Power TIG 3000 DC PULSE

GeKaMac®

PoWerTIG 3000 DC PULSE

Users Manual

Please Read and Understand This Manual
Before Operating The Welding Machine

www.gedikwelding.com

This machine is for internal use only.

It complies with the WEEE Directive.

This machine has been designed in accordance with the EN 60974-1 and EN 60974-10 standards.

The machine is safe when installation, operation, and maintenance are performed in accordance with the user manual and regulations. The operator and machine owner are responsible for adhering to safety rules.

Gedik Kaynak San. Ve Tic. A.Ş. assumes no responsibility for safety or CE compliance if any modifications are made to the machine or if safety rules are not followed.

This Class A equipment is not suitable for use in homes and similar residential areas where the power supply is provided by the low-voltage public electricity network.

This machine is not household waste and cannot be disposed of in the trash.

When the machine reaches the end of its service life or becomes obsolete, it must be disposed of in accordance with regulations.

COMPLIES WITH THE WEEE DIRECTIVE.

Eco Design Statement

This machine has been designed and manufactured in accordance with the requirements of the 2009/125/EC Eco Design Directive concerning the environmentally friendly design of energy-related products.

Accordingly, machines with an idle mode are as follows.

	Idle Mode
MMA	**X**
MIG	√
TIG	√
Plazma	√
SAW	**Out of Scope**

Efficiency measurements should be conducted only on the power unit. The water cooling system should be disabled. For more information on measurements and machine settings, Gedik Kaynak Sanayi ve Ticaret A.Ş. should be consulted.

AT UYGUNLUK BEYANI

EU DECLARATION OF CONFORMITY

Bu uygunluk beyanı yalnızca imalatçının sorumluluğu altında düzenlenir.

This declaration of conformity is issued under the sole responsibility of the manufacturer.

İstanbul, Turkey, 08.03.2024

İmalatçı / Manufacturer

GEDİK KAYNAK SANAYİ ve TİCARET A.Ş.

Ankara Cad. No.306 Seyhli Pendik ISTANBUL TURKIYE

Ürün / Product	ARC WELDING MACHINE
Marka-Model / Brand- Model	POWER TIG 3000 DC PULSE

Yukarıda tanımlanan beyanın nesnesi ilgili uyumlaştırılmış AB mevzuatı ile uyumludur.

The object of the declaration described above, is in conformity with the relevant union harmonisation legislation.

Direktifler / Directives	2014/30/EU & 2014/35/EU & 2009/125/EC EU/2019/1784

Uyumlaştırılmış standartlar ve uygunluğun deklare edilmesiyle ilişkili diğer referanslar.

References to the relevant harmonised standarts used and references to the other technical specifications in relation to which conformity is declared.

EN IEC 60974-1
EN IEC 60974-10

Bu ekipman, talimatlara uygun kurulduğunda, bakımı yapıldığında ve kullanıldığında belirtilen standartlara uygundur. Makine üzerinde bir değişiklik yapıldığında veya yanlış kullanımda deklarasyon geçersiz olur.

The equipment is in compliance with pertinent legislation when installed, utilized, and maintained in accordance with the enclosed instructions. This declaration will be invalid under any modification or improper use.

İmalatçı Adına İmzalayan / Signed for and on behalf of:

Hatice Özel, Equipment Business Unit Director

EN ENGLISH

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Introduction

Thank you for buying our product.
In order to get the best performance out of the plant and ensure the maximum lifespan of its parts, the use and maintenance instruc-tions contained in this manual must be read and strictly complied with, as well as **the safety instructions contained in the rele-vant folder**. If repairs to the plant are required, we recommend that our clients contact our service centre workshops, as they have the necessary equipment and personnel that are specifically trained and constantly updated.
All our machines and equipment are constantly developed and so changes may be made in terms of their construction and features.

Description

PoWer TIG 3000 DC Pulse
Using the most modern IGBT based inverter technology, the three-phase TIG generator with high frequency **PoWer TIG 3000 DC Pulse** ignition, comes with an innova-tive digital control for all welding parameters.
Technologically cutting-edge, robust, easy to use, fitted with high potential digital control, this generator can be used for high qual-ity TIG welding, in direct current, of all metals including aluminium and alloys. This means that the machine is particularly suitable for specific uses in industry and the maintenance sector.
It also guarantees excellent performance for MMA welding, even when using particularly difficult cellulosic and basic electrodes.

Features

The characteristics found in all welding machines in the PoWer TIG range are:
- Innovative and compact design.
- Compact size and light weight for easy transportation.
- Metallic main structure with shock-proof plastic front panel.
- Protective visor on the control panel.
- Robust handle integrated into the chassis.
- Digital control, regulation and monitoring of all welding param-eters.
- Digital display for pre-setting welding parameters.
- Digital ammeters and voltmeters are standard fittings, with pre-setting of welding current and saving of the latest value (Hold-function).
- Feature that makes it possible to save and call up personalised welding programs.
- Self-diagnosis device.
- Overheating thermostatic protection.
- Automatic compensation for mains voltage fluctuations within ±20%.
- Safety barrier against excess voltage from mains.
- Electromagnetic disturbance is reduced due to high frequency being involved only during the arc ignition phase.
- “Energy Saving” function to operate the power source cooling fan andthe torch water cooling only when necessary.
- Low absorbed current consumption.
- This generator also conforms to all the standards and directives in force in the European Community.

- **TIG**
  - Excellent TIG welding characteristics.
  - High frequency arc striking of TIG welding, precise and efficient even from long distance.
  - Using special TIG torches allows remote adjustment of welding current directly from the torch.
  - Standard built-in pulsation (from 0,5 to 2000 Hz) with provision for entering the SYN Pulse function.
- **MMA**
  - The VRD (Voltage Reduction Device) can be activated, which reduces voltages to below 12 V, which means that the welding machine can be used in ambient conditions in which there is a high electrical risk, thereby providing maximum operator safety.
  - "Arc Force" adjustable to select the best dynamic characteristics for the welding arc.
  - "Hot Start" adjustable to improve ignition with particularly difficult electrodes.
  - Anti-sticking function to avoid the electrodes sticking.

PoWer TIG 3000 DC Pulse

- Suitable for use on all robotic systems.
- Optional "RoboMAT 1" interface that handles all process start/stop signals, regulation of the principal welding parameters, and also acts as a flexible, efficient interfacing system that meetsall Analogue / Digital connection requirements.

Usage limits (IEC 60974-1)

The use of a welder is typically discontinuous, in that it is made up of effective work periods (welding) and rest periods (for the positioning of parts, the replacement of wire and underflushing operations etc. This welder is dimensioned to supply a I_2 max nominal current in complete safety for a period of work of X% of the total usage time. The regulations in force establish the total usage time to be 10 minutes. The work cycle is considered to be X% of this period of time. If the permitted work cycle time is exceeded, an overheat cut-off occurs to protect the components around the welder from dangerous overheating. Activation of thermal protection is signaled by "t° C" flashing on control panel display (for further information see the MTH / MTB control panel manual). After several minutes the overheat cut-off rearms automatically and the welder is ready for use again.

Technical data

The general technical data of the system are summarized in table 1.

Model		PoWer TIG 3000 DC Pulse	
		TIG	MMA
Power supply 50/60 Hz	V	3~ 400 ±20%	
Power supply: Z_{max}	Ω	0,092	
Input power @ I_2 Max	kVA	9,1	9,8
Delayed fuse (I_2 @ 100%)	A	10	
Power factor / cosφ		0,96 / 0,99	0,95 / 0,99
Efficiency degree	η	0,78	0,83
Open circuit voltage	V	60	
Current range	A	5÷300	10÷270
Duty cycle @ 100% (40°C)	A	210	200
Duty cycle @ 60% (40°C)	A	250	230
Duty cycle @ X% (40°C)	A	300 (35%)	270 (35%)
Usable electrodes	mm	1,2÷4,0	1,6÷5,0
Standards		IEC 60974-1 • IEC 60974-3 • IEC 60974-10 CE S	CE S CE S
Protection class		IP 23 S	
Insulation class		F	
Dimensions	mm	495 - 390 - 185	
Weight	kg	17,5	

IMPORTANT:
These systems, tested in accordance with the requirements of the **EN/IEC 61000-3-3** standard, satisfy the requirements laid down by the **EN/ IEC 61000-3-11** standard.

PoWer TIG 3000 DC Pulse

This equipment complies with **EN/IEC 61000-3-12** provided that the maximum permissible system impedance Z_{max} is less than or equal to 0,092 at the interface point between the user's supply and the public system. It is the responsibility of the installer or user of the equipment to ensure, by consultation with the distribution network operator if necessary, that the equipment is connected only to a supply with maximum permissible system impedance Z_{max} less than or equal to 0,092.

How to lift up the machine

The weld machine has a strong handle all in one with the frame, used for transporting the machine manually only.

NOTE: *These hoisting and transportation devices conform to Eu-ropean standards. Do not use other hoisting and transportation systems.*

Open the packaging

The system essentially consists of:

- **PoWer TIG** weld unit.
- Separately:
  Welding TIG torches (optional).
  Neck strap
  Ground cable, complete with rapid coupling (optional).
  Coolant unit for welding torch (optional).
  trolley for transportation (optional).
  "RoboMAT 1" analogue / digital robot interface (optional this interface must only be used for automatic / robotised equip-ments).
  Generator interconnection cable - robot interface (optional - this interface must only be used for automatic / robotised equipments).

Upon receiving the system:

- Remove the welding generator and all relevant accessories-components from their packaging.
- Check that the weld machine is in good condition, if not report any problems immediately to the seller-distributor.
- Make sure all ventilation grilles are open and that no foreign bod-ies are blocking the air circulation.

Installation

The installation site for the system must be carefully chosen in or-der to ensure its satisfactory and safe use. The user is responsi-ble for the installation and use of the system in accordance with the producer's instructions contained in this manual. Before install-ing the system the user must take into consideration the potential electromagnetic problems in the work area. In particular, we sug-gest that you should avoid installing the system close to:

- Signalling, control and telephone cables.
- Radio and television transmitters and receivers.
- Computers and control and measurement instruments.
- Security and protection instruments.

Persons fitted with pace-makers, hearing aids and similar equip-ment must consult their doctor before going near a machine in op-eration. The environment in which the equipment is installed must be suitable for the casing's protection level. This system is cooled by means of the forced circulation of air, and must therefore be placed in such a way that the air may be easily sucked in and ex-pelled through the apertures made in the frame.

The welding unit is characterised by the following levels:

- Protection level IP 23 S indicates that the equipment can be used both indoors and outdoors.
- Use class "S" means that the equipment can be used in condi-tions subject to heightened electrical shock.

Connection to the electrical supply

Connection of the machine to the user line (electrical current) must be performed by qualified personnel.

Before connecting the welding machine to the mains pow-er supply, make sure that rated voltage and frequency corre-spond to those provided by the mains power supply and that the welding machine's power switch is turned to "O".

PoWer TIG 3000	**Three-phase power supply**

The four-pole cable supplied with the system must be used for the connection to the mains power supply. This cable is made up of:

- Three conductors that are used to connect the machine to the power supply.
- The fourth, which is YELLOW-GREEN, is used to form the "GROUND" connection.

Connect a suitable load of normalised plug (3p+t) to the pow-er cable and provide for an electrical socket complete with fuses or an automatic switch. The ground terminal must be connected to the ground conducting wire (YELLOW-GREEN) of the supply.

Table 2 shows the capacity values that are recommended for fus-es in the line with delays.

NOTE: *Any extensions to the power cable must be of a suitable diameter, and absolutely not of a smaller diameter than the spe-cial cable supplied with the machine.*

Instructions for use

COMMAND AND CONTROL UNITS (Fig. A)

Pos. 1 MTH / MTB command and control panel.
Pos. 2 Positive pole quick connection.
Pos. 3 Fast coupling TIG torch gas tube.
Pos. 4 TIG weld auxiliary control connector (torch button, re-mote controlpedal, etc.).
Pos. 5 Negative pole quick connection.
Pos. 6 Power supply switch. In the "O" position the welder is off.
Pos. 7 Mains cable. **Pos. 8** Welding gas hose.
Pos. 9 Power supply connector for the cooling system.

