



# Multi 250 - 400K - 500F- 500K - 500 MAR e Accessories



English



## WARNING

IMPORTANT: BEFORE STARTING THE EQUIPMENT, READ THE CONTENTS OF THIS MANUAL, WHICH MUST BE STORED IN A PLACE FAMILIAR TO ALL USERS FOR THE ENTIRE OPERATIVE LIFE-SPAN OF THE MACHINE. THIS EQUIPMENT MUST BE USED SOLELY FOR CUTTING OPERATIONS.

## INTRODUCTION

To obtain the best performance from the machine and ensure the longest possible life of all its components you must carefully follow the instructions for use and maintenance detailed in this manual. In the interest of our customers we suggest any maintenance or repair of the equipment is made by qualified personnel.

All our products are subject to a constant development. We are therefore constrained to reserve the right to make any necessary or useful changes in design and equipment.

## ROUTINE MAINTENANCE

Prevent metal powder from accumulating inside the equipment. Disconnect the power supply before every operation ! Carry out the following periodic controls on the power source:



- Clean the power source inside by means of low-pressure compressed air and soft bristle brushes.
  - Check the electric connections and all the connection cables.
- For the use and maintenance of the pressure reducers, consult the specific manuals.



## 1. DECLARATION OF CONFORMITY

TER SRL - Via Leopardi, 13 - 36030 Caldogno (VI) Italy

declares that the machines described in this manual must be use solely for professional purposes in an industrial environment and they are manufactured in compliance with the instructions contained in the harmonized standard:

2006/95/CE (LDV) – 2004/108/CE (EMC) – 2002/95 (RoHs)

and with the instructions contained in the harmonized standard,

if applicable:

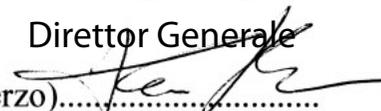
EN 60974-1 EN 60974-2 EN 60974-3 EN 60974-5 EN 60974-7 EN 60974-10 EN 60974-12

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Date 31/01/2012

Maurizio Terzo  
Direttore Generale

(Maurizio Terzo).....



**IN CASE OF ANY TECHNICAL PROBLEM ASK FOR QUALIFIED SERVICE ASSISTANCE**

The equipment don't compiles with EN/ IEC 61000-3-12.  
The installer or the user must be sure that it can be connected to the public low voltage power line,  
if necessary, in consultation with the network distributor.



## 2. RAEE STANDARDS



The symbol on the product or on its packaging indicates that this product may not be treated as household waste. Instead it shall be handed over to the applicable collection point for the recycling of electrical and electronic equipment. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product. For more detailed information about recycling of this product, please contact your local city office, your household waste disposal service or the shop where you purchased the product.

## 3. SAFETY PRECAUTIONS

WELDING AND ARC CUTTING CAN BE HARMFUL TO YOURSELF AND OTHERS. The user must therefore be educated against the hazards, summarized below, deriving from welding operations.

### ELECTRIC SHOCK – May be fatal



Install and earth the welding machine according to the applicable regulations. Do not touch live electrical parts or electrodes with bare skin, gloves or wet clothing. Isolate yourselves from both the earth and the workpiece. Make sure your working position is safe.

### FUME and GASES – May be hazardous to your health



Keep your head away from fumes. Work in the presence of adequate ventilation, and use ventilators around the arc to prevent gases from forming in the work area.

### ARC RAYS – May injure the eyes and burn the skin



Protect your eyes with welding masks fitted with filtered lenses, and protect your body with appropriate safety garments. Protect others by installing adequate shields or curtains.

## RISK of FIRE and BURNS



Sparks (sprays) may cause fires and burn the skin; you should therefore make sure there are no flammable materials in the area, and wear appropriate protective garments.

## NOISE



This machine does not directly produce noise exceeding 80dB. The plasma cutting/welding procedure may produce noise levels beyond said limit; users must therefore implement all precautions required by law.

## PACE MAKER



The magnetic fields created by high currents may affect the operation of pacemakers. Wearers of vital electronic equipment (pacemakers) should consult their physician before beginning any arc welding, cutting, gouging or spot welding operations.

## EXPLOSIONS



Do not weld in the vicinity of containers under pressure, or in the presence of explosive dust, gases or fumes. All cylinders and pressure regulators used in welding operation should be handled with care.

## 4. GENERAL DESCRIPTION

This machine is a constant direct current power source, designed for welding electrically conductive materials (metals and alloys) using the electrical arc procedure.

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## 5. PLC DEVICE (POWER LINE CONTROLLER)

On the MULTI single-phase generators equipped with PLC device. The domestic (inside houses) power supply is normally limited to 16A: the machine can be used in such a conditions turning the PLC key, positioned on the rear panel, on 16A.

Note: use an industrial plug 25A at maximum power. The PLC key must be positioned on 25A (industrial applications). Don't use the 16A plug for industrial applications.

### 5.1 PLC function

The MULTI 250K machine is an industrial power source for light/medium applications; the duty cycle is very high and the inverter architecture allows high current rates. When the machine is plugged on a domestic (house) power line, a plug 16A should be mounted; the input current must be less than 16A in order to avoid the switching-off of the main switch protecting the power line.

The PLC feature controls the input current, automatically inhibiting the welding process when the power input rises the limit of the main line switch (16A).

The power of the machine isn't reduced, only the welding time (duty cycle) is concerned when the demanded current is higher than the available one.

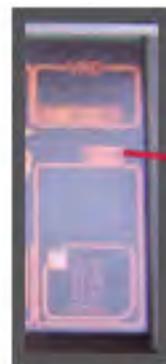
### 5.2 PLC display

When the PLC inhibits the welding process, the current supply is broken immediately, and the front panel shows the PLC timer count down.

When the timer arrives to 0, the welding job can restart.

Please refer to the plots in order to avoid unexpected welding interruptions when the machine is used on domestic lines.

## 6. STANDBY



The machine stops its main functions when it is not continuously used, in order to reduce the power consumption at 10W; the "STANDBY" icon lights. The fan works only when the machine needs to be cooled down; during light applications, the fan normally doesn't work. The water cooling unit, if any, works only on MIG process; at the end of the mig welding process, it works for further 180 sec.

## 7. VRD - VOLTAGE REDUCTION DEVICE

This feature reduces the output no load voltage <math>< 15V</math>.

It increases the safety conditions of the operator: the no load voltage is not dangerous but any contact between human body and live parts may cause a shock with loss of equilibrium control or similar.

The VRD feature is activated with "VRD" light on. The feature is always "on": the system grants efficient arc striking even with a no load voltage <math>< 15V</math>.

On manual MIG process it becomes automatically "off".





### Sound Function

If mode mig or mig pulse is selected, any increase or decrease of the stored job, done by the digital buttons of the torch, determines a sequence of sounds that indicate the number on the arc. If the adjustment, however, is made on the conventional parameters, such as voltage or the wire speed, the sound accompanying the increase or decrease of the parameter. A different sequence is emitted when they are reached the minimum and maximum limits of the adjustment.

### Inch Wire Function

This function is used during loading of the wire. I press the button on the mig torch until the display shows the word "INC", release the button and press again within 3 seconds. Now the wire advances quickly. To stop the process release the button.

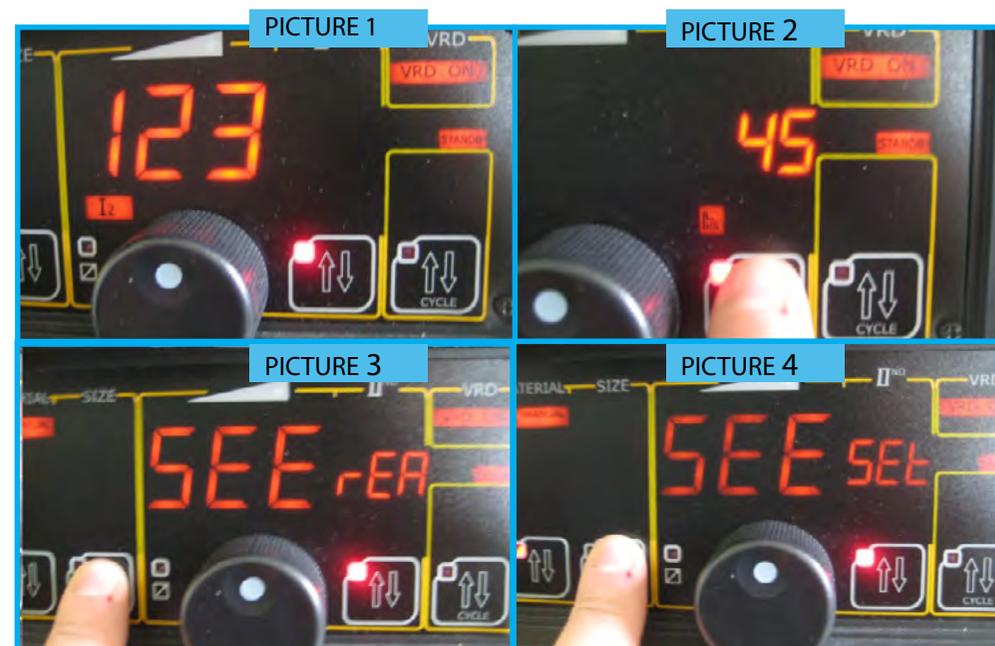
### Wire Speed Calibration Function

With this process it is perfectly possible to calibrate the speed of the wire which, with the use of different torches and welding wires with different diameter and consistency may increase or decrease the drag. The procedure is as follows: Press the torch switch until the flashlight shows "INC", within 3 second press 3 times switch sw4, then, press again the torch switch.



### Welding Parameter Function

With this mode of operation the display, during the welding, indicating the actual values of current and voltage. In default mode, however, only the set of welding parameters are displayed. The function mode is activated by "MMA Manual", set the encoder to the current 123 (PICTURE 1), press the button of the parameter 2 and with the encoder set "45" (PICTURE 2), now press the size button for 5 seconds, the message "SEE rEA" indicates that'll display the actual data (PICTURE 3). By pressing another 5 seconds will return to the original mode and the display will read "SEE SET" (PICTURE 4).



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## 8. ALARMS AND SETTINGS

### 8.1 Power supply alarms and setting

The single-phase welding generator MULTI 250K has an input voltage of 230V ( min 170V – max 270V ). The tri-phase welding generators MULTI 400K and 500K have an input voltage of 400V ( min 340V – max 500V). Both single and tri-phase versions can be supplied with motorgenerators and/or long cables (within the min/max input voltage limits).

In case current exceeds the mentioned limits (current peaks), machine functions stop and display shows the detected current peak. Reset the machine by switching the main ON/OFF knob.

The tri-phase version detects even the right presence of the three current phases and, should one of those fail for > 20 m/s, machine functions stop and display will show the missing phase. Again, reset the machine by switching the main ON/OFF knob.



Power supply alarms that may appear on display:

PS XXX ac : power supply current peak

ALL Ph : current phase failure

### 8.2 Short circuit protection

A circuit test is released every time you switch "ON" the machine. The correct output polarities are checked-out and in case of an eventual short circuit detection, machine enters in alarm standby showing on the display:

#### ALL Ph - alarm short circuit

Once short circuit conditions are removed, machine test will continue correctly.

Short circuit conditions may appear even during the welding job: in case they persist continuously for more than 5 sec, generator enter in "short circuit alarm".

The "antisticking" icon lights too.

### 8.3 Output failure

Fires, burns and shocks may be caused by uncorrect current outputs.

Reasons may be found on:

- involuntary failures on mig jobs which may release, without any control, the welding wire: it melt entering in contact with negative polarities generating possible fire and burn conditions
- damaged cables, with insulation losses, etc.

In case of any output failure, the machine enters in alarm condition showing:

#### ALL Out - Output Alarm

### 8.4 ED alarm

The MULTI serie generators are characterized by a high ED factor – 60% at 40°C (40% in case of MULTI 250K) and power supply may, in certain cases, be insufficient causing damages on the existing supply network.

The MULTI serie controls regularly the input power value and in case of any discrepancy display will shows:

ALL Ed xxx: The machine will be available again at the end of the count-down shown on the display.

### 8.5 Thermic alarm

The MULTI serie generators are fan cooled. Forced ventilation is activated once the inverter temperature exceed the 40°C and fan turns automatically off once internal components are correctly cooled.

Fan cooling is anyway rarely activated: it may occur when duty cycle has been exceeded, in case of high environment temperatures, etc.

In case of overheating, output is disabled and display will shows:

ALL OL

The icon °C light on

Leave the machine on to allow a correct ventilation; when thermal conditions are recovered, normal operations are again possible.



## 8.6 Cooling unit Alarm

When the generator is equipped with the cooling unit, the correct cooling liquid circulation is constantly controlled. The cooling unit works only when Mig, Pulsed Mig or Tig processes are activated.

The cooling unit pump is activated switching the torch trigger and turns off 4 minutes after the welding job end.

In case of liquid circulation failures, output is disabled and display will show:

ALL h2o

Reset the machine switching the main knob ON/OFF.

Long unactivity periods may damage the cooling unit pump or generate momentary re-start problems. First ensure the presence of liquid inside the tank and control the right positioning of the in/out hoses – following instructions may help:

- unplug the water-out blu hose from the machine rear panel and plug a temporary hose
- push & release the torch trigger once: cooling unit pump test should be activated for 15 seconds
- cooling liquid should flow from the temporary hose: if not, repeat the pump test as above
- once ensured the correct liquid flowing, restore the original hose
- if necessary, control the correct liquid flowing at the intermediary levels, i.e wire feeder unit rear and front



9. MAIN FEATURES:

Power Source Type	Multi 250K	Multi 400K	Multi 500K	Multi 500F	Multi 500MAR
Code					
Power supply ( -10% / +15% )	230V	400V	400V	400V	400V
Phases	1ph	3ph	3ph	3ph	3ph
Fuses	T25A	T25A	T32A	T32A	T32A
Rated Duty Cycle in 10 min	ED 40%	ED 60%	ED 60%	ED 60%	ED 60%
Rated secondary current	250A	400A	500A	500A	400A
Permanent Sec. Current 100%	160A	310A	380A	380A	380A
Rated power	8,7KVA	18KVA	26KVA	26KVA	26KVA
Permanent power 100%	5,5KVA	12,5KVA	17,5KVA	17,5KVA	17,5KVA
Overload protection	DIGITAL	DIGITAL	DIGITAL	DIGITAL	DIGITAL
TIG Regulation field	10A-250A	10A-400A	10A-500A	10A-500A	10A-500A
STICK Regulation field	20A-220A	20A-400A	20A-500A	20A-500A	20A-500A
Range di regolazione MIG - MAG - MIG PULS	20A-250A	20A-400A	20A-500A	20A-500A	20A-500A
NO LOAD voltage (S) (K)	90V	90V	90V	90V	90V
Max secondary current	320A	500A	640A	640A	640A
Short circuit limit	480A	850A	1050A	1050A	1050A
Protection class	IP21S	IP21S	IP21S	IP21S	IP23
Insulating class	H	H	H	H	H
Stick synergi programs N°	19	19	19	19	puls exp opt
Tig synergi programs N°	18	18	18	18	puls exp opt
Mig-Mag synergi programs N°	18	18	18	18	puls exp opt
Pulsed Mig synergi programs N°	5	5	5	5	puls exp opt
Pulsed Mig Double Pulsation	ok	ok	ok	ok	puls exp opt
Up grade 8-16-32 puls Mig program	opt	opt	opt	opt	no
Optional water cooling unit	no	ok	ok	ok	no
Optional kit DUO (second wire feeder)	no	ok	ok	ok	no
Double gas bottle trolley opt.	no	no	ok	ok	no
Digital remote control Mig torch optional	ok	ok	ok	ok	puls exp opt
Remote control receptacle	ok	ok	ok	ok	puls exp opt
Digital Amperometer voltmeter	ok	ok	ok	ok	ok
Width - Height Length mm	340x400x620	340x400x620	650x820x960*	340x600x620*	340x600x620*
Weight Kg	24	30	85	50	50

\* Height of the Multi 500

Note: dimentions and weight are without wire feeder, without cooler unit

10. JOBS and SETTING

The MULTI generators serie can be divided in three categories:

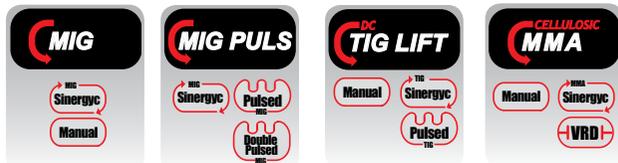
- K Serie
- K Serie + DUO kit
- F Serie and MAR Serie





### 11. GENERATORS K SERIE

- Multi 250K
- Multi 400K
- Multi 500K
- Multi 400K DUO
- Multi 500K DUO



#### 11.1 Multi 250K - Multi 400K

They can be equipped with trolley; the 400K version even with cooling unit. Mode and job settings achievable directly from the front panel.

