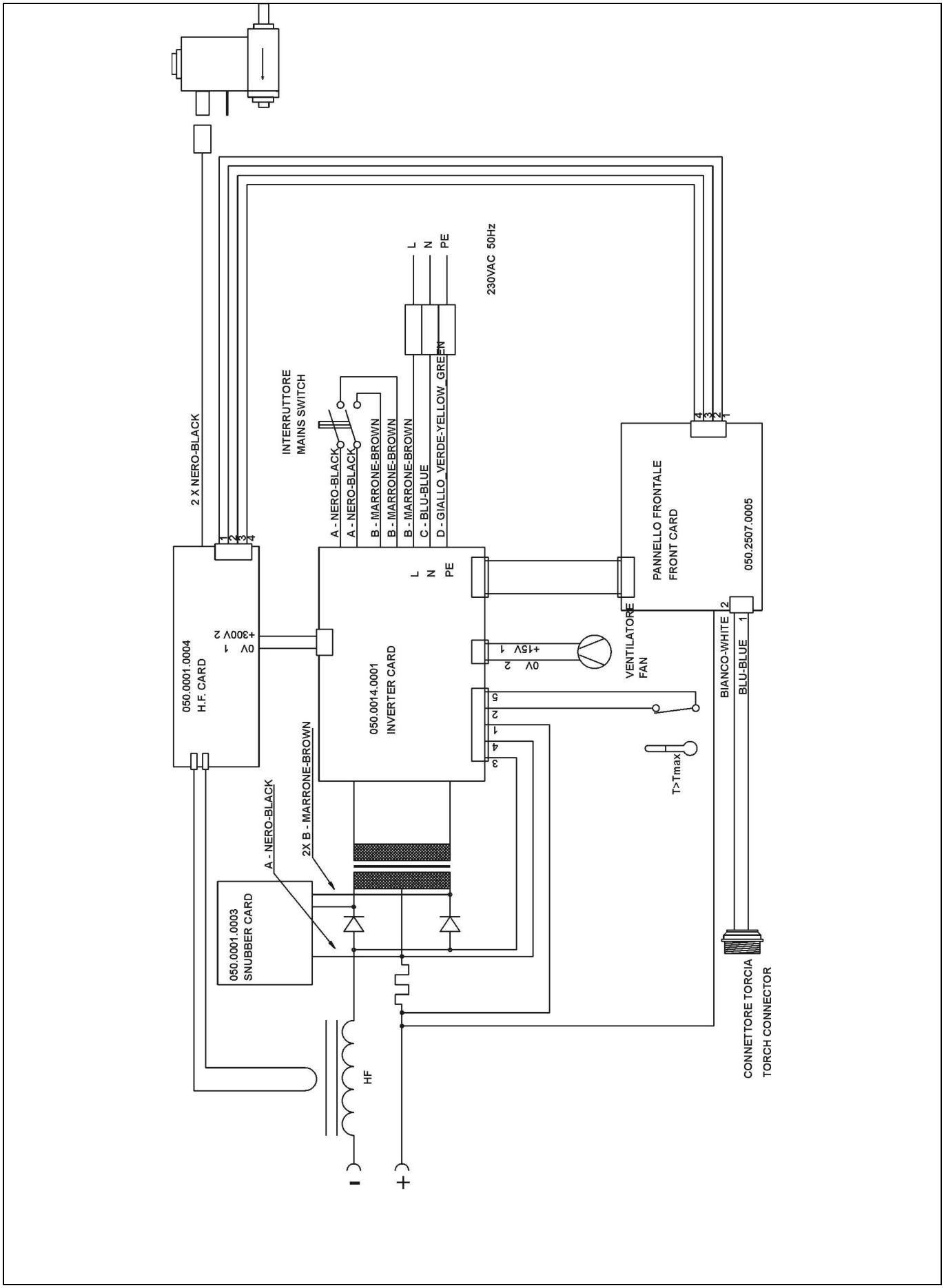
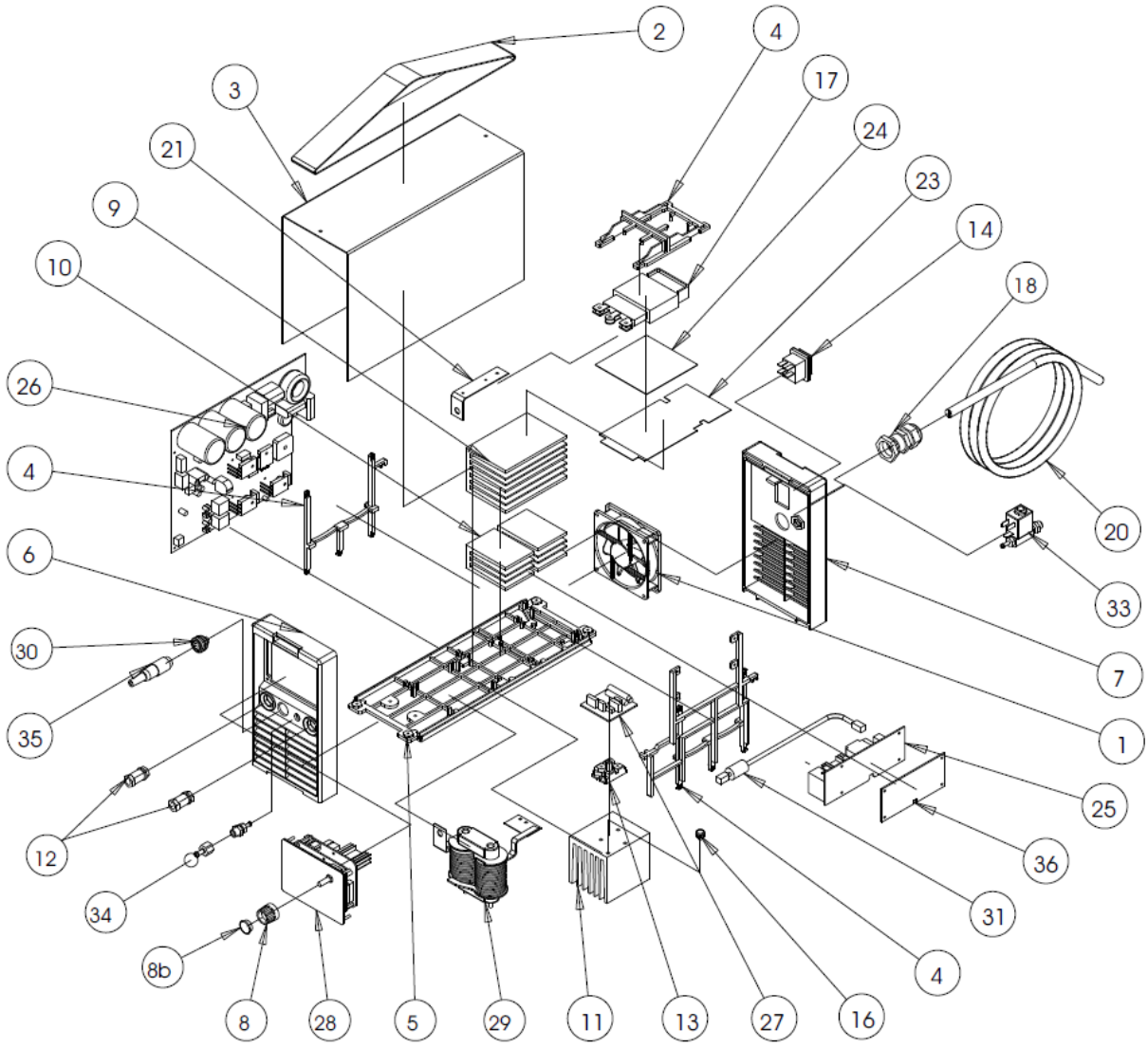
SERVISNÍ MANUÁL ALFIN 161 W	SERVICE MANUAL ALFIN 161 W