Table 2

Model		PoWer TIG 3000 DC Pulse	
		TIG	MMA
Input power @ I_2 Max	kVA	9,1	9,8
Delayed fuse (I_2 @ 100%)	A	10	
Duty cycle @ X% (40°C)	A	300 (35%)	270 (35%)
Mains cable Length Section	 m mm^2	 4 2,5	
Ground cable Section	 mm^2	 35	

Power TIG 3000 DC Pulse

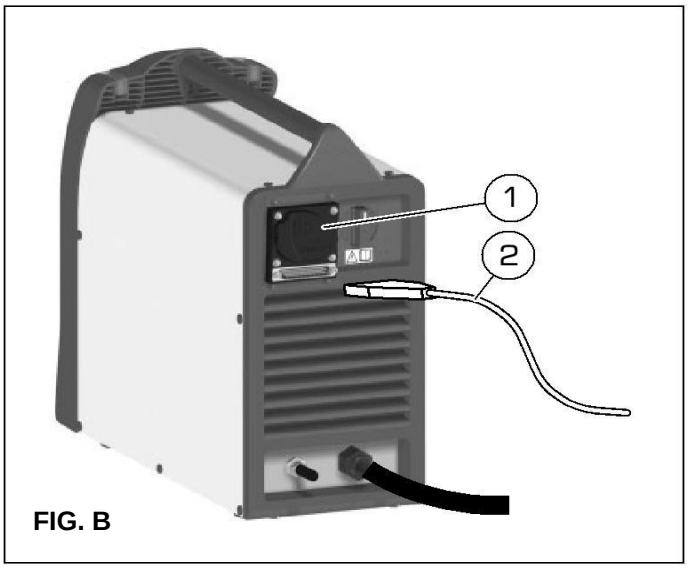


FIG. B

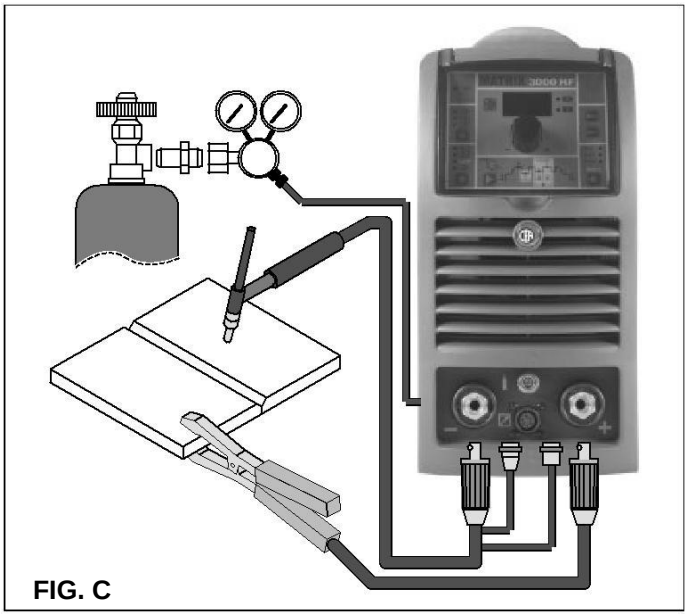


FIG. C

Interfacing accessories (optional)

“RoboMAT 1” analogue / digital robot interface
Fitted on the back of the **PoWer TIG 3000 DC Pulse** weld-ing machine (see example, Pos. 1, Fig. B).

“RoboMAT 1” analogue / digital robot interface connection cable - Cutting robot or for automatic equipment
Connect the cable to the analogue / digital interface as shown in figure (Pos. 2, Fig. B).
To connect the other end of this cable see the diagram in the man-ualfor the “RoboMAT 1” analogue / digital robot interface.
IMPORTANT: *Do not keep the “RoboMAT 1” analogue / digital ro-bot interface connected to the generator, unless it is also powered by the automatic system.*

TIG welding

In the TIG process welding is achieved by melting the two metal pieces to be joined, with the possible addition of material from the outside, using an arc ignited by a tungsten electrode. The molten bath and the electrode are protected by and inert gas (for exam-ple, Argon). This type of welding is used to weld thin sheet metal or when elevated quality is required.

- Connecting the welding cables (Fig. C):
  Connect the gas hose to the Argon cylinder.
  With the machine switched off:
  Connect the ground cable to the snap-on connector marked + (positive).
  Connect the relative ground clamp to the workpiece or to the workpiece support in an area free of rust, paint, grease, etc..
  Connect the TIG torch power cable to the snap-on con-nector marked - (negative).
  Connect the torch gas tube to the connection (Pos. 3, Fig. A).
  Insert the torch button connector in the 6 poles holder (Pos. 4, Fig. A).
- Switch the welding machine on by moving the power supply switch to **I** (Pos. 6, Fig. A).
- Make the adjustments and select the parameters on the con-trol panel (for further information see the MTH / MTB control panel manual).

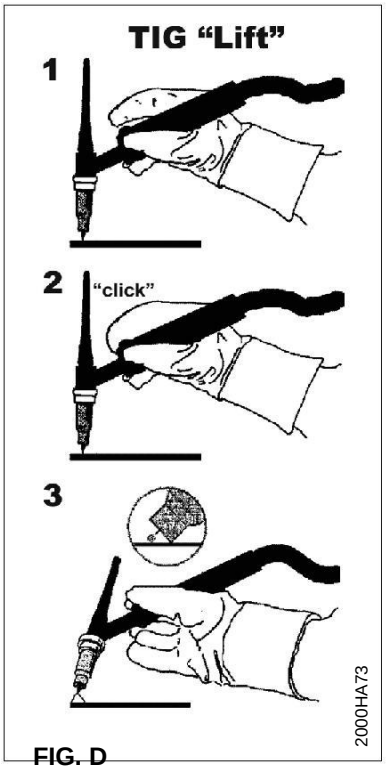


FIG. D

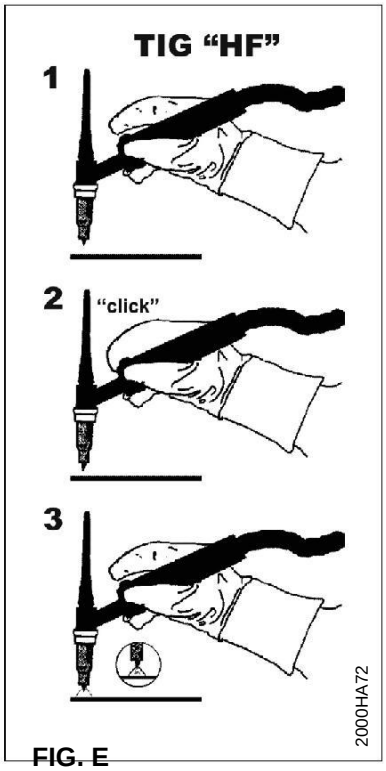


FIG. E

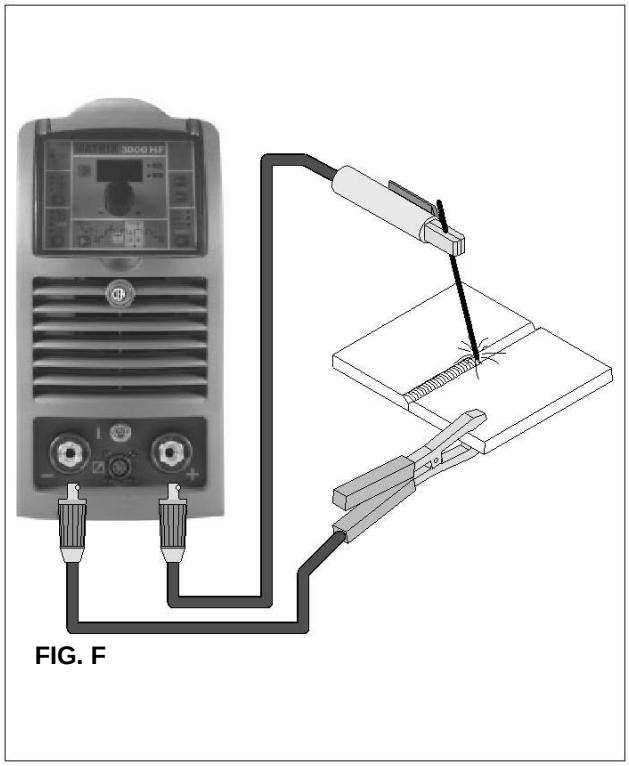


FIG. F

TIG WELDING WITH “Lift” TYPE STRIKING

4a) Open the gas cylinder and flow regulator.

5a) Put the electrode at the point at which welding is to begin, put the TIG torch at an angle so that the edge of the gas nozzle is not on top of the piece to be welded, keeping contact be-tween the point of the electrode and the piece to be welded (Fig. D-1).

6a) Press the torch button.

7a) The “Lift” function strikes the arc when the TIG torch electrode comes into contact with the workpiece and is then removed (Fig. D-2)

8a) Carry out TIG welding (Fig. D-3). To end welding:

- Lift the torch slowly, at a certain point the welding current decreases, and then stop.
- The welding machine follows an automatic down slope along with extinguishing of the arc.

9a) When finished welding remember to shut off the gas cylinder.

TIG WELDING WITH HIGH FREQUENCY STRIKING (HF)

4b) Open the gas cylinder and flow regulator.

5b) Put the electrode at the point at which welding is to begin, put the TIG torch at an angle so that the edge of the gas nozzle is not on top of the piece to be welded, keeping a 2-3 mm gap between the point of the electrode and the piece to be weld-ed (Fig. E-1).

6b) Press the torch button.

7b) The voltaic arc strikes even without contact between the TIG torch electrode and the workpiece (Fig. E-2).

8b) To continue welding put the torch back in its normal position (Fig. E-3).

IMPORTANT: *The high frequency switches off automatically after switching on.*

PART TO BE WELDED

The part to be welded must always be connected to ground in or-der to reduce electromagnetic emission. Much attention must be afforded so that the ground connection of the part to be welded does not increase the risk of accident to the user or the risk of dam-age to other electric equipment. When it is necessary to connect the part to be welded to ground, you should make a direct con-nection between the part and the ground shaft. In those countries in which such a connection is not allowed, connect the part to be welded to ground using suitable capacitors, in compliance with the national regulations.

WELDING PARAMETERS

Table 3 shows the currents to use with the respective electrodes for TIG welding. This input is not absolute but is for your guidance only; read the electrode manufacturers’ instructions for a specific choice. The diameter of the electrode to use is directly proportion-al to the current being used for welding.

Table 3

Ø ELECTRODE (mm)	CURRENT (A)
1,2	10 ÷ 80
1,6	70 ÷ 150
2,4	140 ÷ 250
3,2	225 ÷ 400
4,0	300 ÷ 500

Electrode welding (MMA)

The welding electrode is used to weld most metals (various types steel, etc.),for which rutilic and basic electrodes are used.

1) Connecting the welding cables (Fig. F):
   Disconnect the machine from the mains power supply and con-nect the welding cables to the output terminals (Positive and Negative) of the welding machine, attaching them to the clamp and ground with the polarity specified for the type of electrode being used (Fig.F). Always follow the electrode manufactur-er’s instructions. The welding cables must be as short as pos-sible, they must be near to one another, positioned at or near floor level. Do not touch the electrode clamp and the ground clamp simultaneously.
2) Switch the welding machine on by moving the power supply switch to **I** (Pos. 6, Fig. A).
3) Make the adjustments and select the parameters on the con-trol panel (for further information see the MTH / MTB control panel manual).
4) Carry out welding by moving the torch to the workpiece. Strike the arc (press the electrode quickly against the metal and then lift it) to melt the electrode, the coating of which forms a protec-tive residue. Then continue welding by moving the electrode from left to right, inclining it by about 60° compared with the metal in relation to the direction of welding.

PART TO BE WELDED

The part to be welded must always be connected to ground in or-der to reduce electromagnetic emission. Much attention must be afforded so that the ground connection of the part to be welded does not increase the risk of accident to the user or the risk of dam-age to other electric equipment. When it is necessary to connect the part to be welded to ground, you should make a direct con-nection between the part and the ground shaft. In those countries in which such a connection is not allowed, connect the part to be welded to ground using suitable capacitors, in compliance with the national regulations.

WELDING PARAMETERS

Table 4 shows some general indications for the choice of elec-trode, based on the thickness of the parts to be welded. The val-ues of current to use are shown in table 5 with the respective electrodes for the welding of common steels and low-grade al-loys. These data have no absolute value and are indicative data only. For a precise choice follow the instructions provided by the electrode manufacturer.

Table 4

WELDING THICKNESS (mm)	Ø ELECTRODE (mm)
1,5 ÷ 3	2
3 ÷ 5	2,5
5 ÷ 12	3,2
12	4

Table 5

Ø ELECTRODE (mm)	CURRENT (A)
1,6	30 ÷ 60
2	40 ÷ 75
2,5	60 ÷ 110
3,2	95 ÷ 140
4	140 ÷ 190
5	190 ÷ 240
6	220 ÷ 330

The current to be used depends on the welding positions and the type of joint, and it increases according to the thickness and di-mensions of the part.

The current intensity to be used for the different types of welding, within the field of regulation shown in table 5 is:

- High for plane, frontal plane and vertical upwards welding.
- Medium for overhead welding.
- Low for vertical downwards welding and for joining small pre-heated pieces.

A fairly approximate indication of the average current to use in the welding of electrodes for ordinary steel is given by the follow-ing formula:

$$I = 50 \times (Øe - 1)$$

Where:
I = intensity of the welding current Øe = electrode diameter
Example:
For electrode diameter 4 mm

$$I = 50 \times (4 - 1) = 50 \times 3 = 150A$$

Maintenance

ATTENTION: *Before carrying out any inspection of the inside of the generator, disconnect the system from the supply.*

SPARE PARTS
Original spare parts have been specially designed for our equip-ment. The use of non-original spare parts may cause variations in performance or reduce the foreseen level of safety. We decline all responsibility for the use of non-original spare parts.