With the first left hand side key you can select the welding process between:

- MMA (manual or synergic)
- TIG (manual or synergic)
- PULSED TIG (manual or synergic)
- MIG-MAG (manual or synergic)
- PULSED MIG (synergic and synergic/double pulsed)

Once welding mode is choosed, the machine will always recall the last used program or the last used setting.

### 11.1 Multi 500K

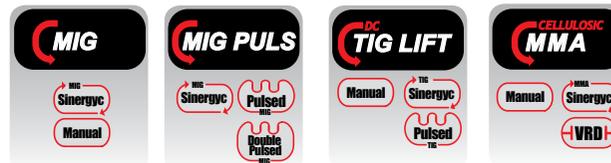
It can be equipped with trolley and cooling unit.



Generators K Serie with Duo kit (secondary wire feeder unit)

### 11.2 Multi 400K DUO

It can be equipped with trolley and cooling unit. The DUO configuration (double torch) provides double job programs; on the main generator you can select between:



- MMA (manual or synergic)
- TIG (manual or synergic)
- PULSED TIG (manual or synergic)
- MIG-MAG (manual or synergic)
- PULSED MIG (synergic and synergic/double pulsed)



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11.3 Multi 500K DUO Multi 500KT DUO without cooling unit

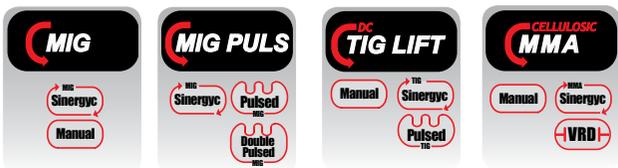
On the wire feeder unit you can choose between:

- MIG-MAG (synergic)
- PULSED MIG (synergic)
- PULSED MIG (synergic/  
double pulsed)
- MIG-MAG (manual)
- MMA

Job transfer from main generator to wire feeder unit or viceversa is released automatically switching the corresponding torch trigger, pushing the knob on the main panel or any key on the wire feeder panel.



When the main generator torch is working, the remote wire feeder unit will display "INT CNT" meaning someone is using the main unit. Once welding mode is chosen, the machine will always recall the last used program or the last used setting.



12. MULTI 500F - MULTI 500F WATER COOLING

It can be equipped with cooling unit and can work as standard MMA and TIG DC power source.

On the generator main panel you can select between:

- MMA (manual or synergic)
- TIG (manual or synergic)
- PULSED TIG (manual or synergic)

while from remote wire feeder unit:

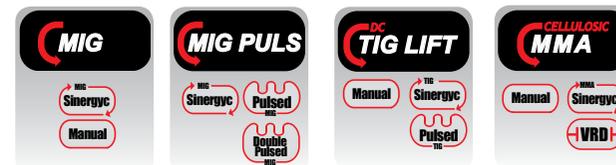
- MIG-MAG (synergic)
- PULSED MIG (synergic)
- PULSED MIG (synergic/double pulsed)
- MIG-MAG (manual)
- MMA

Every welding job can work with specific different programs, set from the generator main panel.

Job transfer from main generator to wire feeder unit or viceversa is released automatically switching the corresponding torch trigger, pushing the knob on the main panel or any key on the wire feeder panel.

When the main generator torch is working, the remote wire feeder unit will display "INT CNT" meaning someone is using the main unit.

Once welding mode is chosen, the machine will always recall the last used program or the last used setting.



English GB





**13. MULTI 500 MAR**

The generator can be connected with the MIDI LPM wire feeder unit, able to provide pulsed mig mode adding the relative kit



**14. MMA MODE (MANUAL)**



Connect the electrode holder and earth clamp to the right main generator polarities; the electrode holder can be connected even to the wire feeder unit – in that case B and C setting steps are inhibited – on the wire feeder panel you can simply adjust the welding current and arc dynamic (see wire feeder setting).

- A - Select STICK
- B - Select MANUAL
- C - Adjust welding current....and weld



A - Select STICK

B- Select MANUAL

C- Adjust welding current





### 14.1 HOT START - MMA Mode (Manual)



The value can be adjusted according to the electrode type – Ex. stainless steel and rutile electrodes demand a low value, near to 0 – basic and the majority of the common electrodes a mid-value between 30/50 – cellulosic electrodes require a high value.

Push the 2nd level key until “HS” icon light on – the led will blink for two seconds and during this time adjust the required value. Two seconds after the last touch, “HS” setting mode get off.

(see also wire feeder setting)



Adjusting knob  
2nd level key

### 14.2 HOT START - MMA Mode (Synergic)



In synergic MMA mode the value is already set according to the chosen electrode. The parameter can be changed anyway - adjustments are displayed in % (percentage) towards the original value:

C – HS value increased of 15%



B – HS icon  
A – 2nd level key

### MMA mode (synergic)

MMA synergic welding is a really useful way to avoid setting mistakes. Even skilled welders can save job time entering the synergic mode:



A - Select STICK    B - Select electrode type    C - Select electrode size

push the 2nd level key until “HS” icon light on – the led will blink for two seconds and during this time adjust the required value. Two seconds after the last touch, “HS” setting mode get off.

The adjustment is made using the main display knob, as usual. The new parameter is automatically stored – it will be restored once recalling the same program.

This setting is available only on the main generator panel.

NB: the welding current can be adjusted as well, remaining anyway inside the programmed synergic values.





## 15.TIG MODE (MANUAL)



Plug the tig torch to the negative polarity and the torch trigger plug to the respective socket. In case of remote control function, use the remote control socket. Torch gas hose must be screwed to the machine gas nipple.

The welding generator can be equipped with cooling unit: in that case a water cooled tig torch may be used plugging the water inlet/outlet hoses.

NOTE: generator provided with cooling unit can support even gas cooled tig torches. Do not forget to close the water circuit by using a suitable by-pass hose placed between the inlet and outlet nipples (front and rear).

Using an appropriate hose connect the gas bottle to the inlet gas nipple placed on the rear panel (market with tig) – release the gas flow at 5/7 lt/min.

The MULTI generators provide tig torch arc strike by using the Lift-Arc method:



push the torch trigger

slow down the torch until the ceramic nozzle touch the workpiece; in this phase held the torch and avoid any contact between tungsten and workpiece

keeping the nozzle in contact, turn the torch until the tungsten enters in contact with the workpiece

maintaining the nozzle-work piece contact, turn back the torch to the original position; the arc strikes and the welding can be performed

### 15.1 Current Setting - Tig Mode (Manual)



Turning the main display knob adjust the welding current.

NOTE: on manual tig mode the material tickness setting is not available.



A – Select TIG or TIG PULSE

B – Select MANUAL

### 15.2 Trigger Setting - Tig Mode (Manual)



(A) TIMER  
it activates the spot function. The spot arc remains on during the set time

(B) 2T trigger:  
arc strikes when torch trigger is pressed, and stops when released

(C) 2T slope:  
arc strikes when torch trigger is pressed, and stops when released with a slope down

(D) 4T trigger:  
arc strikes pressing and releasing torch trigger. It stops pressing and releasing once again

(E) 4T slope:  
it's like the 4T trigger, adding a current slope on start and a slope down current on stop





NOTE: on manual setting certain parameters can be adjusted while others remain fix:

PRE-GAS	fix at 0,1 sec
SLOPE UP	variable, depending on slope down
CURRENT 1	starting current - fix
CURRENT 3	final current - fix
SLOPE DOWN	slope down, variable and synergic (setting by the 2nd level key)
POST-GAS	variable and synergic (setting by the 2nd level key)
PULSATION	variable and synergic (setting by the 2nd level key)
TIMER	variable (setting by the 2nd level key)
MAX PULS. PEAK	synergic
MIN PULS. PEAK	synergic

NOTE: in synergic mode all parameters change according to the choosed program and/or current level:

PRE-GAS	fix at 0,1 sec
SLOPE UP	slope up, synergic depending on slope down
CURRENT 1	synergic
CURRENT 3	synergic
SLOPE DOWN	slope down - synergic
POST-GAS	synergic
PULSATION	synergic
PULSATION BAL.	synergic
TIMER	variable (setting by the 2nd level key)
MAX PULS. PEAK	synergic
MIN PULS. PEAK	synergic

GENERALLY, USER DOESN'T NEED TO ADJUST OR MODIFY THE WELDING PARAMETERS BEING THEM ALREADY SET (SYNERGIC)

16. TIG MODE (SYNERGIC)



A - Select material type



B - Select tungsten diam.

Using the main knob adjust the current level or the basic material tickness. These two elements are strictly connected and depend on the selected program (material type & tungsten diam.).

17. Parameters Adjustment - Tig Mode (Synergic)



Certain synergic parameters can be adjusted in case. User can modify slope down, pulsations and post-gas:



A - 2nd level key

SLOPE DOWN (crater filler): press the 2nd level key until led "SLOPE DOWN" light on; with the main knob set the value between -50% and +50%.

PULSATION: press the 2nd level key until led "FREQUENCY" light on; with the main knob set the value between -50% and +50%.

POST-GAS: press the 2nd level key until led "POST-GAS" light on; with the main knob set the value between -50% and +50%.





## 18. MIG-MAG MODE

### 18.1 Wire spool loading - Mig-Mag Mode



The wire feeder unit can receive 200 or 300 mm size wire spools. Make sure your wire spool is correctly and safely fixed to the pinion than adjust the friction screw:

- match the driving rolls located into the driving motor with your wire type and size
- insert the wire into the driving rolls and push it till the machine euro adaptor. Lock the driving rolls properly
- connect the mig torch to the machine euro adaptor
- press the torch trigger: wire drives for 5 sec. and stops once the display will light "INC 10"
- release the torch trigger and press it again: wire drives now into the torch at approx 10 mt/min, until trigger remain pressed
- shielding gas hose is fitted to the back panel of the machine (gas nipple marked with MIG). Adjust the flow rate between 16/22 lt/min. depending on the welding task
- connect the earth clamp plug to the negative polarity

This procedure is valid even for the LPM remote wire feeder unit.

Now you can select your Mig welding mode between:

- MIG-MAG - MANUAL
- MIG-MAG - SYNERGIC
- PULSED MIG
- PULSED MIG - DOUBLE PULSED

## 19. MIG/MAG MANUAL



Setting available for generators Serie "K" and Serie "K + DUO":

A – select MIG

B – select MANUAL



C – with the main knob adjust the current level



### 19.1 Wire Speed Setting - Mig/Mag manual



A - press once, wire speed led light on

B - adjust wire speed





19.2 Inductance Setting - Mig/Mag Manual



A - press until inductance led light on

B - adjust inductance

In the same way you can set the POST GAS TIMER, SLOPE DOWN & CRATER FILLER.

19.3 Trigger Mode Setting - Mig/Mag Manual



Press to select

19.4 Trigger Select - Mig/Mag Manual



- (A) TIMER: it activates the spot function. The spot arc remains on during the set time
- (B) 2T trigger: arc strikes when torch trigger is pressed, and stops when released
- (C) 2T slope: arc strikes when torch trigger is pressed, and stops when released with a slope down
- (D) 4T trigger: arc strikes pressing and releasing torch trigger. It stops pressing and releasing once again
- (E) 4T slope: it's like the 4T trigger, adding a current slope on start and a slope down current on stop

19.5 Remote wire feeder unit setting - Mig/Mag Manual



The remote wire feeder unit LPM can be connected to the generator by an interconnecting cable which carries power cable, control signals, gas hose and eventual hoses for the torch cooling.

19.6 Wire Speed Setting And Voltage- Mig/Mag Manual



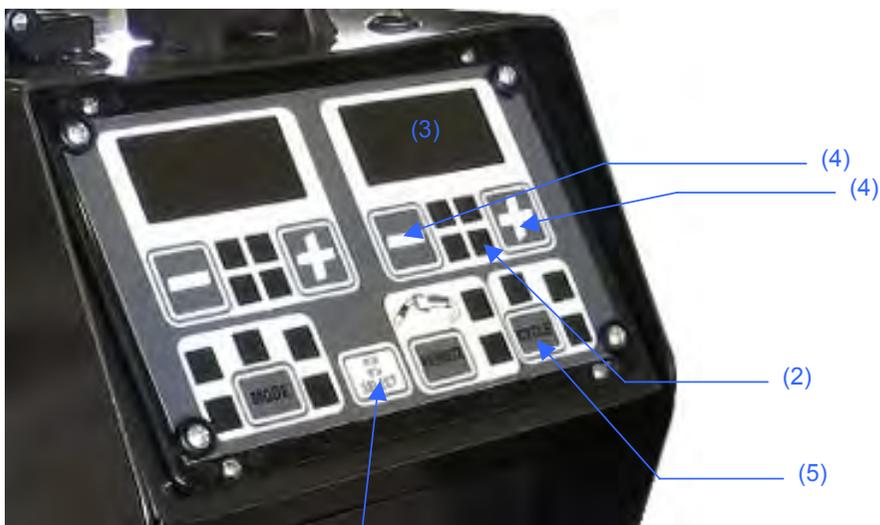
- (1) [Button]
- (2) [Button]
- (3) [Dial]
- (4) [Button]
- (5) [Dial]
- (6) [Button]





- (1) press the key MODE and select MANUAL
- (2) with icon WIRE SPEED on, adjust the wire speed by using the keys – and + (left)
- (3) the display shows the wire speed in mt/min.
- (4) icon Ireal (real welding current) is off
- (5) the display shows the set voltage
- (6) with icon Vset on, adjust voltage by using the keys – and + (right)

### 19.7 Inductance Setting - Mig/Mag Manual



- (1) press the key SELECT until inductance icon (2) is on
- (3) the display shows the inductance value
- (4) using the keys – and + set the inductance

The display (3) return to the previous value 1 second after the last key touch or pressing the key SELECT once again

- (5) set the trigger mode (2T – 4T – 2T slope – 4T slope –the slope values are already pre-set)

### 20. MIG/MAG SYNERGIC



#### 20.1 Setting From The Machine Panel - Mig/Mag Synergic



Setting available for generators Serie "K" and Serie "K + DUO":

A – select MIG

B – select material type

C – select wire size



NOTE: material type (B) refers to the wire spool type located inside the machine



C - with the main knob adjust the current level or the basic material tick

the wire speed is automatic regulated with the setting current and/or thickness



### 20.2 Inductance Setting - Mig/Mag Synergic



The value of electronic inductance is automatically adjusted with the synergic preset, value can be adjusted as follow.



A - press until inductance led light on

B - adjust inductance

Display shows the increasing or decreasing pourcentage towards the pre-set (synergic) value.

### 20.3 ARC setting - Mig/Mag Synergic



A - press until arc lenght led light on

B - adjust arc lenght

The main knob allows arc setting between -20 (short) and +20 (long). The -0- value correspond than to the pre-set synergic value.

In the same way you can adjust POST GAS, TIMER, CRATER FILLER and TRIGGER mode.

