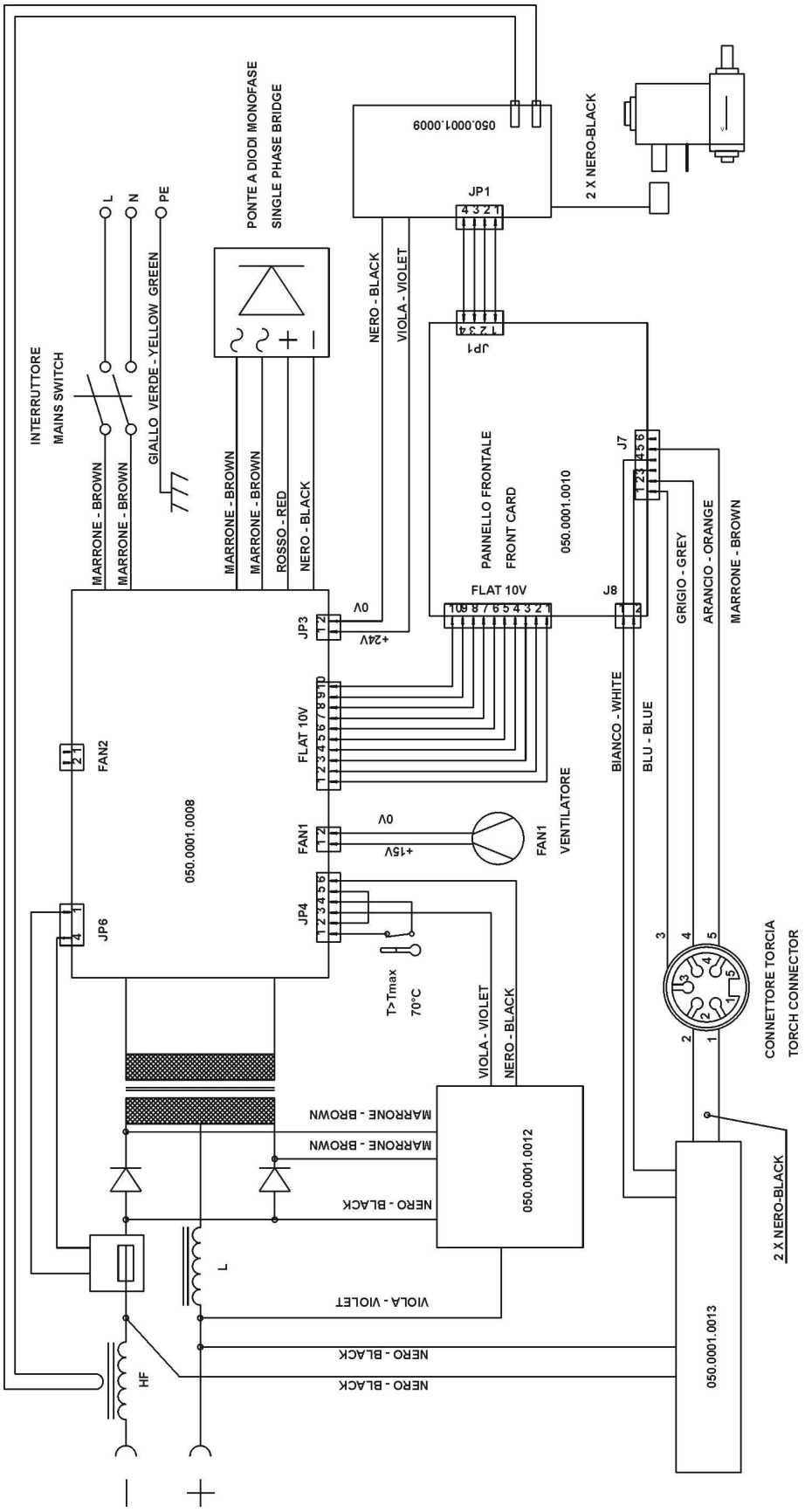
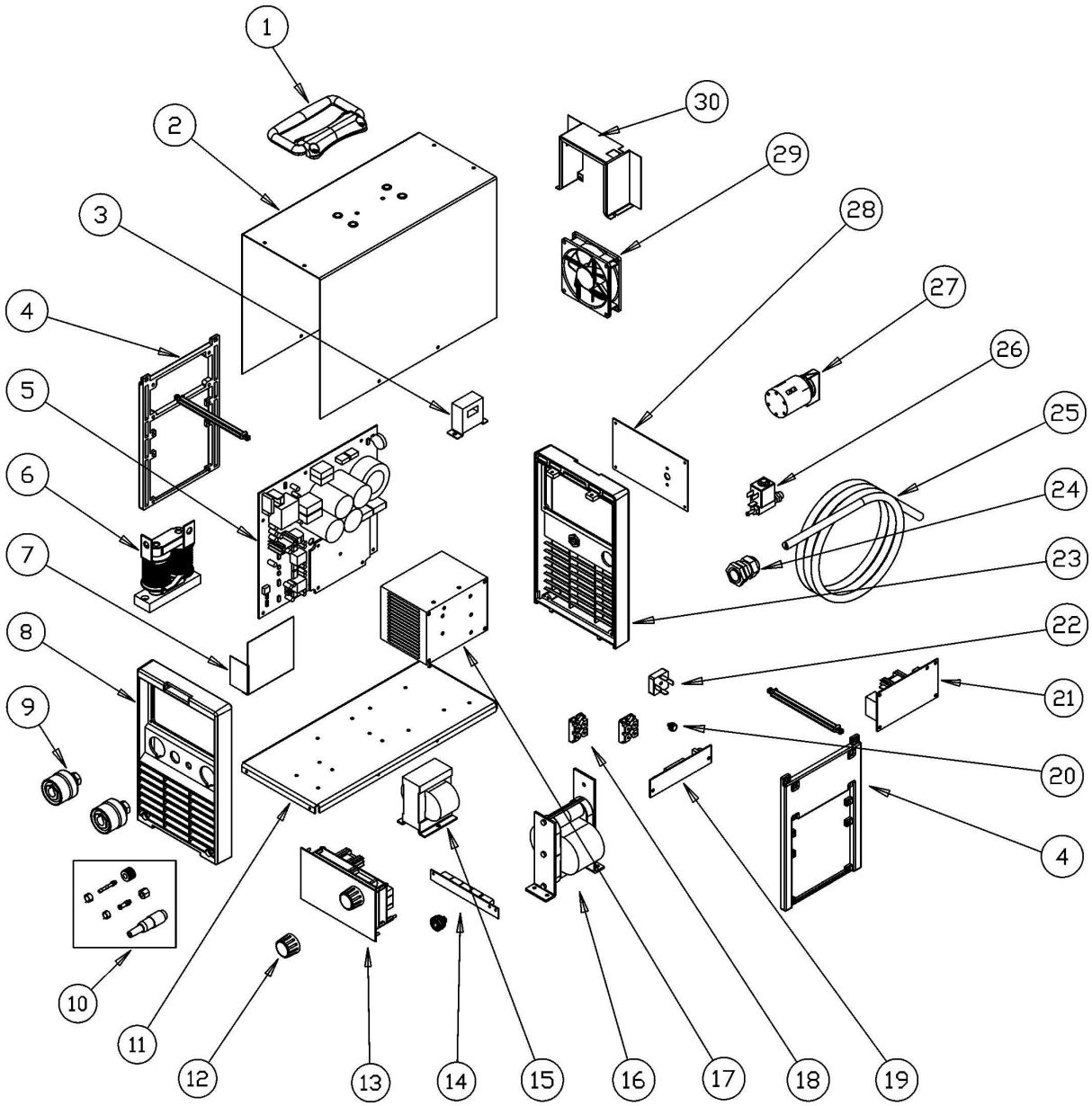
SERVISNÍ MANUÁL ALFIN 171 W MAX	SERVICE MANUAL ALFIN 171 W MAX