1. VAROVÁNÍ	WARNING
UPOZORNĚNÍ – Pouze osoba splňující kvalifikaci danou zákonem je oprávněna opravovat stroj. **PŘED OTEVŘENÍM KRYTU STROJE JEJ ODPOJTE VYTAŽENÍM SÍŤOVÉ VIDLICE ZE SÍTĚ.** **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.** **Každé 4 měsíce zkontrolujte řádný stav svařovacích kabelů a síťových kabelů.** **Není povolena žádná modifikace svařovacího stroje.** **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 36 V.**	**NOTE Only trained personnel are permitted to work inside the machine.** **BEFORE OPENING THE MACHINE, CUT OFF ITS ELECTRICAL POWER BY REMOVING THE PLUG FROM THE MAINS SUPPLY SOCKET.** **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.** **With the same frequency, check the welding cables and the supply cables.** **No modification, of any type, may be made to the welding machine.** **For safety while maintaining the machine, please shut off the supply power and wait for 5 minutes, until capacity voltage already drops to safe voltage 36V.**
2. BLOKOVÉ SCHÉMA	**ELECTRICAL PRINCIPLE DRAWING**


2 X NERO-BLACK
INTERRUTTORE
MAINS SWITCH
230VAC 50Hz
L
N
PE
A - NERO-BLACK
A - NERO-BLACK
B - MARRONE-BROWN
B - MARRONE-BROWN
B - MARRONE-BROWN
C - BLU-BLUE
D - GIALLO_VERDE-YELLOW_GREEN
PANNELLO FRONTALE
FRONT CARD
050.2507.0005
050.0001.0004
H.F. CARD
0V 1
+300V 2
050.0014.0001
INVERTER CARD
+15V 1
0V 2
VENTILATORE
FAN
BIANCO-WHITE
BLU-BLUE
T>Tmax
A - NERO-BLACK
2X B - MARRONE-BROWN
050.0001.0003
SNUBBER CARD
HF
CONNETTORE TORCIA
TORCH CONNECTOR

