PoWer TIG Series

GeKaMac®

Power TIG 4000 AC/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 4000 AC/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.

Standartlar / Standards	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

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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 instructions contained in this manual must be read and strictly complied with, as well as **the safety instructions contained in the relevant 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

Using the most modern IGBT based inverter technology, the threephase TIG generator with high frequency **POWER TIG 4000 AC/DC PULSE** ignition, comes with an innovative digital control for all welding parameters.
Technologically cutting-edge, robust, easy to use with both direct and alternating current, fitted with high potential digital control, this generator can be used for high quality TIG welding 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 MATRIX AC/DC range are:
- Innovative and compact design.
- Compact size and light weight for easy transportation.
- Metallic main structure with shock-proof plastic front panel.
- Sloping front panel, easy to read and adjust and highly visible from any direction.
- Robust handle integrated into the chassis.
- Digital control, regulation and monitoring of all welding parameters.
- 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 (Holdfunction).
- coldTACK function in TIG HF DC. Innovative spot welding device to achieve precise and safe joining with a minimal thermal input. “Multi-coldTACK” function grants cold spotting in a rapid sequence, thus further widening the benefits of the single spot.
- 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%/+15%.
- 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.
- POWER TIG 4000 AC/DC PULSE - Suitable for use on all robotic systems.

- **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.
  - The diameter of the electrode used is set to allow greater control of the ignition and dynamics of the arc.

- Standard built-in pulsation with provision for entering the SYN Pulse function.
- Square, mixed, sinusoidal, or triangular wave shape selector.
- Square welding wave frequency balancing / regulation and “Balance Plus”.

• **MMA**
- “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.

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 MTA 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.

How to lift up the machine

Strap the hoisting belts around the machine and lift it up care fully and safely, slinging it from the bottom up. The welder has two handles to carry it around manually.

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

Open the packaging

The system essentially consists of:
• **POWER TIG 4000 AC/DC PULSE** weld unit.
• Separately:
- Welding TIG torches (optional).
- 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 equipments).
- Generator interconnection cable - robot interface (optional - this interface must only be used for automatic / robotised equipments).

Table 1

Model		POWER TIG 4000 AC/DC PULSE	
		TIG	MMA
Power supply 50/60 Hz	V	400 +15% / -20%	
Power supply: Z_{max}	Ω	0,041	
Input power @ I_2 Max	kVA	15,3	20,5
Delayed fuse (I_2 @ 100%)	A	16	
Power factor / cosφ		0,97 / 0,99	
Efficiency degree	η	0,70	0,72
Open circuit voltage	V	65	
Current range	A	5÷400	10÷400
Duty cycle @ 100% (40°C)	A	250	
Duty cycle @ 60% (40°C)	A	320	
Duty cycle @ 35% (40°C)	A	400	
Standards		IEC 60974-1 • IEC 60974-3 • IEC 60974-10 CE S	
Protection class		IP 23 S	
Insulation class		F	
Dimensions	mm	670 - 525 - 290	
Weight	kg	49	

WARNING: *This equipment complies with* **EN/IEC 61000-3-12** *provided that the maximum permissible system impedance Z_{max} is less than or equal to 0,041 Ω - POWER TIG 4000 AC/DC PULSE 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 0,041 Ω - POWER TIG 4000 AC/DC PULSE

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.*

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 bodies are blocking the air circulation.

Installation

The installation site for the system must be carefully chosen in order to ensure its satisfactory and safe use. The user is responsible for the installation and use of the system in accordance with the producer's instructions contained in this manual. Before installing the system the user must take into consideration the potential electromagnetic problems in the work area. In particular, we suggest 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 equipment must consult their doctor before going near a machine in operation. 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 expelled 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 conditions 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 power supply, make sure that rated voltage and frequency correspond to those provided by the mains power supply and that the welding machine's power switch is turned to "O".
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 power 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 fuses 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 special cable supplied with the machine.*

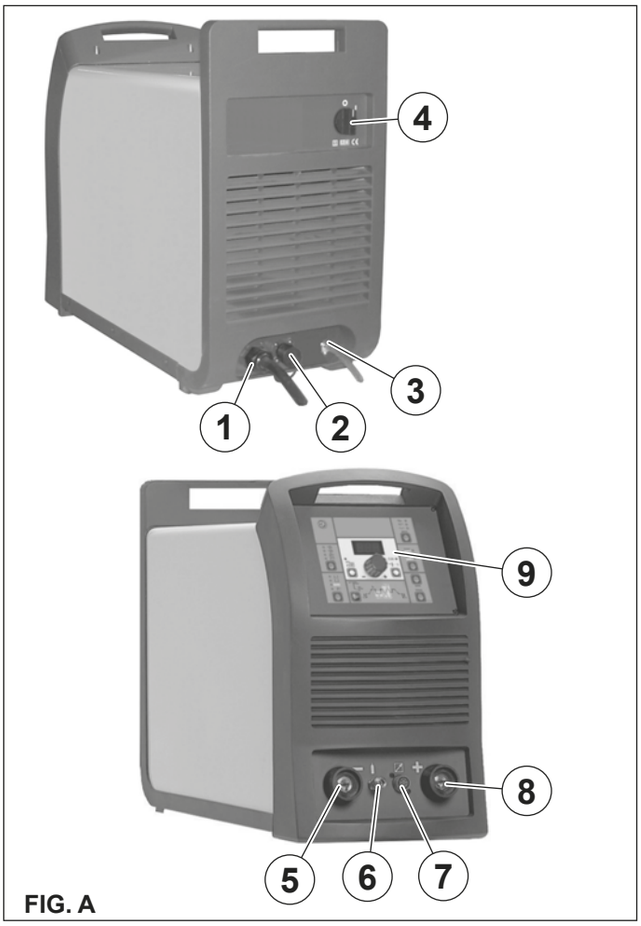


FIG. A

Table 2

Model		POWER TIG 4000 AC/DC PULSE	
		TIG	MMA
Input power @ I_2 Max	kVA	15,3	20,5
Delayed fuse (I_2 @ 100%)	A	16	
Duty cycle @ 35% (40°C)	A	400	
Mains cable Length Section	 m mm^2	 4 4	
Ground cable Section	 mm^2	 50	

Instructions for use

COMMAND AND CONTROL UNITS (Fig. A)

Pos. 1 Welder cable.
Pos. 2 Power connector for cooling system.
Pos. 3 Weld gas inlet coupling.
Pos. 4 Supply switch. In the “O” position the welder is off.
Pos. 5 Fast coupling straight polarity.
Pos. 6 Fast coupling TIG torch gas tube.
Pos. 7 TIG weld auxiliary control connector (torch button, remote control pedal, etc.).
Pos. 8 Fast coupling reverse polarity.
Pos. 9 MTA command and control panel.

Interfacing accessories (optional)

Interface for RoboMAT 1 robot - Connection to welding machine:

1) Undo the 4 screws and remove the plate fixed to the rear panel (Fig. B1).
2) Connect the robot wiring harness connector to the RoboMAT 1 robotic interface (Fig. B2).
3) Secure the RoboMAT 1 robotic interface to the rear panel of the welding machine with the 4 supplied screws (Fig. B3).

RoboMAT 1 robot - welding robot interface connecting cable - Connection to RoboMAT 1 robot interface:

1) Connect the cable to the robotic interface as indicated in figure C. To connect the other end of this cable, see the diagramin the RoboMAT 1 robotic interface manual.