### 20.4 Setting from the Remote Wire Feeder Unit Mig/Mag Synergic



First of all, set the MIG/MAG synergic mode on the generator main panel:



A Select MIG

B - select material type

C - select wire size

English

GB



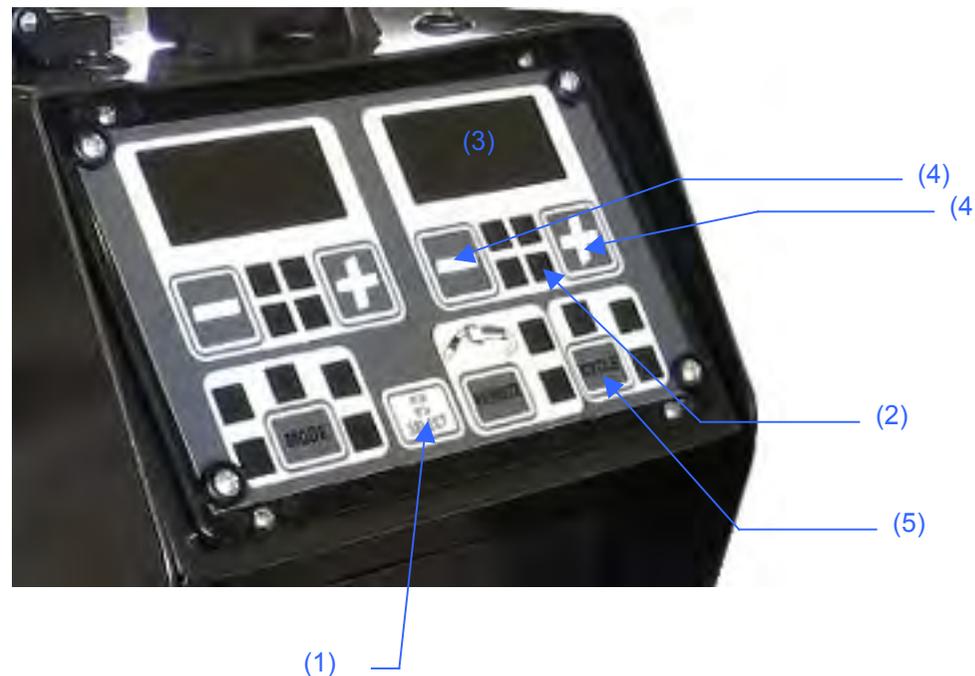
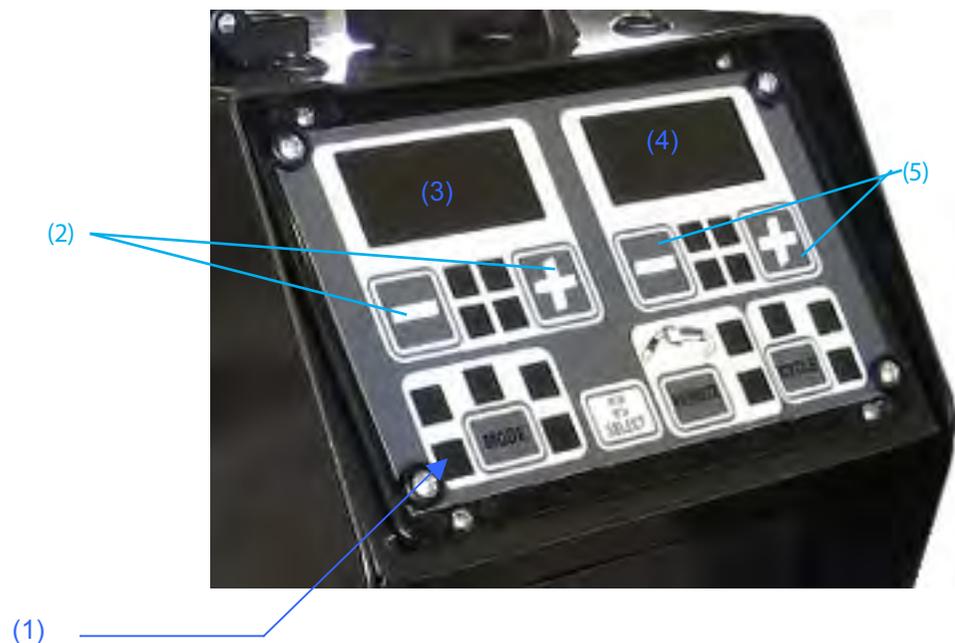


NOTE: material type (B) refers to the wire spool type located inside the remote wire feeder unit

20.5 Inductance Setting - Mig/Mag Synergic



Now approach the remote wire feeder unit and set as follow:



- (1) press the key MODE until icon "syn" light on
- (2) with keys - and + (left side) adjust the welding current
- (3) display shows the set current when icon "Iset" light on, real job welding current with "Ireal" icon on
- (4) display shows the pre-set arc length and, during welding job the real voltage
- (5) with keys - and + (right side) adjust the arc length. Value equal to -0- corresponds to the pre-set synergic data: it can be adjusted from -20% up to + 20%. During this setting the icon "Vreal" is off while icon "arc length" is on

- (1) press the key SELECT until inductance icon (2) is on
  - (3) the display shows the inductance value
  - (4) using the keys - and + set the inductance
- The display (3) return to the previous value 1 second after the last key touch or pressing the key SELECT once again
- (5) set the trigger mode (2T - 4T - 2T slope - 4T slope -the slope values are already pre-set)
- NOTE: with the DUO configuration (wire spool inside the machine and another one inside the remote wire feeder - double torch) you can set two independent welding jobs. Process and programs are automatically released pressing the respective torch trigger or any one key on the wire feeder unit or generator main panel.





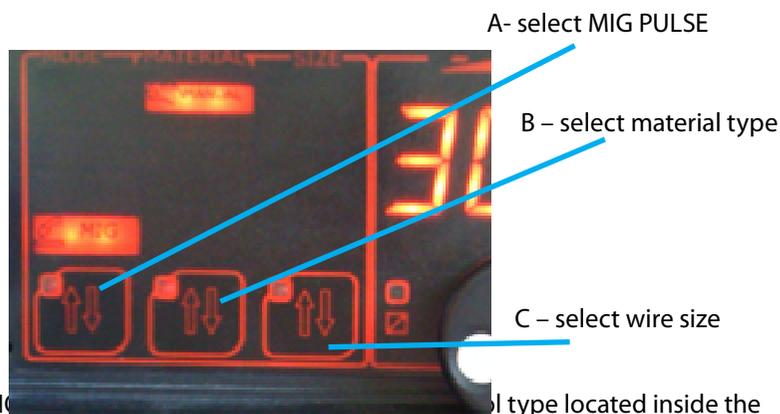
### 21. MIG PULSE MODE



#### 21.2 setting from the machine panel- Mig Pulse Mode



Setting available for generators Serie "K" and Serie "K + DUO":



### 21.3 Inductance setting- Mig Pulse Mode



Display shows the increasing or decreasing percentage towards the pre-set (synergic) value

### 21.4 Arc setting- Mig Pulse Mode



The main knob allows arc setting between -20 (short) and +20 (long). The -0- value correspond than to the pre-set synergic value.

In the same way you can adjust POST GAS, TIMER, CRATER FILLER and TRIGGER mode.

English GB





## 22. MIG DOUBLE PULSE



### 22.1 Setting From The Machine Panel- Mig Double Pulse



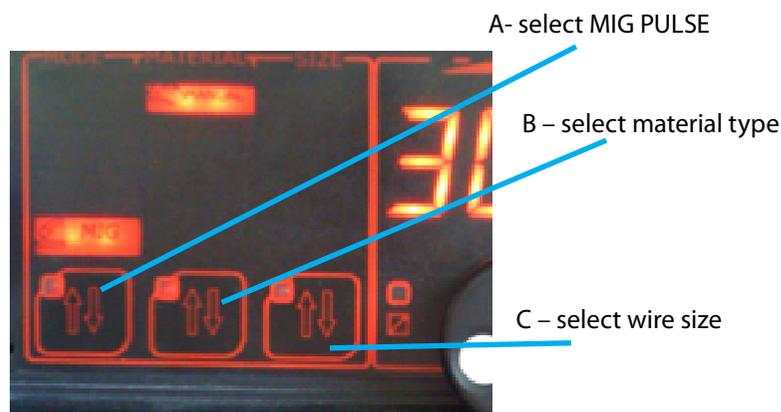
When the double pulse is on, relative icon blink continuously. The double pulse value is totally synergic and doesn't need any adjustment.

## 23. SETTING WIRE FEEDER UNIT

### 23.1 Mig Pulse – Setting From The Remote Wire Feeder Unit

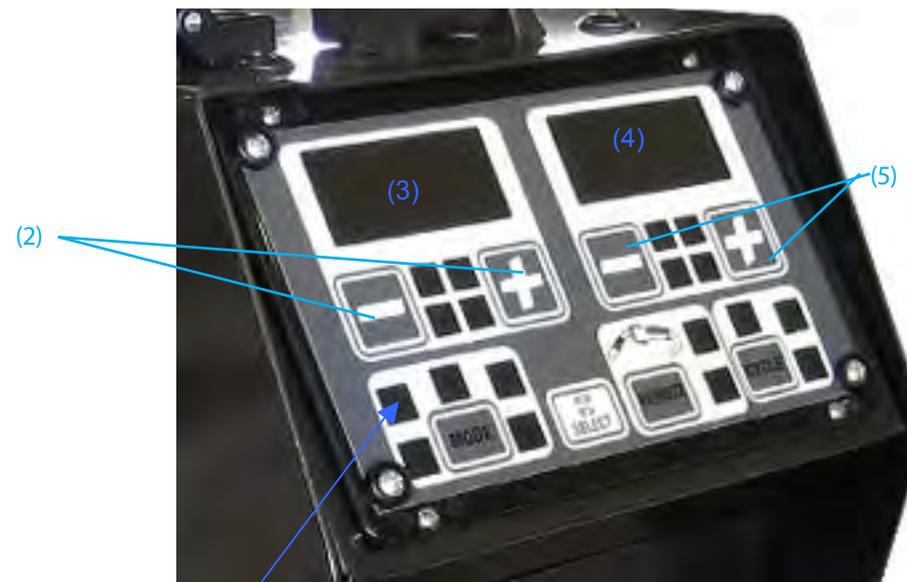


First of all, set the MIG pulse synergic mode on the generator main panel:



NOTE: material type (B) refers to the wire spool type located inside the remote wire feeder unit

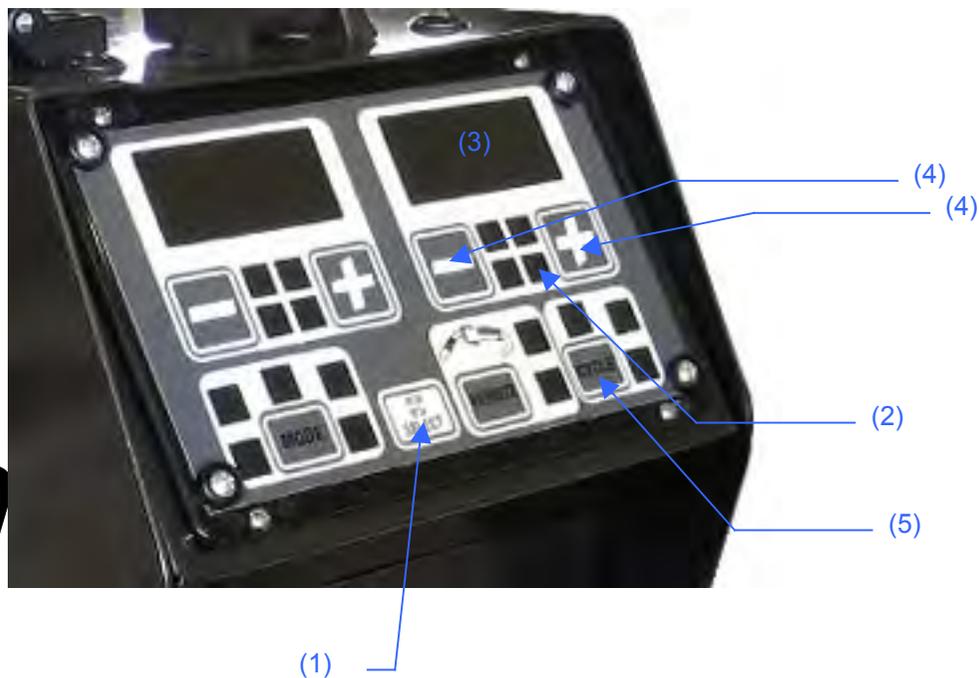
Now approach the remote wire feeder unit and set as follow:



- (1) press the key MODE until icon "puls" light on
- (2) with keys – and + (left side) adjust the welding current
- (3) display shows the set current when icon "Iset" light on, real job welding current with "Ireal" icon on
- (4) display shows the pre-set arc length and, during welding job the real voltage
- (5) with keys – and + (right side) adjust the arc length. Value equal to -0- corresponds to the pre-set synergic data: it can be adjusted from -20% up to + 20%. During this setting the icon "Vreal" is off while icon "arc length" is on



### 23.2 Inductance - Setting From The Remote Wire Feeder Unit



- (1) press the key SELECT until inductance icon (2) is on
- (3) the display shows the inductance value
- (4) using the keys - and + set the inductance. The display (3) return to the previous value 1 second after the last key touch or pressing the key SELECT once again
- (5) set the trigger mode (2T - 4T - 2T slope - 4T slope - the slope values are already pre-set)

NOTE: with the DUO configuration (wire spool inside the machine and another one inside the remote wire feeder - double torch) you can set two independent welding jobs. Process and programs are automatically released pressing the respective torch trigger or any one key on the wire feeder unit or generator main panel.

### 23.3 Mig Double Pulse

#### Setting From The Remote Wire Feeder Unit



- (1) press the key MODE until icon "twice" light on
- (2) press the key SELECT until display (3) shows the pulse value (number / seconds)
- (3) with keys - and + (left side) adjust the pulse value eventually

- (1) press the key MODE until icon "twice" light on
- (2) press the key SELECT until display (3) shows the pulse value (number / seconds)
- (3) with keys - and + (left side) adjust the pulse value eventually

All other parameters can be adjusted as described in chapter MIG pulse.



