



INSTRUCTION MANUAL



DC MMA and LIFTIG Welding Inverter

EBURON 160
EBURON 200

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1. SAFETY INSTRUCTIONS



In its conception, specification of parts and production, this machine complies with the regulation in force, namely the European Standards (EN) and international standards (IEC).
There are applicable the European Directives "Electromagnetic compatibility", "Low voltage" and "RoHS", as well as the standards IEC / EN 60974-1 and IEC / EN 60974-10.



Electric shocks can be deadly.

- This machine must be connected to earthed sockets. Do not touch the live parts of the machine.
- Before any intervention, disconnect the machine from the mains. Only qualified personnel should intervene in these machines.
- Always check the state of the input power cable.



It is essential to protect the eyes against the radiations of the electric arc. Use a welding mask or helmet with a suitable protective filter.



Use closed-in smoke extractor. Smoke and gases can damage the lungs and cause poisoning.



Welding can originate risks of fire or explosion.

- Remove flammable or explosive materials from welding area;
- Always have sufficient firefighting equipment;
- Fire can break out from sparks even several hours after the welding work has been finished.



Hot parts can cause burns. The work piece, the projections and the drops are hot. Use gloves, aprons, safety shoes and other individual safety equipment.



Electromagnetic fields generated by welding machines can cause interference with other devices. They can affect cardiac pacemakers.



Gas bottles can explode (MIG or TIG welding). It is essential to comply with all safety regulations regarding gases.

1.1 ELECTROMAGNETIC COMPATIBILITY

The user is responsible for installing and using the arc welding equipment according to the manufacturer's instructions. If electromagnetic disturbances are detected, then it shall be the responsibility of the user of the arc welding equipment to resolve the situation with the technical assistance of the manufacturer. In some cases, this action may be as simple as connecting to earth the welding circuit. In other cases, it could involve constructing electromagnetic screens enclosing the welding power source and the work complete with associated input filters. In all cases, electromagnetic disturbances shall be reduced to the minimum to avoid troubles.

Before installing arc welding equipment, the user shall assess potential electromagnetic problems in the surrounding area. The following shall be considered:

- a) Supply cables, control cables, signalling and telephone cables, above, below and adjacent to the arc welding equipment;
- b) Radio and television transmitters and receivers;
- c) Computer and other control equipment;
- d) Safety critical equipment, e.g. guarding of industrial equipment;
- e) The health of the people around, e.g. the use of pacemakers and hearing aids;
- f) Equipment used for calibration or measurement;
- g) The immunity of other equipment in the environment. The user shall ensure that other equipment being used in the environment is compatible. This may require additional protection measures;
- h) The hour of day when welding or other activities are to be carried out.

1.1.1 Methods of reducing emissions

Connection to mains

Arc welding equipment should be connected to the input supply system according to the manufacturer's recommendations. If interference occurs, it may be necessary to take additional precautions such as filtering of the supply system. Consideration should be given to shielding the supply cable of permanently installed arc welding equipment, in metallic conduit or equivalent. Shielding should be electrically continuous throughout its length. The shielding should be connected to the welding power source so that good electrical contact is maintained between the conduit and the welding power source enclosure.

Welding cables

The welding cables should be kept as short as possible and should be positioned close together, running at or close to the floor level.

Equipotent bonding

Bonding of all metallic components in the welding installation and adjacent to it should be considered. However, metallic components bonded to the work piece will increase the risk that the operator could receive an electric shock by touching these metallic components and the electrode at the same time. The operator should be insulated from all such bonded metallic components.

Connexion to earth of the work piece

When the work piece is not bonded to earth for electrical safety, nor connected to earth because of its size and position, e.g. ships hull or building steelwork, a connection bonding the work piece to earth may reduce emissions in some, but not all instances. Care should be taken to prevent the earthing of the work piece increasing the risk of injury to users, or damage to other electrical equipment. Where necessary, the connection of the work piece to earth should be made by a direct connection to the work piece, but in some countries where direct connection is not permitted, the bonding should be achieved by suitable capacitance, selected according to national regulations.

Screening and shielding

Selective screening and shielding of other cables and equipment in the surrounding area may alleviate problems of interference. Screening of the entire welding installation may be considered for special applications.