GENERATOR
As these systems are completely static, proceed as follow:
- Periodic removal of accumulated dirt and dust from the inside of the generator, using compressed air. Do not aim the air jet directly onto the electrical components, in order to avoid damaging them.
- Make periodical inspections in order to individuate worn cables or loose connections that are the cause of overheating.

Optional

The remote controls can be only used in the 2-STROKE and 4-STROKE welding modes.

MANUAL REMOTE CONTROL
WARNING: *When using the machine for TIG welding it is OBLIGATORY to use the kit for simultaneously use – CEA code n° 460056.*
Weld current can be measured at a distance by connecting up this control. The display will show the previous maximum weld current value set on the welder. The remote control will adjust welding current from the minimum to this value (for further information see the MTH / MTB control panel manual). Just turn the adjustment knob on the welder to change the maximum output value.

FOOT SWITCH
The foot switch replaces the torch button and the welding current setting knob. The display will show the previous maximum weld current value set on the welder. The pedal will adjust the welding current from the minimum to this value (for further information see the MTH / MTB control panel manual). Just turn the adjustment knob on the welder to change the maximum output value.
NOTE:
- *To use the pedal control correctly, set the "welding mode" to 2-STROKE and then the welding parameters SLOPE UP time to 0 sec., SLOPE DOWN time to 0 sec.*
- *When using the machine for TIG welding the operator can use the torch button to start the weld and the pedal to regulate the welding current remotely..*

AIR AND/OR WATER-COOLED TORCH UP/ DOWN
The up/down torch replaces the current setting knob on the front of the welder. Press right (+) and left (-) button to adjust the ac-tive parameter. With this kind of torch, it is also possible to scroll the saved programmes by pressing the two (+) and (-) buttons.
Turn the knob to scroll the programmes until an empty and unused programme is found.

NOTE: *The value shown on the display during welding represents the effective current output with all types of control.*
The digital control unit of the generator is fitted with a control rec-ognition device which allows it to identify which device is connect-ed and take action accordingly. To allow the command recognition device to work correctly, connect (with the machine switched off) the required accessory to the relative connector and then switch on the welding machine with the on/off switch.
NOTE: ***It is not possible to memorize or open programmes when the remote controls are connected (except for the torch with UP/DOWN commands).***
If a remote control is connected (followed by self-acknowledge-ment procedure) the machine will automatically return to the man-ual-welding phase if it has been pre-set for automatic welding.

The pointing out of any difficulties and their elimination

The supply line is attributed with the cause of the most common difficulties. In the case of breakdown, proceed as follows:
1) Check the value of the supply voltage
2) Check that the power cable is perfectly connected to the plug and the supply switch
3) Check that the power fuses are not burned out or loose
4) Check whether the following are defective:
   - The switch that supplies the machine.
   - The plug socket in the wall.
   - The generator switch.

NOTE: *Given the required technical skills necessary for the repair of the generator, in case of breakdown we advise you to contact skilled personnel or our technical service department.*

Digital interface PCB replacement

- Unscrew the 4 screws fastening the front rack panel.
- Remove the adjustment knob.
- Extract wiring connectors from digital interface PCB.
- Unscrew small supporting columns.
- Remove digital interface PCB by lifting it out of its supports.
- Proceed vice versa to assemble new digital interface PCB.

Procedure for cover assembly and disassembly

Proceed as follows (Fig. G):
1) Unscrew the two screws fastening the handle.
2) Take off handle pulling it backwards.
3) Take off covering lid and unscrew the 3 screws fastening the top.
4) Use both hands to push the top towards the front part free ing the back part.
5) Remove top by lifting with both hands.

Proceed vice versa for assembly.

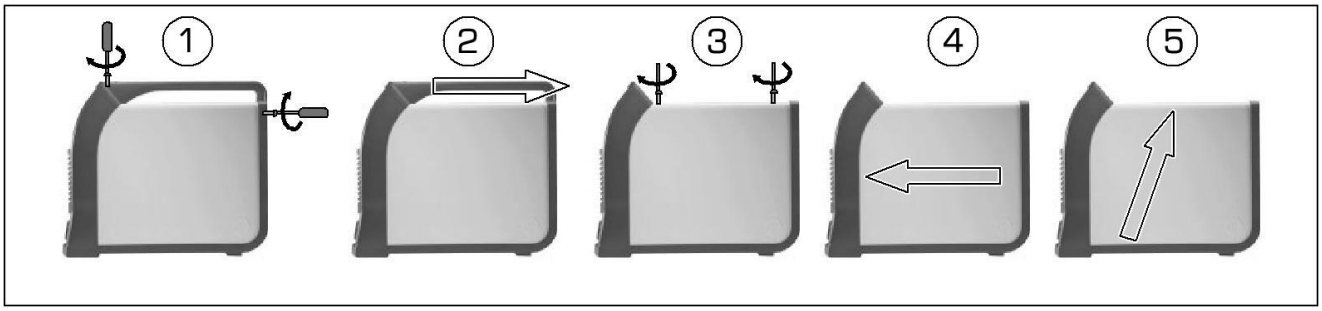


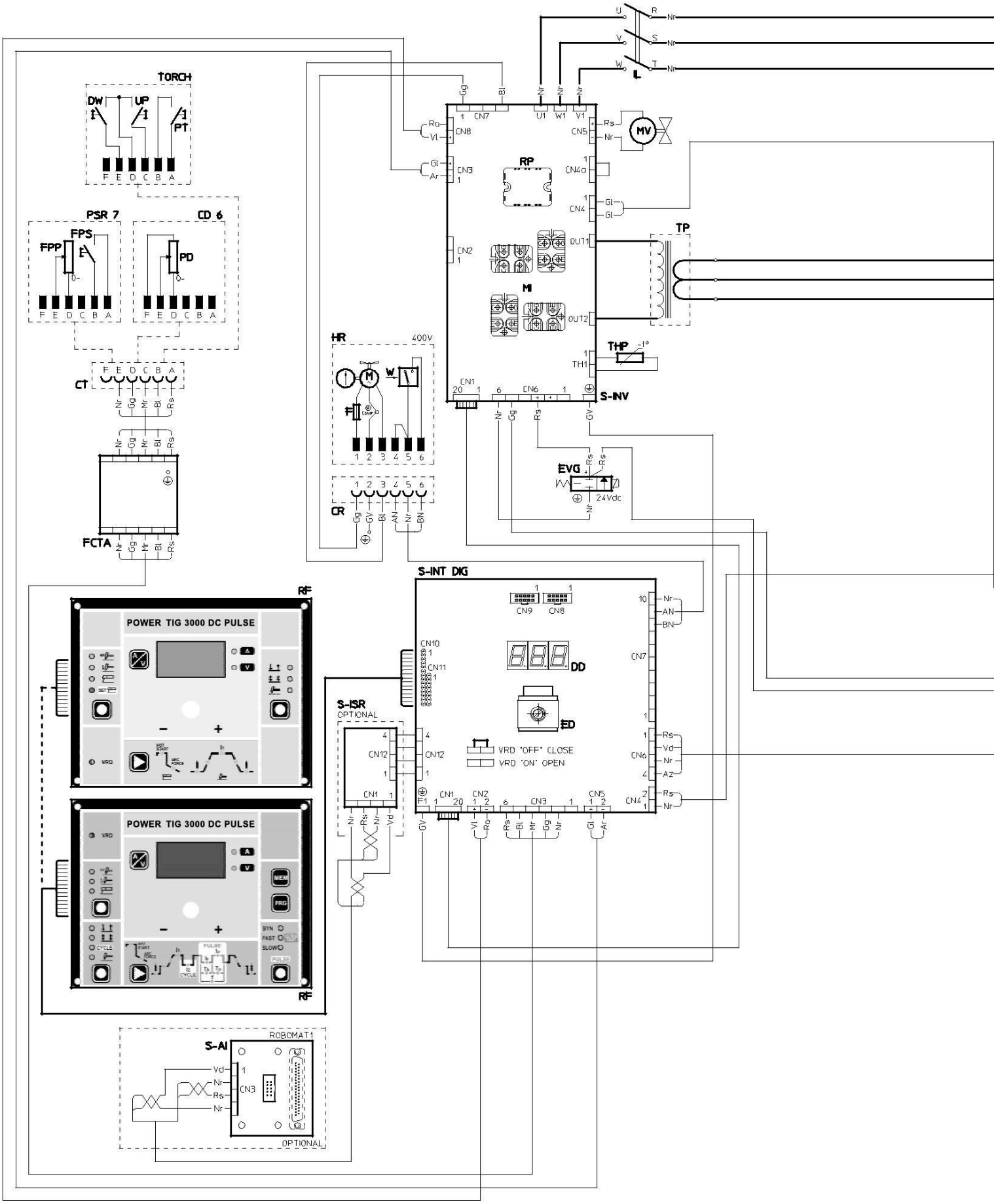
FIG. G

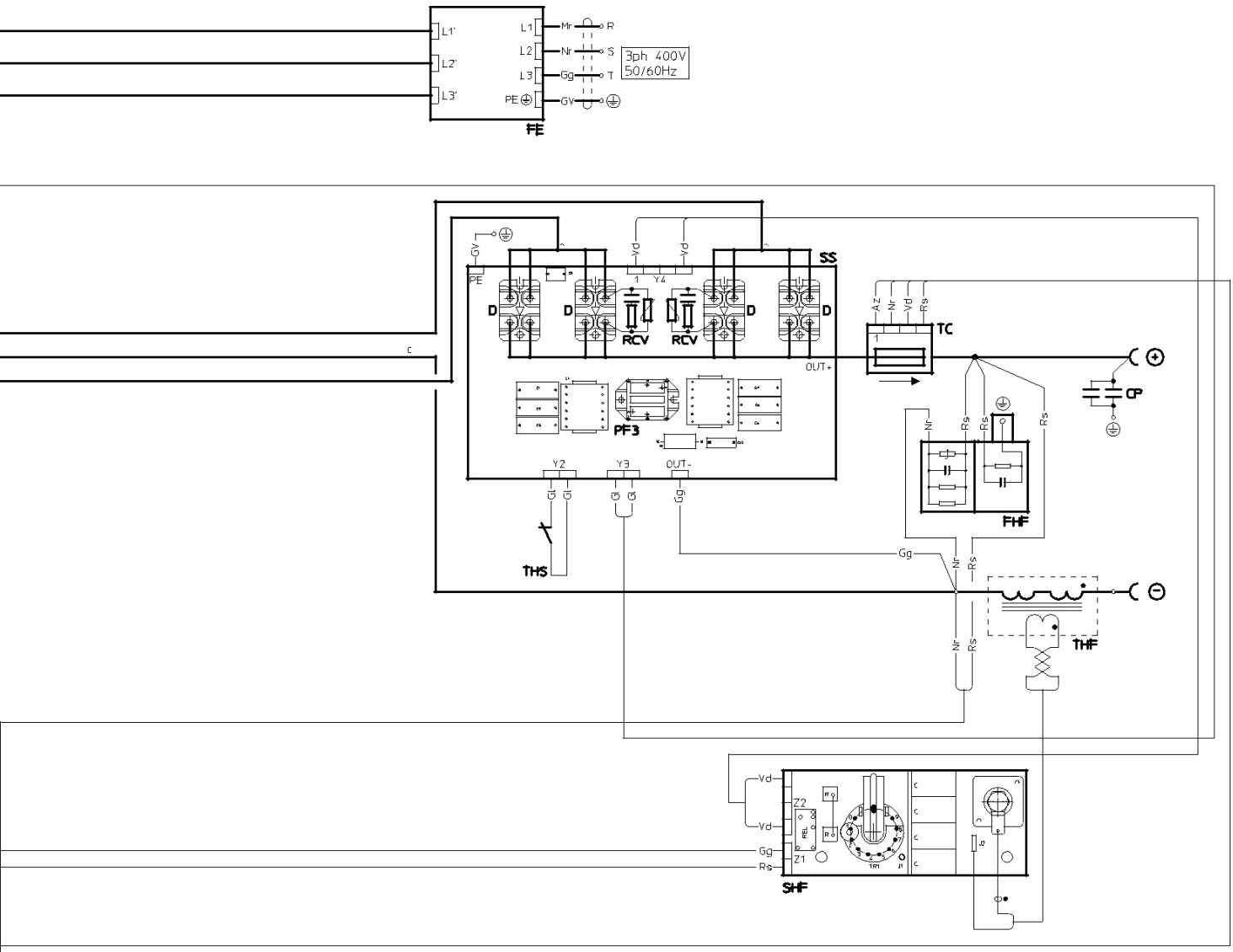
Meaning of graphic symbols on machine

0 I	Power supply switch
S	System for use in environments with increased risk of electroshock
CE	Product suitable for free circulation in the Euro-pean Community
	Danger! High voltage
	Grounding
+	Positive pole snap-in connector
−	Negative pole snap-in connector