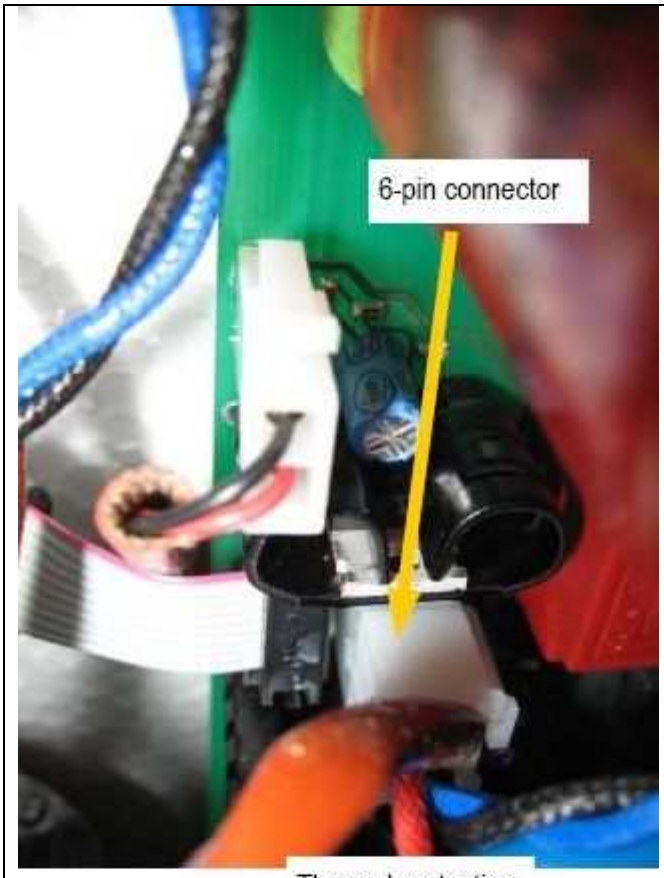
3. NÁHRADNÍ DÍLY	SPARE PARTS



Pos.	Code	Popis	Description	Quantity
1	003.002.0001	Ventilátor Alfin KD1209PTBX 6A	Fan Alfin KD1209PTBX 6A	1
2	7.511.249	Popruh Pegas	Belt Pegas	1
3	011.000.0052	Kryt horní Alfin140T	Upper Cover Alfin140T	1
4	012.001.0000	Držák vnitřní 140ET	Inner Support 140ET	1
5	012.002.0001	Kryt spodní Alfin140T	Cover Lower Alfin140T	1
6	012.002.0052	Panel přední Alfin140T	Front Panel Alfin140T	1
7	012.001.0102	Panel zadní Alfin 140-150 M	Back Panel Alfin140ET	1
8+8b	014.001.0002	Knoflík Alfin kodér bez šipky	Knob Alfin encoder	1
9	015.001.0001	Chladič L-107 Alfin140ET	Cooler L-107 Alfin140ET	1
10	015.001.0002	Chladič L-50 Alfin140ET	Cooler L-50 Alfin140ET	2
11	015.001.0003	Chladič L-75 Alfin140ET	Cooler L-75 Alfin140ET	1
12	021.001.1022	Rychlosp. samice Alfin140ET	Quick Connector Female Alfin140ET	2
13	032.002.0255	Usměr. výstupní Alfin	Rectifier Outlet Alfin	1
14	040.001.0001	Vypínač hlavní Alfin140ET	Switch ON/OFF Alfin140ET	1
16	040.003.1080	Termostat Alfin140ET	Thermostat Alfin140ET	1
17	010.0007.0005	Trafo Alfin161	Transformer Alfin161	1
18	045.000.0001	Vývodka Alfin	Outlet Alfin	1
20	045.002.0001	Kabel přívodní Alfin 140ET	Mains Cable Alfin 140ET	1
21	045.005.0005	Bočník Alfin140T	Shunt Alfin140T	1
23	046.002.0002	Vložka slídová Alfin140ET	Insulator Alfin140ET	1
24	046.003.0401	Vložka izolační Alfin140ET	Insultaor Alfin140ET	2
25	050.001.0004	PCB HF start A140T	PCB HF start A140T	1
25	050.R01.0004	PCB HF start A140T REPAS	PCB HF start A140T REPAS	1
26	050.0014.0001	PCB silová ALFIN 161 TIG HF	PCB power board ALFIN 161 TIG HF	1
26	050.R014.0001	PCB silová ALFIN 161 TIG HF repas	PCB power board ALFIN 161 TIG HF used	1

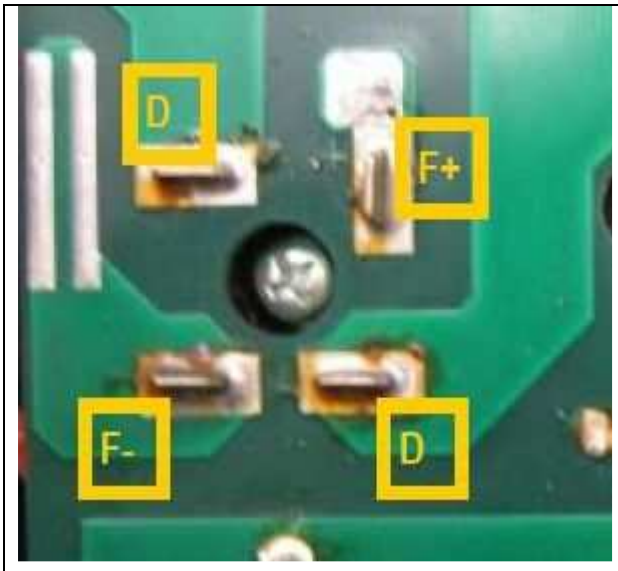
27	050.001.0003	**PCB RC-člen A140ET**	**PCB RC Circuit A140ET**	1
28	050.5022.9900	**PCB řídící ALFIN 161 TIG HF**	**PCB Control board ALFIN 161 TIG HF**	1
28	050.R522.9900	**PCB řídící ALFIN 161 TIG HF repas**	**PCB Control board ALFIN 161 TIG HF used**	1
29	044.003.0001	**Cívka start HF**	**Coil Start HF**	1
30	022.002.0002	**Konektor panel.zásuvka ALFIN**	**Torch connection ALFIN**	1
31	022.002.0003	**Kabel propoj. 24V Alfin140T**	**Cable Bundle 24V Alfin140T**	1
33	017.001.5512	**Ventil 24V DC D=2,7mm**	**Solenoid Valve 24V DC D=2,7mm**	1
34	3210	**Sada kon. na ALFIN 3 dílce M10X1**	**Connector Set na ALFIN 3 Parts M10X1CONNECTORS**	1
35	021.004.3360	**Konektor ovl. hořáku Alfin orig.**	**Connector Alfin Orig.**	1
36	046.004.0003	**Izolátor pod PCB HF**	**Gasket under PCB HF**	1