1.2 ELECTRICAL SECURITY

1.2.1 Connection to the network

Before connecting your equipment, you must check:

- The safety device against over-currents, and the electrical installation are compatible with the maximum power and the supply voltage of the welding power source (refer to the instructions plates).
- The connection, either single-phase, or three-phase with earth can be effectuated on a socket compatible with the welding power source cable plug.
- If the cable is connected to a fixed post, the safety device against electric shocks will never cut the earth.
- The ON/OFF switch located on the welding power source is turned off.

1.2.2 Working area

The use of arc welding implies a strict respect of safety conditions regarding electric currents. It is necessary to check that no metal piece accessible by the operators and to their assistants can come into direct contact with a phase conductor and the neutral of the network. In case of uncertainty, this metal part will be connected to the earth with a conductor of at least equivalent section to the largest phase conductor.

Make sure that all metal pieces that the operator could touch with a non-insulated part of his body (head, hands without gloves on, naked arms, etc) is properly grounded with a conductor of at least equivalent section to the biggest supply cable of the ground clamp or welding torch. If more than one metal ground is concerned, they need to be all interlinked in one, which must be grounded in the same conditions.

Unless very special care has been taken, do not proceed to any arc welding or cutting in conductive enclosures, whether it is a confined space or the welding machine has to be left outside. Be even more prudent when welding in humid or not ventilated areas, and if the power source is placed inside (Decree dated 14.12.1988, Art. 4).

1.2.3 Risks of fire and explosion

Welding can originate risks of fire or explosion. You must pay attention to fire safety regulation

- Remove flammable or explosive materials from welding area;
- Always have sufficient fire fighting equipment;
- Fire can break out from sparks even several hours after the welding work has been finished.

1.3 INDIVIDUAL PROTECTION

1.3.1 Risks of external injuries

Arc rays produce very bright ultra violet and infrared beams. They will damage eyes and burn skin if the operator is not properly protected.

-The welder must be dressed and protected according to the constraints of his works impose to him.

-Operator must insulate himself from the work-pieces and the ground. Make sure that no metal piece, especially those connected to the network, comes in electrical contact to the operator.

-The welder must always wear an individual insulating protection.

Protective equipment: gloves, aprons, safety shoes that offer the additional advantage to protect the operator against burns caused by hot pieces, spatters, etc. Check the good state of this equipment and replace them before you are not protected any more.

- It is absolutely necessary to protect eyes against arc rays.

- Protect hair and face against sparks. The welding shield, with or without headset, must be always equipped with a proper filter according to the arc welding current. In order to protect shaded filter from impacts and sparks, it is recommended to add a glass in front of the shield.

Recommended shade (DIN 4-15)

numbers according to EN 379: 2003

Welding process	Current in amperes																					
	A																					
	1.5	6	10	15	30	40	60	70	100	125	150	175	200	225	250	300	350	400	450	500	600	
MMAW (coated electrodes)	8						9		10		11		12			13			14			
TIG				8		9			10		11			12			13					
MAG	8								9	10		11			12			13				14
MIG									9	10		11			12			13		14		
MIG light alloys										10		11		12		13		14				
Carbon bow gouges Air / Arc	10												11	12	13		14		15			
Cutting plasma jet										9	10	11	12			13						
Microplasm arc welding	4	5		6		7	8		9	10		11			12							
	1.5	6	10	15	30	40	60	70	100	125	150	175	200	225	250	300	350	400	450	500	600	

NOTE: A higher step must be used when welding with low ambient light.

1.3.2 Risk of internal injuries

Gases and fumes

- Gases and fumes produced during the welding process can be dangerous and hazardous to your health. Arc welding works must be carried out in suitable ventilated areas.
- Ventilation must be adequate to remove gases and fumes during operation. All fumes produced during welding have to be efficiently removed during its production, and as close as possible from the place they are produced.
- Vapours of chlorinated solvents can form toxic gas phosgene when exposed to ultraviolet radiation from an electric arc.

Safety in the use of gases (welding with TIG or MIG inert gases)

Compressed gas cylinders

Compressed gas cylinders are potentially dangerous. Refer to suppliers for proper handling procedures:

- No impact: secure the cylinders and keep them away from impacts.
- No excess heat (over 50°C)

Pressure relief valve

- Check that the pressure relief screw is slackened off before connecting to the cylinder.
- Check that the union is tight before opening the valve of the cylinder. Open it slowly a fraction of a turn.
- If there is a leak, NEVER tighten a union under pressure, but first close the valve on the cylinder.
- Always check that hoses are in good condition.

