrázek 8		Digitální multimetr. "OL" označuje přerušený obvod

CAUTION!

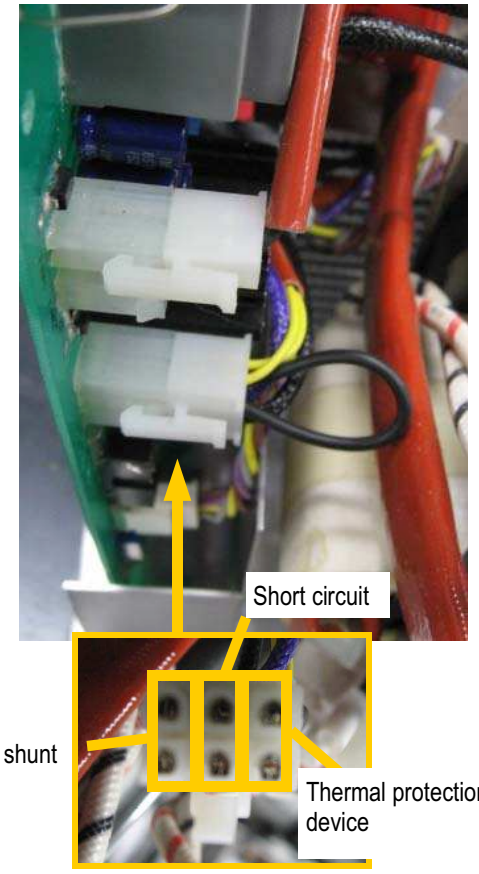
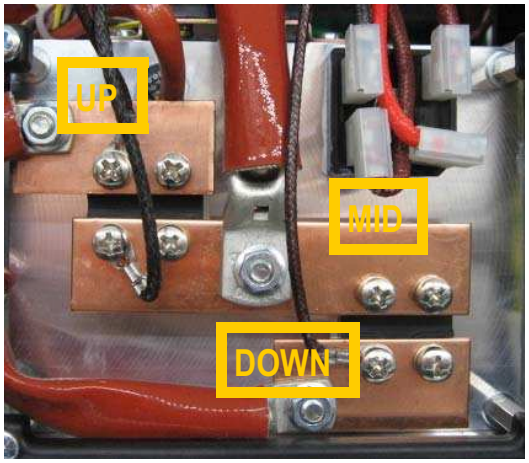
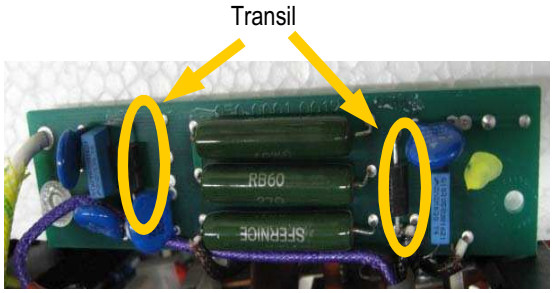
Before carrying out any work on the machine make sure it is off and the plug has been disconnected.

PROBLEM	CASE	SOLUTION
The machine does not switch on.	– Electrical power does not reach the machine.	• Make sure the line switches are closed, the protection devices (fuses) have not been enabled and that the power supply cable is intact.
	– Voltage reaches the machine switch but there is no voltage after the contacts.	• Switch the machine off and disconnect the plug. Make sure that when the switch is closed, there is continuity between the contact input and output and that the varistor is not broken. In case the Power Board must be replaced (picture 5).
	– There is voltage after the disconnecting switch but the machine does not go on.	• Switch the machine off and disconnect the plug. Check the mosfet of the switching power supply unit on the power board (picture 6).
The protection devices of the line set off when the switch is activated and the machine does not go on.	– Damaged power supply cable with short-circuited wires.	• Switch off the machine and disconnect the plug. Make sure that there are no short circuits between the poles of the plug caused by a damaged power supply cable.
	– Inverter is damaged.	• Switch off the machine, disconnect the plug and check: - varistors (picture 5); - inverter (picture 4); – Input bridge rectifier (picture 3); – switching power supply unit (picture 6). If one of these components is damaged replace the power board 0008.
The front panel does not switch on.	– The fan works but the front panel does not go on.	• Switch off the machine and disconnect the plug. Make sure the flat cable that connects the front panel to the power board is inserted correctly. If correctly inserted, replace the front panel. If the front panel does not go on, one of the switching power supply unit outputs is broken. Therefore the power board must be replaced.
	– Both the fan and the front panel do not work.	• Switch off the machine, disconnect the plug and check the mosfet of the switching power supply unit on the power board. IF it's damaged it must be replaced (picture 6).