## 23.4 Mma Mode

## Setting From The Remote Wire Feeder Unit

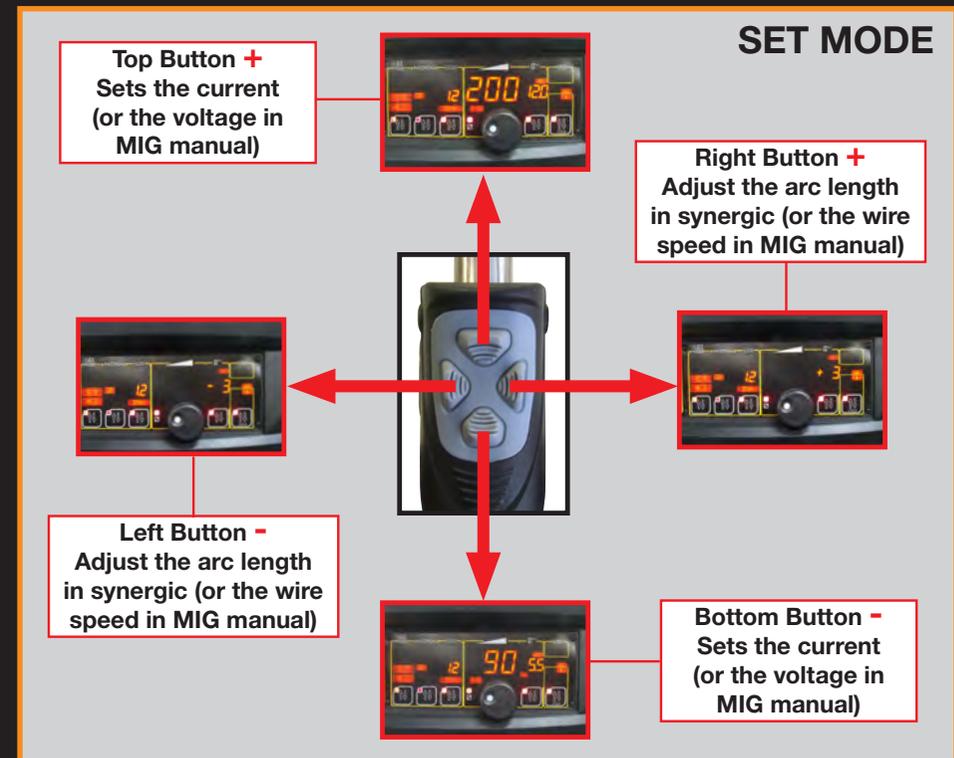
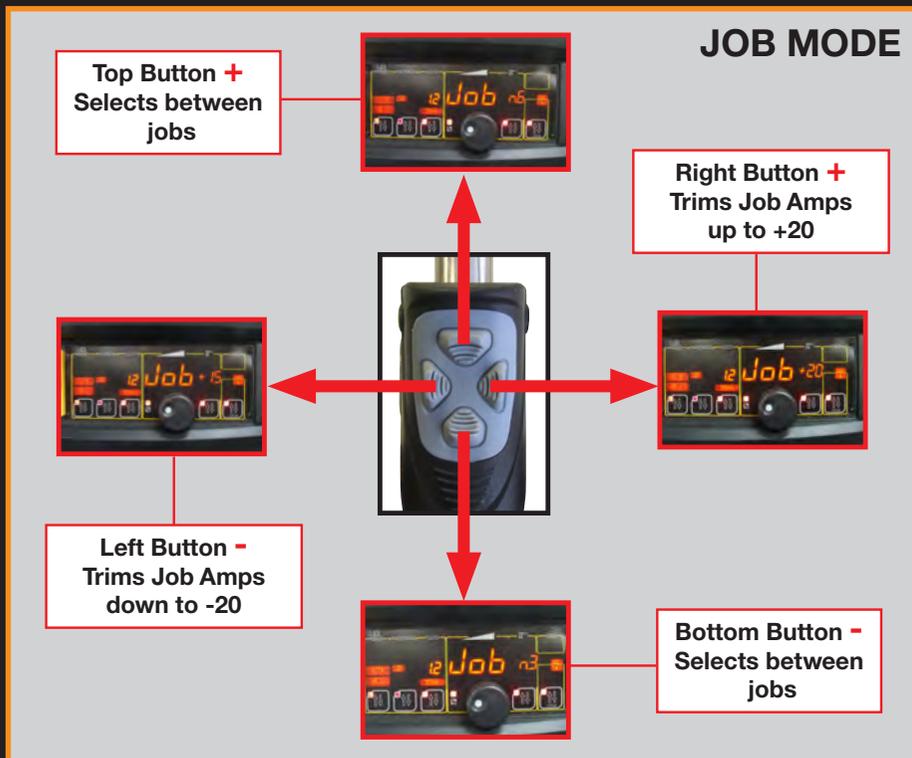
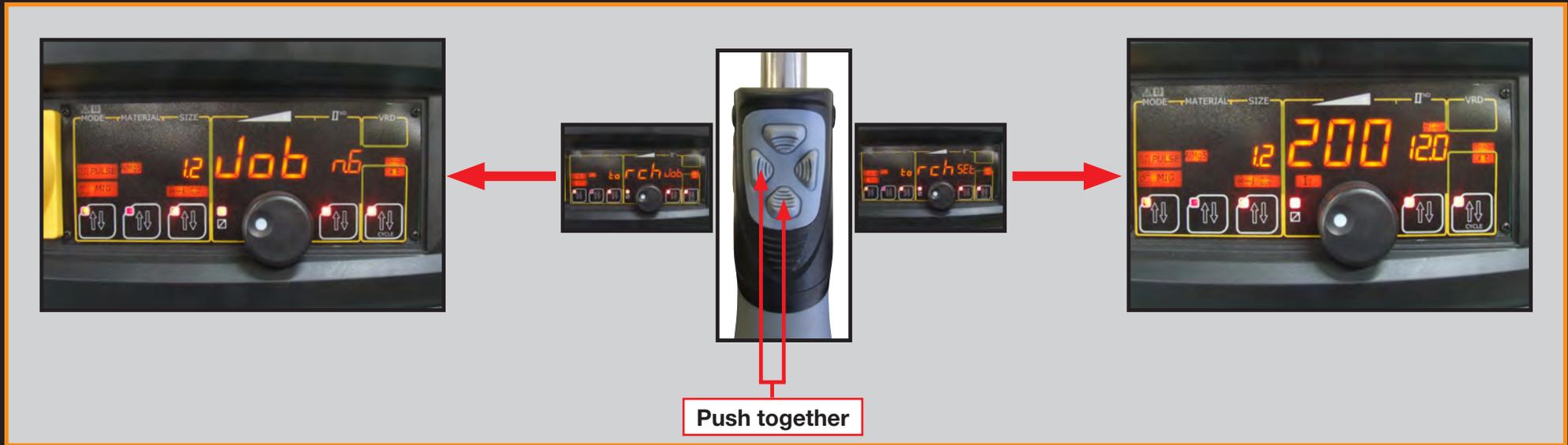


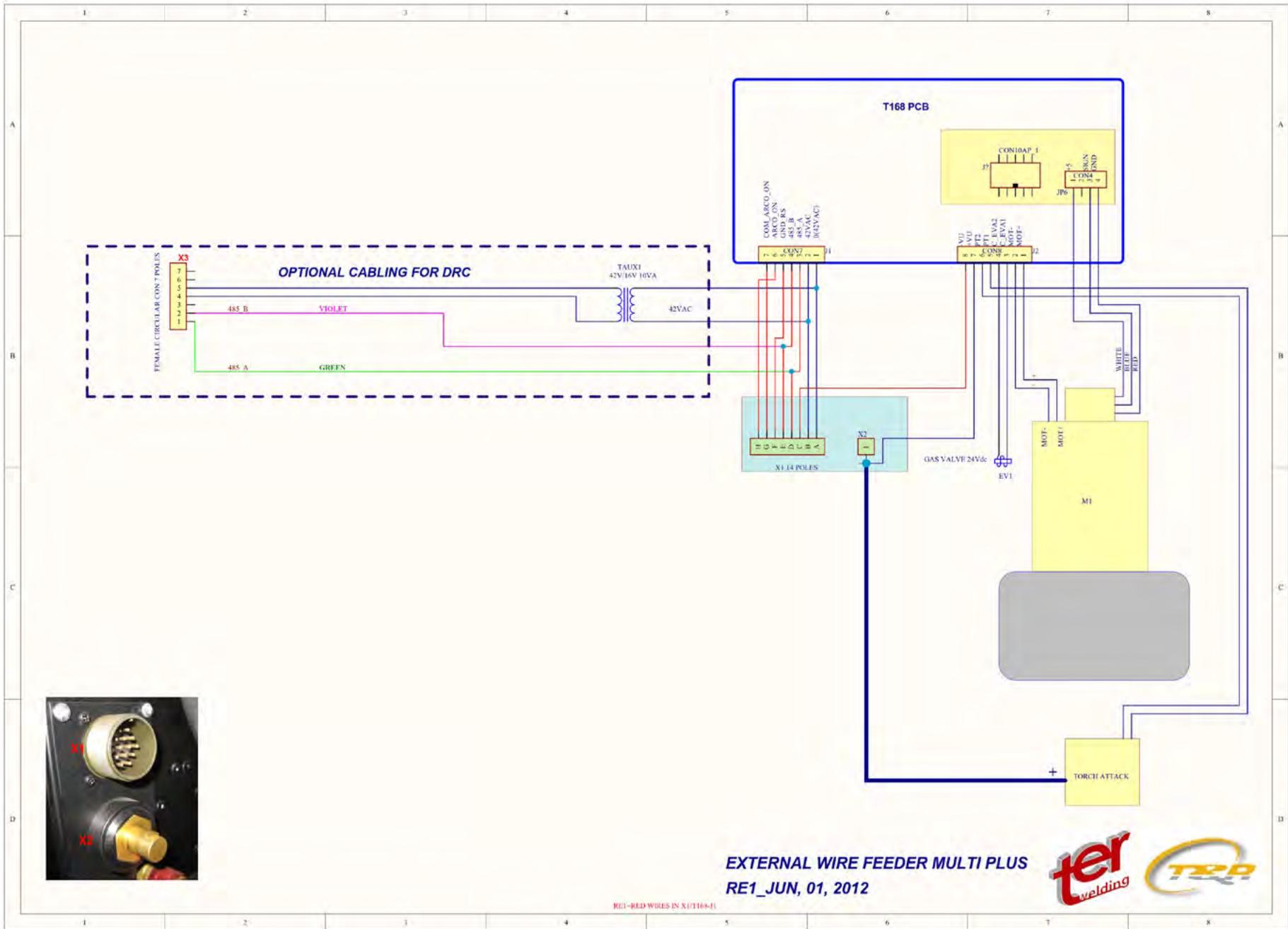
- (1) press the key MODE until icon "MMA-stick" light on
- (2) with keys - and + (left side) adjust the current value (3)

NOTE: setting of any synergic program is made always from front machine main panel while adjustments can be performed directly on the remote wire feeder unit panel.

# MULTI-Plus Concept - LOGIC TORCH OPERATION

The digital Torch has two operational modes. **SET** and **JOB**. To switch from on mode to another, Push the Left and Bottom together. In **JOB** mode any adjustment can be done from the front panel and is stored inside the current **JOB**



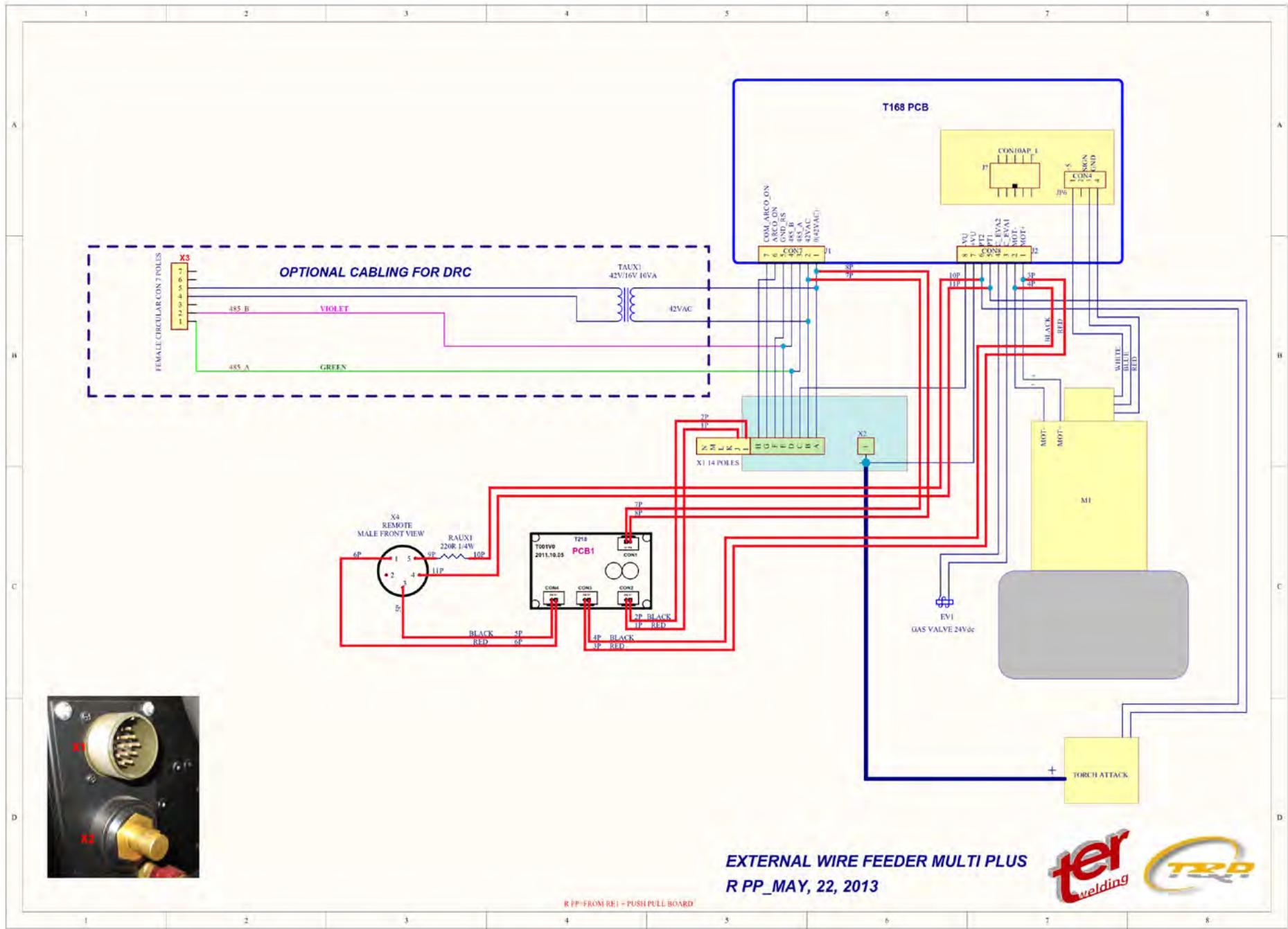


EXTERNAL WIRE FEEDER MULTI PLUS  
RE1\_JUN, 01, 2012

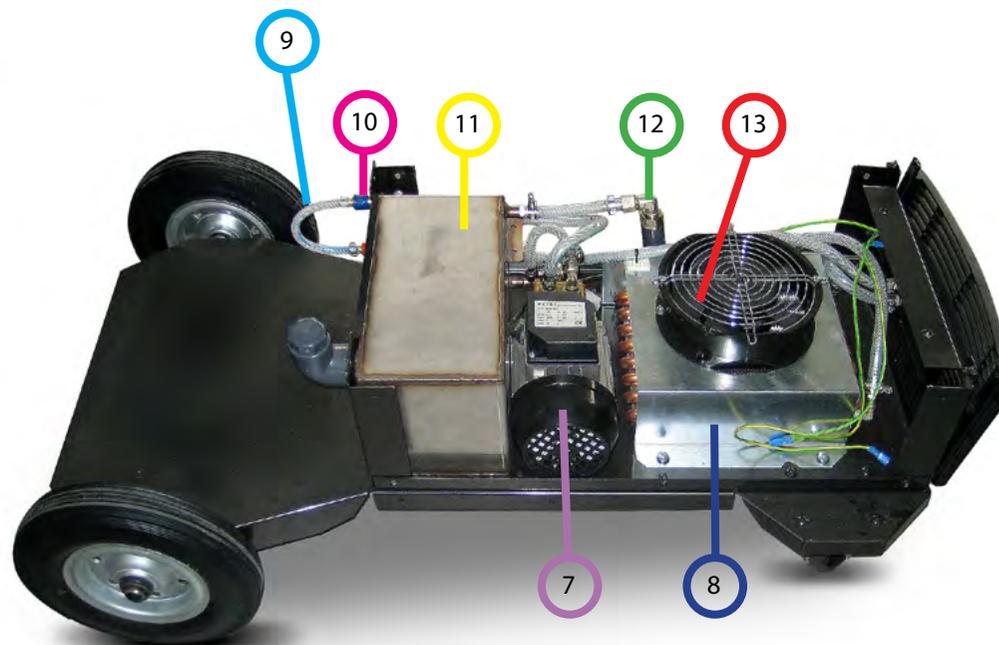
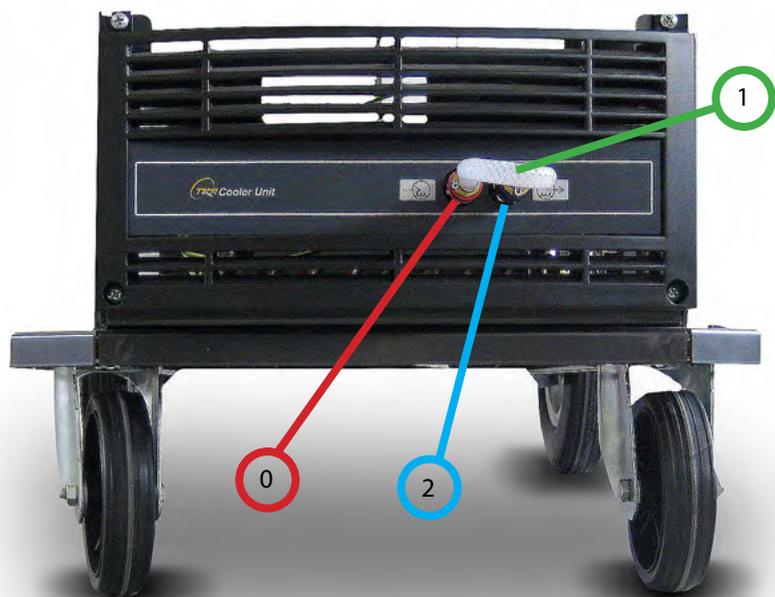