2. MMA WELDING (coated electrode)

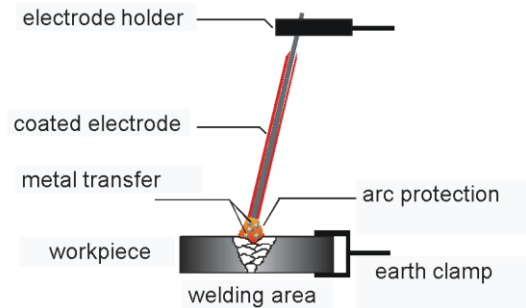
To establish an electric arc, a potential difference is induced between the electrode and the workpiece. The air between them is ionized and conductive, so that the circuit is closed and the electric arc is made. The high temperature of the arc melts the base material and electrode that is deposited by creating a welding bath. Arc welding is still very common due to the low purchase cost of equipment and consumables used in this process.

The metal core of the electrode is covered with a flux material that upon assembly creates a protective atmosphere that prevents the oxidation of the molten metal and facilitates the welding operation.

On DC current sources (rectifiers), the polarity of the electrical current influences the metal transfer mode.

Normally the electrode is connected to the positive (+), although it can be connected in very thin materials with the negative (-).

Although the horizontal weld position is the most favorable, this process allows use at all positions.



MMA welding parameter table:

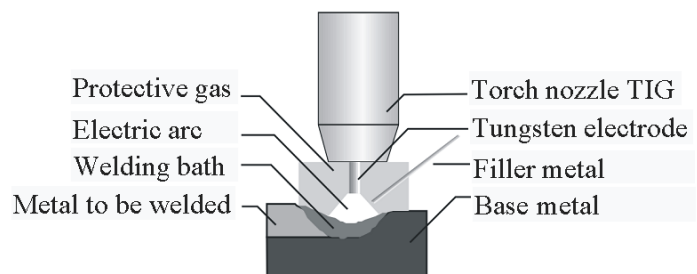
Diameter electrode	Welding current	Thickness of sheet metal
Ø 2,5 mm	40 – 125 A	> 2 mm
Ø 3,2 mm	105 – 250 A	> 3 mm
Ø 4,0 mm	75 – 185 A	> 6 mm
Ø 5,0 mm	140 – 305 A	> 9 mm
Ø 6,0 mm	210 – 430 A	> 9 mm
Ø 8,0 mm	275 – 450 A	> 9 mm

3. TIG WELDING (Tungsten inert gas)

It is the process of arc welding under shield gas, using a torch with a fusible tungsten electrode and which can be used with or without filler metal in an inert gas atmosphere such as argon and mixtures thereof.

This process makes the arc more stable without splashing, which guarantees a strong mechanical resistance of the weld connection. This TIG process

replaces with many advantages the oxyacetylene on welding of steel, stainless steel, copper, brass DC, the aluminum on AC welding and, in various cases, the MMA and Mig welding, especially when the weld seam remains visible.



Chemical composition of the electrodes

Code	Composition	Type	Color	Welding
WP	Pure tungstene	W	Green	AC – Aluminium, Magnesium
WT4	0,35-0,55% thorium	Th	Blue	DC Mild steel, stainless steel, Titanium Copper
WT10	0,80-1,20% thorium		Yellow	
WT20	1,7-2,3% thorium		Red	
WT30	2,7-3,3% thorium		Violet	
WT40	3,8-4,3% thorium		Orange	
WZ3	0,15-0,50% zirconium	Zr	Brown	Stainless steel, Nickel, Non-ferrous metals
WZ8	0,70-0,10% zirconium		White	
WL10	1,0-1,2% lanthanum	La	Black	All TIG applications
WC20	1,9-2,3% cerium	Ce	Grey	All TIG applications

Table of diameters and currents applicable to electrodes

Ø electrode (mm)	Amp. DC		Amp. AC
	Negative (-)	Positive (+)	
1,6 mm	40-130 A	10-20 A	45-90 A
2,0 mm	75-180 A	15-25 A	65-125 A
2,5 mm	130-230 A	17-30 A	80-140 A
3,2 mm	160-310 A	20-35 A	150-190 A
4,0 mm	275-450 A	35-50 A	180-260 A
5,0 mm	400-625 A	50-70 A	240-350 A