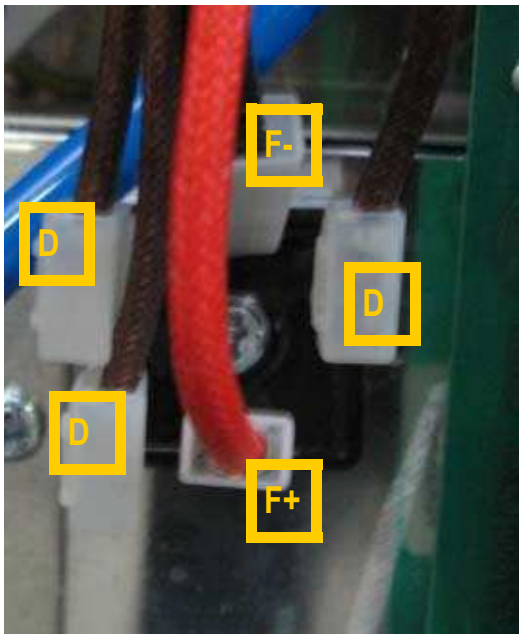
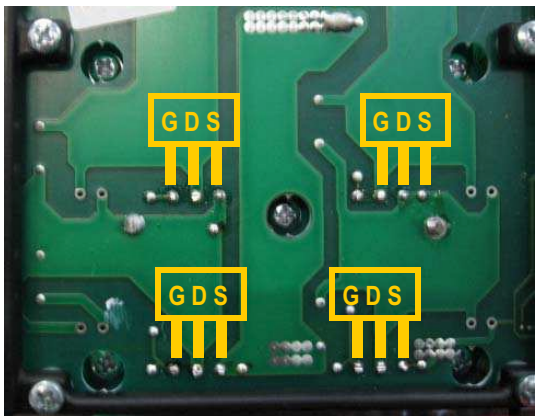
PROBLEM	CASE	SOLUTION
The MMA/TIG output voltage is about 14V and the machine does not weld.	– Check that the snubber board wires are correctly inserted in the 6-pin connector on the power board. – The primary current alarm on the power board is activated.	• Switch off the machine and disconnect the plug: – Make sure that the wiring contact is correctly inserted in the connector (picture 1); – Check for continuity between the +/- output outlets and that the 6-path connector is connected to the front panel (picture 1); • The power board must be replaced.
The output voltage in each procedure is about 14V and enabling of the thermal protection device.	Wait a few minutes keeping the machine on to favour cooling of the inverter. If the machine continues running with the protection devices on, switch the machine off and disconnect the plug. Remove the hood and make sure: – the temperature of the heat sink tool is less than 40°C; – If it is less than 40°C, check whether the thermal protective device contacts are normally closed.	- If one of the protection devices is always opened it is defective, it must be accordingly replaced. - If it is closed, make sure the two terminals are well inserted in the connector (picture 1). - Power board feed problems, it must be accordingly replaced.
The output voltage in MMA is zero.	Switch the machine off and disconnect the plug. Check for a short circuit at the DINSE plug with a diode tester. A short circuit may be caused by : – damaged transil on the snubber board; – damaged diodes; – damaged inverter; – The inductive value of the Power Transformer is null.	Switch off the machine and disconnect the plug. Remove the snubber board: • check with a diode tester the status of the transil on the snubber board (picture 2); • check with a diode tester the status of the diodes (picture 2); • check the status of the power board (picture 4); • The Power Transformer must be replace.
The welding is non optimal.	Spattering occurs during welding.	Make sure welding polarity is correct, the earth clamp is fixed correctly and check the hot-start and arc-force values that have to be decreased if they are too high.