4. KONTROLA SILOVÉ PCB	CHECKING THE POWER PCB



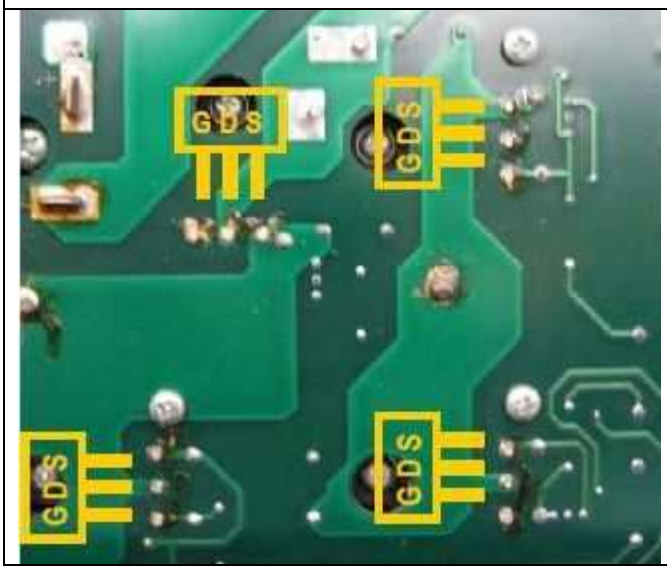
Pozice kontaktů v konektoru
- teplotní čidlo (žluté dráty): pozice 2,5
- drát pro snímání výstupního napětí (červený): pozice 3
- dráty bočníku: pozice 1,4

Zkontrolujte spojení kontaktů tepelné ochrany pomocí testeru diod, teplota chladiče nesmí být vyšší než 40°C.
Zkontrolujte spojení mezi: + objímkou a červeným drátem
Zkontrolujte průchodnost mezi: - objímkou a vodiči bočníku.



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

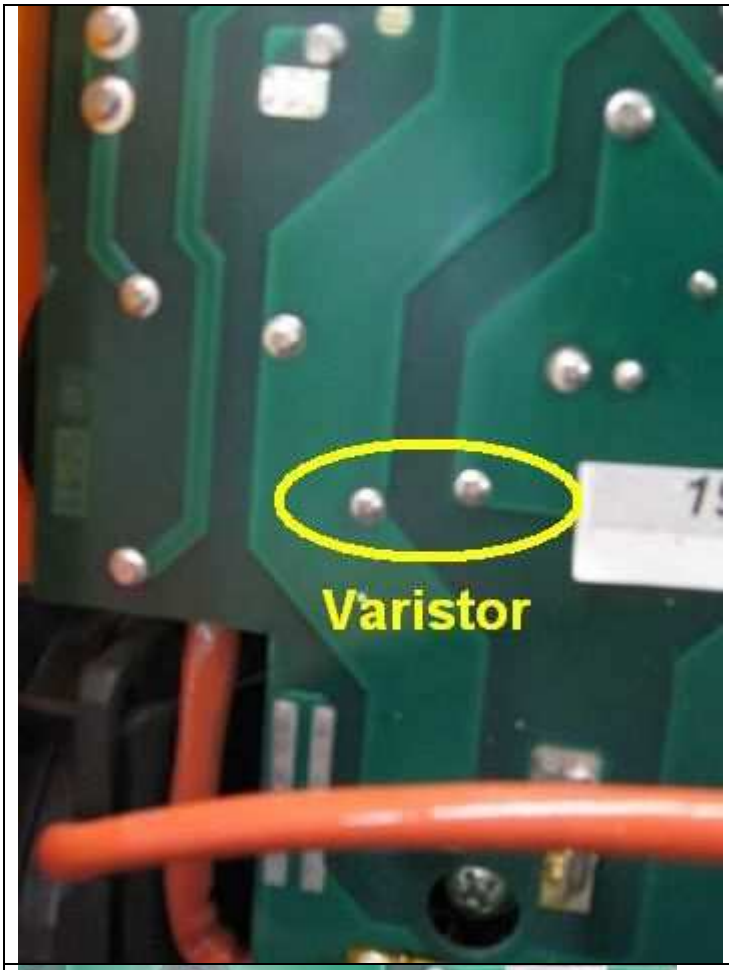
Červený vodič	Černý vodič	Naměřená hodnota
F+	D	OL
D	F+	>0.450
D	F-	OL
F-	D	>0.450