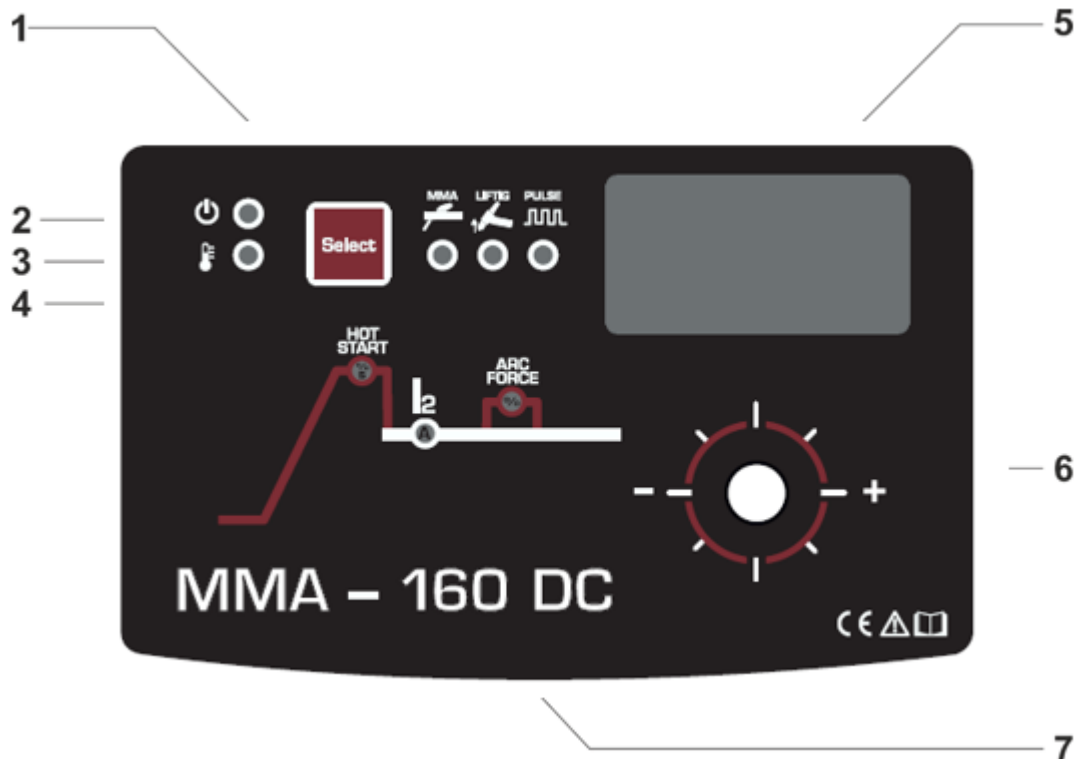
Shielding gases: The gases used in TIG welding contribute to:

- Wrap the electric arc in an ionizable atmosphere.
- Avoid contamination of the welding bath by oxygen existing in the atmosphere.
- Cool the electrode.

Argon (Ar)

- Is the most common gas and is used with a degree of purity of 99.9%. Helium (He)
 - Pure helium is used in welding copper mixed with argon in percentages between 10% and 75%.
- Hydrogenated (H) - is an inert gas at ambient temperature and is used especially in copper welding. It is not recommended to weld in closed spaces because it combines with oxygen by turning the air unbreathable.

4. CONTROL PANEL



1	Welding process selector: MMA welding, LIFTIG (TIG welding with arc ignition without high frequency) and PULSE (when lit with another mode also lit, indicates the pulse welding with the respective welding mode)
2	Machine LED connected and powered
3	Overload or overload alarm indicator - Turns off the machine in case of overheating
4	VRD option - MMA VRD - Reduction of secondary voltage for use in environments with increased risk of electric shock.
5	Digital welding current display
6	Setting and Parameter Selection - Selects parameter / setting parameters by turning the knob
7	Welding parameters - see the description of these parameters in this user guide

5 TECHNICAL DATA

PRIMARY		160	200
Single phased power supply	V	1 x 230 V (-+10%)	1 x 230 V (-+10%)
Frequency	Hz	50/60	50/60
Maximum primary current (MMA)	A	34	43
Maximum primary current (TIG)	A	24	30
Maximum power consumption (MMA)	KVA	7,8	9,9
Maximum power consumption (TIG)	KVA	5,5	6,9
SECONDARY			
No-load voltage	V	74	80
Welding current range	A	10 - 160	10 - 200
Welding current at 40 %	A	160	200
Welding current at 60 %	A	135	160
Welding current at 100%	A	105	125
Protection degree		IP 21S	IP 21S
Insulation class		H	H
Norms		IEC / EN 60974-1	IEC / EN 60974-1
Weight	Kg	5,1	5,7
Dimensions → ↑ ↗	cm	15 x 24 x 32	15 x 24 x 32

6. INSTALLATION

4.1 CONNECTION TO THE MAIN SUPPLY

This unit must be connected to a mono-phase 230V - 50 Hz/60 Hz + ground.