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 example, Argon). This type of welding is used to weld thin sheet metal or when elevated quality is required.

1) Connecting the welding cables (Fig. D):
   - 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 connector marked - (negative).
     - Connect the torch gas tube to the connection (Pos. 6, Fig. A).
     - Insert the torch button connector in the 6 poles holder (Pos. 7, Fig. A).
2) Switch the welding machine on by moving the power supply switch to **I** (Pos. 4, Fig. A).
3) Make the adjustments and select the parameters on the control panel (for further information see the MTA control panel manual).

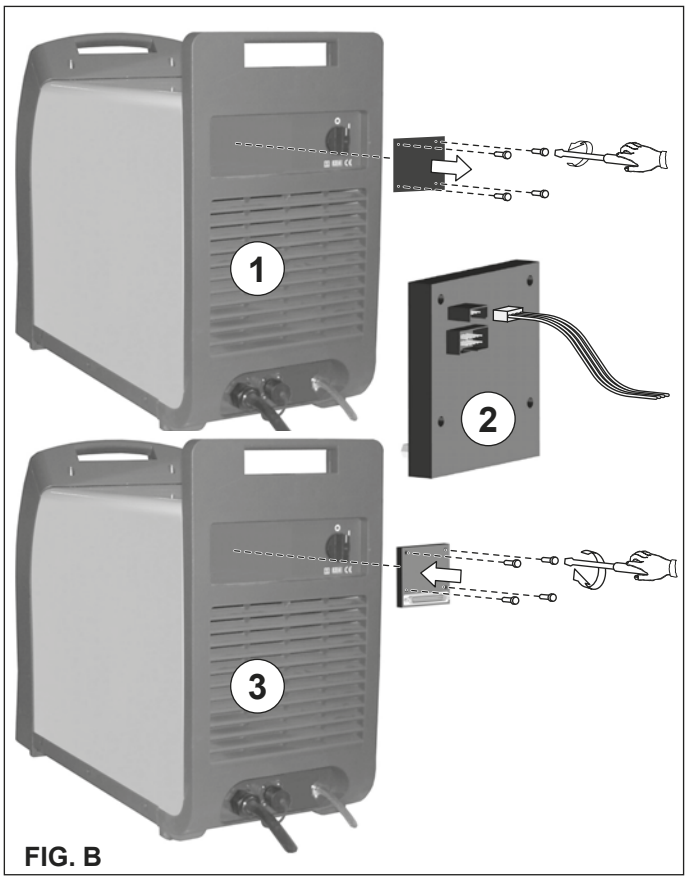


FIG. B

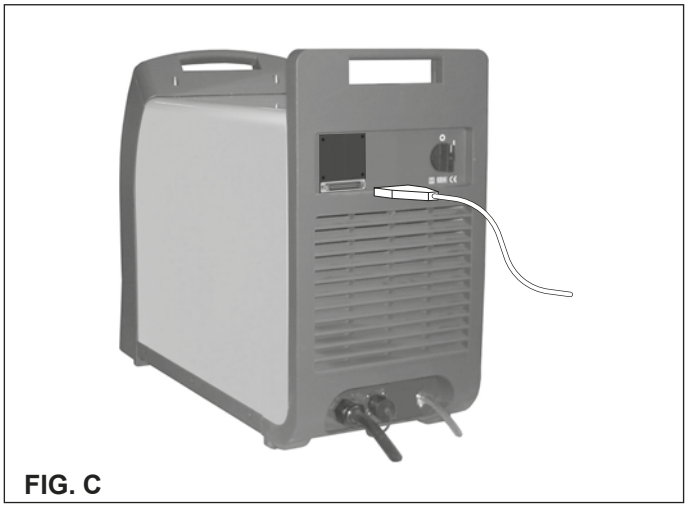


FIG. C

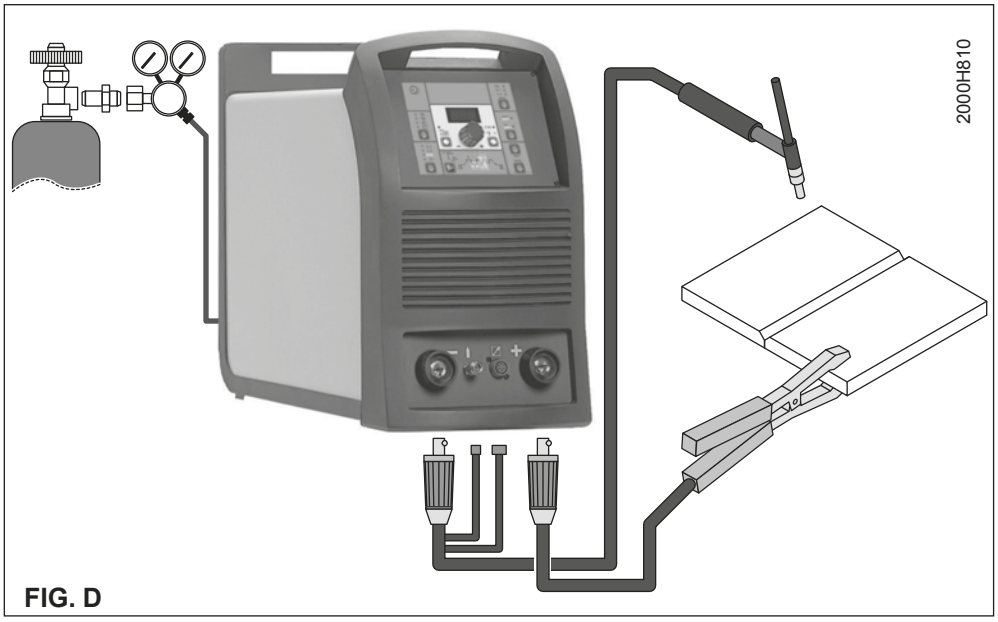


FIG. D

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 between the point of the electrode and the piece to be welded (Fig. E-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. E-2)
8a) Carry out TIG welding (Fig. E-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 welded (Fig. F-1).
6b) Press the torch button.
7b) The voltaic arc strikes even without contact between the TIG torch electrode and the workpiece (Fig. F-2).
8b) To continue welding put the torch back in its normal position (Fig. F-3).

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

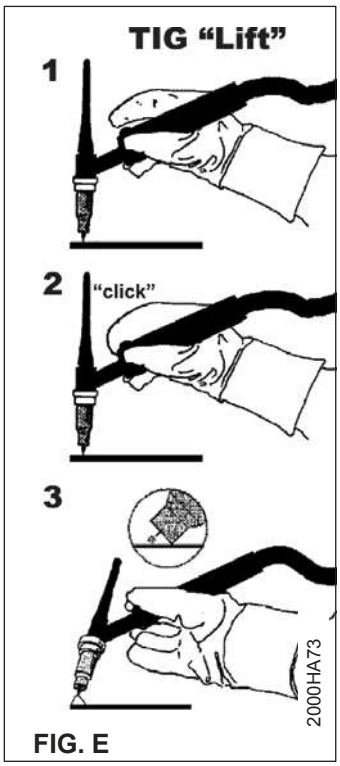


FIG. E

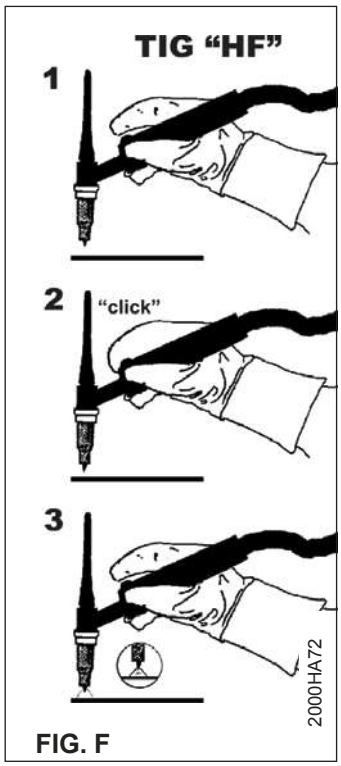


FIG. F

PART TO BE WELDED

The part to be welded must always be connected to ground in order 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 damage to other electric equipment. When it is necessary to connect the part to be welded to ground, you should make a direct connection 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.