RED-RED WIRES IN X1(T168-1)



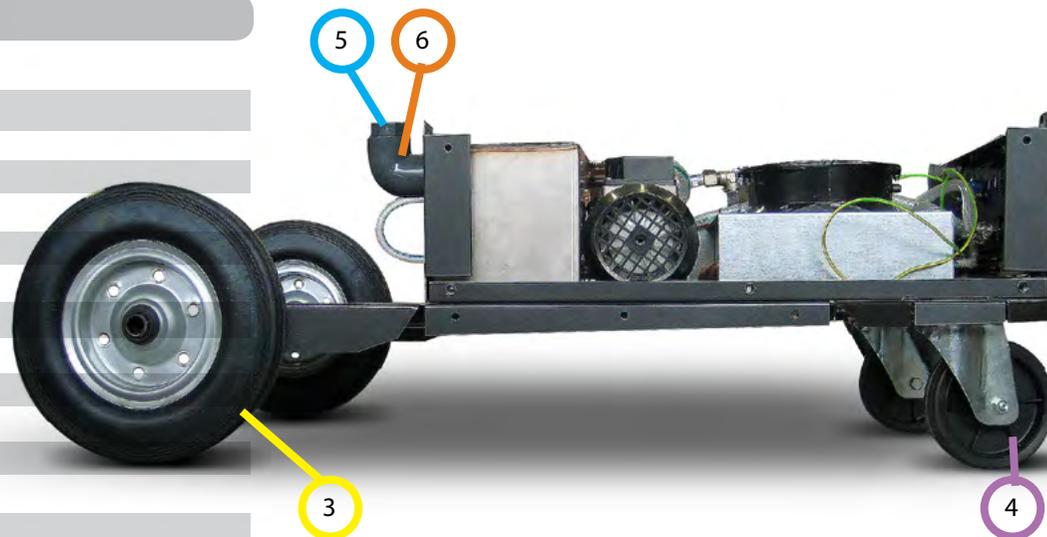


English



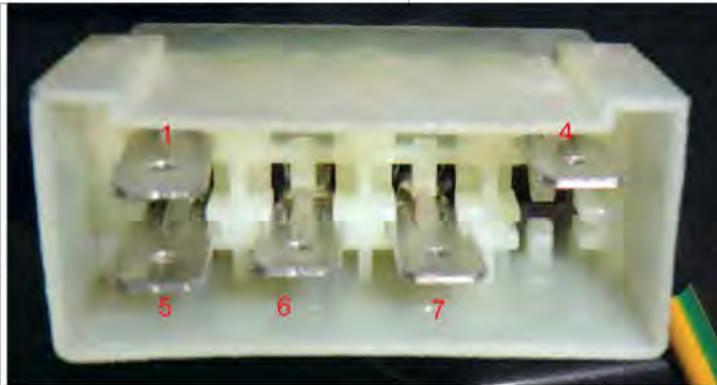
Spare Parts Multi Cooler Unit

N°	CODE	DESCRIPTION
0	40-160910-04-00	Water speed-pass access Block red
1	38-107080-01-00	External Water pipe byPass
2	40-160910-03-00	Water speed-pass access Block Blue
3	37-160220-12-00	Back Wheels
4	37-160320-11-00	Front Directional wheels
5	24-031200-13-A0	Plastic Plug
6	24-032200-07-A0	90 degree Plastic Elbow
7	37-310000-01-00	Water-Pump
8	37-340000-01-00	Heat exchanger Device
9	38-107080-01-00	External Water Pipe
10	40-160910-03-00	Water speed-pass access Block
11	37-320000-01-00	water Box
12	06-030001-02-00	Flow sensors
14	40-160910-04-00	Water speed-pass access Block



English

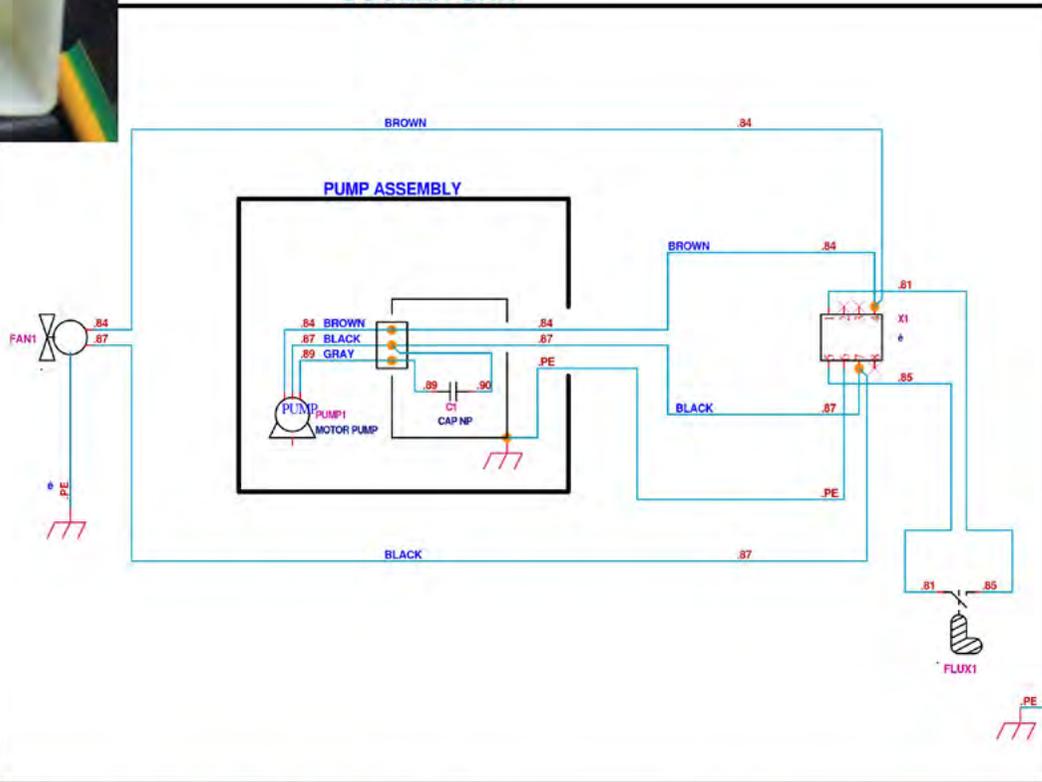




X1 MALE CONNECTOR

IMAGE NAME: unit cooler male connector.JPG  
ALSO STORED IN V\_COOLER-UNIT-MULTISYNERGIC.DDB FILE

### COOLER UNIT



COOLER UNIT FOR: MULTISYNERGIC MACHINES  
MULTIWAVE MACHINES  
MULTI PLUS MACHINES

TITLE: COOLER-UNIT	DATE: JUN. 01, 2012	TER S.r.l.
FILE: V_COOLER-UNIT_RE0.Sch	REV: 0 SHEET: 01 OF 01	Via G. Leopardi, 13 36030 Caldoggno(VI) ITALY
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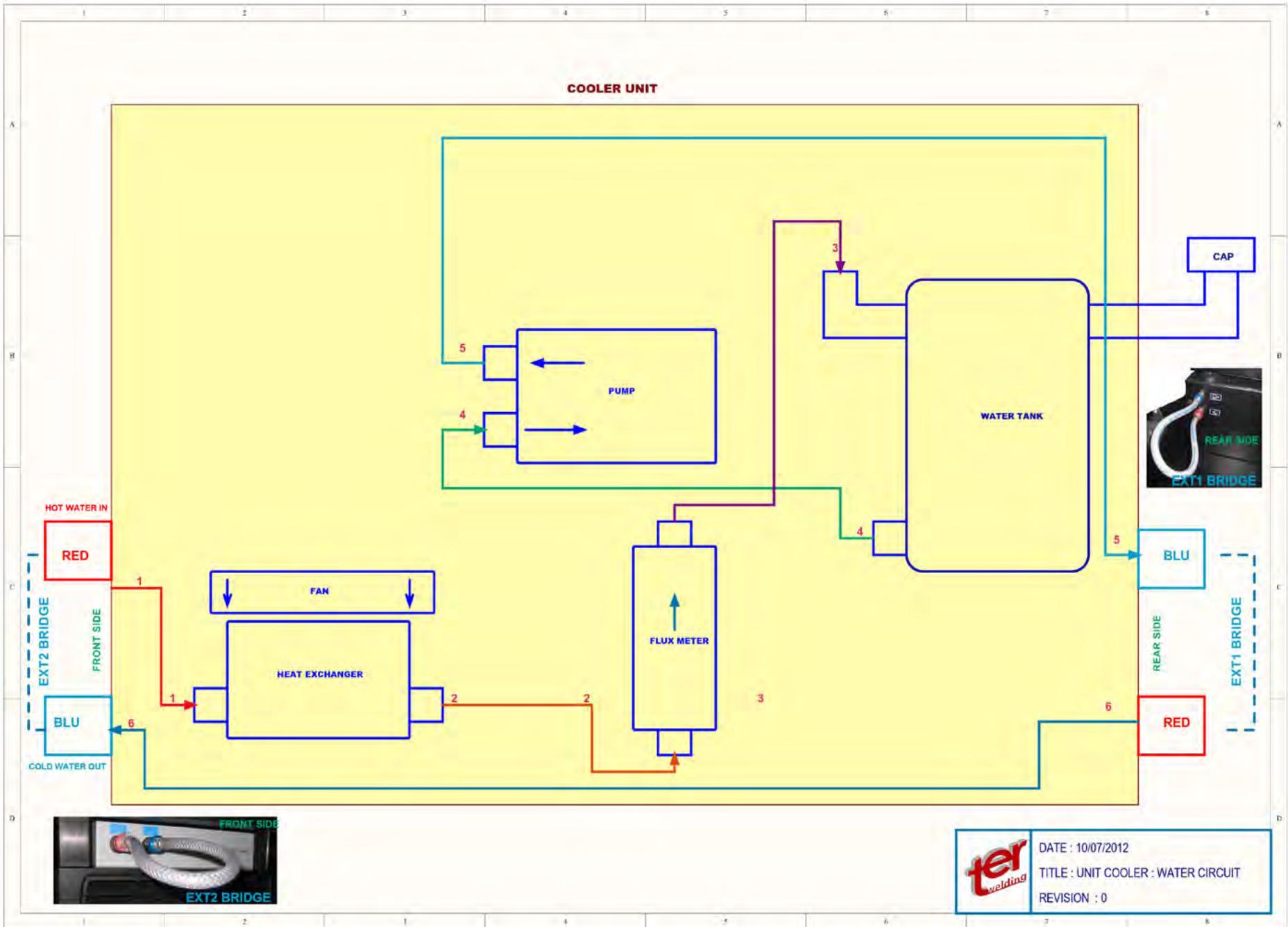


English





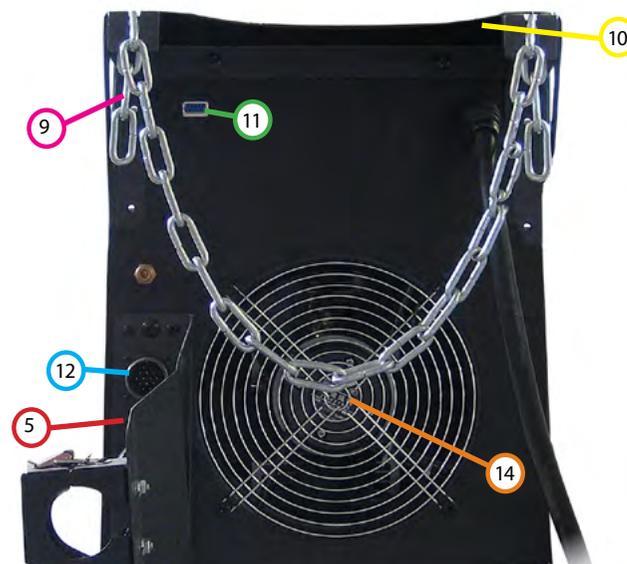
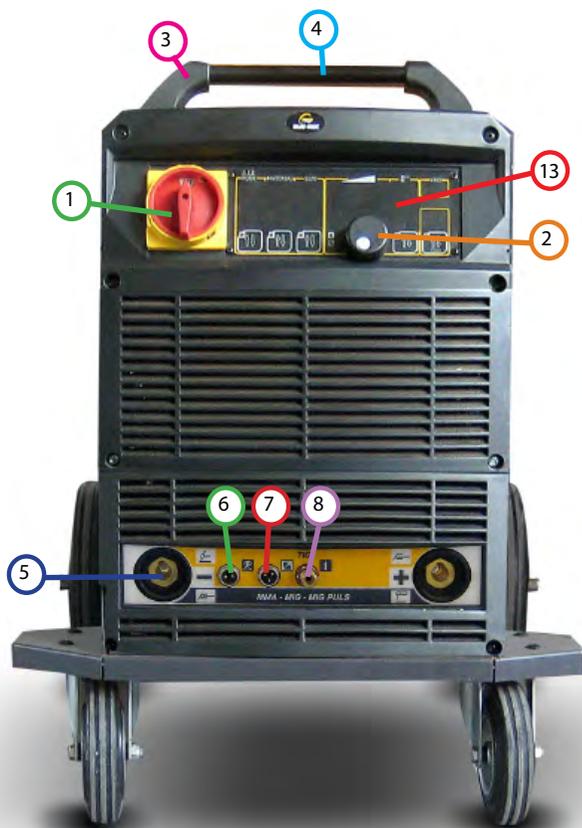
English GB