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 36 V.	**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



3. NÁHRADNÍ DÍLY | SPARE PARTS



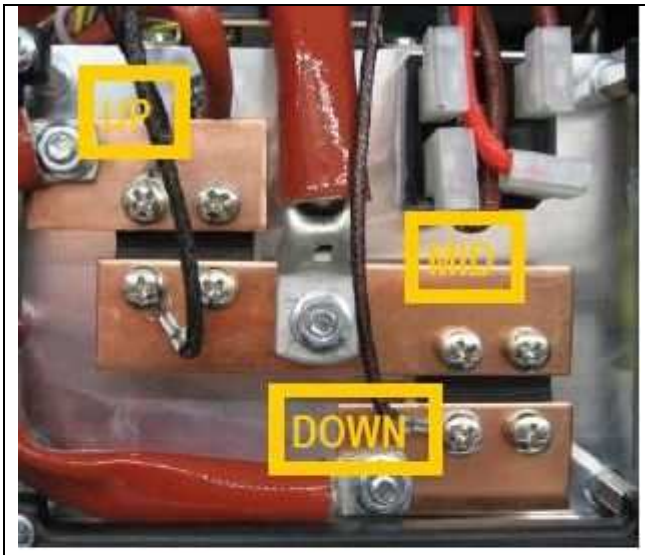
Pos.	Code	Popis	Description	Quantity
1	011.0006.0031	Držák - madlo A171W	Holder A171W	1
2	011.0000.0115	Kryt horní A171W	Upper cover A171W	1
3	041.004.0300	Hallova sonda Alfin	Hall Sensor Alfin	1
4	012.003.0000	Držák vnitřní 160/200	Inner Support 160/200	2
5	050.001.0008	PCB silová A160E	PCB Power A160E	1
5	050.R01.0008	PCB silová A160E REPAS	PCB Power A160E REPAIR	1
6	044.003.0002	Cívka start HF A160/200	Coil Start HF A160/200	1
7	011.0003.0003	Deska ochranná A171W	Power Board Protection Plate A171W	1
8	012.003.0150	Panel přední Alfin160/200T	Front Panel Alfin160/200T	1
9	711P001204	Rychlosp. TEB 35-70 panel samice	Quick Connector 35-70 Panel Socket	2
10	3475	Sada kon. ALFIN G1/4 komple	Connector Set ALFIN G1/4 komple	1
11	011.003.0001	Kryt spodní Alfin160/200	Cover Lower Alfin160/200	1
12	2379-B	Knoflík21N6+modrá krytka,podl.	Knob21N6+Blue Cover,Washer	1
13	050.5026.9900	PCB řídící A171W	PCB Kontrol A171W	1
13	050.5R26.9900	PCB řídící A171W REPAS	PCB Kontrol A171W REPAIR	1
14	050.001.0013	PCB odrušovací A160T/200T	PCB Filter A160T/200T	1
15	044.004.0001	Tlumivka Alfin160/200	Choke Alfin160/200	1
16	042.003.0005	Trafo Alfin160	Transformer Alfin160	1
17	015.0001.0005	Chladič A171W	Heat Sink A171W	1
18	032.002.0255	Usměr. výstupní Alfin	Rectifier Outlet Alfin	2
19	050.001.0012	PCB RC-člen A160E/200E	PCB RC Circuit A160E/200E	1
20	040.003.1070	Termostat Alfin160/200	Thermostat Alfin160/200	1
21	050.001.0009	PCB HF Start A160T/200T	PCB HF Start A160T/200T	1
21	050.R01.0009	PCB HF Start A160T/200T REPAS	PCB HF Start A160T/200T REPAIR	1
22	032.001.3506	Usměr. vstupní Alfin160	Rectifier Inlet Alfin160	1