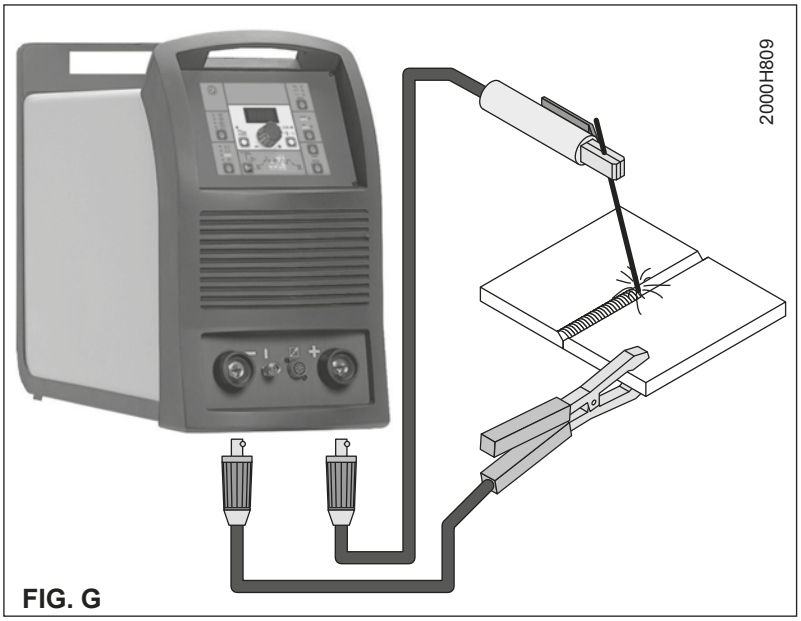


FIG. G

WELDING PARAMETERS

Table 3 shows the currents to use with the respective electrodes for TIG AC and DC 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 proportional to the current being used for welding.

Table 3

Ø ELECTRODE (mm)	ELECTRODE TYPE - Current adjustment field (A)			
	TIG DC		TIG AC	
	Tungsten Ce 1% Grey	Tungsten Rare ground 2% Turchoise	Tungsten Pure Green	Tungsten Rare ground 2% Turchoise
1	10-50	10-50	-	-
1,6	50-80	50-80	30-60	30-60
2,4	80-150	80-150	60-120	60-120
3,2	150-250	150-250	80-160	80-160
4	200-400	200-400	100-240	100-240
4,8	-	-	200-300	200-300
6,4	-	-	275-400	275-400

Electrode welding (MMA)

Electrode welding is used to weld most metals (different types of steel, etc.) using coated rutilic and basic electrodes with diameters ranging from Ø 1.6 mm to Ø 8 mm.

CONNECTION OF THE WELDING CABLES (Fig. G)
With the machine disconnected from the supply, connect the welding cables to the out terminals (positive and negative) of the welder, connecting them to the gripper and the ground, with the correct polarity provided for the type of electrode to be used (Fig. G). The welding cables must be as short as possible, close to one other, and positioned at floor level or close to it.

PART TO BE WELDED
The part to be welded must always be connected to ground in order 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 damage to other electric equipment. When it is necessary to connect the part to be welded to ground, you should make a direct connection 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 the values of current to use with the respective electrodes for the welding of common steels and low-grade alloys. These data have no absolute value and are indicative data only. For a precise choice follow the instructions provided by the electrode manufacturer. The current to be used depends on the welding positions and the type of joint, and it increases according to the thickness and dimensions of the part. The current intensity to be used for the different types of welding, within the field of regulation shown in table 4 is:

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

A fairly approximate indication of the average current to use in the welding of electrodes for ordinary steel is given by the following 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 equipment. 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*

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 MTA 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 MTA 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.*

Table 4

Ø ELECTRODE (mm)	ELECTRODE TYPE - Current adjustment field (A)									WELDING THICKNESS (mm)
	6010 6011	6012	6013	6020	6027	7014	7015 7016	7018	7024 7028	
1,6	-	20-40	20-40	-	-	-	-	-	-	≤ 5
2	-	25-60	25-60	-	-	-	-	-	-	
2,4	40-80	35-85	45-90	-	-	80-125	65-110	70-100	100-145	≤ 6,5
3,2	75-125	80-140	80-130	100-150	125-185	110-160	100-150	115-165	140-190	> 3,5
4	110-170	110-190	105-180	130-190	160-240	150-210	140-200	150-220	180-250	> 6,5
4,8	140-215	140-240	150-230	175-250	210-300	200-275	180-255	200-275	230-305	> 9,5
5,6	170-250	200-320	310-300	225-310	250-350	260-340	240-320	260-340	275-365	
6,4	210-320	250-400	250-350	275-375	300-420	330-415	300-390	315-400	335-430	
8	275-425	300-500	320-430	340-450	375-475	390-500	375-475	375-470	400-525	> 13

- *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 active 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: *Programme sequences can be created by placing an empty programme between saved ones.*

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 recognition device which allows it to identify which device is connected 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-acknowledgement procedure) the machine will automatically return to the manual-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