Main supply must be protected by fuses or circuit breaker according to the value I_{1eff} written on the specifications of the power source.

It is strongly suggested to use a differential protection for the operator's safety.

4.2 CONNECTION TO EARTH

For the operator's protection, the power source must be correctly grounded (according to the International Protection Norms).

It is necessary to set a good earth connection with the green/yellow wire of the power cable. This will avoid discharges caused by accidental contacts with grounded pieces. If no earth connection has been set, a high risk of electric shock through the chassis of the unit remains possible.

7. FUNCTIONS

7.1 MMA WELDING MODE (coated electrode)

- Make the necessary connections to mains and earth as described in "Installation". Connect the earth and electrode holder cables to welding plugs + (positive) and – (negative) according to electrode polarity. If necessary, pay attention to electrode manufacturer instructions.
- Turn the main switch on rear panel to ON position.
- The Power ON indicator lights, indicating that machine is under voltage.
- Select MMA welding (coated electrode) or MMA PULSED welding (both indicators are lit).

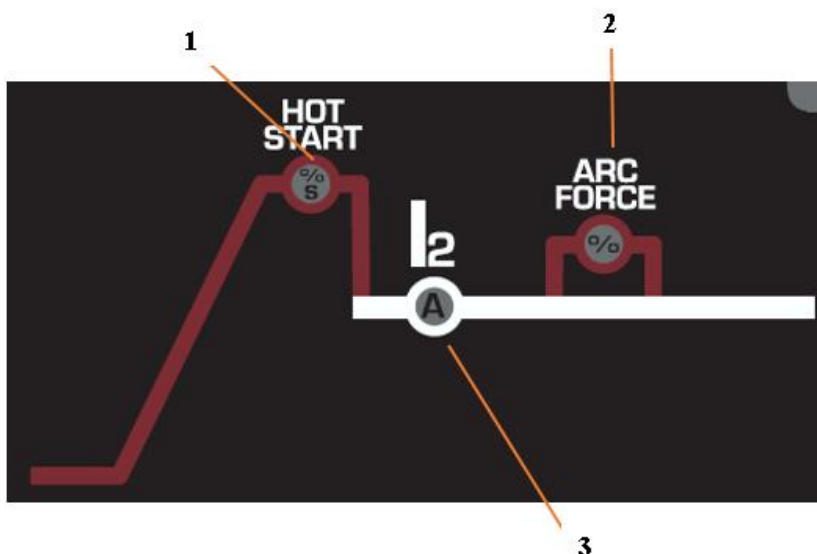


Fig. 1 – MMA parameters

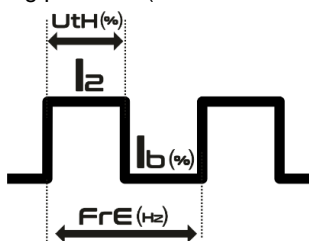
- Adjust welding current (Fig.1 - 3),

according to the following table:

Electrode diameter (mm)	□ 2,0	□ 2,5	□ 3,2	□ 4,0	□ 5,0	□ 6,0
Adjusting current scope (Amp)	50 - 70	60 - 100	80 - 150	130 - 200	150 - 260	200 - 360

- Hot Start (Fig.1 - 1) - To force arc ignition, adjust hot start percentage of main current and/or time (seconds).
- Arc Force (Fig.1 - 2) - To avoid electrode sticking during welding, adjust arc force current percentage of main current.

Pulsed MMA welding – the welding current oscillates between a high and a low current value allowing less thermal input in thinner plates and greater arc control in the most demanding positions (vertical ascending).