23	012.003.0100	**Panel zadní A160/200**	**Back Panel A160/200**	1
24	045.000.0001	**Vývodka Alfin**	**Outlet Alfin**	1
25	045.002.0001	**Kabel přívodní Alfin 140ET**	**Mains Cable Alfin 140ET**	1
26	017.001.5512	**Ventil 24V DC D=2,7mm**	**Solenoid Valve 24V DC D=2,7mm**	1
27	040.001.0010	**Vypínač Alfin 160, 170, 180, 200 HF25**	**Switch ON/OFF Alfin 160, 170, 180, 200 HF25**	1
28	013.0005.0000	**Panel zadní ON-OFF A171W**	**Rear Panel ON-OFF A171W**	1
29	003.002.0001	**Ventilátor Alfin**	**Fan Alfin**	1
30	011.003.0002	**Držák ventilátoru 160/200**	**Fan Holder 160/200**	1

4. KONTROLA SILOVÉ PCB	CHECKING THE POWER PCB

Pozice kontaktů v konektoru
- teplotní čidlo (žluté dráty): pozice 3,6

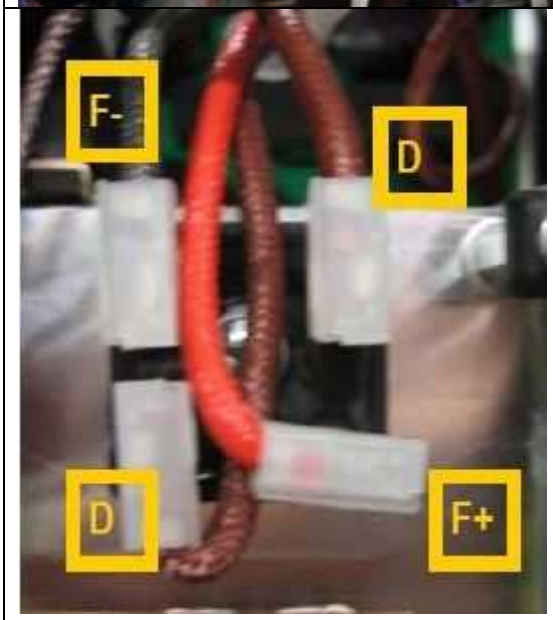
Zkontrolujte spojení kontaktů tepelné ochrany pomocí testeru diod, teplota chladiče nesmí být vyšší než 40°C.



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

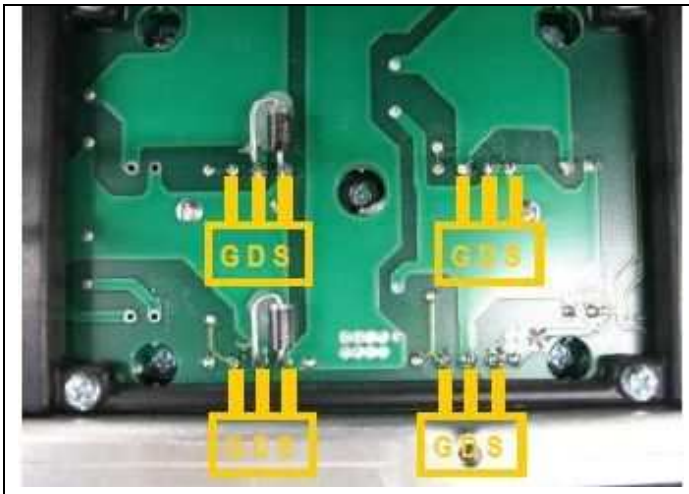
červený	černý	hodnota
UP	MID	OL
MID	UP	>.150
MID	DOWN	>.150
DOWN	MID	OL

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



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

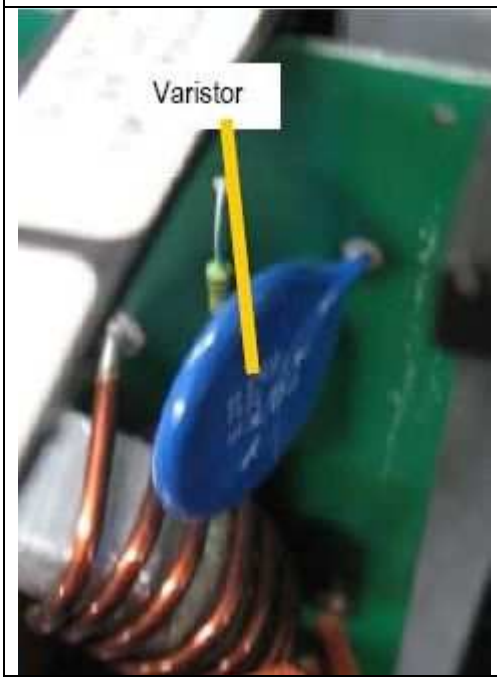
Červený vodič	Černý vodič	Naměřená hodnota
F+	D	OL
D	F+	>0.450
D	F-	OL
F-	D	>0.450