MULTI 500F

Spare Parts Multi 500F

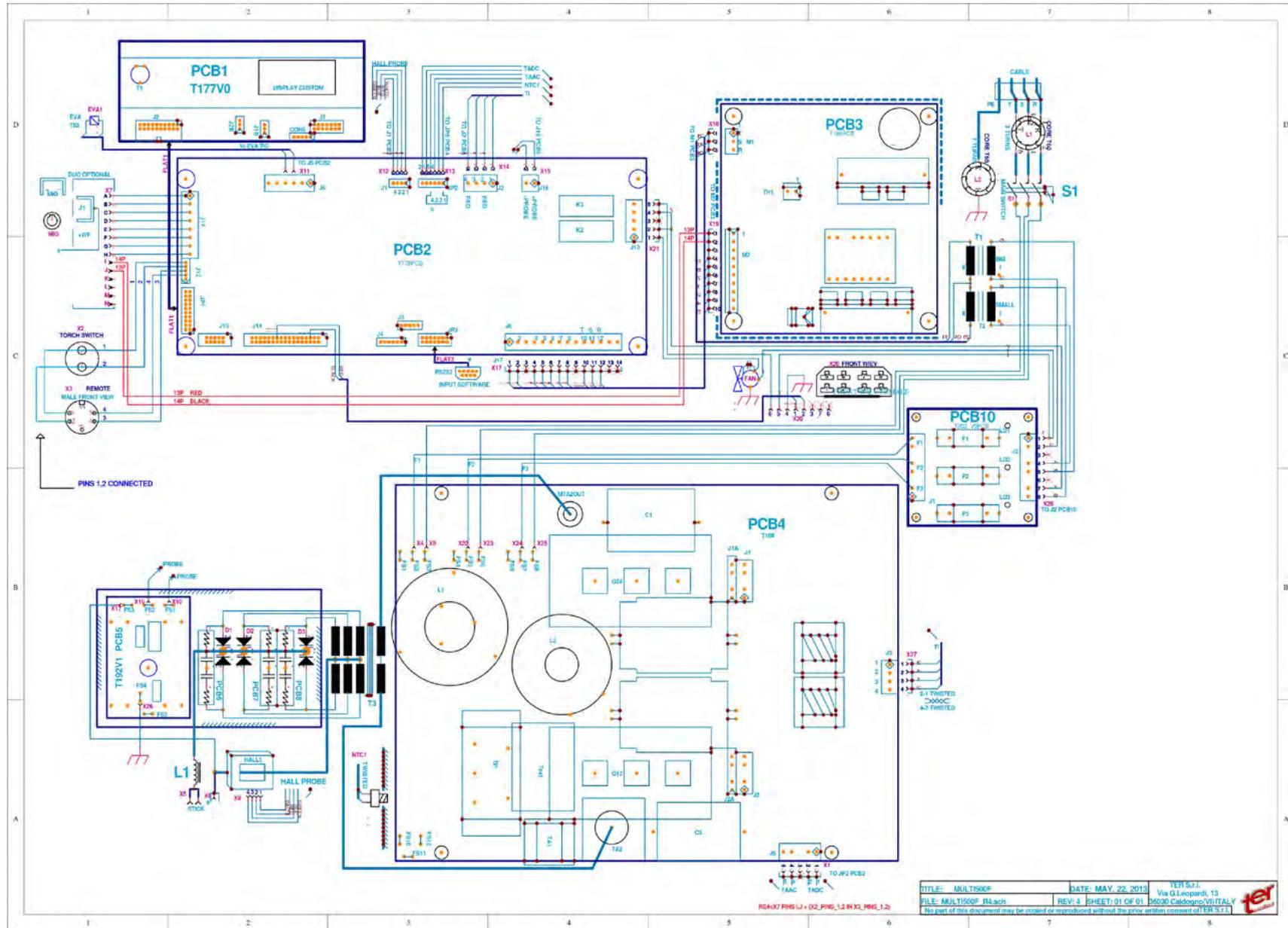


N°	CODE	TER CODE	DESCRIPTION	Rif. WELDING DIAGRAM
1	07-990003-06-00 D0170AA		Universal switch 62A	S1
2	37-231410-05-01 C0144AA		Knob	
3	37-260100-01-00 C0054AA		Handle block	
4	22-031001-02-A0C0056AA		Handle block	
5	40-160710-01-00 B0078AA		Fast socket	
6	40-140120-01-00 D0171AA		Air socket	
7	40-140120-02-00 D0172AA		Air socket	
8	24-031000-01-A0C0026AA		Gas connector components	
9	37-220100-02-00 D0190AA		Chain	
10	25-020102-58-A0C0115AA		External gas bottle support	
11	39-106309-01-A0		Program input serial port	
12	40-141010-04-00 B0104AA		Backside 14 poles socket	
13	T177PCB	T177PCB	Digital display control	PCB1
14	37-130310-01-00 D0175AA		Fan net	

English



WELDING DIAGRAM MULTI 500F



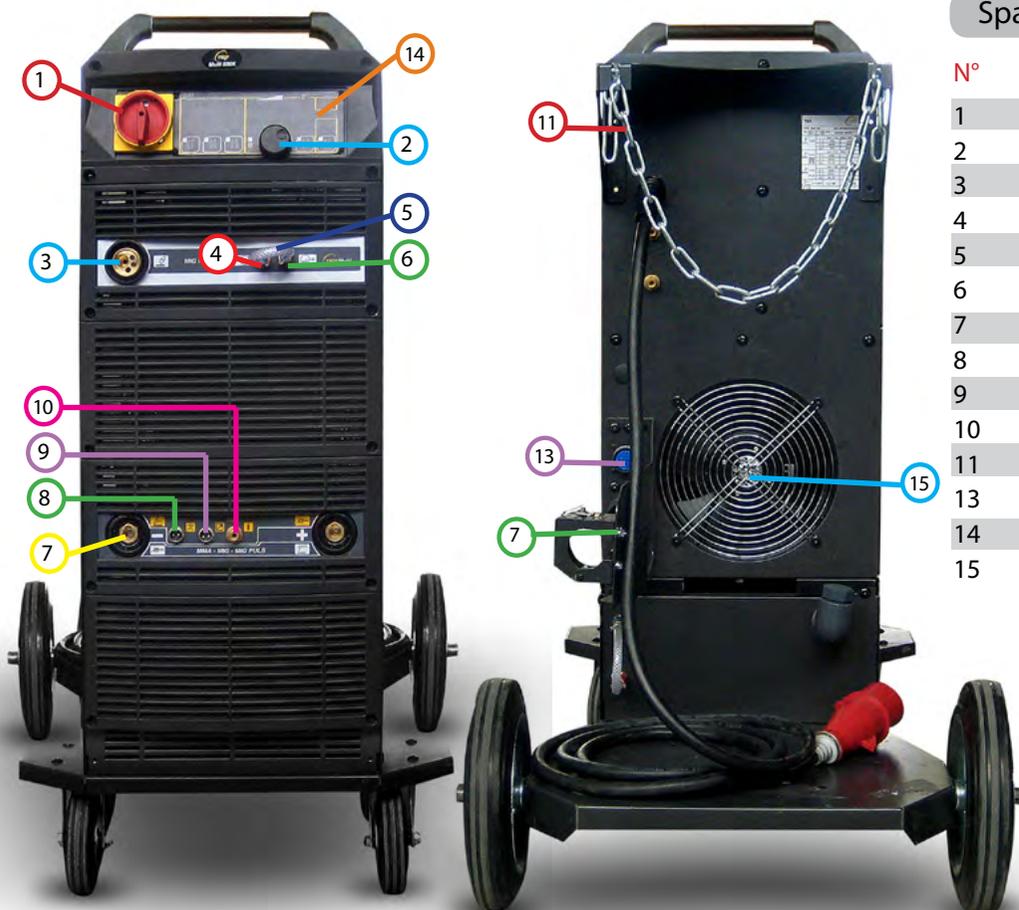
English GB







MULTI 500K



Spare Parts Multi 500K

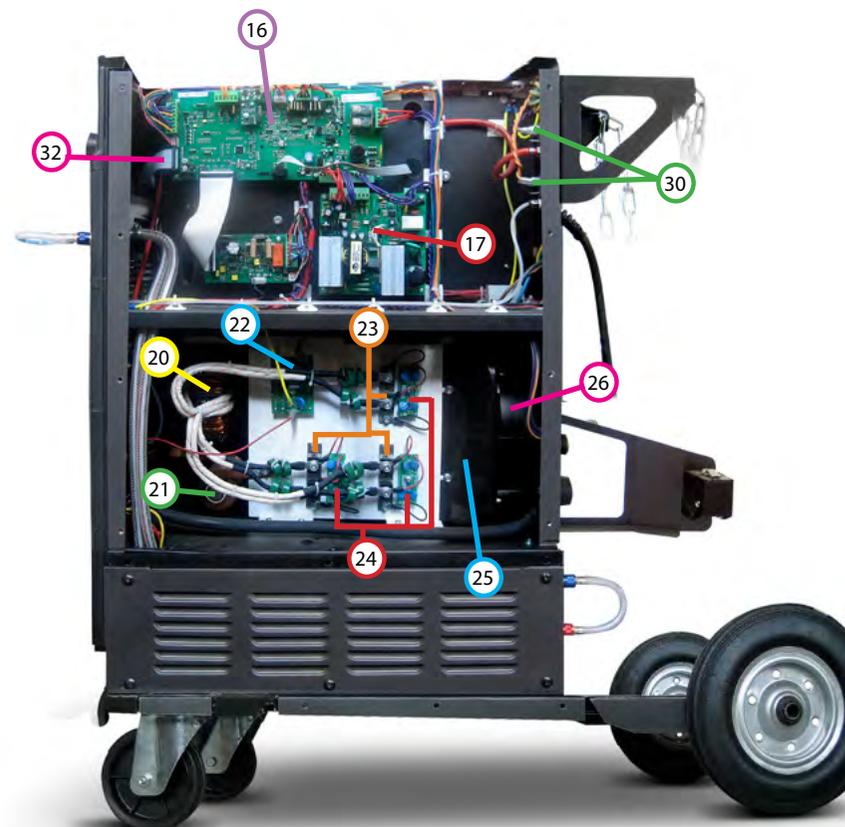
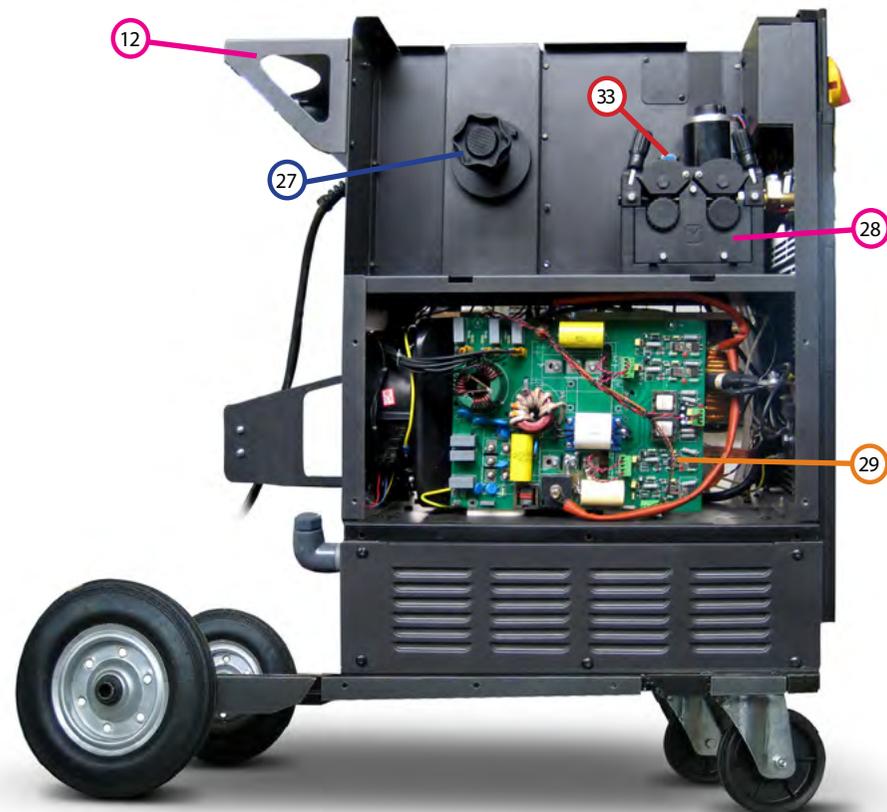
N°	CODE	DESCRIPTION	Rif. WEL.DIAGRAM
1	07-990003-06-00	Universal switch 62A	S1
2	37-231410-05-01	Knob	
3	40-180000-06-00	Flange brass components	
4	40-160910-06-00	Male red quick water connector	
5	38-103060-03-00	Water ByPass	
6	40-160910-05-00	Male Blue quick water connector	
7	40-160710-01-00	Fast socket	
8	40-140120-01-00	Air socket	
9	40-140120-02-00	Air socket	
10	24-031000-01-A0	Gas connector components	
11	37-220100-02-00	Chain	
13	40-141010-04-00	Backside 14 poles socket	
14	T177PCB	Digital display control	PCB1
15	37-130310-01-00	Fan net	

English





MULTI 500K



Spare Parts Multi 500K

N°	CODE	TER CODE	DESCRIPTION	Rif. WEL.DIAGRAM
12	25-020102-58-A0	C0115AA	External gas bottle support	
16	T178PCB	T178PCB	Contor PCB	PCB2
17	T186PCB	T186PCB	Auxiliary board	PCB3
18	03-010300-11-00	M0021AA	auxillary transformer 50Hz	T1
19	03-010500-40-00	M0042AA	auxillary transformer 50Hz	T2
20	03-010303-27-00	M0033AA	Toroidal HF transformer	T3
21	03-020100-15-00	M0034AA	output choke	L1
22	T192PCB	T192PCB	Probe filter	PCB5
23	04-010300-22-00	E0021AA	rectifier	D1-D2-D3

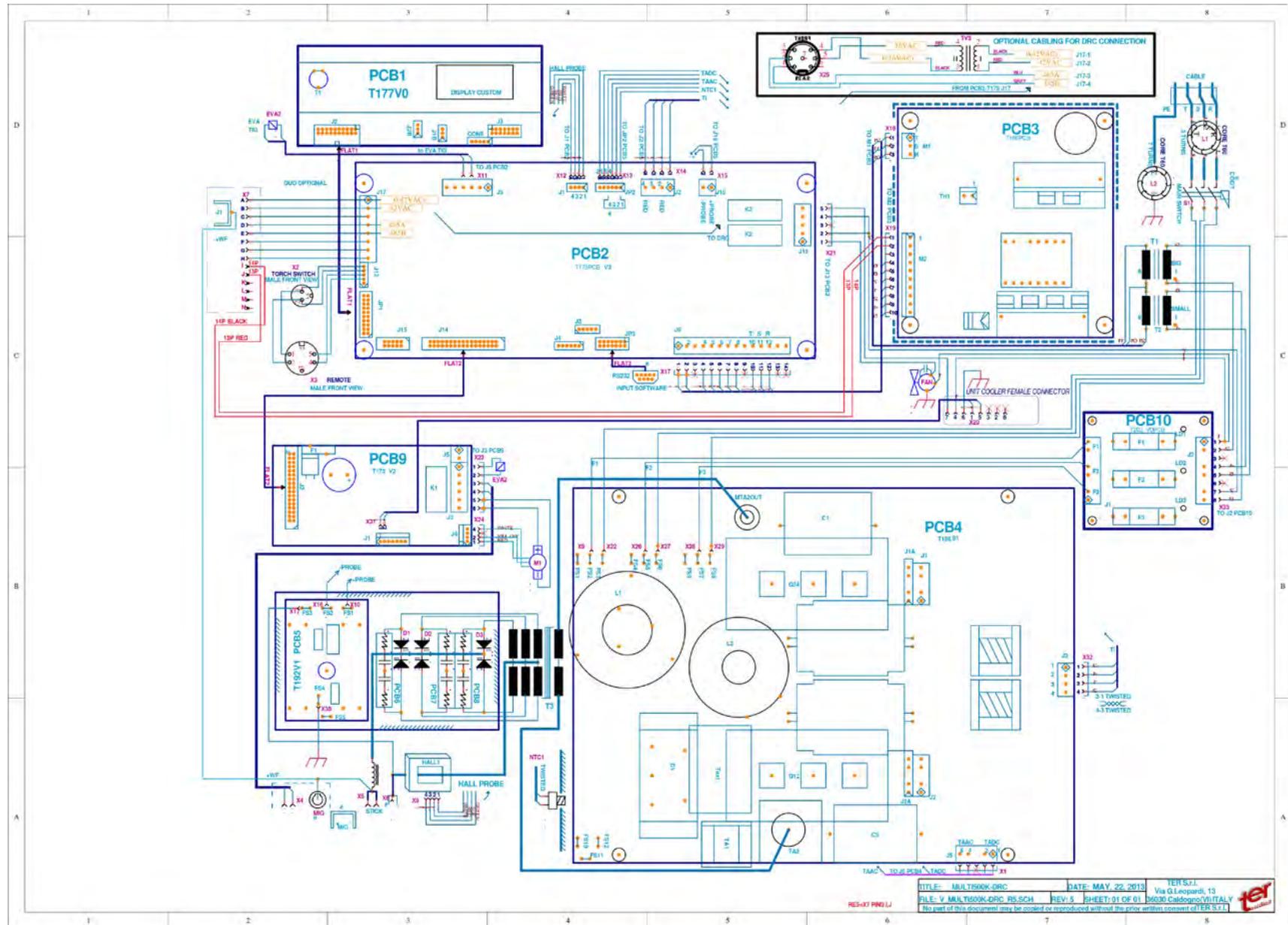
Spare Parts Multi 500K

N°	CODE	DESCRIPTION	Rif. WEL.DIAGRAM
24	51-PH-33-E-RL	Absorption PCBA	PCB6-PCB7-PCB8
25	23-020602-01-A0	Fan cover	
26	37-120321-01-00	Fan	FAN
27	37-221100-02-00	Spool Support	
28	37-210433-01-00	Wire feeder	
29	T188PCB	Driver Board	PCB4
30	37-140110-02-00	Solenoid	EVA1-EVA2
32	T173PCB	Wire control PCB	PCB9
33	39-106309-01-A0	Program input serial port	RS232
-	37-190100-05-00	Fuse	