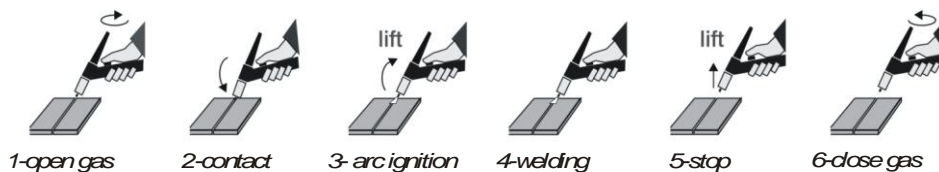
- Ib - adjust welding base current in percentage of main current (the digital display shows Ib).
- UtH - WIDTH - adjust the time of the peak current (main current) from 10% to 90% (the digital display shows UtH).
- FrE - PULSE FREQUENCY - adjust pulsed current frequency in Hertz (the digital display shows FrE).

- Start welding.

7.2 TIG WELDING MODE

- Make the necessary connections to mains and earth as described in "Installation".
- Connect earth cable to positive plug by turning it firmly to right to assure a perfect electric contact.
- Connect TIG torch power cable to negative plug by turning it to right to assure a perfect electric contact.
- Connect gas tube to gas bottle. Check the content of gas bottle, and replace it, if necessary.
- Adjust gas flow 6 l/min and 12 l/min according to the value of the current.
- Apply a tungsten electrode on TIG torch. The electrode must be sharpening according the welding method: TIG DC (tip sharpen).
- Turn the main switch on rear panel to ON position.
- The Power ON indicator lights, indicating that machine is under voltage.
- Select LIFTIG* (TIG welding with contact ignition). There is the PULSED welding mode available (both indicators are lit respectively).

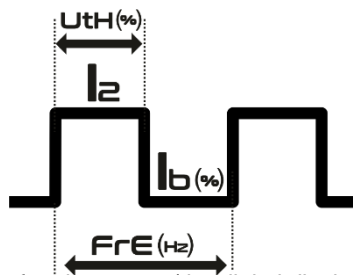
* LIFTIG:



LIFTIG ignition (by contact) should be used when the high frequency radiations could disturb the functioning of electronic devices near the welding zone (computers, pace-makers, medical tools, etc).

- Adjust welding current (Fig.1 - 3).

Pulsed LIFTIG welding – the welding current oscillates between a high and a low current value allowing less thermal input in thinner plates and greater arc control.



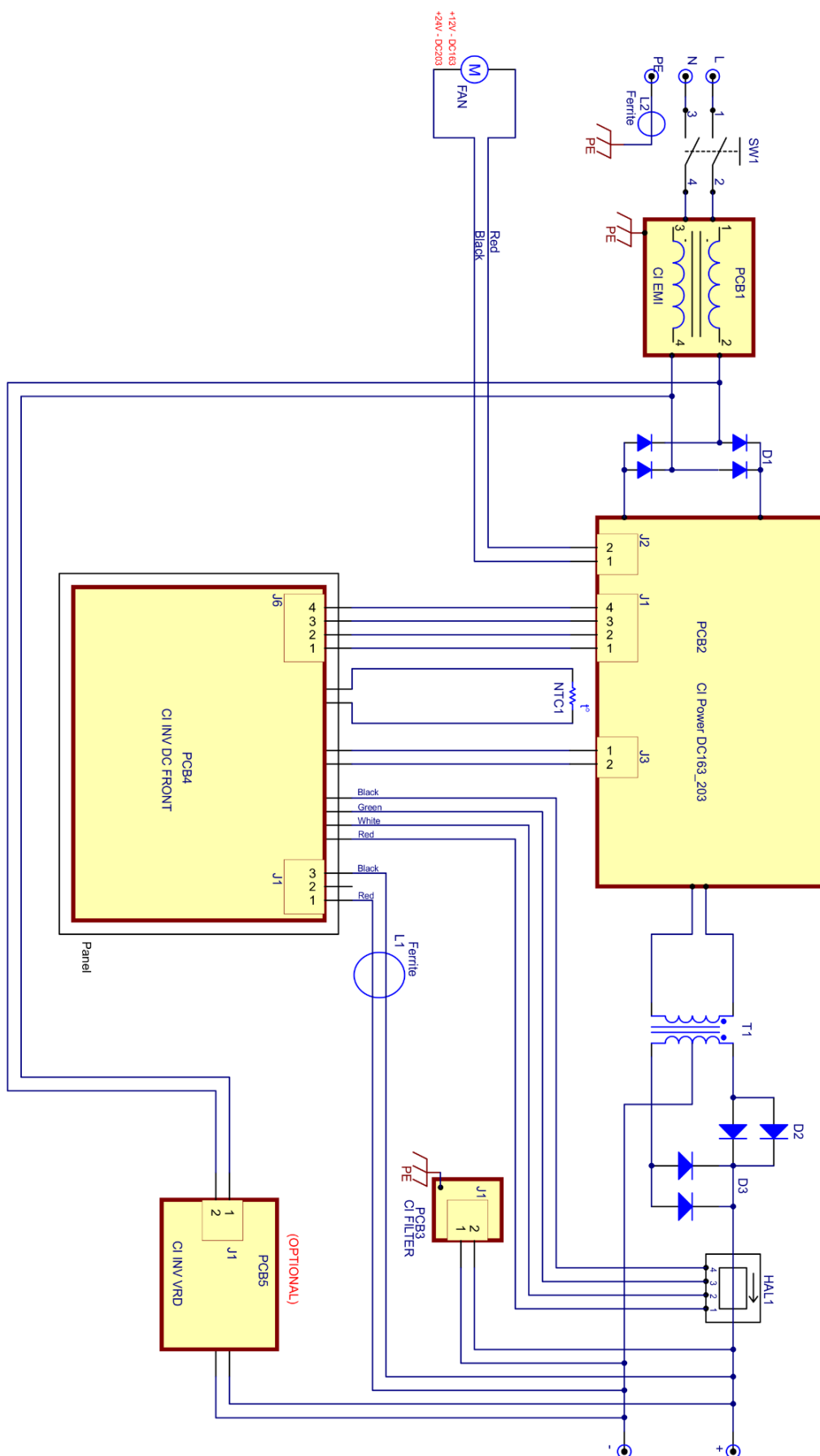
- I_b - adjust welding base current in percentage of main current (the digital display shows I_b).
- U_{tH} - WIDTH - adjust the time of the peak current (main current) from 10% to 90% (the digital display shows U_{tH}).
- FrE - PULSE FREQUENCY - adjust pulsed current frequency in Hertz (the digital display shows FrE).