	Connector for the remote control
	Warning!
	Fast coupling TIG torch gas tube
	Before using the equipment you should carefully read the instructions included in this manual
	MMA welding
	TIG welding
	Special disposal

Wiring diagram (PoWer TIG 3000 DC Pulse)





L1'
L2'
L3'
L1
L2
L3
PE
Mr
Nr
Gg
GV
R
S
T
3ph 400V
50/60Hz
FE
SS
D
RCV
PF3
OUT+
OUT-
Y2
Y3
Y4
Vd
Az
Nr
Rs
TC
CP
FHF
THS
THF
Gg
Z2
Z1
SHF

•1 CA	•2 CP	•3 CR	•4 CT	•5 D	•6 DB	•7 DD	•8 ED	•9 EVG	•10 F
•11 FCTA	•12 FE	•13 FHF	•14 HR	•15 IL	•16 L	•17 L1-2	•18 M	•19 MI	•20 MI2
•21 MIH	•22 MIL	•23 MV	•24 P1	•25 P2	•26 PF	•27 PF3	•28 RCV	•29 RF	•30 RP
•31 S-AI	•32 S-DOUBLER	•33 S-INT DIG	•34 S-INV	•35 S-ISR	•36 S-LINK	•37 SF	•38 SG	•39 SHF	•40 SR
•41 SS	•42 TA	•43 TC	•44 TF	•45 TH	•46 THF	•47 THP	•48 THS	•49 TP	•50 W

Key to the electrical diagram

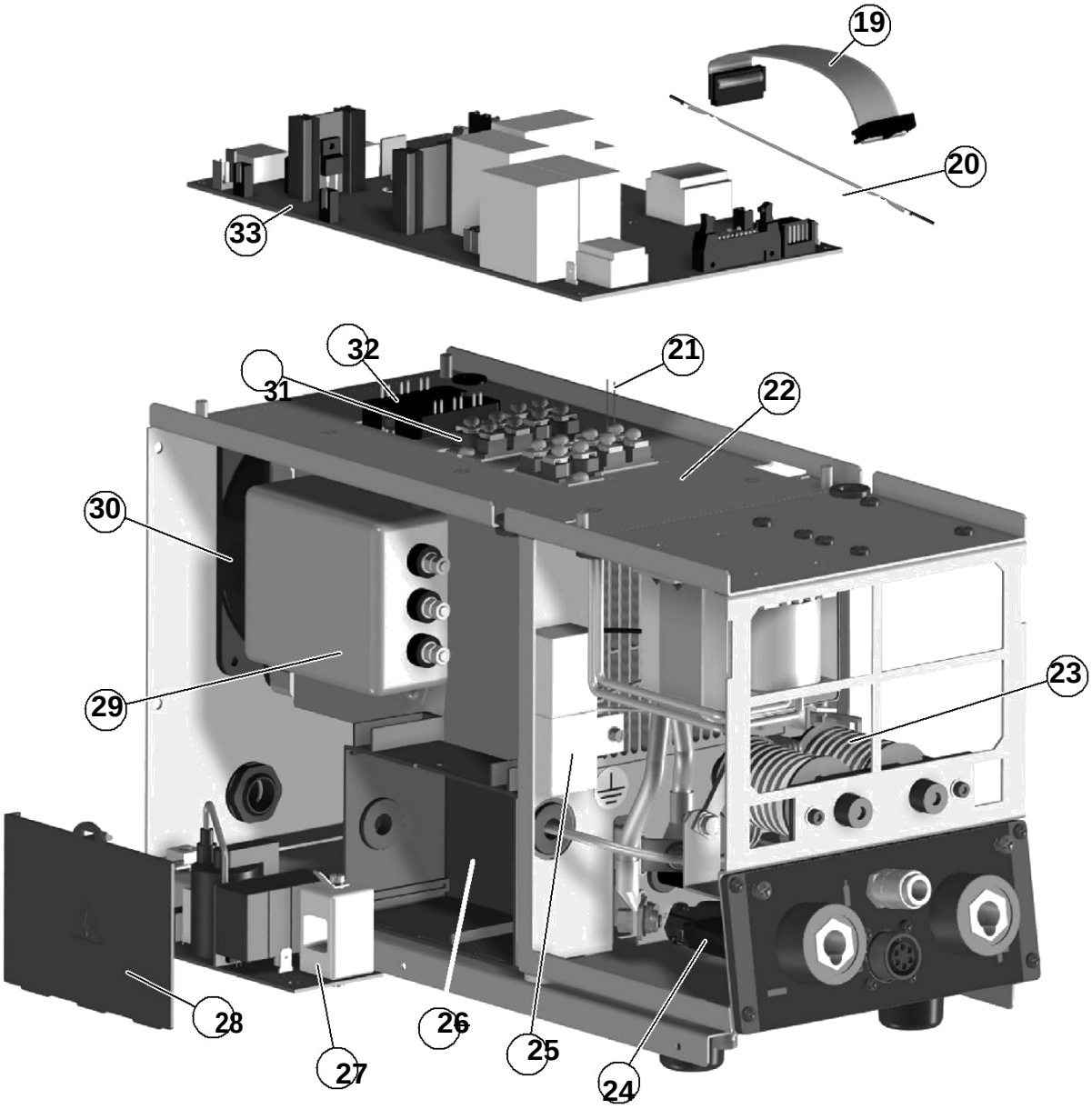
•1 Power supply connector 230V 50/60Hz **•2** EMC capacitors **•3** Power supply connector for the cooling system **•4** TIG torch connector **•5** Second-ary diode **•6** “Dual Boost Chopper” IGBT **•7** Digital display **•8** Encoder **•9**
Gas solenoid valve **•10** Fuse **•11** Torch filter complete with connector **•12**
EMC filter **•13** HF filter **•14** Water cooling system **•15** Power supply switch
•16 Inductor **•17** PFC inductances **•18** Electric pump **•19** Primary IGBT circuit **•20** “Full Bridge” IGBT **•21** Primary upper IGBT **•22** Lower prima-ry IGBT **•23** Fan motor **•24** Primary transformer (start) **•25** Primary trans-former (end) **•26** Secondary rectifier **•27** Rectifier diode ultrafast **•28** R-C / Secundary diode varistor **•29** Membrane keyboard **•30** Primary rectifier
•31 Interface for automation (optional extra) **•32** Booster board **•33** Digital interface PCB **•34** Inverter PCB **•35** Automation interface isolation board (optional extra) **•36** Capacitors PCB **•37** EMC filter PCB **•38** High frequen-cy (HF) spark gap contacts board **•39** High frequency (HF) PCB **•40** Re-lay PCB **•41** Secondary circuit PCB **•42** Auxiliary transformer **•43** Current transducer **•44** Toroidal ferrite **•45** Secondary circuit diode thermostat **•46** HF transformer **•47** Primary circuit thermistor **•48** Secondary circuit ther-mostat **•49** Transformer **•50** Pressure switch

Colour key

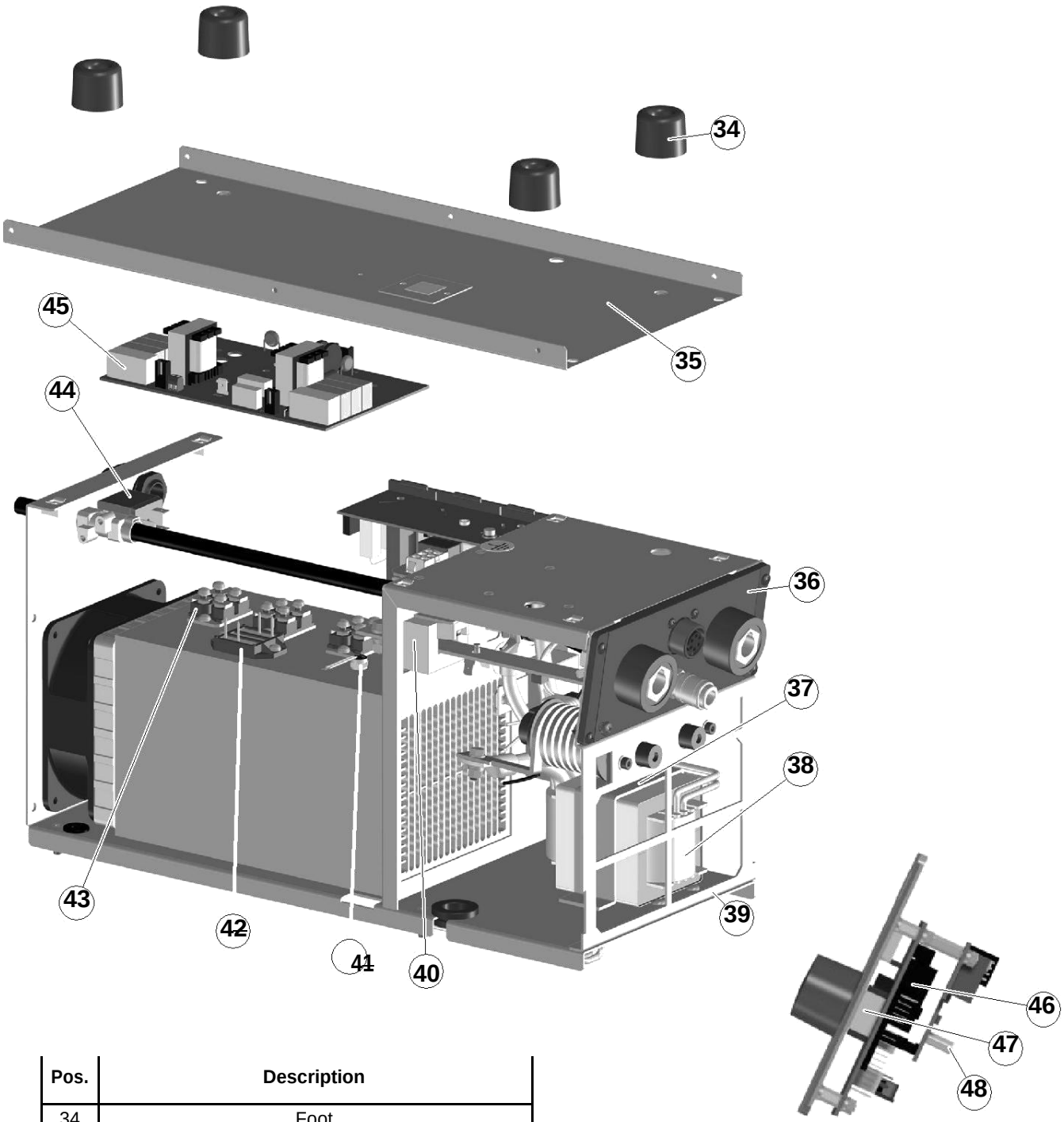
AN Orange
Ar Orange
Az Sky blue
Bc White
Bl Blue
BN White Black
Gg Grey
Gl Yellow
GV Yellow Green
Mr Brown
Nr Black
RN Red Black
Ro Pink
Rs Red
Vd Green
Vl Violet

EN Spare parts list (PoWer TIG 3000 DC Pulse)

Pos.	Description
1	Front rack transparent visor
2	MTH Membrane Keyboard PoWer TIG 3000
	MTB Membrane Keyboard PoWer TIG 3000
3	Ø29mm Knob without index
4	GeKaMac logo sticker
5	Front panel without GeKaMac logo
6	Quick connection
7	Gas quick connection
8	Front sticker
9	Remote control socket
10	Carrying belt hook
11	Handle
12	Mains switch knob
13	Mains switch
14	Mains cable
15	Cable clamp with lock ring
16	Rear panel
17	Gas tube
18	Cover with GeKaMac logo stickers