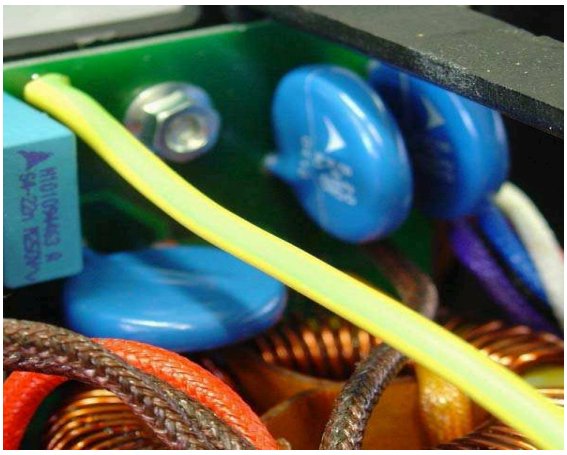
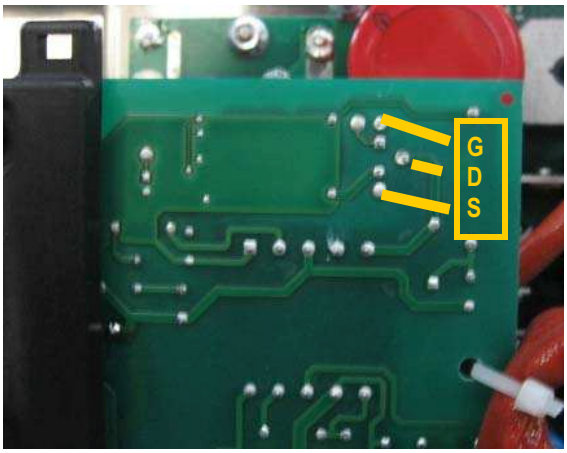
PROBLEM	CASE	SOLUTION
When welding the protection devices of the line set off.	Make sure the welding current does not require greater power than the one supplied by the line.	Decrease the welding current.
The machine does not strike in HF mode.	– The front panel could be damaged. – The HF board could be damaged. – HF board cable could be damaged or disconnected. – The HF transformer is damaged.	• Replace the front panel board; first verify that the spare part has the right software. • The HF board must be replaced. • Connect the cables or, if damaged, replace them. • The HF transformer could be damaged, in case it must be replaced.
Gas does not come out from solenoid valve.	– Excessive gas pressure. – Damage solenoid valve wiring. – The solenoid valve control relay on the front panel is damaged. – Feeding is missing. – Solenoid valve is damaged.	• Remove the gas connection. Carry out a gas test on the front panel in the TIG procedure and check opening of the solenoid valve. Reduce gas pressure. Restore connections and carry out a gas test. • Switch off the machine and disconnect the plug: – Check the continuity of the solenoid valve cable .If there's no continuity, try to repair the damaged cables; – Check that the connectors are correctly inserted. • The front panel must be replaced. • Check continuity between points A/B of the power board and x/y poles of the connector that goes to the front panel. After that the solenoid valve or the front panel must be replaced (picture 9). • Should the operations carried out not have a positive outcome, replace the solenoid valve.

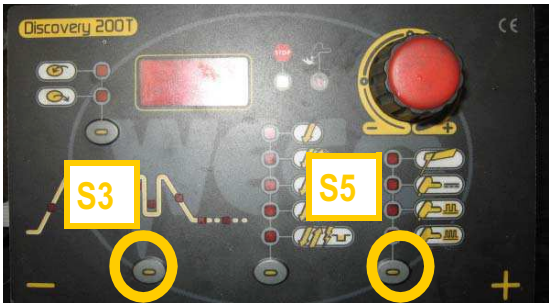
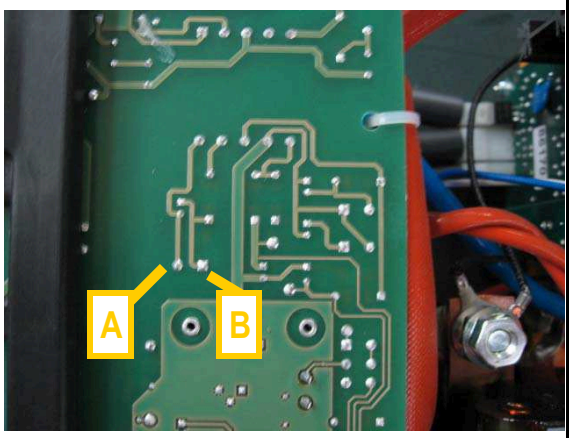
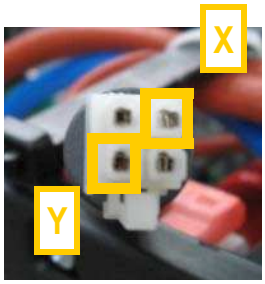
PROBLEM	CASE	SOLUTION
The torch button doesn't work.	– The torch could be damaged. – There is no continuity between the amphenol connector and the front panel. – The front panel or the HF board are damaged.	• The Torch must be replaced. • Single out the interruption and replace the wiring. • The front panel must be replaced.
The machine always welds at maximum current.	– The front panel is damaged. – The Power Board is damaged. – The Hall Effect is damaged.	• Switch off the machine and disconnect the plug: – Replace the front panel board; first verify that the spare part has the right software. – The Power Board must be replace. • The Hall Effect must be replace.
Gas comes out but the machine doesn't weld.	Pre-gas settings are not correct.	Regulate pre-gas settings.
The machine can't stop welding or the welding current is not the one set.	The slope up and slope down are not correctly set.	• Regulate in the correct way the slopes. • Otherwise, reset the parameters and reset the machine (picture 8).
The remote control doesn't work.	– Check that the 6-pin connector of the external wiring is correctly inserted on the Front Panel. – Check that the 2-pin blu connector is correctly inserted on the Power Board. – Check the continuity of the remote control cable. – The torch potentiometer could be damaged. – The amphenol cable is damaged or disconnected.	• Insert the wires into the connectors correctly and insert the connectors into their housings. Should this not be sufficient, replace the front panel board (first verify that the spare part has the right software) or the power board. • The potentiometer must be replaced. • Connect the cable, or, if damaged, replace it.