- Start welding.

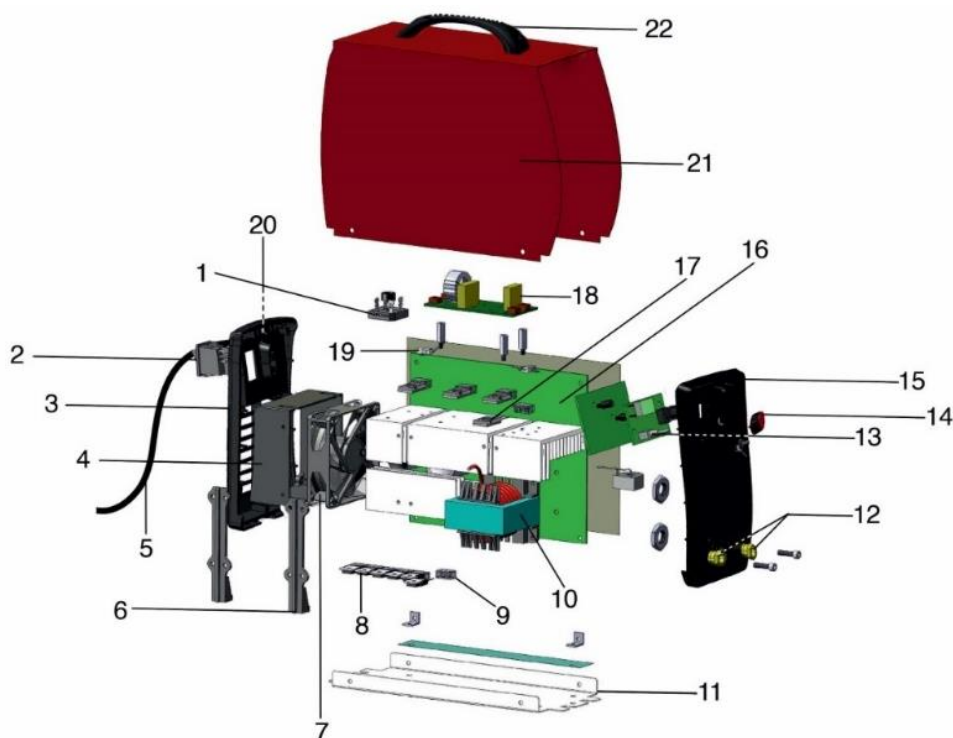
8. ERRORS DESCRIPTION

Er1 - Overheating - Cuts off machine in case of over temperature

9. ELECTRICAL DIAGRAM



10. SPARE PARTS LIST



Nr.	Description	160	200
1	Rectifier	CO108279	CO108289
2	Main switch	CO109401	CO109401
3	Rear panel	CO9R302G06	CO9R302G06
4	Fan holder	PF109262	PF109262
5	Primary cable	CO2C0252T025B	CO2C0252T025B
6	Support bracket	CO108285	CO108293
7	Fan	CO108284	CO108292
8	Diodes	CO108286	CO108294
9	Diodes isolator	CO98713180	CO98713180
10	Main transformer	CO108276	CO108288
11	Base plate	PF109254	PF109254
12	Quick connections	CO109403	CO109403
13	PCB - Control	PF109645	PF109646
14	Knob	CO109679	CO109679
15	Front panel	CO106610	CO106610
16	PCB - Main control	CO107835	CO107836
17	IGBT module	CO108280	CO108290
18	PCB - EMC	CO108277	CO108277
19	Thermal sensor	CO109397	CO109397
20	Cable clamp connector	CO101584	CO101584
21	Cover	PF109257	PF109257
22	Handle	CO101893	CO101893

11. MAINTENANCE

This arc welding equipment should be routinely maintained according to the manufacturers' recommendations. All access and service doors and covers should be closed and properly fastened when the arc welding equipment is in operation. The arc welding equipment should not be modified in any way, except for those changes and adjustments covered in the manufacturer's instructions. In particular, the spark gaps of arc striking and stabilising devices should be adjusted and maintained according to the manufacturer's recommendations.

Before carrying out any internal checking or repair work, check that the power source has been disconnected from the electrical installation by locking and guard devices. Ensure and avoid accidental connection of the plug to a socket. Voltages are high and dangerous inside the machine.

Despite their robustness, ours power sources require some regular maintenance. Each 6 months (more often in dusty surroundings):

- The machine must be blown through with dry, oil free compressed air.
- Check for continuity all electrical connections.
- Check the connection of cables and flat top.