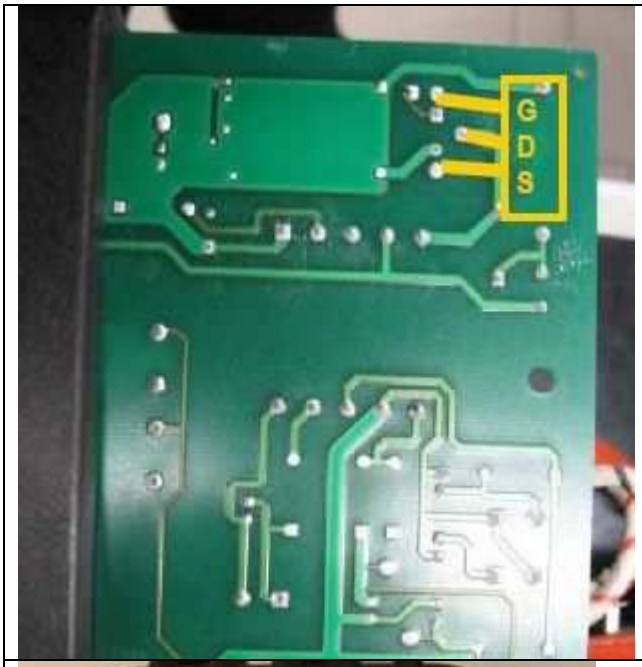
Pro kontrolu tranzistorů změřte tyto podle následující tabulky testerem diod

červený	černý	hodnota
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



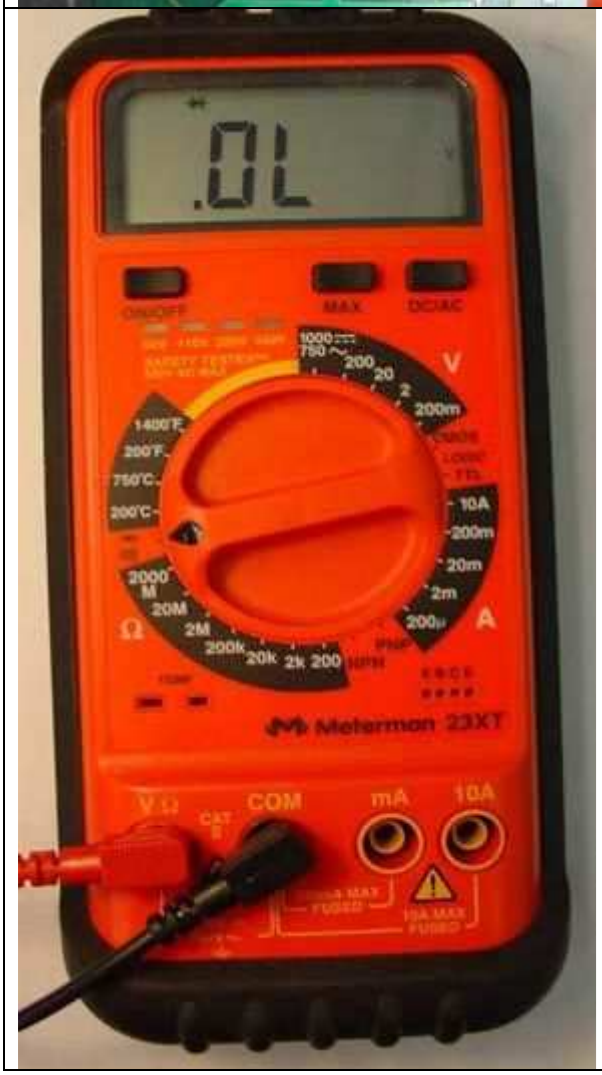
Varistor je blízko vstupu napájecího napětí na silovou PCB. Toto zařízení slouží k ochraně PCB před vstupním
přepětím. Při přepětí "exploduje" a zkratuje vstup. Je-li rozsah zkratu velmi
vysoký, obvod se přeruší