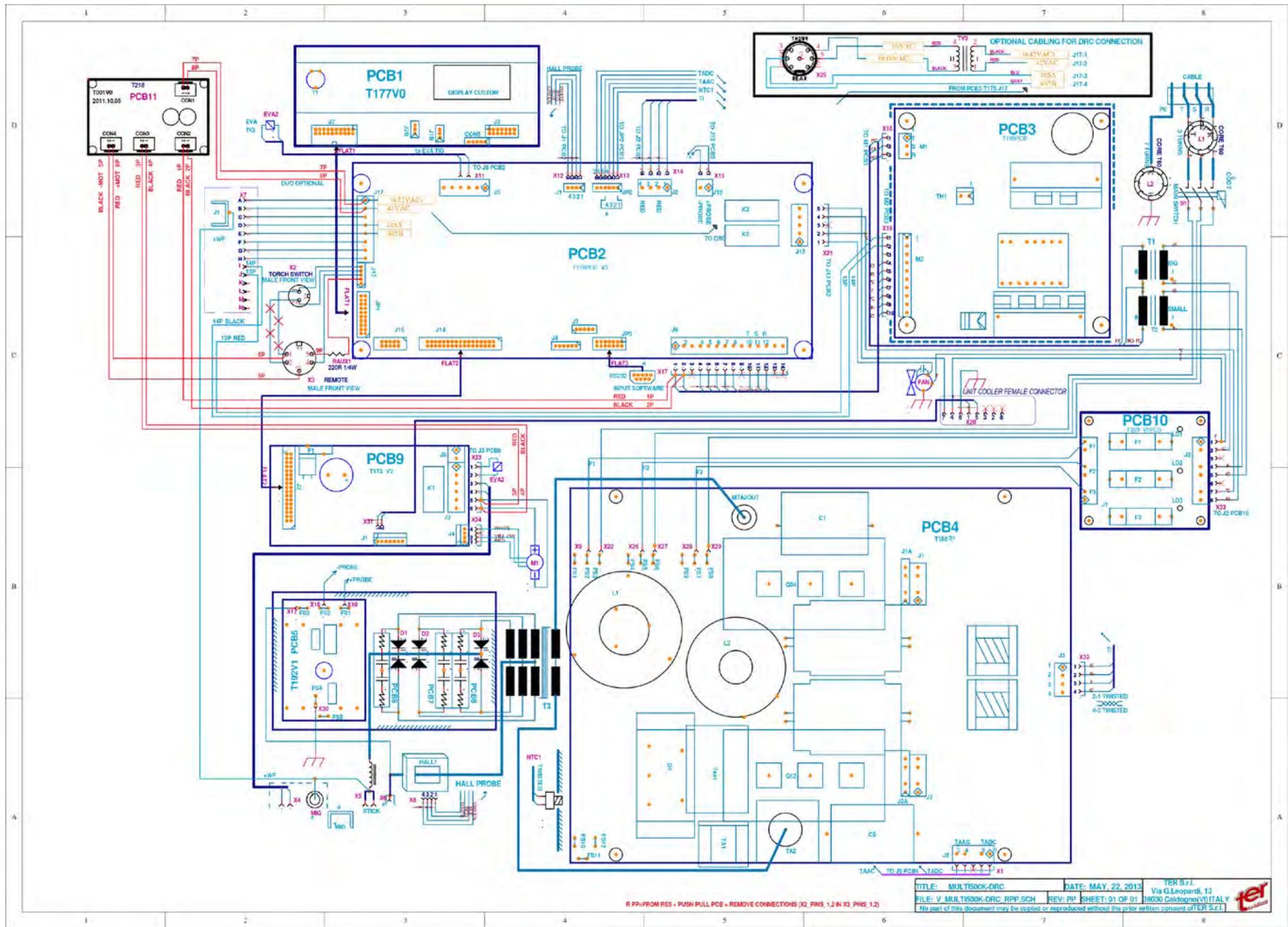


WELDING DIAGRAM MULTI 500K



English



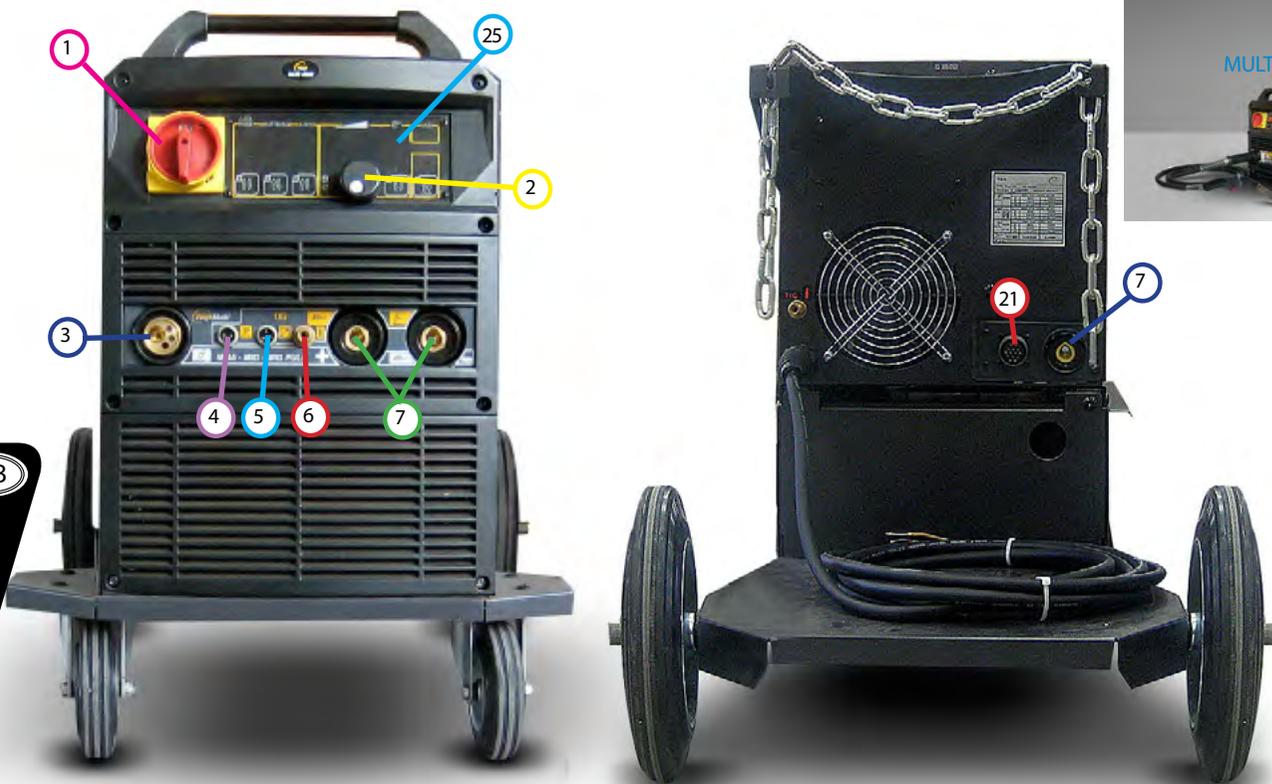


English





MULTI 400K



English

GB

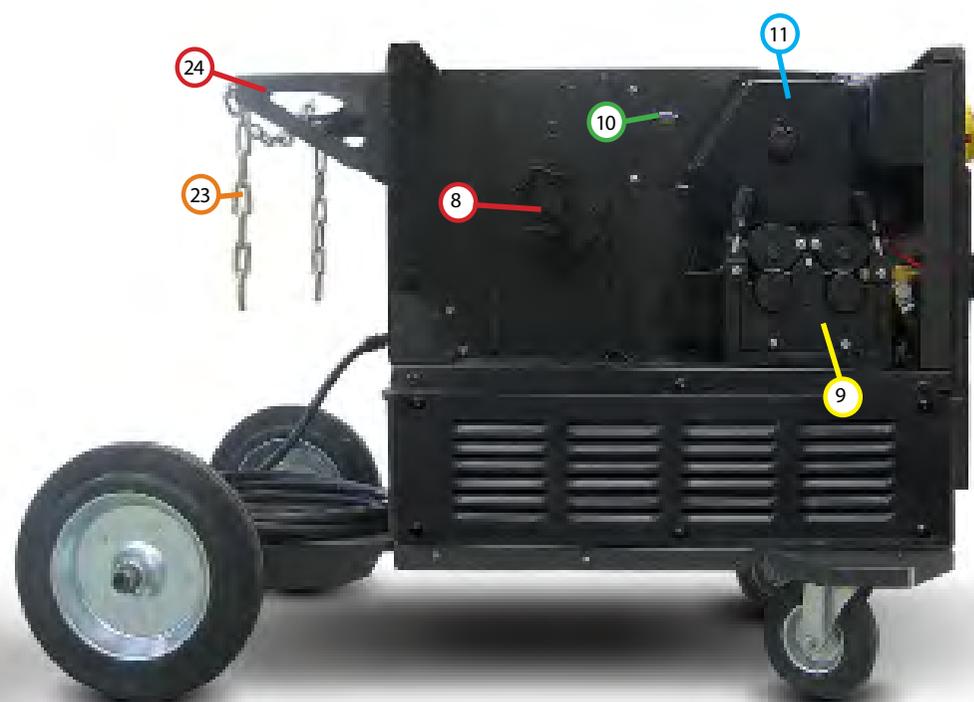
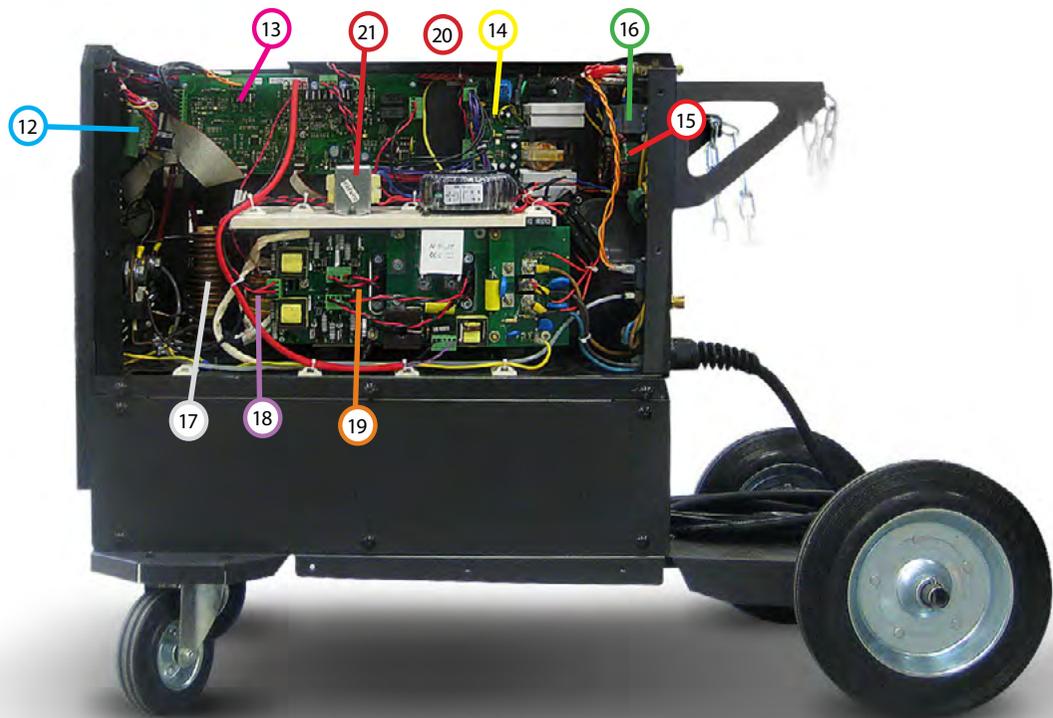
Spare Parts Multi 400K

N°	CODE	TER CODE	DESCRIPTION	Rif. WEL.DIAGRAM
1	07-020000-18-00	D0165AA	Universal switch 32A	S1
2	37-231410-05-01	C0144AA	Knob	
3	40-180000-06-00	C0257AA	Euro connector	
4	40-140120-01-00		Air socket	
5	40-140120-02-00	D0172AA	Air socket	
6	24-031000-01-A0	C0026AA	Gas connector components	
7	40-160710-01-00	B0078AA	Fast socket	
21	40-141010-04-00	B0104AA	Backside 14 poles socket	
25	T177PCB	T177PCB	Digital display control	PCB1





MULTI 400K



English

Spare Parts Multi 400K

N°	CODE	DESCRIPTION	Rif. WEL.DIAGRAM
8	37-221100-02-00	Spool support	
9	37-210433-01-00	Wire feeder	
10	39-106309-01-A0	Program input serial port	RS232
11	37-300100-01-00	Plastic internal module	
12	T173PCB	Wire control PCB	PCB9
13	T178PCB	Contor PCB	PCB2
14	T186PCB	Auxiliary board	PCB3
15	T196PCB	EMC board	PCB10
-	T192PCB	Probe Filter	PCB5