Check the good state, insulation and connection of all the equipment and electrical accessories: plugs and flexible supply cables, conduits, connectors, extension cables, sockets on the power source, ground clamp and electrode holder. These connections and mobile accessories are marked according to standards, if consistent with the safety rules. They can either be controlled by you or by accredited firms.

- Repair or replace all defective accessories
- Check periodically that the electrical connections are tightened and do not heat.

Maintenance works of electrical equipment must be entrusted by qualified people (Section VI, Art. 46).

11.1 TROUBLESHOOTING

POSSIBLE CAUSES	CHECK
DISPLAY OFF = NO SUPPLY	
ON/OFF main switch is OFF	Switch it ON
Power supply cable is cut	Check cable and connections
No main supply	Check circuit breaker and fuses
Defective ON/OFF main switch	Replace the switch
THERMAL INDICATOR ON = INPUT VOLTAGE OVER RATED LIMIT	
Duty cycle over rated (if ambient > 25°C)	Let the machine cool, it will automatically start again
Insufficient cooling air	Clean the air inlets
Very dusty machine	Open the generator and blow it through
Fan doesn't start	Replace the fan
IMPROPER WELDING	
Wrong electrode polarity	Use the right polarity according to the indications of electrode's manufacturer
Dirtiness in the weld parts	Clean and eventually degrease the weld parts



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EU Declaration of Conformity

Déclaration UE de Conformité

We hereby state that the following product:

Nous déclarons que le produit suivant:

MODEL / MODÈLE:

LASTEK EBURON MMA – 160 DC

Complies with directives:

Est conforme aux directives:

2014/30/UE - Electromagnetic Compatibility Directive (EMC)
- Directive Compatibilité Electromagnétique (CEM)

2014/35/UE - Low Voltage Directive (LVD)
- Directive Basse Tension (DBT)

2011/65/UE - Restriction of Hazardous Substances (RoHS)

And applied the following standards:

Et que les normes suivantes ont été appliquées:

EN/IEC 60974-1:2017

EN/IEC 60974-10:2014



Herentals, 2018


Luc Driesen - Technical Director

Unauthorized Interventions or modifications will cancel the validity of this declaration. / Des interventions ou modifications non autorisées annulent la validité de cette déclaration.

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