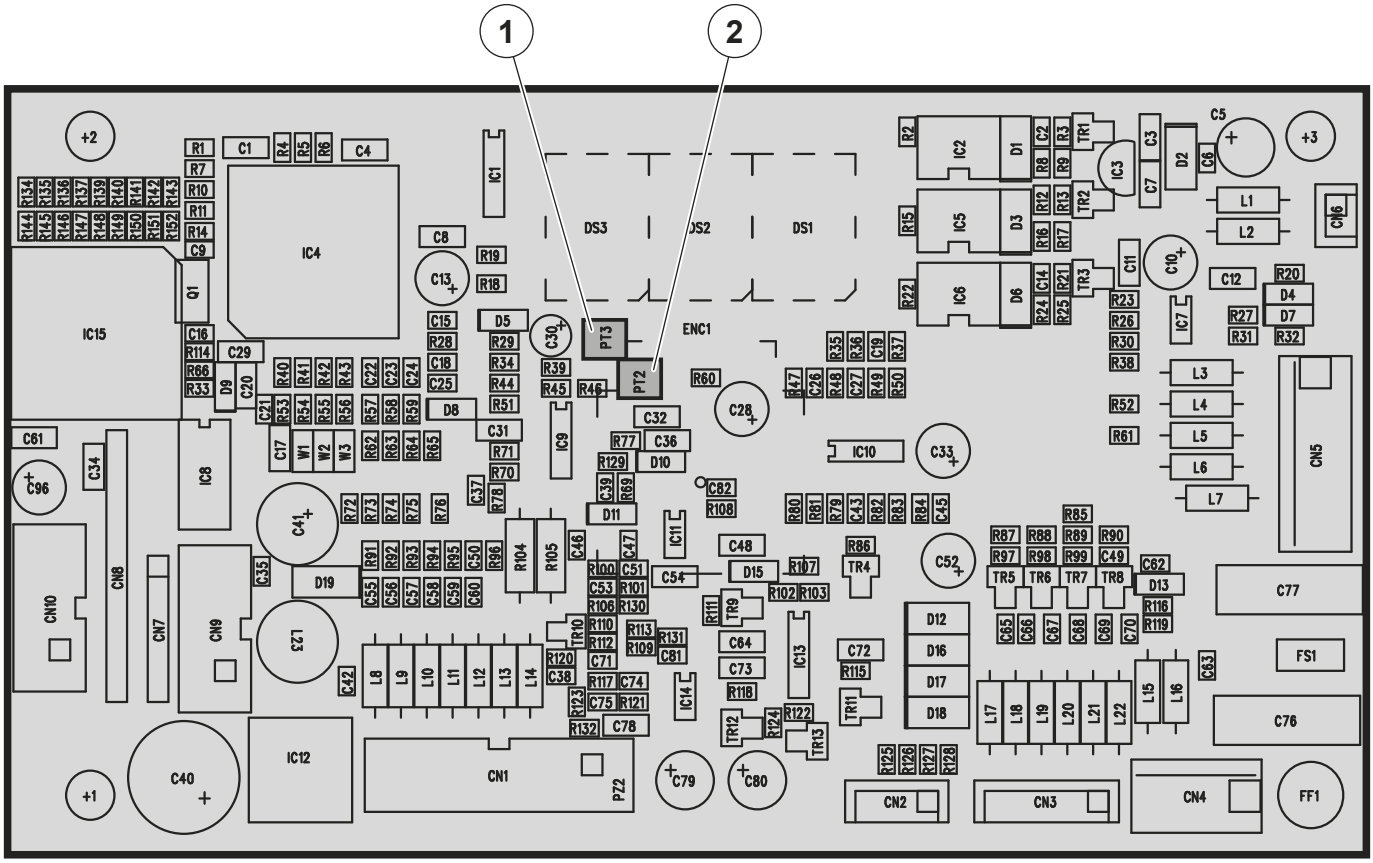
- Unscrew the 4 screws fastening the front rack panel.
- Remove the adjustment knob.
- Extract wiring connectors from digital interface PCB.
- Unscrew small supporting columns.
- Remove digital interface PCB by lifting it out of its supports.
- Proceed vice versa to assemble new digital interface PCB.

Meaning of graphic symbols on machine

0 I	Power supply switch		Connector for the remote control
S	System for use in environments with increased risk of electroshock		Warning!
CE	Product suitable for free circulation in the European Community		Fast coupling TIG torch gas tube
	Danger! High voltage		Before using the equipment you should carefully read the instructions included in this manual
	Grounding		MMA welding
+	Positive pole snap-in connector		TIG welding
−	Negative pole snap-in connector		Special disposal

Adjustment of digital interface board

1) Adjustment of the maximum current
2) Adjustment of the minimum current



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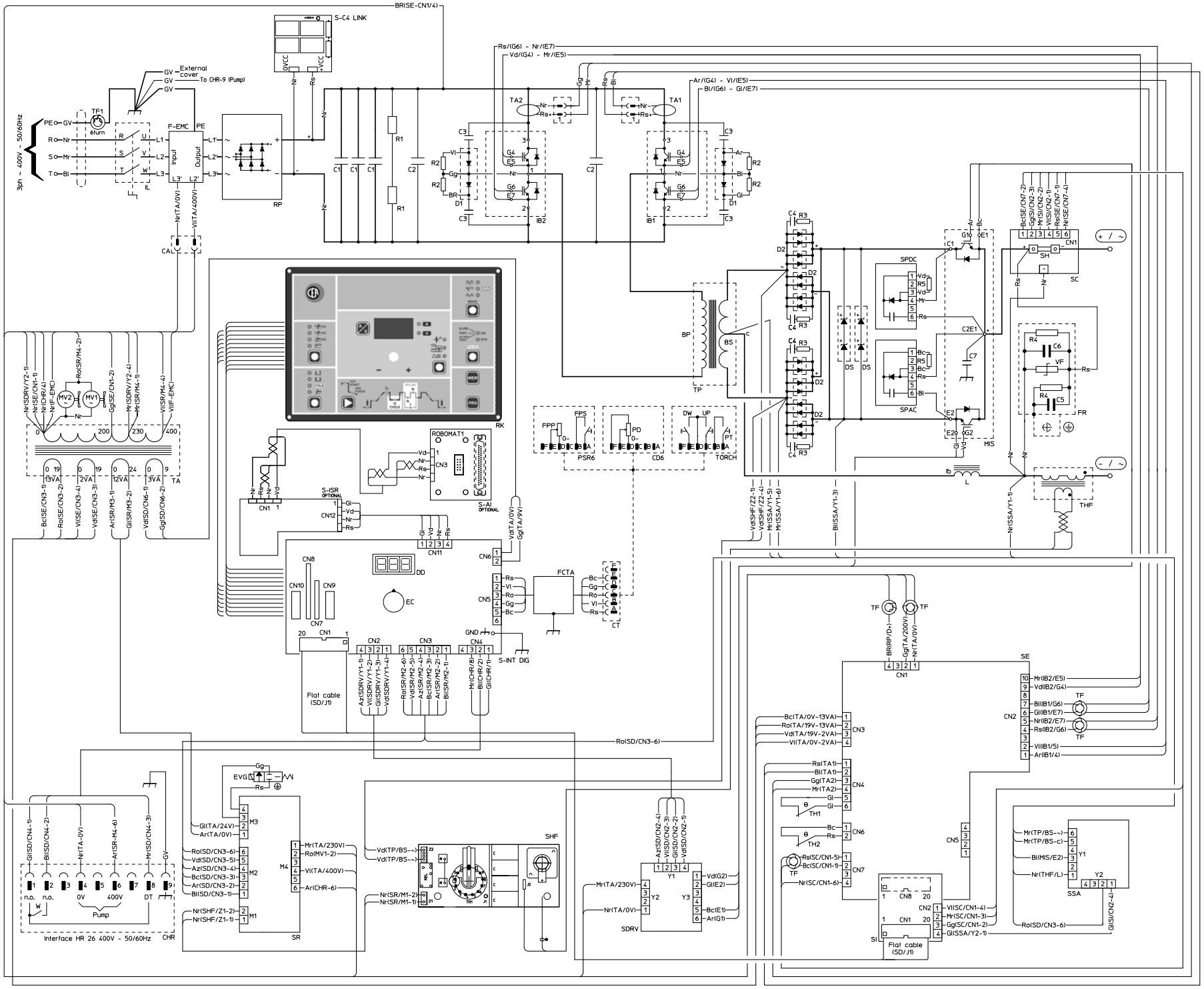
Wiring diagram (POWER TIG 4000 AC/DC PULSE)