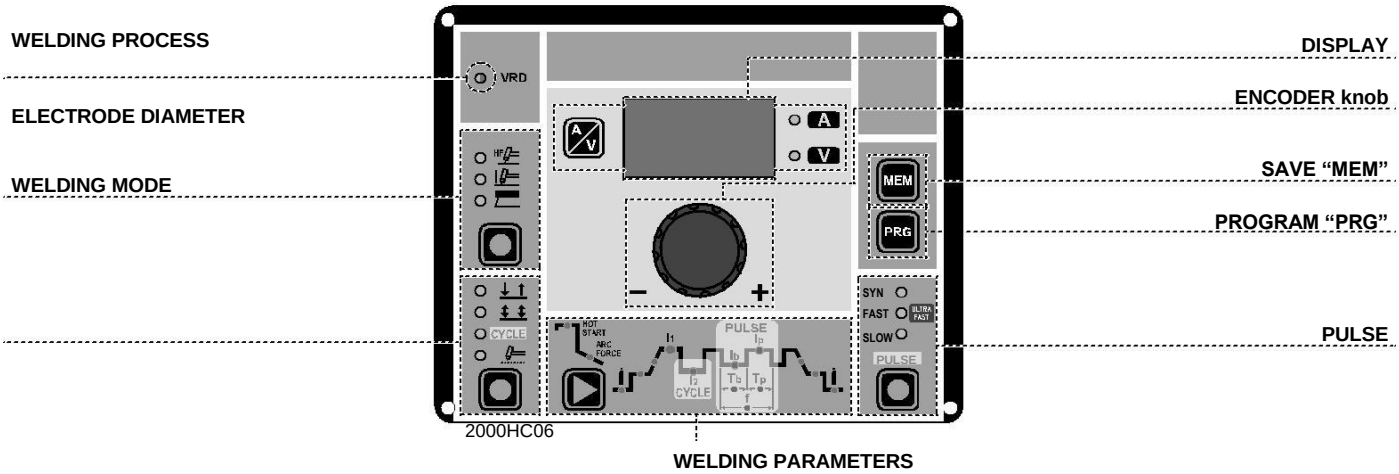
Pos.	Description
19	Auxiliary wiring
20	RoboMat 1 - PoWer TIG 3000 DC Pulse Wiring (only for PoWer TIG 3000 DC Pulse)
21	Primary circuit thermistor
22	Inverter PCB insulation
23	HF transformer
24	Torch filter with connector
25	HF filter
26	HF PCB box
27	High frequency (HF) PCB
28	HF PCB cover
29	EMC Filter
30	Fan motor
31	Primary circuit IGBT
32	Primary circuit rectifier
33	Primary inverter PCB assembly



Pos.	Description
34	Foot
35	Base
36	Dinse Insulation
37	Transformer support
38	Transformer
39	Internal metallic frame
40	Current transducer
41	Secondary circuit thermostat
42	Secondary rectifier
43	Secondary diode
44	Gas solenoide valve
45	Secondary circuit PCB
46	PoWer TIG 3000 DC Pulse digital interface PCB
47	Encoder
48	Robotic interface isulation PCB (only for PoWer TIG 3000 DC Pulse)

Control panel

VRD



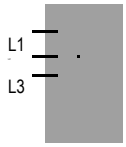
■ VRD

The Voltage Reduction Device (VRD) is a safety device that reduces the voltage. It prevents voltages forming on the output ter-minals that may pose a danger to people.
Two-tone LED (off - red - green) indicates enabling of the VRD device.
The standard, preset settings for the firm do not activate the VRD function on the welding machine and so this LED is normally off. To activate the VRD device, see the relevant paragraph.

■ WELDING PROCESS

The PoWer TIG 3000 DC Pulse welding machine offers **3** TIG/Electrode welding processes. Each time the button is pushed, the welding machine switches to select the welding process indicated by the LED that stays lit, in the following order:

- ***TIG with HF ignition***
- ***TIG with “Lift” type ignition***
- ***ELECTRODE (MMA)***



■ WELDING MODE

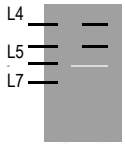
The PoWer TIG 3000 DC Pulse welding machine offers **4** welding modes. Each time the button is pushed, the welding machine switches to select the welding mode indicated by the LED that stays lit, in the follow-ing order:

L4 ***2 STROKES***

L5 ***4 STROKES***

L6 ***CYCLE***

L7 ***SPOT WELDING***



L4 ***2 STROKES***

When the torch button is pushed welding begins starting with the INITIAL CURRENT (if SLOPE UP is selected), while when it is re-leased welding ends when the FINAL CURRENT is reached (if SLOPE DOWN is set).

L5 ***4 STROKES***

TIG welding takes place as follows:

- When the torch button is pushed welding begins at the INITIAL current.
- When the torch button is released the SLOPE UP process is carried out (if applicable) and the current returns to the PRIN-CIPAL value **I1** .
- When the torch button is pushed the SLOPE DOWN process is carried out (if applicable) and the current returns to the FI-NAL value.
- When the button is released the welding cycle ends.

L6 ***CYCLE***

When this function has been activated, TIG welding takes place as follows:

1) When the torch button is pushed welding begins at the INITIAL current.
2) When the torch button is released the SLOPE UP process is carried out (if applicable) and the current returns to the PRIN-CIPAL value **I1** .
3) When the torch button is pressed and released within less than 1 second the welding current goes to the CYCLE value (**I2**), and by repeating this operating you can move between the two cur-rent levels (**I1**), (**I2**) an infinite number of times.
4) When the torch button is pushed and held down (for longer than 1 second) you exit the cycle, the SLOPE DOWN process is car-ried out (if applicable) and the current returns to the FINAL val-ue. When the torch button is released the welding cycle ends.

This welding mode is especially indicated for welding profiles with different thickness, where continuous current variation is required. Also, when welding aluminium, it allows you to have a higher initial current, thereby facilitating pre-heating of the workpiece.

L7 ***SPOT WELDING***

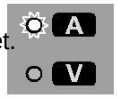
This can be used by pushing the torch button to spot weld for a pre-set period of time (in seconds) at the end of which the arc switch-es off automatically.

■ DISPLAY

Displays the selections made using the various Keys (with corre-sponding LED on or flashing) and regulated using the ENCOD-ER knob.

The button can also be used to view:

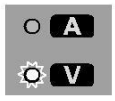
L26 ***AMPERE (CURRENT)***



- When the machine is in stand-by, the Amps (A) set.
- When the machine is welding the real Amps (A) at which the operator is actually welding.

WARNING: *LED* **L26** *switched on and steady.*

L27 ***VOLT (VOLTAGE)***

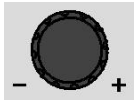


- The actual VOLTS (V) at the welding clamps (the value displayed CANNOT BE CHANGED OR REGULATED).

WARNING: *LED* **L27** *switched on and steady.*

■ ENCODER knob

This is used to regulate and change the welding pa-rameters, according to which LED is switched on and the value shown on the DISPLAY, which is nec-essary for the machine to work correctly.



■ SAVE "MEM"

Used to save the parameters for the welding programs.

■ PROGRAM "PRG"

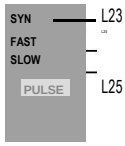
Used to call up welding programs.

When using one of the **2** TIG welding processes, it makes it possible to set one of the **4** pulsation modes available on the welding machine, using the relevant button:

L23 ***SYN PULSE***

L24 ***ULTRA FAST PULSE***

L25 ***SLOW PULSE***



L23 ***Synergic pulsations (SYN PULSE)***

WARNING:

LED **L23** *switched on and steady.*

L24 ***Fast pulsations (FAST PULSE)***

WARNING:

LED **L24** *switched on and steady.*

L24 ***Ultra fast pulsations (ULTRA FAST PULSE)***

WARNING:

LED **L24** *switched on and flashing.*

L25 ***Slow pulsations (SLOW PULSE)***

WARNING:

LED **L25** *switched on and steady.*

WARNING: *The operator can decide to TIG weld without using any pulsation mode. If this is the case, the* **4** *LEDs are switched off.*

■ WELDING PARAMETERS

Each time the button is pushed, the welding machine selects the next function according to the machine configuration, the welding process, the welding mode, etc...

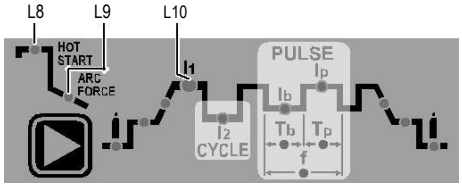
1A - STANDARD CONFIGURATION
Electrode welding (MMA)

When using the electrode welding process, this allows you to select the following welding parameters, based on which LED is flashing:

L8 ***HOT START***

L9 ***ARC FORCE***

L10 ***PRINCIPAL welding CURRENT*** **I1**



1B - STANDARD CONFIGURATION TIG welding

When one of the **2** TIG welding processes available on the welding machine is activated, this allows you to select the following weld-ing parameters, based on which LED is flashing:

L11 ***PRE-GAS duration***

L12 ***SLOPE UP duration***

L13 ***BASE current duration*** T_b

WARNING: *This can only be programmed when* **SLOW** *pulsation is activated.*

L14 ***PEAK current duration*** T_p

WARNING: *This can only be programmed when* **SLOW** *pulsation is activated.*

L15 ***SLOPE DOWN duration***

L16 ***POST-GAS duration***

L17 ***INITIAL welding CURRENT***

L10 ***PRINCIPAL welding CURRENT*** I_1

L18 ***CYCLE CURRENT*** I_2

WARNING: *This can only be programmed when the* **CYCLE** *weld-ing mode is active.*

L19 ***BASE CURRENT*** I_b

WARNING: *This can only be programmed when at lease one pul-sation mode is activated.*

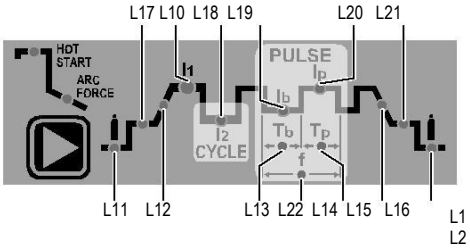
L20 ***PEAK CURRENT*** I_p

WARNING: *This can only be programmed when at least one pul-sation mode is activated.*

L21 ***FINAL welding CURRENT***

L22 ***PULSATION FREQUENCY*** f

WARNING: NOT *programmable when* **SLOW** *pulsation mode is active.*



2 - SPECIAL CONFIGURATION (only for expert welders) TIG welding

For this configuration, in addition to the parameters already de-fined for the STANDARD configuration, you can also set the fol-lowing parameters:

L8 ***IGNITION CURRENT***

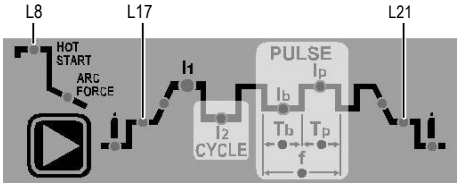
WARNING: *This can only be programmed when the* **TIG with HF ignition** *welding process is used.*

L17 ***INITIAL welding CURRENT***

WARNING: *Only programmable for the welding process:* **TIG with HF ignition** *and* **2 TIME** *welding mode active.*

L21 ***FINAL welding CURRENT***

WARNING: *Only programmable for the welding process:* **TIG with HF ignition** *and* **2 TIME** *welding mode active.*

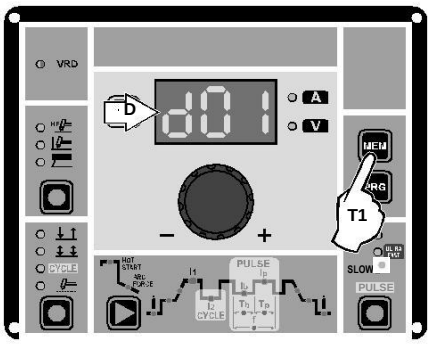


WARNING: ***This special parameter is only to be activated by qualified personnel, or those trained by technicians.***

Displaying the software version installed

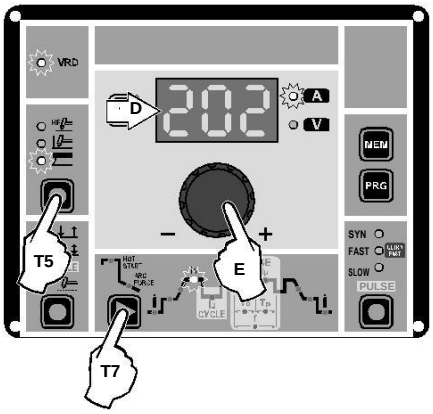
The **PoWer TIG 3000 DC Pulse** are fitted with a digital control with software on board defined in the factory. This software is subject to continuous evolution and improvement. The software is identified by a spe-cific number that can be viewed on the DISPLAY (D) as follows:

- When the welding machine is off, push and hold the **"MEM" SAVE** key down (T1).
- Start the welding machine by turning the power supply switch to position **I**.
- For a few seconds the DISPLAY (D) shows the type of soft-ware on board (e.g. d01) where:
  d indicates the welding machine model.
  01 indicates the VERSION of the software installed



Electrode welding (MMA)

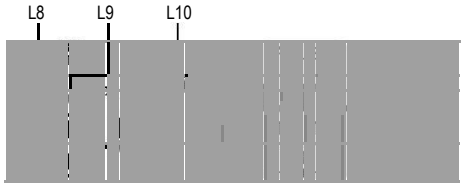
- Start the welding machine by turning the power supply switch to position **I**.
- **WELDING PROCESS SELECTION**
  Push the WELDING PROCESS SELECTION key (T5) to se-lect the ELECTRODE welding processes for welding with "HOT START" or "ARC FORCE" devices that can be pro-grammed by the user.
- Turn the ENCODER Knob (E) until the DISPLAY shows the CURRENT VALUE at which you wish to weld, in relation to the diameter of the electrode you are using.