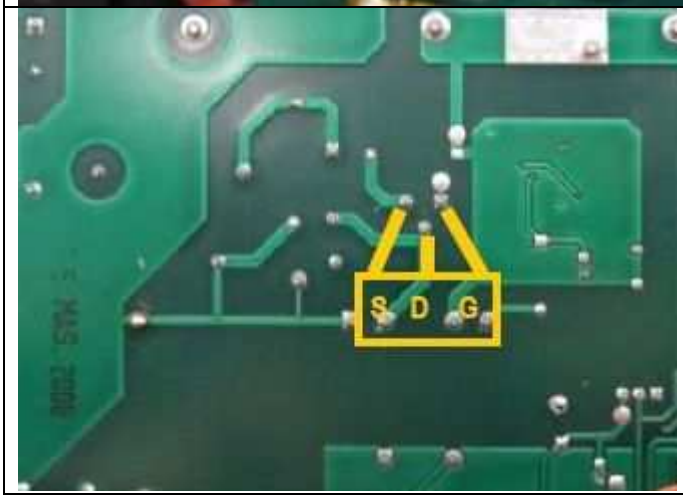
Pro kontrolu tranzistorů změřte tyto podle následující tabulky testerem diod

červený	černý	hodnota
S	G	0,28
G	S	0,6

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



Varistor je 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



Pro kontrolu tranzistor změřte podle následující tabulky testerem diod

červený	černý	hodnota
G	D	0,5
D	S	OL
G	S	0,6

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

	Digitální multimetr. "OL" označuje přerušený obvod

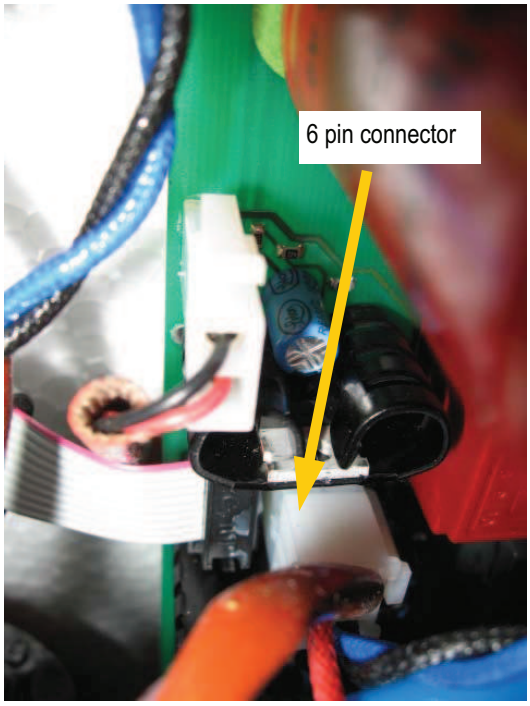
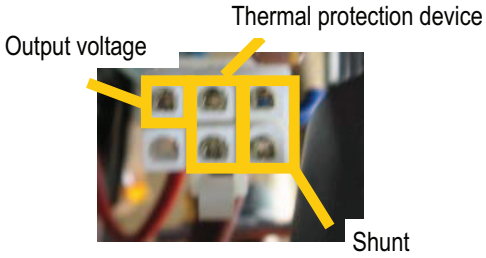
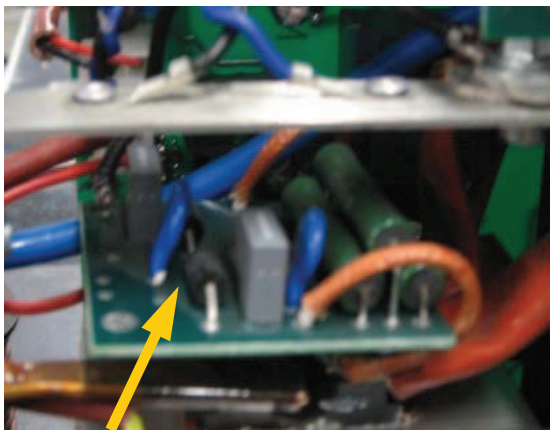
CAUTION!