•1 BP	•2 BS	•3 C1-7	•4 CA	•5 CD 6	•6 CHR	•7 CT	•8 D1	•9 D2	•10 DD
•11 DS	•12 DW	•13 EC	•14 EVG	•15 F-EMC	•16 FCTA	•17 FPP	•18 FPS	•19 FR	•20 Ib
•21 IB1-2	•22 IL	•23 L	•24 MIS	•25 MV1-2	•26 PD	•27 PSR 7	•28 PT	•29 R1-5	•30 RK
•31 RP	•32 S-AI	•33 S-C4-LINK	•34 S-DRV	•35 S-INT DIG	•36 S-ISR	•37 SC	•38 SE	•39 SH	•40 SHF
•41 SI	•42 SPAC	•43 SPDC	•44 SR	•45 SSA	•46 TA	•47 TA1-2	•48 TF	•49 TF1	•50 TH1
•51 TH2	•52 THF	•53 TP	•54 UP	•55 VF	•56 W				

Key to the electrical diagram

•1 Primary transformer coil **•2** Secondary transformer coil **•3** Capacitors **•4** Power supply connector **•5** Remote control **•6** Cooling power supply connector **•7** Torch pushbutton connector **•8** SNUBBER diodes **•9** Secundary diodes **•10** Digital display **•11** Voltage surge suppressor **•12** DOWN button **•13** Encoder **•14** Gas solenoid valve **•15** EMC filter **•16** Torch filter and accessories **•17** Pedal control potentiometer **•18** Microswitch **•19** HF protection filter **•20** Coil start **•21** IGBT unit **•22** Mains switch **•23** Secondary inductor **•24** Double IGBT secondary module **•25** Fan motor **•26** Remote current potentiometer **•27** Pedal control **•28** Torch button **•29** Resistances **•30** Membrane keyboard **•31** Primary rectifier **•32** Interface for automation (optional extra) **•33** Capacitors PCB **•34** DRIVER PCB **•35** Digital interface PCB **•36** Automation interface isolation board (optional extra) **•37** Amplified signal board shunt **•38** INVERTER control PCB **•39** Shunt **•40** Spark gap PCB **•41** Interface PCB **•42** AC side IGBT protection board **•43** DC side IGBT protection board **•44** Relay PCB **•45** Welding arc stabiliser board **•46** Auxiliary transformer **•47** IGBT power transformer **•48** Disturbances suppression toroid **•49** Toroid for the EMC disturbance suppression line cable **•50** Thermostat **•51** Thermostat **•52** HF transformer **•53** Transformer **•54** UP button **•55** Varistor **•56** Pressure switch


S-C4 LINK
External cover
To CHR-9 (Pump)
3ph ~ 400V - 50/60Hz
F-EMC
Input
Output
RP
TA2
TA1
IB2
IB1
SPDC
SPAC
MIS
SC
FR
THF
TP
BP
BS
RK
ROBOMAT1
S-AI OPTIONAL
S-ISR OPTIONAL
FCTA
CT
S-INT DIG
Flat cable (SD/J1)
SE
SSA
SDRV
SHF
SR
EVG
Pump
Interface HR 26 400V - 50/60Hz
CHR
TA
PSR6
CD6
TORCH

2101WC13/B

PoWer TIG Series

GeKaMac®

Power TIG 4000 AC/DC PULSE

Users Manual

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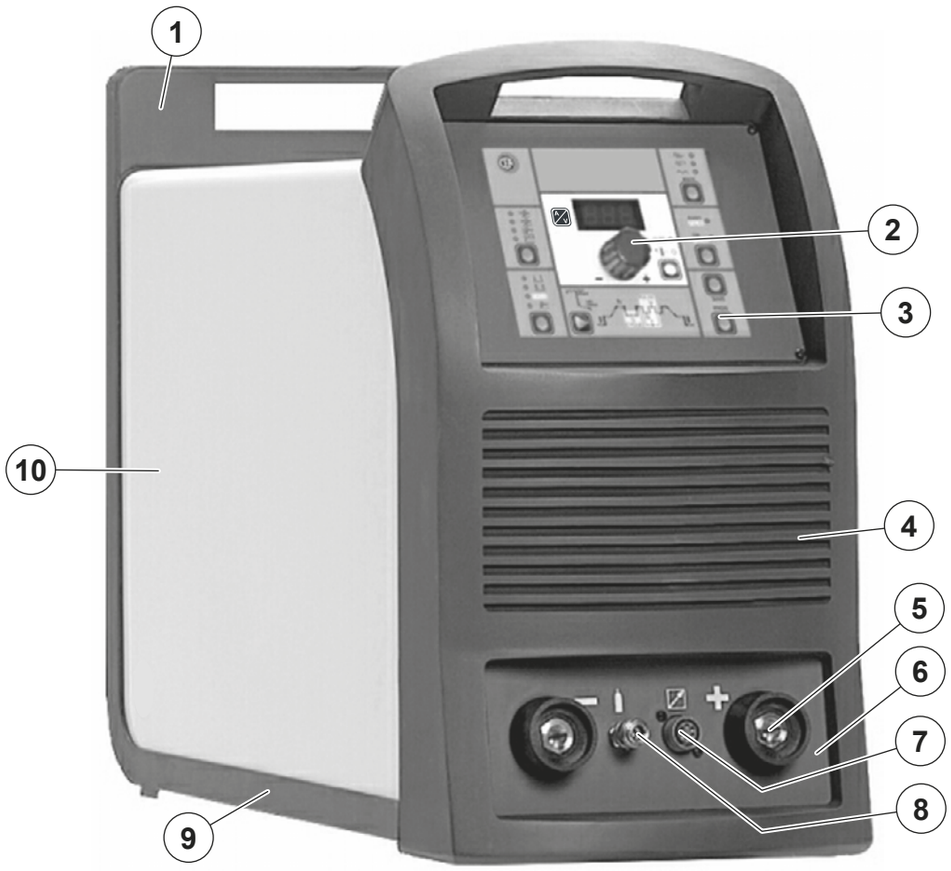
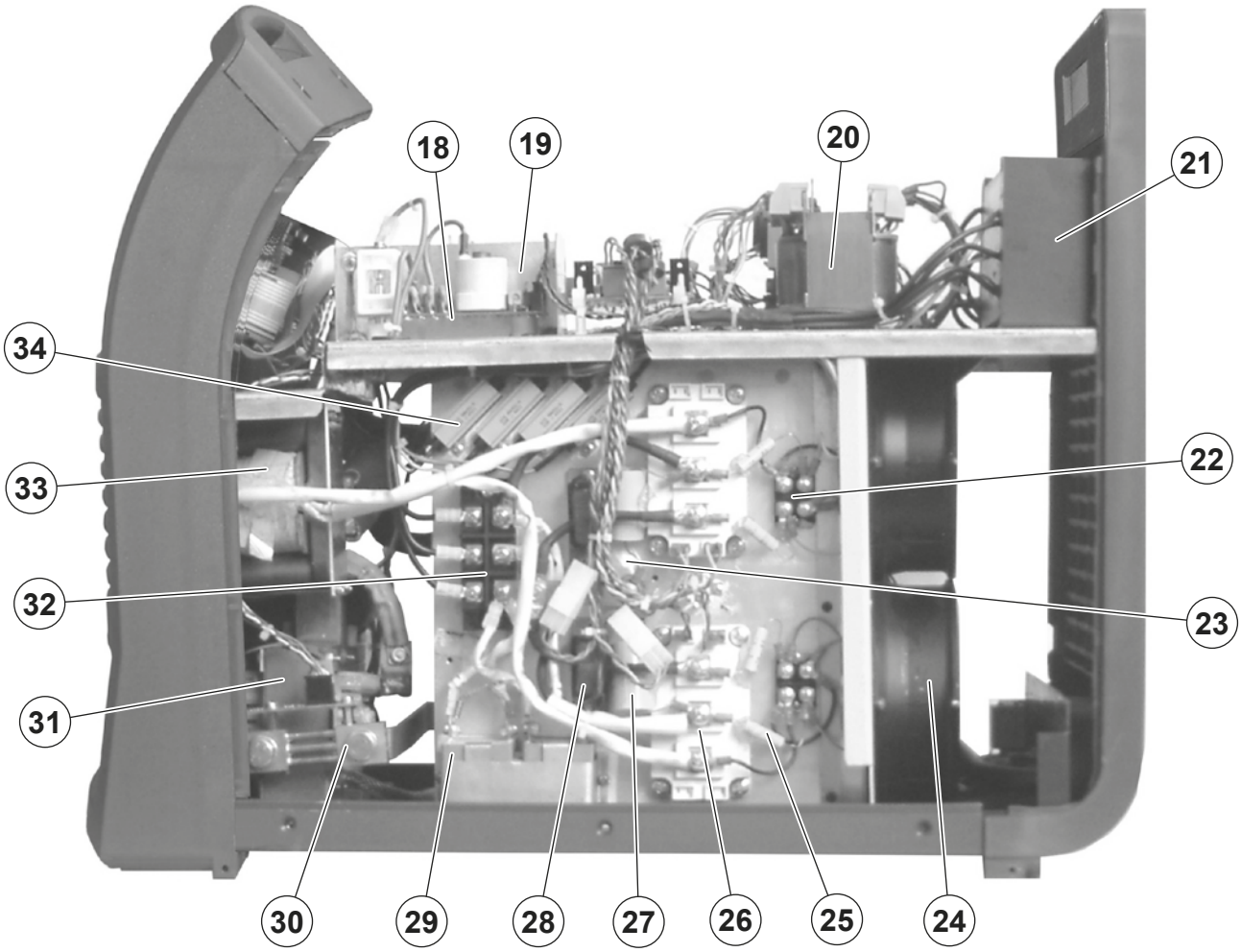
IT Lista ricambi (POWER TIG 4000 AC/DC PULSE)