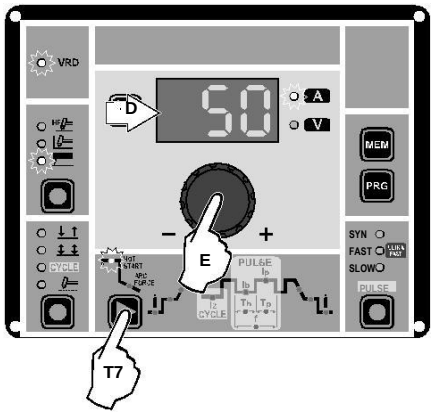
4) **WELDING PARAMETERS SELECTION**
   To refine the weld quality, the following parameters can be set by pushing the WELDING PARAMETERS SELECTION key (T7) in succession:
   - **HOT START -** This increases the welding current, in per-centage terms, for a time interval that can be set at the start of the welding process, thereby reducing the risk of poor fu-sion at the start of the joint (**L8** HOT START - 00-100).
   - **MMA ARC FORCE -** Regulates, in percentage terms, the dynamic characteristics of the arc (**L9** - ARC FORCE - 00-100).

• **PRINCIPAL welding CURRENT I1 (L10):**

	TIG 3000	
	10 ÷ 270 A	



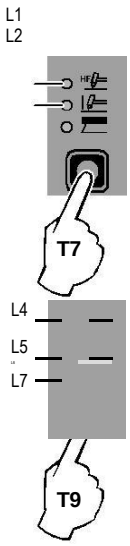
The value for the welding parameters can be regulated using the ENCODER Knob (E).



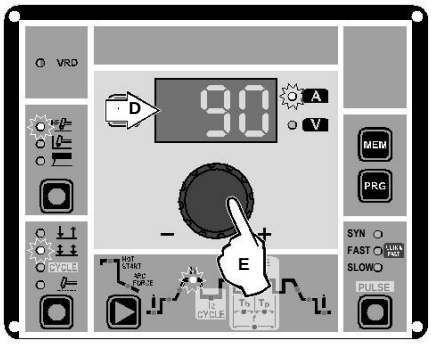
- To exit these functions hold the WELDING PARAMETERS SELECTION key (T7) down for about **1** second, after which the DISPLAY INDICATION LED switches on and the welding machine is once again ready to weld at the current indicated on the DISPLAY (D).
- Once the all the selections/regulations indicated above have been made, welding can begin.
- During the welding process the DISPLAY (D) shows the real Amps (A) at which the operator is actually welding.

TIG welding

5) Start the welding machine by turning the power supply switch to position **I**.
6) Press the WELDING PROCESS SELECTION Key (T5) and select:
   L1 a TIG "HF" welding process for direct current TIG welding with high frequency ignition.
   L2 a TIG "Lift" welding process for direct current TIG "Lift" type welding without high frequency.
   WARNING: *The "Lift" ignition current is creat-ed by pushing the torch button only after having touched the workpiece with the electrode.*
3) Press the WELDING MODE SELECTION Key (T6) and go to one of the **4** options available:
   L4 2T
   L5 4T
   L7 SPOT WELD



- Turn the ENCODER Knob (E) until the DISPLAY (D) shows the CURRENT VALUE at which you wish to weld.



- By pushing the WELDING PARAMETERS SELECTION (T7) key a number of times it is possible to set the various TIG WELDING PARAMETERS (see the "TIG Welding" paragraph - WELDING PARAMETERS).
- Once the all the selections/regulations indicated above have been made, welding can begin.
- During the welding process the DISPLAY shows the real Amps (A) at which the operator is actually welding.

TIG welding with the SPOT WELDING function on

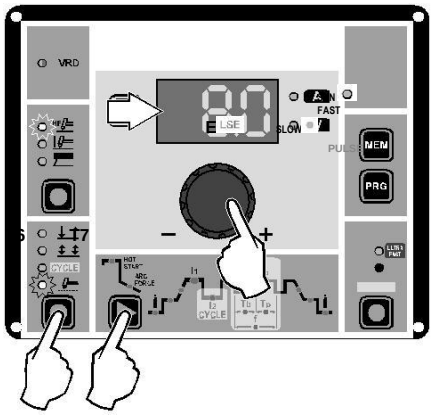
- Start the welding machine by turning the power supply switch to position **I**.
- Press the WELDING PROCESS SELECTION Key (T5) and select one of the welding machine's **2** TIG processes:
  L1 TIG with HF ignition
  L2 TIG with "Lift" type ignition

3) Press the WELDING MODE SELECTION Key (T6) and go to one of the **SPOT WELDING** func-tion.
- Press and release the WELDING PARAMETERS SELECTION Key (T7) until the SPOT WELD LED starts flashing.

D

T7

5) Rotate the ENCODER knob (E) to set the SPOT WELDING time required (0,1÷10,0 sec).



- By pushing the WELDING PARAMETERS SELECTION (T7) key a number of times it is possible to set the various TIG WELDING PARAMETERS (see the "TIG Welding" paragraph - WELDING PARAMETERS).
- Once the all the selections/regulations indicated above have been made, welding can begin.
- During the welding process the DISPLAY shows the real Amps (A) at which the operator is actually welding.

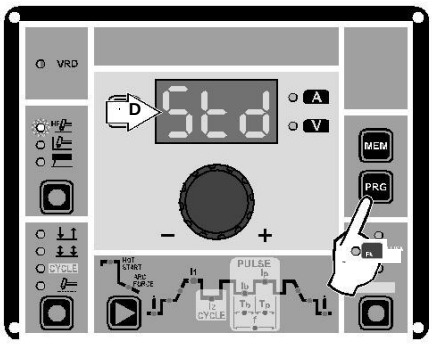
TIG welding - Welding parameters

- The PoWer **TIG 3000 DC Pulse** can be configured in the following **2** ways:
- **STANDARD (Std)** configuration.
- **SPECIAL (SPE)** configuration.

STANDARD CONFIGURATION (Std)

When it leaves the factory the welding machine is normally configured in STANDARD (Std) mode.
To check the configuration, carry out the following operations:

1) When the welding machine is off, push and hold the "PRG" PROGRAM key down (T2).
2) Start the welding machine by turning the power supply switch to position **I**.
3) The DISPLAY (D) shows the following message: **Std** (welder configured in STANDARD mode).

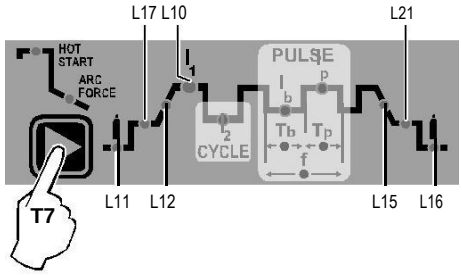


4) Press the "PRG" PROGRAM key (T2) to confirm.

The **WELDING PARAMETERS** included, programmable, and that can be edited (by turning the ENCODER key) in a **STANDARD (Std)** configuration can be broken down into 3 different sub-groups:

1 - "BASIC" WELDING PARAMETERS

Press the WELDING PARAMETERS SELECTION Key (T7) a num-ber of times to set:



L11 ***PRE-GAS duration (0,05 ÷ 1,00 sec)***

WARNING: *This* ***CANNOT*** *be programmed when the* **TIG with "Lift" type ignition** *welding processes is active.*

L17 ***INITIAL welding CURRENT***

	TIG 3000	
	5 ÷ 300 A	

WARNING: *This can only be programmed when* **4 STROKES** *or* **CYCLE** *welding mode is activated.*

L12 ***SLOPE UP duration (0,0 ÷ 5,0 sec)***

L10 ***PRINCIPAL welding CURRENT*** I_1

	TIG 3000	
	5 ÷ 300 A	

L15 ***SLOPE DOWN duration (0,0 ÷ 8,0 sec)***

L21 ***FINAL welding CURRENT***

2200 HF	3000 HF	420 HF
5 ÷ 220 A	5 ÷ 300 A	5 ÷ 420 A

WARNING: *This can only be programmed when* **4 STROKES** *or* **CYCLE** *welding mode is activated.*

L16 ***POST GAS duration (0,5 ÷ 25,0 sec)***

WARNING: *When the post-gas LED flashes and the LED* I_1 *is on at the same time, this means that the welding machine is in the post-gas stage.*

To exit the setting phase, hold the WELDING PARAMETERS SE-LECTION key (T7) down for about **1 second**.

2 - WELDING PARAMETERS with PULSE mode active:

Pulsed TIG welding allows greater control of the arc and better de-formation of the material.
The **PoWer TIG 3000 DC Pulse** can be used for TIG pulsed welding in **4** differ-ent modes:

- SLOW PULSE
- FAST PULSE
- ULTRA FAST PULSE
- SYN PULSE

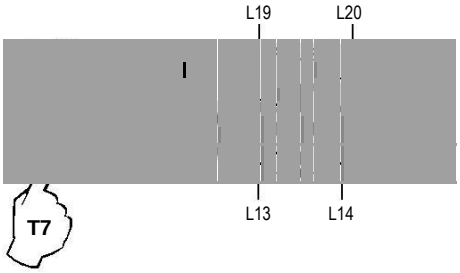
WARNING: *Pulsation is deactivated automatically for the duration of the INITIAL and FINAL current.*

2A) SLOW PULSE

TIG pulse welding with manual setting of parameters.

Press the PULSE key (T3) until the requited pulsation is active.

Press the WELDING PARAMETERS SELECTION Key (T7) a number of times to set the following (in addi-tion to the WELDING PARAMETERS defined as be-ing "BASIC"):



L20 ***PEAK CURRENT*** I_p

	TIG 3000	
	5 ÷ 300 A	

L19 ***BASE CURRENT*** I_b

	TIG 3000	
	5 ÷ 300 A	

L14 ***PEAK current duration*** T_p

TIG 3000
0,01 ÷ 0,99 sec

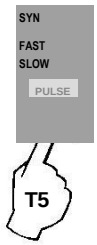
L13 ***BASE current duration*** T_b

TIG 3000
0,01 ÷ 0,99 sec

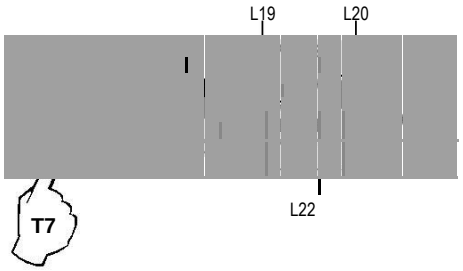
To exit the setting phase, hold the WELDING PARAMETERS SE-LECTION key (T7) down for about **1** second.

2B) FAST PULSE

TIG pulse welding with manual setting of parameters. Press the PULSE key (T3) until the requited pulsation is active.



Press the WELDING PARAMETERS SELECTION Key (T7) a number of times to set the following (in addi-tion to the WELDING PARAMETERS defined as be-ing “BASIC”):



L19 ***BASE CURRENT*** **Ib**

	TIG 3000	
	5 ÷ 300 A	

L20 ***PEAK CURRENT*** **Ip**

	TIG 3000	
	5 ÷ 300 A	

L22 ***PULSATION FREQUENCY*** **f**

	TIG 3000
FAST	0,5 ÷ 500 Hz

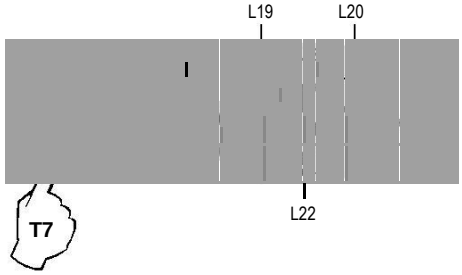
To exit the setting phase, hold the WELDING PARAMETERS SE-LECTION key (T7) down for about **1 second**.

2C) ULTRA FAST PULSE

TIG pulse welding with manual setting of parameters.

The possibility of using pulsation frequencies that are not as high, up to 2000 Hz, ideal for welding minor thicknesses, makes it possible to achieve a great re-duction in the arc cone and the area thermally altered, with a more stable, concentrated arc and an increase in weld penetration and speed.

Press the WELDING PARAMETERS SELECTION Key (T7) a num-ber of times to set the following (in addition to the WELDING PA-RAMETERS defined as being “BASIC”):



L19 ***BASE CURRENT*** **Ib**

	TIG 3000	
	5 ÷ 300 A	

L20 ***PEAK CURRENT*** **Ip**

	TIG 3000	
	5 ÷ 300 A	

L22 ***PULSATION FREQUENCY*** **f**

	TIG 3000
ULTRA FAST	500 ÷ 2000 Hz

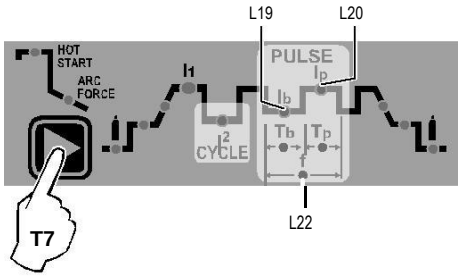
To exit the setting phase, hold the WELDING PARAMETERS SE-LECTION key (T7) down for about **1 second**.