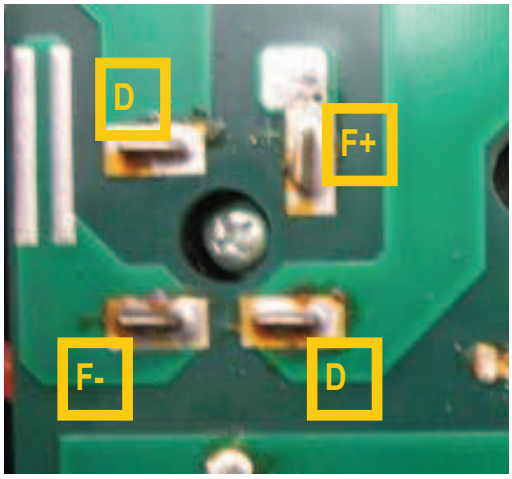
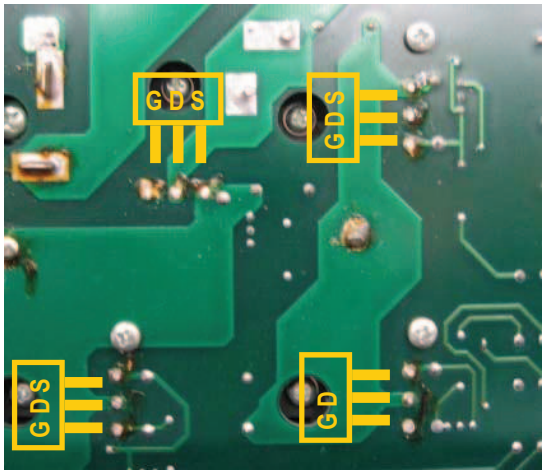
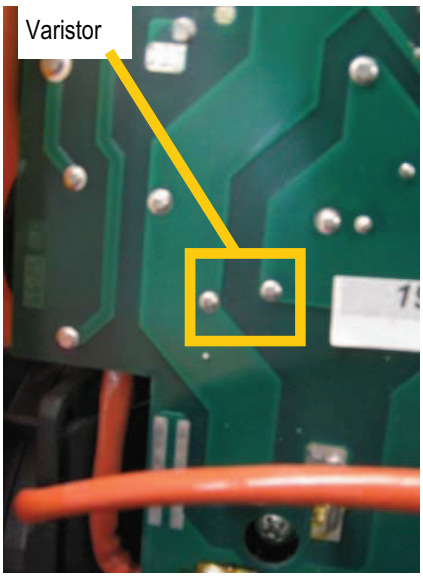
Before carrying out any work on the machine make sure it is off and the plug has been disconnected.

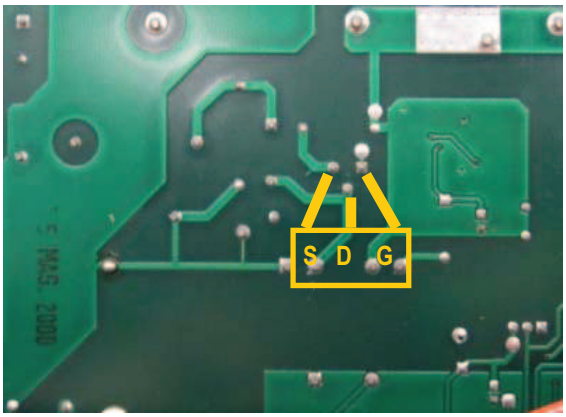
PROBLEM	CASE	SOLUTION
The machine does not switch on.	– Electrical power does not reach the machine. – Voltage reaches the machine switch but there is no voltage after the contacts. – There is voltage after the disconnecting switch but the machine does not go on.	• Make sure the line switches are closed, the protection devices (fuses) have not been enabled and that the power supply cable is intact. • 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 (picture 5). If it's damaged, the Power Board must be replaced. • Switch the machine off and disconnect the plug. Check the mosfet of the switching power supply unit on the power board (picture 6). If it's damaged, the Power Board must be replaced.
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. – Inverter is damaged.	• 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. • Switch off the machine, disconnect the plug and check: - varistors (picture 5); - l'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.
The front panel does not switch on.	– The fan works but the front panel does not go on. – Both the fan and the front panel do not work.	• 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. • Switch off the machine, disconnect the plug and check the mosfet of the switching power supply unit (picture 6).