EN Spare parts list (POWER TIG 4000 AC/DC PULSE)

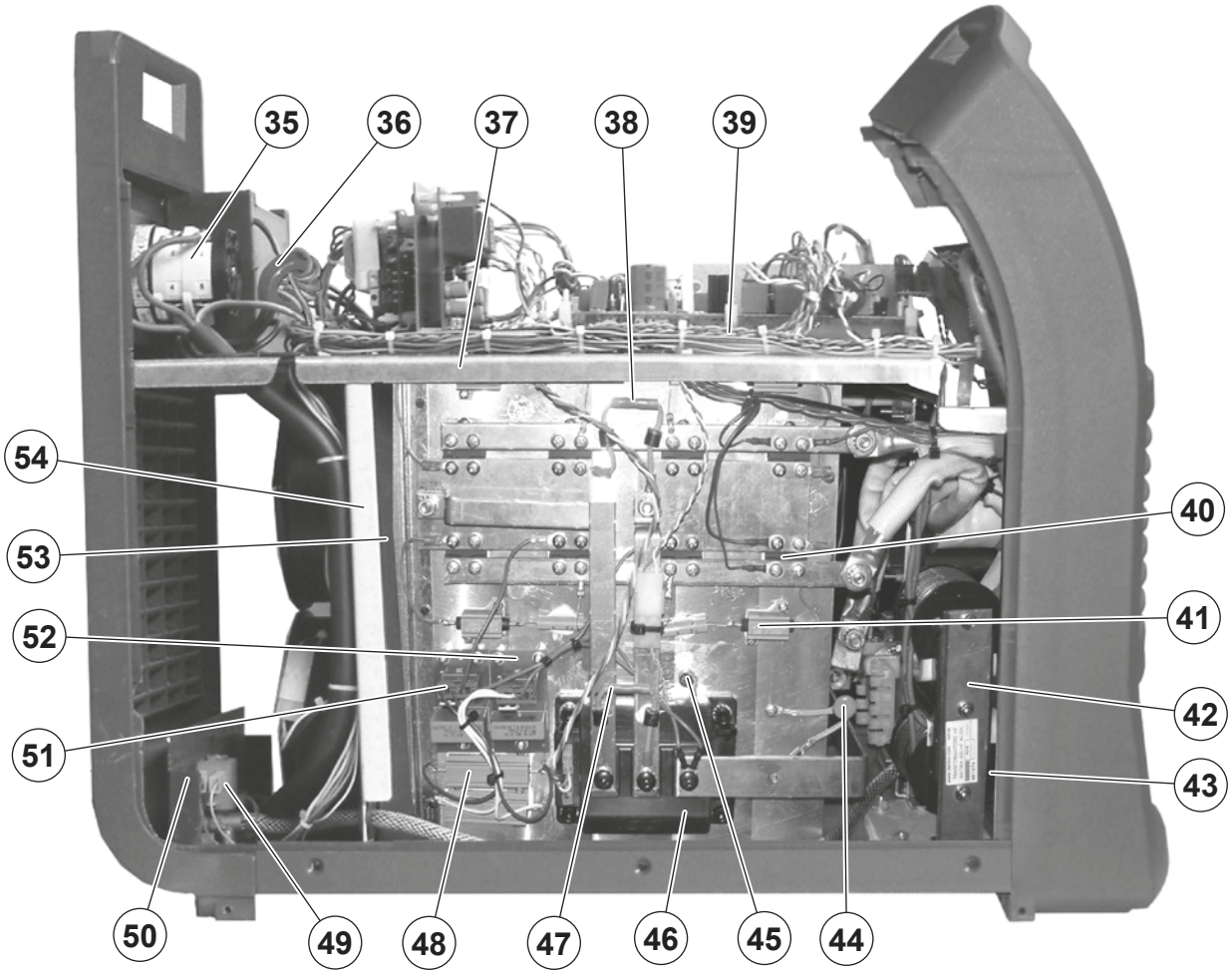


Pos.	Cod.	Descrizione	Description
1	352435	Coperchio pannello posteriore	Rear panel cover
2	438888	Manopola senza indice	Knob without index
3	447866A	Tastiera a membrana	Membrane keyboard
4	352420	Pannello frontale	Front panel
5	403617	Attacco rapido	Quick connection
6	467087	Adesivo frontale attacco rapido	Quick connection front sticker
7	419050	Connettore comando a distanza	Remote control socket
8	403635	Attacco rapido gas	Gas quick connection
9	352422	Guida laterale	Side guide
10	420522	Coperchio	Cover