2D) SYN PULSE

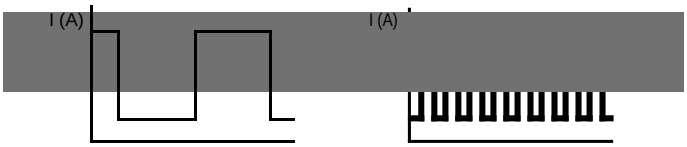
TIG pulse welding with synergic setting of parameters.

Press the PULSE key (T3) until the requited pulsation is active.

Press the WELDING PARAMETERS SELECTION Key (T7) a number of times to set the following (in addi-tion to the WELDING PARAMETERS defined as be-ing “BASIC”):



L19 ***BASE CURRENT*** **Ib**



Press the PULSE key (T3) until the requited pulsation is active.

	TIG 3000	**3B - FAST**
	25 ÷ 300 A	**PULSE + CYCLE**

This function, which is good for less skilled operators, makes it possible to change the pulsation parameter (Peak current **Ip**) and the other values for the corresponding pulsation parameters (Base current **Ib** - Pulsation frequency **f**) vary automatically.
To exit the setting phase, hold the WELDING PARAMETERS SE-LECTION key (T7) down for about **1 second**.

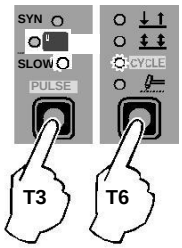
When this welding mode is active it is possible to work at **2** differ-ent pulse current levels (**I1** and **I2**). To do so you must also set (not only pulse parameters **Ib** , **Ip** , and **f**), but also the 2nd level PEAK current (**I2p**). The other 2nd level pulse parameters (BASIC CUR-RENT **I2b** and FREQUENCY **f**) are achieved synergically. The FREQUENCY remains constant while the 2nd level BASIC CUR-RENT **I2b** is proportional to the ratio between the 1st level currents.

Press the PULSE key (T3) until the requited pulsation is active (FAST LED on).
Press the WELDING MODE SELECTI ON key (T6) until the CYCLE welding mode is active (CYCLE LED on).

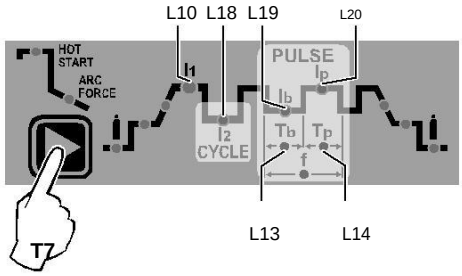
Press the WELDING PARAMET ERS SELEC-TION Key (T7) a number of times to set the following (in addition to the WELDING PARAM-ETERS defined as being “BASIC”):

3A - SLOW PULSE + CYCLE

Press the PULSE key (T3) until the requited pulsation is active (SLOW LED on).
Press the WELDING MODE SELECTION key (T6) until the CYCLE welding mode is active (CYCLE LED on).



Press the WELDING PARAMETERS SELEC-TION Key (T7) a number of times to set the following (in addition to the WELDING PARAM-ETERS defined as being "BASIC"):



L10 - L20 ***1st LEVEL PEAK CURRENT*** **I1p**

	TIG 3000	
	5 ÷ 300 A	

L18 ***2nd LEVEL PEAK CURRENT*** **I2p**

	TIG 3000	
	5 ÷ 300 A	

L19 ***1st LEVEL BASE CURRENT*** **I1b**

	TIG 3000	
	5 ÷ 300 A	

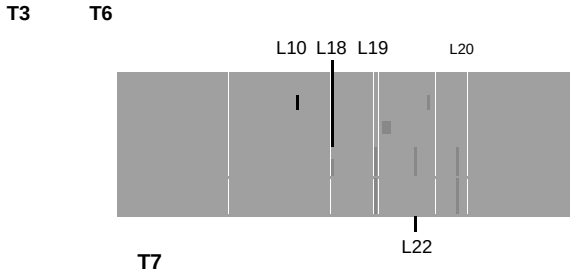
L14 ***PEAK current duration*** **Tp**

TIG 3000
0,01 ÷ 0,99 sec

L13 ***BASE current duration*** **Tb**

TIG 3000
0,01 ÷ 0,99 sec

To exit the setting phase, hold the WELDING PARAMETERS SE-LECTION key (T7) down for about **1 second**.



L10 - L20 ***1st LEVEL PEAK CURRENT*** **I1p**

	TIG 3000	
	5 ÷ 300 A	

L18 ***2nd LEVEL PEAK CURRENT*** **I2p**

	TIG 3000	
	5 ÷ 300 A	

L19 ***1st LEVEL BASE CURRENT*** **I1b**

	TIG 3000	
	5 ÷ 300 A	

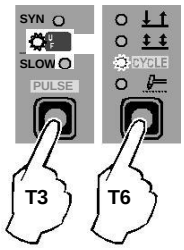
L22 ***PULSATION FREQUENCY*** **f**

	TIG 3000
FAST	0,5 ÷ 500 Hz

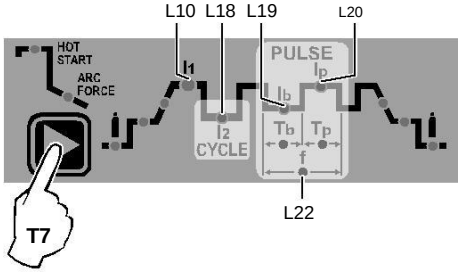
To exit the setting phase, hold the WELDING PARAMETERS SE-LECTION key (T7) down for about **1 second**.

3C - ULTRA FAST PULSE + CYCLE

Press the PULSE key (T3) until the requited pulsation is active (ULTRA FAST LED flashing). Press the WELDING MODE SELECTION key (T6) until the CYCLE welding mode is active (CYCLE LED on).



Press the WELDING PARAMETERS SELEC-TION Key (T7) a number of times to set the following (in addition to the WELDING PARAM-ETERS defined as being "BASIC"):



L10-L20 ***1st LEVEL PEAK CURRENT*** **I1p**

	TIG 3000	
	5 ÷ 300 A	

L18 ***2nd LEVEL PEAK CURRENT*** **I2p**

	TIG 3000	
	5 ÷ 300 A	

L19 ***1st LEVEL BASE CURRENT*** **I1b**

	TIG 3000	
	5 ÷ 300 A	

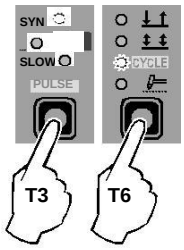
L22 ***PULSATION FREQUENCY*** **f**

	TIG 3000
ULTRA FAST	500 ÷ 2000 Hz

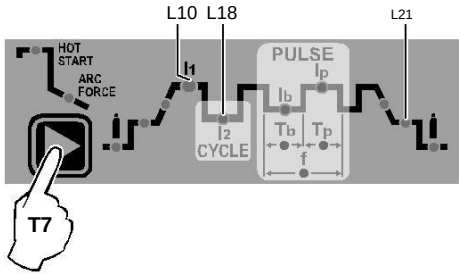
To exit the setting phase, hold the WELDING PARAMETERS SE-LECTION key (T7) down for about **1 second**.

3D - SYN PULSE + CYCLE

Press the PULSE key (T3) until the requited pulsation is active (SYN LED on).
Press the WELDING MODE SELECTION key (T6) until the CYCLE welding mode is active (CYCLE LED on).



Press the WELDING PARAMETERS SELEC-TION Key (T7) a number of times to set the following (in addition to the WELDING PARAM-ETERS defined as being "BASIC"):



L10-L20 ***1st LEVEL PEAK CURRENT*** **I1p**

	TIG 3000	
	25 ÷ 300 A	

WARNING: *When the* **SYN PULSE** *function is active, the 1st level PEAK CURRENT (* **I1p** *) is regulated to achieve a synergy with the values for the other 1st level parameters (* **I1b** , **f** *).*

L18 ***2nd LEVEL PEAK CURRENT*** **I2p**

	TIG 3000	
	25 ÷ 300 A	

WARNING: *When the* **SYN PULSE** *function is active, the 2nd level PEAK CURRENT (* **I2p** *) is regulated to achieve a synergy with the values for the other 2nd level parameters (* **I2b** , **f** *).*

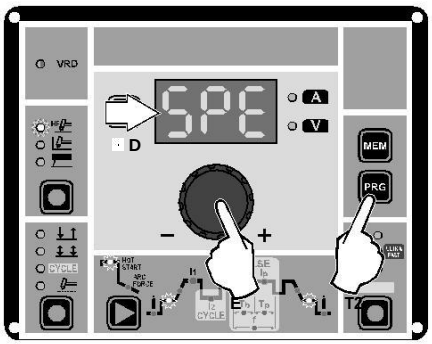
If you want to do a test weld, during the test the LED for the pa-rameter selected flashes and the DISPLAY shows the value for the parameter you are setting.
To exit the setting phase, hold the WELDING PARAMETERS SE-LECTION key (T7) down for about **1 second**.
NOTE: *During the welding process if LED* **Ip** *and LED* **I1** *stay switched on on the DISPLAY, the 1st level current at which you are welding is displayed.*

NOTE: *During the welding process if LED* **I2** *and LED* **Ip** *stay switched on on the DISPLAY, the 2nd level current at which you are welding is displayed.*

SPECIAL CONFIGURATION (SPE)

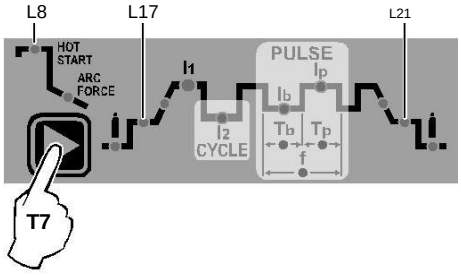
During TIG welding with HF ignition, the PoWer TIG units allow you to further modify the WELDING PARAMETERS, thereby provid-ing a more skilled welder and a more versatile welding machine. Activation will only take place after the machine configuration is changed from STANDARD (Std) to SPECIAL (SPE), which must be done as follows:

- When the welding machine is off, push and hold the "PRG" PROGRAM key down (T2).
- Start the welding machine by turning the power supply switch to position **I**.
- The DISPLAY (D) shows the following message: **Std** (welder configured in STANDARD mode).
- Turn the ENCODER Key (E) until the DISPLAY (D) shows the following message: **SPE** (welder configured in SPECIAL mode).



5) Press the "PRG" PROGRAM key (T2) to confirm.

The **WELDING PARAMETERS** included, that can be programmed and changed (by turning the ENCODER knob) in the **SPECIAL (SPE)** configuration, along with those in the STANDARD config-uration, can be set by pushing the WELDING PARAMETER SE-LECTION button (T7) successively:



L8 ***IGNITION CURRENT***

	TIG 3000	
	5 ÷ 300 A	

WARNING: *This can only be programmed when the* **TIG with HF ignition** *welding process is used.*

WARNING: *If the value for this parameter is too low, ignition prob-lems may arise.*

L17 ***IGNITION welding CURRENT***

	TIG 3000	
	5 ÷ 300 A	

WARNING: *Only programmable for the welding process:* **TIG with HF ignition** *and* **2 TIME** *welding mode active.*

L21 ***FINAL welding CURRENT***

	TIG 3000	
	5 ÷ 300 A	

WARNING: *Only programmable for the welding process:* **TIG with HF ignition** *and* **2 TIME** *welding mode active.*

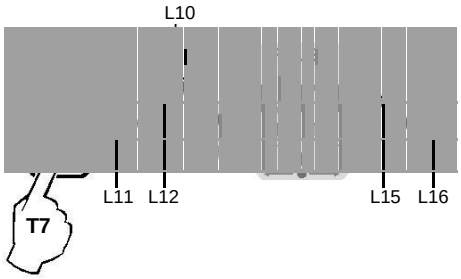
To exit the setting phase, hold the WELDING PARAMETERS SE-LECTION key (T7) down for about **1 second**.

WARNING: These WELDING PARAMETERS are only to be acti-vated by qualified personnel, or those trained by technicians.