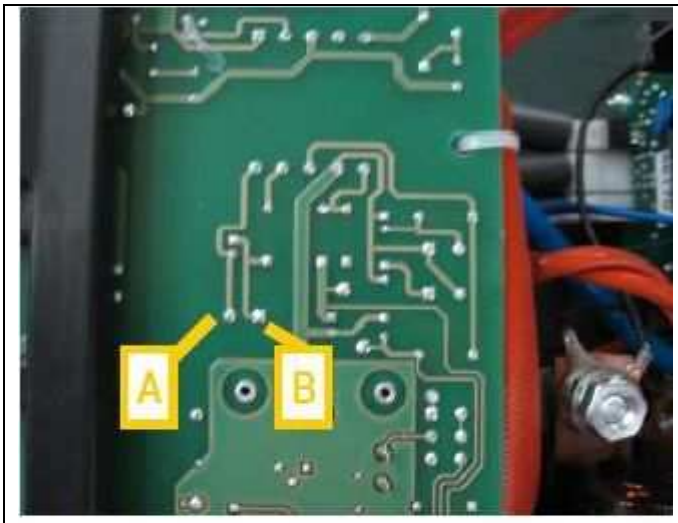
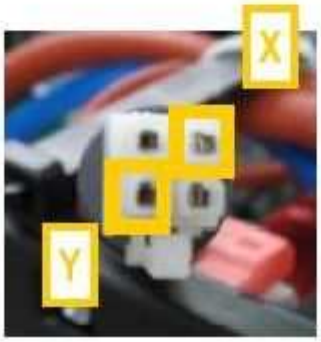
Pro kontrolu tranzistor změřte podle následující tabulky testerem diod

červený	černý	hodnota
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



Digitální multimetr. "OL" označuje přerušený obvod

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

CAUTION!

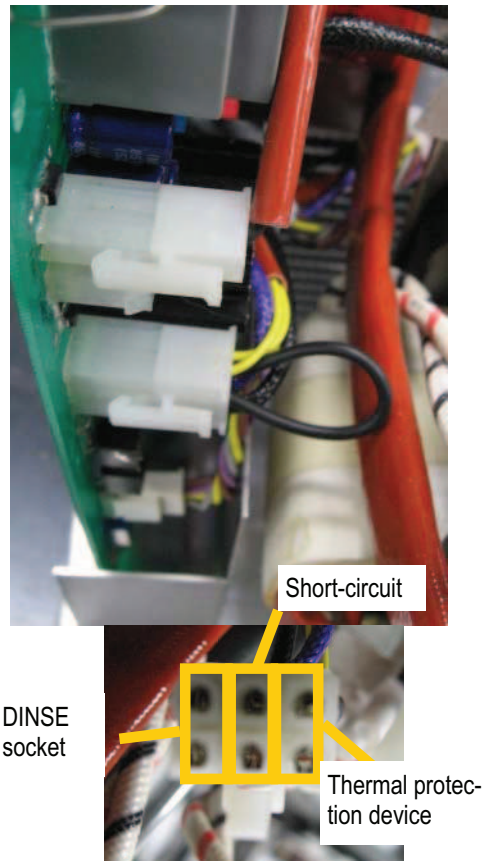
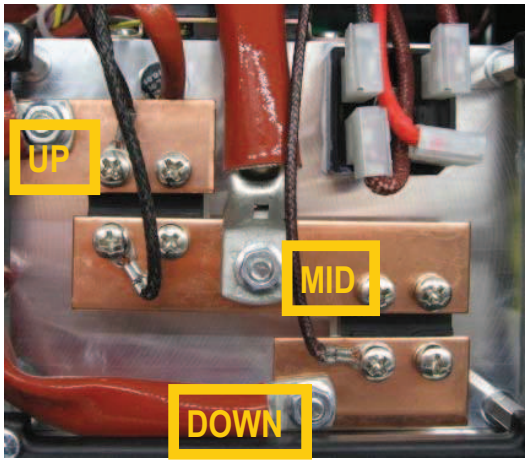
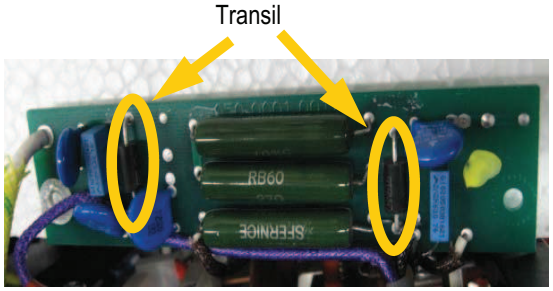
Before carrying out any work on the machine make sure it is off and the plug has been disconnected.