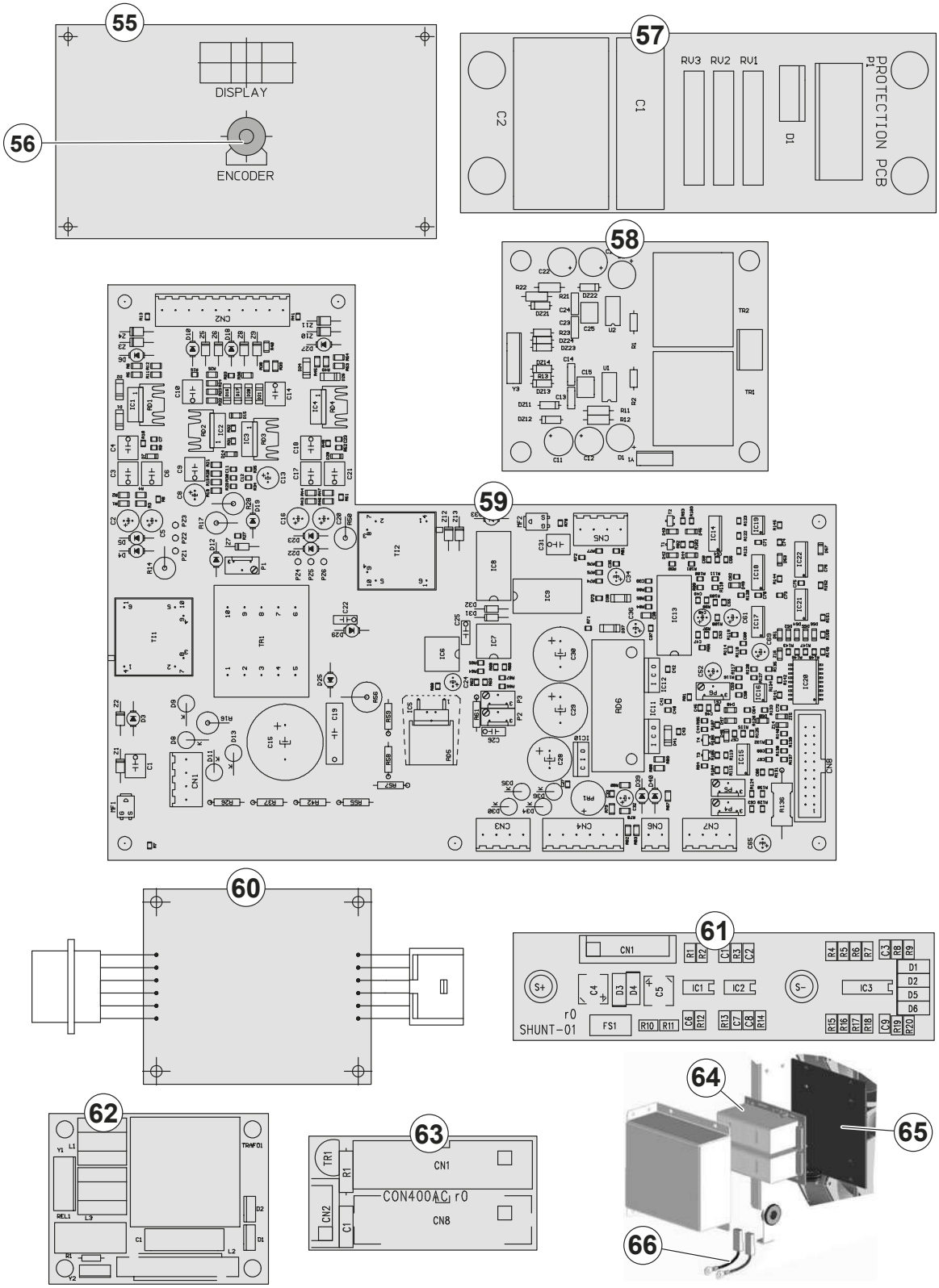
Pos.	Cod.	Descrizione	Description
11	352430	Coperchio pannello frontale	Front panel cover
12	438700	Manopola interruttore di linea	Supply switch knob
13	352425	Pannello posteriore	Rear panel
14	485040	Tubo gas	Gas tube
15	419049	Presa pannello 9 poli	9 Pin panel plug
16	235999	Cavo linea	Mains cable
17	427876	Pressacavo con ghiera	Cable clamp with lock ring



Pos.	Cod.	Descrizione	Description
18	377059	Scheda spinterometro	Spark gap PCB
19	463235	Supporto scheda spinterometro	Spark gap PCB support
20	481458	Trasformatore ausiliario	Auxiliary transformer
21	427667	Filtro EMC	EMC Filter
22	423242	Diodo primario di snubber	Snubber primary diode
23	478787	Termostato su dissipatore primario	Thermostat on primary heatsink
24	486380	Motore ventilatore	Fan motor
25	418781	Condensatore 4700pF - 1500V	4700pF - 1500V Capacitor
26	286030	IGBT primario	Primary IGBT
27	418782	Condensatore 1µF - 850V	1µF - 850V Capacitor
28	481948	Trasformatore di corrente	Current transformer
29	418783	Condensatore di livellamento 25µF - 1000V	25µF - 1000V Capacitor
30	376485	Shunt	Shunt
31	240210	Induttore secondario	Secondary inductor
32	455503	Raddrizzatore primario	Primary rectifier
33	481418	Trasformatore	Transformer
34	457122	Resistore di snubber primario	Snubber primary resistor



Pos.	Cod.	Descrizione	Description
35	435760	Interruttore di linea	Mains switch
36	427404	Toroide per cavo linea soppressione disturbi EMC	EMC disturbance suppression toroid for power line
37	449562	Piastra superiore	Upper plate
38	418914	Scaricatore di protezione	Surgeblock
39	413682	Cablaggio ausiliario	Auxiliary wiring
40	423236	Diodo secondario di snubber	Snubber secondary diode
41	457123	Resistore di snubber secondario	Snubber secondary resistor
42	481574	Trasformatore HF	HF transformer
43	427682	Filtro protezione HF	HF Filter
44	418877	Condensatore EMC	EMC Capacitor
45	478848	Termostato su dissipatore secondario	Thermostat on secondary heatsink
46	286029	Modulo doppio IGBT secondario	Dual secondary IGBT module
47	418915	Scaricatore di protezione	Surgeblock
48	457071	Resistore 120ohm 50W	120ohm 50W Resistor
49	425937	Elettrovalvola gas	Gas solenoide valve
50	404975	Basamento	Base
51	376781	Scheda protezioni lato DC	DC side protections PCB
52	376782	Scheda protezioni lato AC	AC side protections PCB
53	466140	Paratia proteggi polvere	Dust protection
54	466135	Piastra supporto ventilatori	Fan support plate



Pos.	Cod.	Descrizione	Description
55	377186	Scheda interfaccia digitale	Digital interface PCB
56	454150	Encoder	Encoder
57	376927	Scheda relè	Relay PCB
58	376777	Scheda driver	Driver PCB
59	376948	Scheda controllo inverter	Inverter control PCB
60	376930	Filtro torcia ed accessori	Torch filter and accessories
61	377187	Scheda segnale amplificato shunt	Amplified shunt signal PCB
62	376773	Scheda stabilizzatrice arco di saldatura	Welding arc stabilizer PCB
63	376968	Scheda interfaccia	Interface PCB
64	377157	Scheda condensatori primari	Primary capacitor PCB
65	353054	Isolamento scheda condensatori	Capacitor PCB insulated
66	413441	Cablaggio scheda condensatori	Capacitor PCB wiring

IT Ordinazione dei pezzi di ricambio

Per la richiesta di pezzi di ricambio indicare chiaramente:
1) Il numero di codice del particolare
2) Il tipo di impianto
3) La tensione e la frequenza che rileverete dalla targhetta dei dati posta sull'impianto
4) Il numero di matricola

ESEMPIO
N° 2 pezzi, codice n. 352420 - per l'impianto POWER TIG 4000 AC/DC PULSE - 400 V - 50/60 Hz - Matricola n° .....