Editing the maximum and minimum limits for welding parameters

Welding machine in SPECIAL (SPE) configuration:
During TIG welding with HF ignition, the PoWer TIG units allow you to modify the MINIMUM and MAXIMUM LIMITS for some WELD-ING PARAMETERS, thereby providing a more skilled welder and a more versatile welding machine.
Proceed as follows:

1) Switch on the welding machine holding down the WELDING PARAMETERS SELECTION key (T7).
2) Press the WELDING PARAMETERS SELECTION Key (T7) a number of times to set the limits for the following welding pa-rameters:



L11 ***PRE-GAS duration (maximum limit settable from 1,00 to 2,50 sec)***
L12 ***SLOPE UP duration (maximum limit settable from 5,00 to 10,0 sec)***
L10 ***MINIMUM CURRENT for remote controls - minimum limit settable:***

	TIG 3000	
	5 ÷ 300 A	

WARNING: *If the minimum limit setting (for the remote control MINIMUM CURRENT) is greater than or equal to the value for the PRINCIPAL welding CURRENT* **I1** *, you will weld at the PRINCI-PAL welding CURRENT* **I1** *, irrespective of the setting you have chosen for the remote control.*

L15 ***SLOPE DOWN duration (maximum limit settable from 8,00 to 15,0 sec)***
L16 ***POST-GAS duration (maximum limit settable from 10,0 to 25,0 sec)***

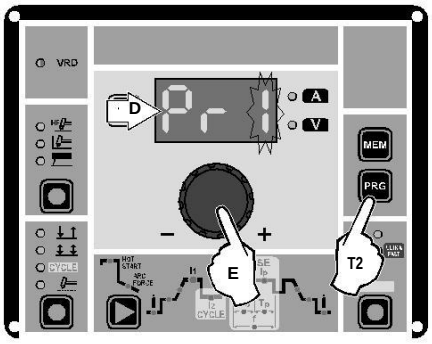
To exit the setting phase, hold the WELDING PARAMETERS SE-LECTION key (T7) down for about **1 second**. The values set are now active and welding can begin.

Creating and memorising automatic welding points

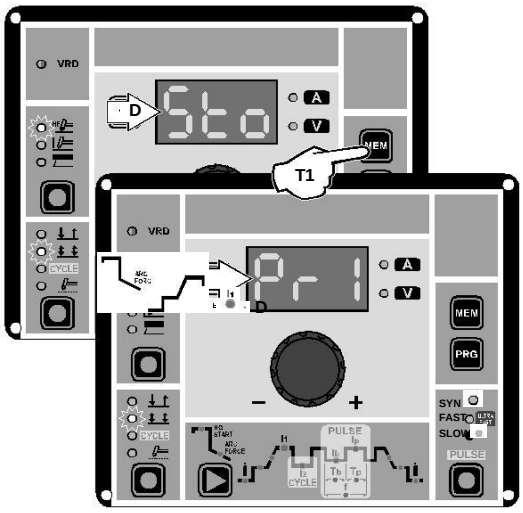
Once you have defined the parameters the operator requires to do their work properly, you can save them in the memory and create a WELDING PROGRAM by proceeding as follows.
WARNING: *To access the setting saving phase, the PRINCIPAL CURRENT LED* **I1** *must be switched on without flashing.*

7) Hold the "PRG" PROGRAM Key (T2) down for at least **5** con-secutive seconds until the DISPLAY (D) reads **Pr**, accompa-nied by a flashing number (e.g. Pr 1).
   In order to be able to choose WELDING PROGRAM that is free, simply rotate the ENCODER knob (E) and look for a pro-gram for which the control panel has all the LEDs for the vari-ous settings switched off.
   WARNING: *The MTH control panel allows you to save a max-imum of* **6** *WELDING PROGRAMS.*

   It is also possible to overwrite a program already saved.



- To SAVE the PROGRAM hold the "MEM" SAVE Key (T1) down until the DISPLAY reads **"Sto"**.
- The WELDING PROGRAM has now been saved and its num-ber appears in the DISPLAY (D) along with the other settings saved (corresponding LEDs on without flashing).



PROGRAMMED and/ or MANUAL welding

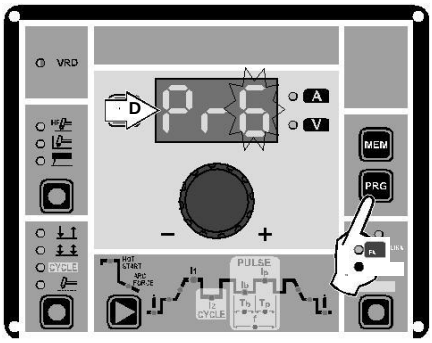
PROGRAMMED WELDING

When the WELDING PROGRAM has been saved, the operator can weld using only pre-set values as they cannot edit any type of parameter / function. To edit, switch to MANUAL welding mode.

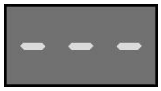
MANUAL WELDING

To go back to set / edit the parameters selected or to create a new program, proceed as follows:

- Hold the "PRG" PROGRAM Key (T2) down (about **3** seconds) until the DISPLAY (D) shows the number of the program se-lected flashing (e.g. **Pr6**).



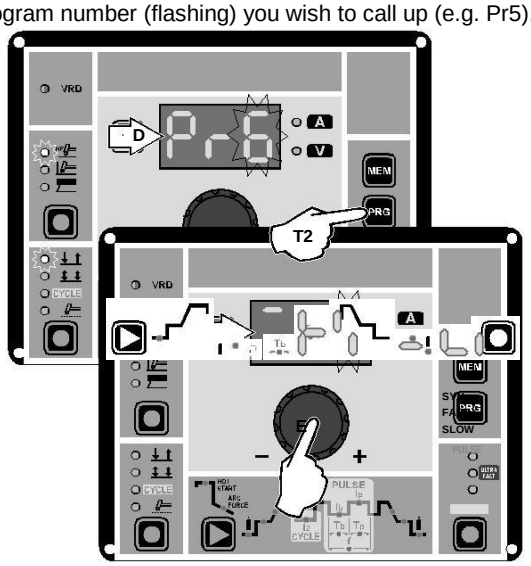
- Turn the ENCODER Key (E) anticlockwise until the DISPLAY (D) shows 3 dashes.



- Press and release the "PRG" PROGRAM key (T2) and the machine goes back to the initial operation condition.
- You can now set or edit the individual parameters or create new programs.
- Rotate the ENCODER Knob (E) to scroll the programs until you find an empty, unused program slot.

Calling up saved programs

- Hold the "PRG" PROGRAM Key (T2) down (about **3** seconds) until the DISPLAY (D) shows the number of the program se-lected flashing (e.g. Pr 6).
- Turn the ENCODER Knob (E) until the DISPLAY (D) shows the program number (flashing) you wish to call up (e.g. Pr5).



NOTE: *If when you are rotating the ENCODER knob (E) to look for a saved welding program to call up the MTH panel does not have any LEDs switched on without flashing, this means that the weld-ing program you are trying to call up has not been saved and, as a result, cannot be called up!*

2) Press and release the "PRG" PROGRAM key (T2) to call up the program number selected.
3) You can now carry out **PROGRAMMED** welding.

Viewing the parameters set

- Call up the program required (see the "Calling up saved programs" paragraph).

2) Press and release the WELDING PARAMETERS SELECTION Key (T7) to view the parameters set in sequence.
3) Hold the WELDING PARAMETERS SELECTION Key (T7) down for more than **1** second to go back to the program selected.

NOTE: *If the parameters set are edited, you automatically exit programming.*

Activating the VRD device

To activate the VRD device, which must be done when the weld-ing machine is switched off:

- Use a suitable screwdriver to unscrew the 4 screws that fix the MTH control panel to the welding machine.
- Position JUMPER W1 on the DIGITAL INTERFACE BOARD in the correct position, following the instructions given in Fig-ure A.
- Use a suitable screwdriver to tighten the 4 screws that fix the MTH control panel to the welding machine.
- Start the welding machine by pushing the switch on the rear panel to position **I**.

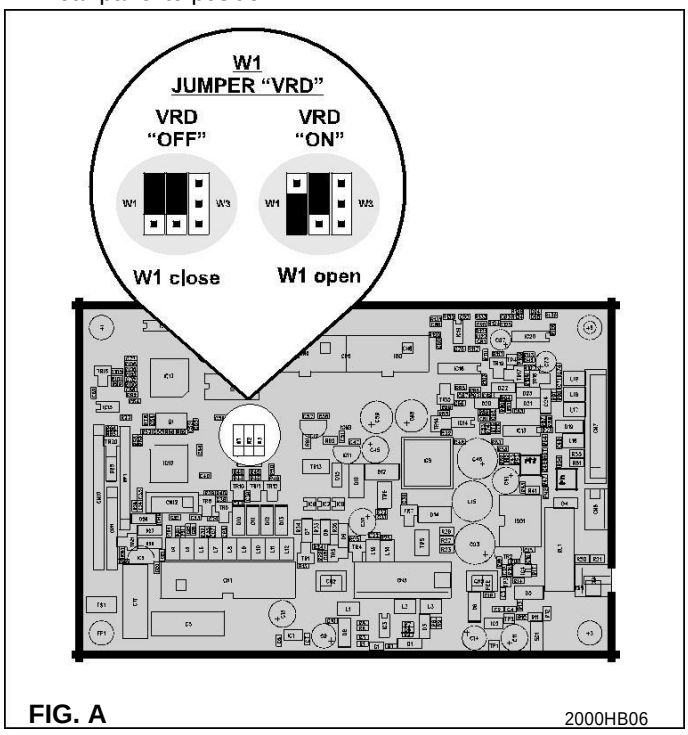


FIG. A 2000HB06

When the MTH control panel switches on the VRD LED will come on and will be GREEN, which means that the VRD function is on.

To "deactivate" the VRD device and therefore start to weld, follow this simple procedure: First touch the workpiece with the elec-trode, then detach it and ignite the arc within a MAX of **0,3** sec-onds, otherwise if this time is exceeded the VRD device starts and prevents welding.

During welding the VRD LED turns RED, which does not indicate any malfunction on the welding machine, but that the VRD device has been deactivated to allow welding.

Auxiliary functions

“Energy saving”

This function manages correct functioning of the cooling fan and cooling equipment that only run when strictly necessary, that is:

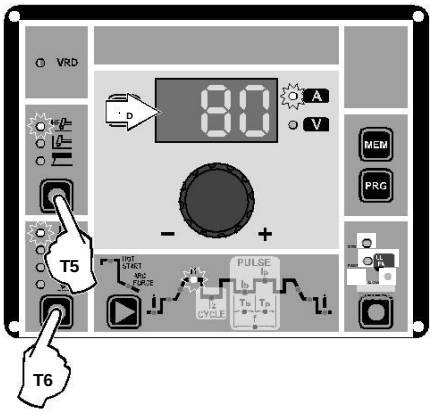
5) **FAN MOTOR -** The fan is activated when:
   During welding or for a certain period of time after this is fin-ished.
   When the thermostat intervenes or for a certain period of time after it has just been reset.
6) **COOLING DEVICE -** The cooling device is activated:
   When the machine is switched on for about **1** minute in order to allow the cooling liquid to circulate through the equipment at the correct pressure (if the error message does not disappear from the DISPLAY (D) when the cooling equipment switches off, contact our technical assistance department).
   During welding or for a certain period of time after this is fin-ished.

Factory default

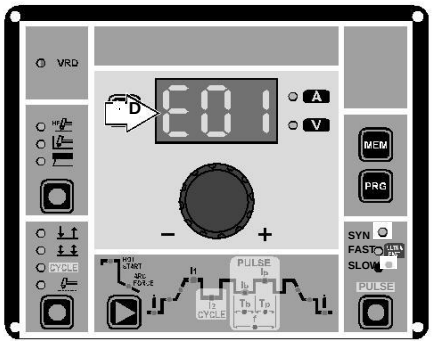
WARNING: *This operation results in complete resetting of all pa-rameters to the factory settings.*

To reset the settings, you must:

- When the welding machine is off, push and hold the WELDING PROCESS SELECTION (T5) and WELDING MODE SELEC-TION (T6) keys down together.
- Switch on the welding machine and hold down the keys until the DISPLAY (D) reads 80.
- Release the two keys.
- The reset procedure has now been completed successfully.



Error and protection conditions



The equipment is protected against problems and if any arise the DISPLAY shows fixed or flashing (error code) messages (depend-ing on the type of error) that serve to inform the operator that a fault has occurred in the equipment (see table 1).

The table provides a summary of all the error conditions that may arise on the equipment and, if possible, what the operator must do to attempt to resolve the problem.

Automatic reset error: once the alarm condition has been re-solved the equipment starts working again and the operator can weld again!

PLEASE NOTE: ***If the fault persists look for the cause of the fault and contact our technical assistance department if nec-essary.***

All of this is necessary to allow our technical assistance depart-ment (**which must be contacted each time error messages appear on the equipment’s operator interface**) to resolve prob-lems more easily, as quickly as possible and thanks to the user’s reports, also because, in the meantime the machine will not allow the operator to do their work.

Table 1

Display	Diagnosis
E01	**PRESSURE SWITCH** This message appears when the cooling equipment is connected to the machine and its pressure switch does not close due to a lack of pressure in the hydraulic circuit. Automatic reset error.
E02	**OVER VOLTAGE** **PoWer TIG 3000 DC Pulse** This message appears when the power supply voltage exceeds **500V**. If the fault persists look for the cause of the fault and contact our technical assistance department if necessary. Automatic reset error.
E03	**UNDER VOLTAGE** **PoWer TIG 3000 DC Pulse** This message appears when the power supply voltage drops below **280V**. If the fault persists look for the cause of the fault and contact our technical assistance department if necessary. Automatic reset error.
t°C	**THERMAL PROTECTION** The welding stops due to an excessively high temperature (thermostat activated). Automatic reset error.

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Power TIG 3000 DC PULSE

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