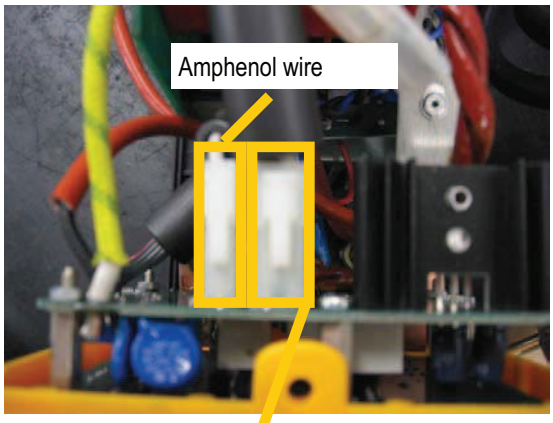
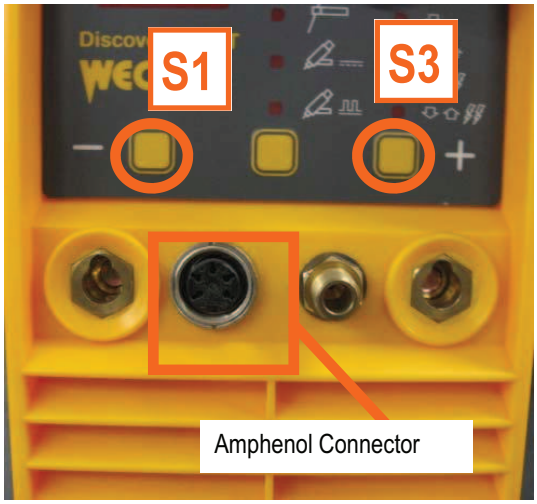
PROBLEM	CASE	SOLUTION
The output voltage in each procedure is about 9V and enabling of the thermal protection device.	Wait a few minutes keeping the machine on to favour cooling of the inverter. If the machine continues running with the protection devices on, switch the machine off and disconnect the 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 the protection device 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 MMA/TIG output voltage is about 10V and the machine does not weld.	– The output voltage cable of the Power Board is damaged (picture 1). – 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. – Check for continuity between the +/- output outlets and that the 6-path connector is connected to the power board (picture 1); • The power board must be 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 diode; – 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 diode (picture 2); • check the status of the power board (picture 4); • The Power Transformer must be replaced.
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 welding is non optimal.	Spattering occurs during welding.	Make sure welding polarity is correct, the earth clamp is fixed correctly.

PROBLEM	CASE	SOLUTION
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.	• 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 (picture 8).
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 (picture 8). • The front panel must be replaced. • The HF board could be damaged, in that case it must be replaced. • Should the operations carried out not have a positive outcome, replace the solenoid valve.
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 damaged boards must be replaced.
The machine always welds at maximum current.	– The Torch could be damaged. – The Front Panel could be damaged. – The Power Board could be damaged. – The shunt wires could be damaged or not correctly inserted.	Switch off the machine and disconnect the plug: • Replace the Torch; • Replace the Front Panel; • Replace the Power Board; • Connect the shunt wires or if damaged, replace them.
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).

		EXPLANATION
PICTURE 1	 	Position of the connector in which they are inserted: • thermal protection device (yellow wires): position 2, 5 • Wire for the output voltage reading: position 3 (red) • 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. Check the continuity between: + socket and the shunt; - socket and the output voltage wire.
PICTURE 2		Remove the snubber board and check with a diode tester the stauts of the transil. At the ends of the two transils (see below) positioned on the snubber board, “OL” must always be measured. 

		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 "OL" F- black D red >.450 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** S G 0.28 G S 0.6 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.
PICTURE 5		The varistor is a blue disc near the ground wire of the power board. This device is for protecting the board from input overvoltage. When there is overvoltage it "explodes" causing a short circuit most of the times. If the extent of the short circuit is very high they become an open circuit.

		EXPLANATION
PICTURE 6		To check the mosfet of the switching power supply unit, carry the following measurements with a diode tester: **Red Probe** / **Black Probe** / **Measure** G / D / 0.5 D / S / "OL" G / S / 0.6 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.
PICTURE 7		Tester or digital millimetre. "OL" means Open Loop.

		EXPLANATION
PICTURE 8	 24V 140 T 	Check that the cable 24V that connect the Front Panel and the HF board is whole and well inserted. (for HF transformer and Solenoid Valve problem) Check that the ampenol wiring are intact and well inserted. In order to reset the parameters, switch the machine on while the S1 and S3 buttons are being pressed.

MG120-1					
SERVISNÍ MANUÁL ALFIN 161 W			**SERVICE MANUAL ALFIN 161 W**		
Vypracoval: Worked out:	DJ 24/1/2011	Přezkoumal: Inspected:	DJ 7/11/2011	Schválil: Approved:	DJ 7/11/2011