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. In case the Power Board must be replaced (picture 5). • 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. – 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); - 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.

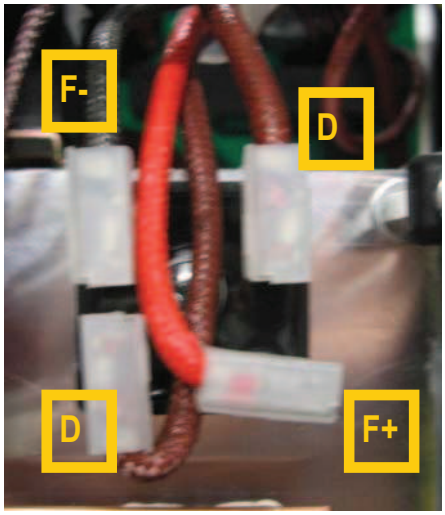
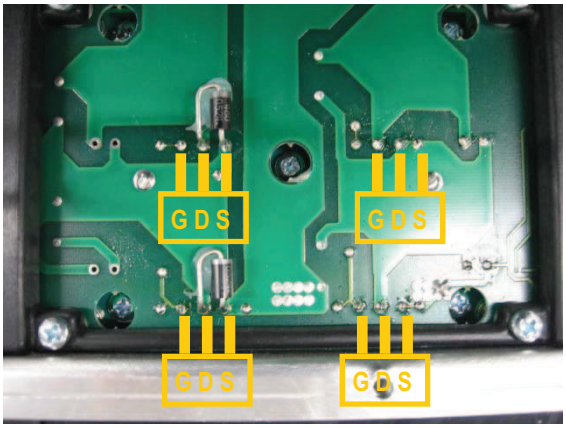
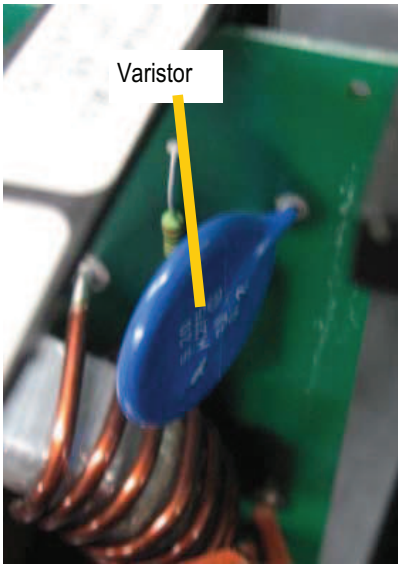
PROBLEM	CASE	SOLUTION
The front panel does not switch on.	– The fan works but the front panel does not go on.	• Switch off the machine and disconnect the plug. Make sure the flat cable that connects the front panel to the power board is inserted correctly. If correctly inserted, replace the front panel. 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).
The MMA/TIG output voltage is about 14V and the machine does not weld.	– The output voltage wiring of the front panel is interrupted (picture 1).	• 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 primary current alarm on the power board is activated.	• 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;	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);
	– damaged diodes;	• check with a diode tester the status of the diodes (picture 2);
	– damaged inverter;	• check the status of the power board (picture 4);
	– The inductive value of the Power Transformer is null.	• The Power Transformer must be replace.