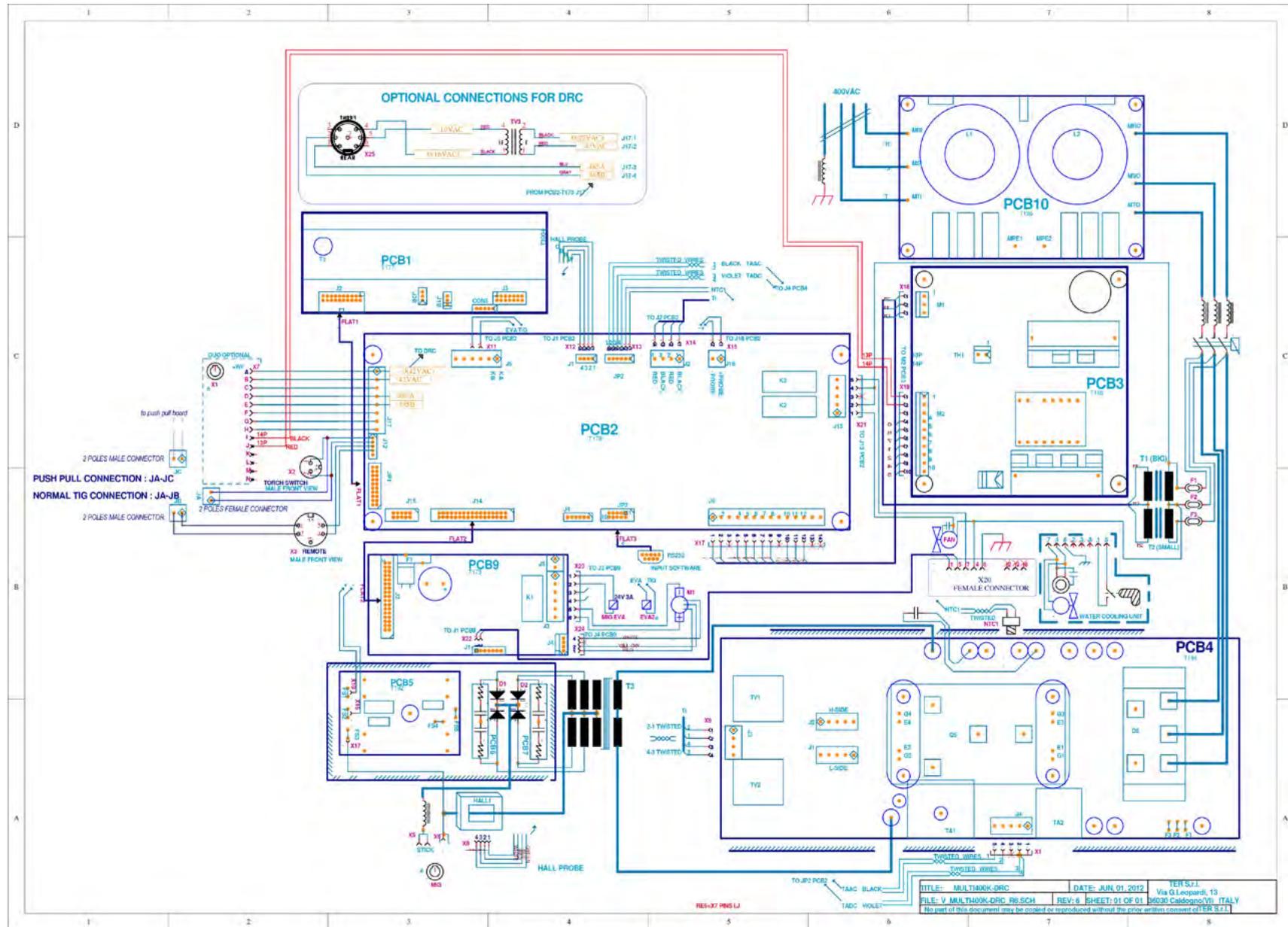
Spare Parts Multi 400K

N°	CODE	TER CODE	DESCRIPTION	Rif. WEL.DIAGRAM
16	37-140110-02-00	A0003AA	Solenoid	
17	03-020200-20-00		Output choke	
18	03-010303-11-00	M0036AA	Toroidal HF transformer	T3
19	T194/T195PCB	T194/T195PCB	400K Driver Board	PCB4
20	03-010300-11-00	M0021AA	auxillary transformer 50Hz	T1
21	03-010500-40-00	M0042AA	auxillary transformer 50Hz	T2
22	40-141010-04-00	B0104AA	Backside 14 poles socket	
23	37-220100-02-00	D0190AA	Chain	
24	25-020102-58-A0	C0115AA	External gas bottle support	





WELDING DIAGRAM MULTI 400K



English GB

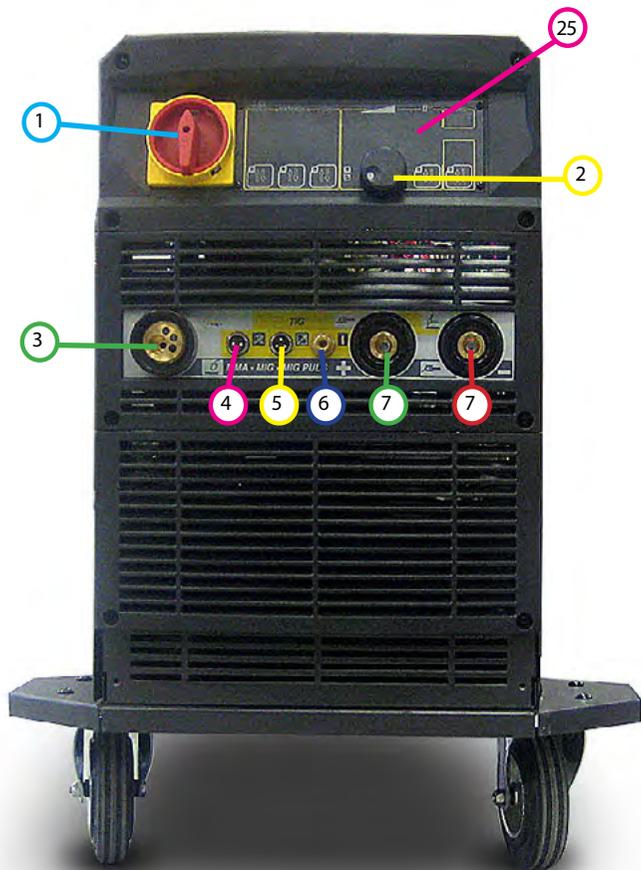


TITLE: MULTI400K-DRC DATE: JUN 01 2012 TER S.r.l.  
 FILE: V\MULTI400K-DRC\_R6.SCH REV: 6 SHEET: 01 OF 01 Via G. Leopardi, 13  
 06030 Calderone (VI) ITALY  
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MULTI 250K



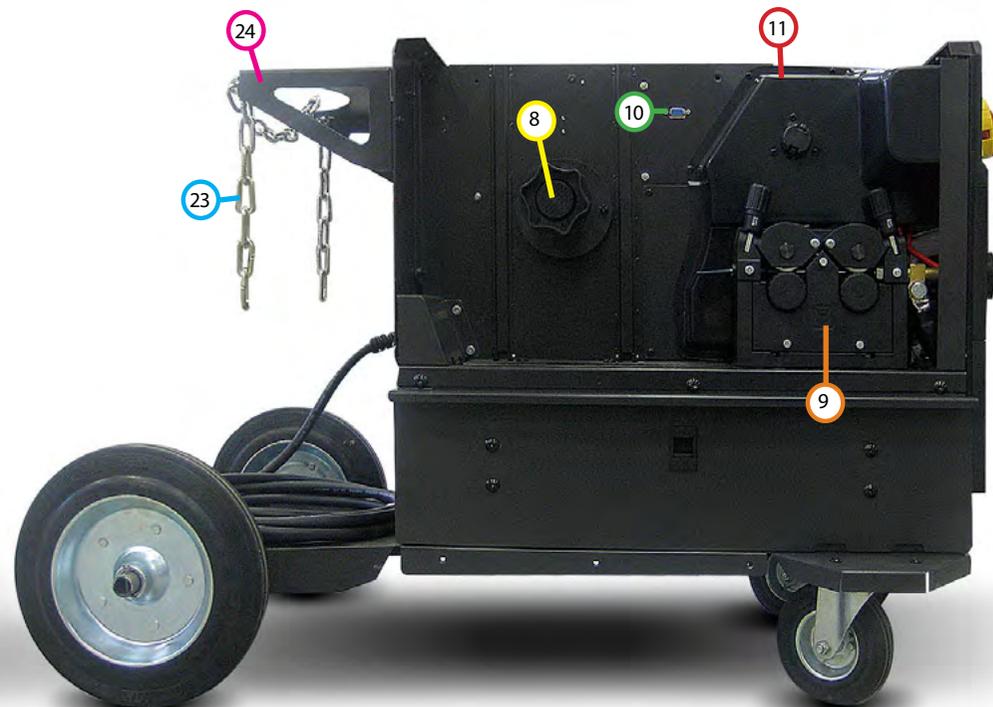
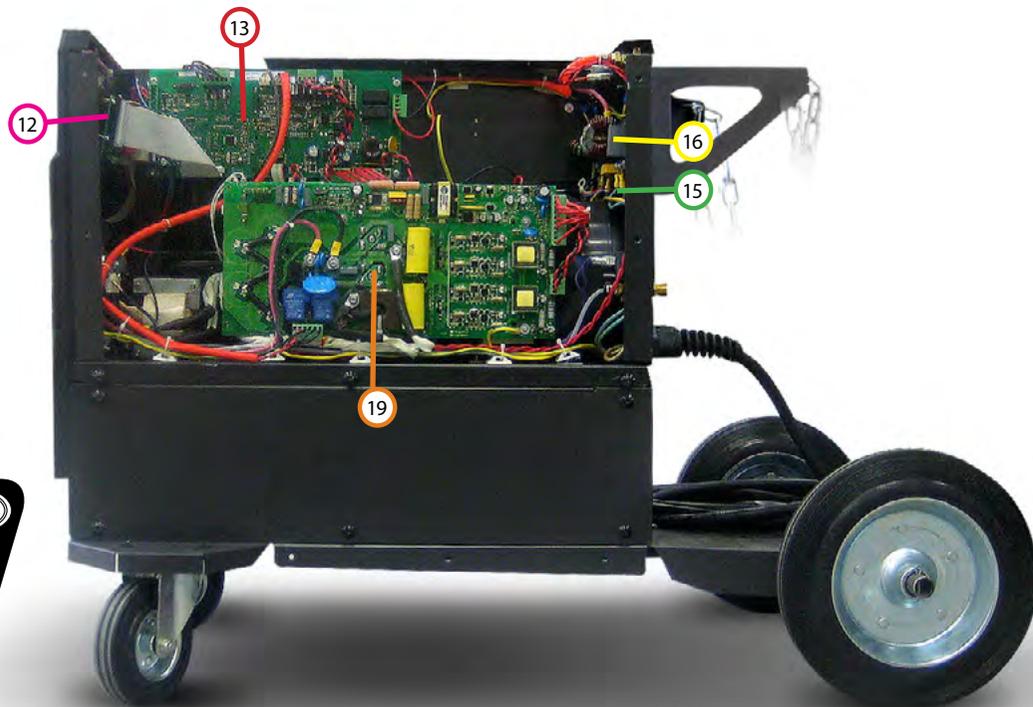
Spare Parts Multi 250K

N°	CODE	TER CODE	DESCRIPTION	Rif. WEL.DIAGRAM
1	07-020000-18-00	D0165AA	Universal switch 32A	S1
2	37-231410-05-01	C0144AA	Knob	
3	40-180000-06-00	C0257AA	Flange brass components	
4	40-140120-01-00	D0171AA	2 pole connector	
5	40-140120-02-00	D0172AA	3 pole connector	
6	24-031000-01-A0	C0026AA	Gas connector components	
7	40-160710-01-00	B0078AA	Fast socket	
21	40-141010-04-00	B0104AA	Backside 14 poles socket	
25	T177PCB	T177PCB	Digital display control	PCB1

English



MULTI 250K



English  
GB

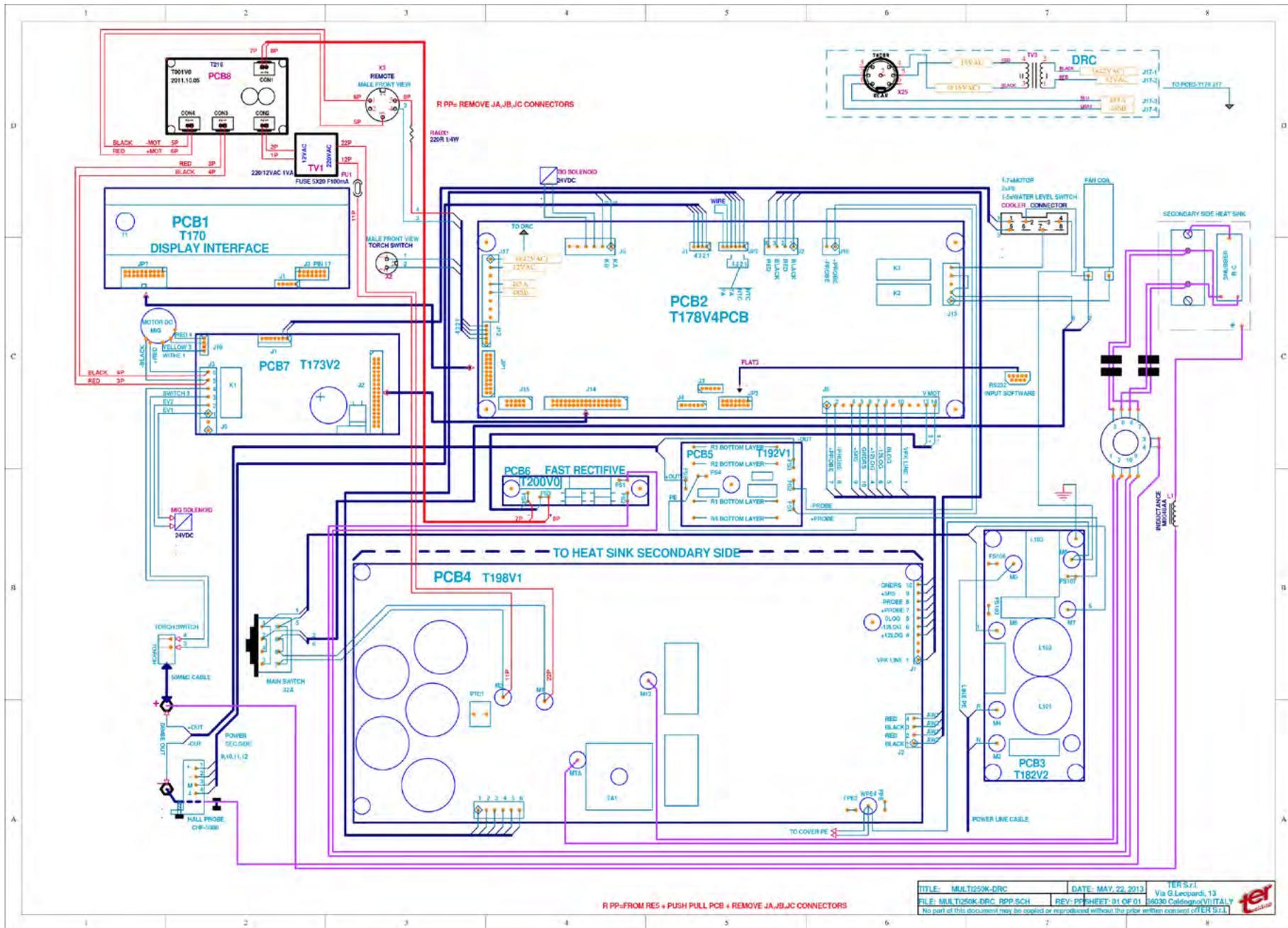
Spare Parts Multi 250K

N°	CODE	TER CODE	DESCRIPTION	Rif. WEL.DIAGRAM
8	37-221100-02-00	D0164AA	Spool Support	
9	37-210433-01-00	A0006AA	Wire feeder	
10	39-106309-01-A0		Program input serial port	RS232
11	37-300100-01-00		Plastic internal module	
12	T173PCB	T173PCB	Wire control PCB	PCB9
13	T178PCB	T178PCB	Contor PCB	PCB2
16	T182PCB	T182PCB	EMC board	PCB7

Spare Parts Multi 250K

N°	CODE	TER CODE	DESCRIPTION	Rif. WEL.DIAGRAM
16	37-140110-02-00	A0003AA	Solenoid	
19	T198PCB	T198PCB	250K Driver Board	PCB4
23	37-220100-02-00	D0190AA	Chain	
24	25-020102-58-A0	C0115AA	External gas bottle support	
-	03-010303-21-00		Toroidal transformer	
-	T192PCB	T192PCB	Probe Filter	PCB5
-	T200PCB	T200PCB	Protect Board	





English

TITLE: MULTI250K-DRC DATE: MAY 22, 2013 TER S.r.l.  
 FILE: MULTI250K-DRC\_RPP-SCH REV: PPSHEET-01 OF 01 Via G. Leopardi, 13 16030 Castelluccio di Stabia (CN)  
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**Ter srl Via Giacomo Leopardi, 13 - 36030 Caldogno (VI) ITALY •**  
**Ph: +39 0444 586440 - Fax: +39 0444 905764 • e-mail: [info@terwelding.com](mailto:info@terwelding.com)**