		EXPLANATION
PICTURE 1		Position of the connector in which they are inserted: • thermal protection device (yellow wires): position 2, 5 • Short circuit: position 2, 5 (black wires) • Shunt wires: position 1, 4. Check the continuity of contact of the thermal protection device with the diode tester, with the heat sink tool temperature less than 40° C.
PICTURE 2	 	To check diodes remove the snubber board and carry out the following measures with a diode tester: At the ends of the two transils (see below) positioned on the snubber board, “OL” must always be measured. 

Copper bar	Probe	Copper bar	Probe	Measure
UP	Red	MID	Black	“OL”
UP	Black	MID	Red	>.150
MID	Red	DOWN	Black	>.150
MID	Black	DOWN	Red	“OL”

		EXPLANATION
PICTURE 3		Input bridge rectifier. To check the Input bridge rectifier , carry out the following measurements with a diode tester: **Faston / Probe / Faston / Probe / Measure** F+ / Red / D / Black / "OL" F− / Red / D / Black / >.450 F+ / Black / D / Red / >.450 F− / Black / D / Red / "OL" Should there be a short circuit on one of these measurements, the input bridge rectifier must be replaced.
PICTURE 4	 	To check the inverter, carry out the following measurements with a diode tester: **Red Probe / Black Probe / Measure** D / S / "OL" S / D / >.350 G / S / >1.5 S / G / >1.5 G / D / "OL" D / G / "OL" Should there be a short-circuit on one of these measurements or an "OL" instead of a numeric value, the power board must be replaced.

<table>
<tr><th></th><th></th><th>EXPLANATION</th></tr>
<tr><td>PICTURE 5</td><td>  </td><td>The varistors are three blue discs near the ground wire of the power board. These devices are for protecting the board from input overvoltage. When there is overvoltage they “explode” causing a short circuit most of the times. If the extent of the short circuit is very high they become an open circuit.</td></tr>
<tr><td>PICTURE 6</td><td> 
</td><td>To check the mosfet of the switching power supply unit, carry the following measurements with a diode tester:
<table>
<tr><th>Red Probe</th><th>Black Probe</th><th>Measure</th></tr>
<tr><td>D</td><td>S</td><td>“OL”</td></tr>
<tr><td>S</td><td>D</td><td>>.350</td></tr>
<tr><td>G</td><td>S</td><td>“OL”</td></tr>
<tr><td>S</td><td>G</td><td>>0.5</td></tr>
<tr><td>G</td><td>D</td><td>“OL”</td></tr>
<tr><td>D</td><td>G</td><td>“OL”</td></tr>
</table>
Should there be a short-circuit on one of these measurements or an “OL” instead of a numeric value, the power board must be replaced.</td></tr>
<tr><td>PICTURE 7</td><td> 
</td><td>Tester or digital millimetre. “OL” means Open Loop.</td></tr>
</table>

		EXPLANATION
PICTURE 8		In order to reset the parameters, switch the machine on while the S3 and S5 buttons are being pressed.
PICTURE 9	 	Check continuity, with a diode tester, between points A/B of the power board and x/y poles of the 4-pin connector that goes to the front panel.