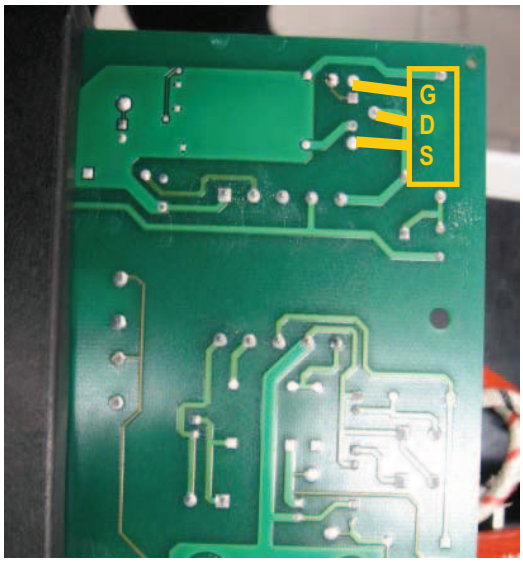
PROBLEM	CASE	SOLUTION
The welding is non optimal.	Spattering occurs during welding.	Make sure welding polarity is correct, the earth clamp is fixed correctly and check the hot-start and arc-force values that have to be decreased if they are too high.
When welding the protection devices of the line set off.	Make sure the welding current does not require greater power than the one supplied by the line.	Decrease the welding current.
The remote control doesn't work.	• Make sure the wiring which goes to the front panel board 0010 is connected to the 6-pin connector. • Make sure that the 2-pin connector is correctly connected to the power board 0008. • Check the continuity of the remote control cable. • The torch potentiometer could be damaged. • The amphenol connector 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 or the power board. • The damaged cable must be replaced. • The potentiometer must be replaced. • Connect the amphenol connector or replace it.
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 8). • Should the operations carried out not have a positive outcome, replace the solenoid valve.

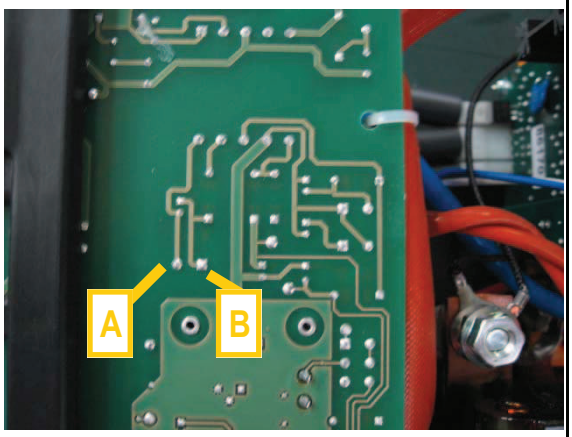
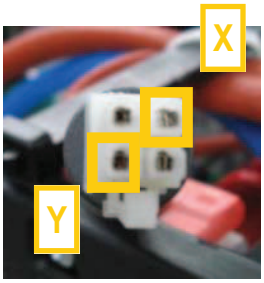
PROBLEM	CASE	SOLUTION
The torch button doesn't work.	– The torch could be damaged. – There is no continuity between the amphenol connector and the front panel. – The front panel or the HF board are damaged.	• The Torch must be replaced. • Single out the interruption and replace the wiring. • The damaged boards 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. • Otherwise, reset the parameters and reset the machine (picture 9).
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 9).

		EXPLANATION
PICTURE 1		Position of the connector in which they are inserted: • thermal protection device (yellow wires): position 3,6; • Short circuit (black wire): position 2,5; • DINSE: 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 / "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** 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.
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.

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

MG122-1					
SERVISNÍ MANUÁL ALFIN 171 W MAX			**SERVICE MANUAL ALFIN 171 W MAX**		
Vypracoval: Worked out:	DJ 24/1/2011	Přezkoumal: Inspected:	DJ 7/11/2011	Schválil: Approved:	DJ 7/11/2011