EN Ordering spare parts

To ask for spare parts clearly state:
1) The code number of the piece
2) The type of device
3) The voltage and frequency read on the rating plate
4) The serial number of the same

EXAMPLE
N. 2 pieces code n. 352420 - for POWER TIG 4000 AC/DC PULSE - 400 V - 50/60 Hz - Serial number .....

PoWer TIG Series

GeKaMac®

Power TIG 4000 AC/DC PULSE

Users Manual

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EN ENGLISH

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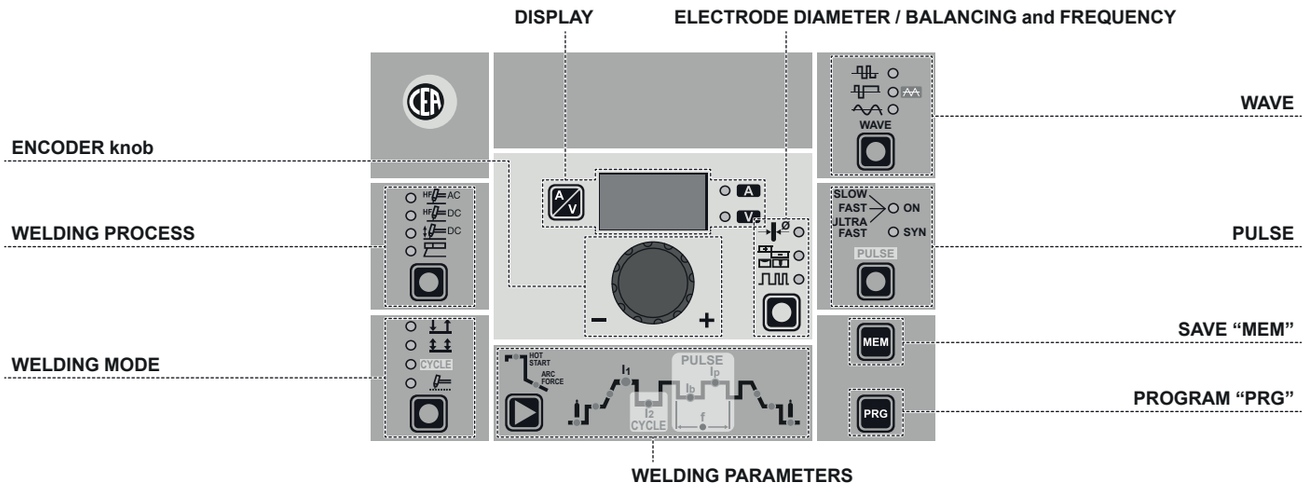
Introduction

This manual describes the functions on and how to use the following control panels:

- **POWER TIG 4000 AC/DC PULSE**
-

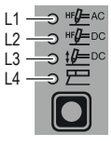
Control panel



■ WELDING PROCESS

The GeKaMac welding machine offers **4** 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:

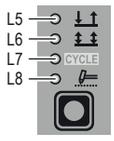
L1 ***TIG AC with HF ignition***
L2 ***TIG DC with HF ignition***
L3 ***TIG DC with “Lift” type ignition***
L4 ***ELECTRODE (MMA)***



■ WELDING MODE

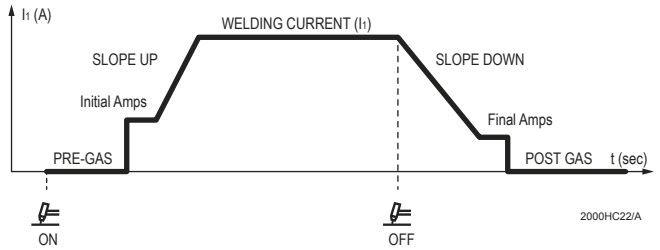
The GeKaMac welding machine offers **4** welding modes. Each time the button is pushed, the welding machine switches to select the welding mode indicated by the LED that stays lit, in the following order:

L5 ***2 STROKES***
L6 ***4 STROKES***
L7 ***CYCLE***
L8 ***SPOT WELDING***



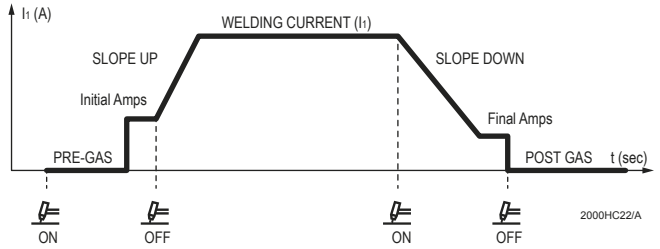
L5 ***2 STROKES***

TIG welding takes place as follows:



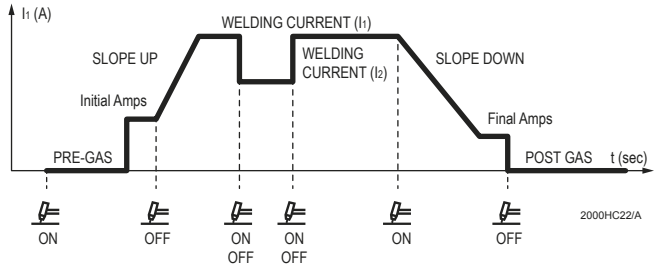
L6 ***4 STROKES***

TIG welding takes place as follows:



L7 ***CYCLE***

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



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.

L8 ***SPOT WELDING***

This can be used by pushing the torch button to spot weld for a preset period of time (in seconds) at the end of which the arc switches off automatically. The tack welding function is divided into 3 types:

- TIG AC and TIG LIFT DC tack welding.
- TIG HF DC tack welding with a single coldTack point.
- TIG HF DC tack welding with a Multi-ColdTack function.

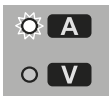
See the relevant paragraphs in the subsequent pages of this manual.

■ DISPLAY

Displays the selections made using the various Keys (with corresponding LED on or flashing) and regulated using the ENCODER knob.

The button can also be used to view:

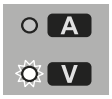
L30 ***AMPERE (CURRENT)***



- 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* **L30** *switched on and steady.*

L31 ***VOLT (VOLTAGE)***

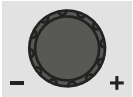


- The actual VOLTS (V) at the welding clamps (the value displayed CANNOT BE CHANGED OR REGULATED).

WARNING: *LED* **L31** *switched on and steady.*

■ ENCODER knob

This is used to regulate and change the welding parameters, according to which LED is switched on and the value shown on the DISPLAY, which is necessary for the machine to work correctly.



■ SAVE "MEM"

Used to save the parameters for the welding programs.

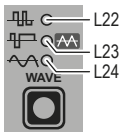
■ PROGRAM "PRG"

Used to call up welding programs.

■ WAVE

During TIG AC welding with HF ignition, it makes it possible to control the following wave shapes:

L22 ***DYNAMIC TIG***
L23 ***SPEED TIG***
L23 ***COLD TIG***
L24 ***SOFT TIG***



L22 ***DYNAMIC TIG***

Square wave: highly dynamic arc for all applications.

WARNING: *LED* **L22** *switched on and steady.*

L23 ***SPEED TIG***

Mixed wave: excellent penetration with high welding speed and low electrode consumption.

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

L23 ***COLD TIG***

Triangular wave: low heat generation with reduced distortion, ideal for minor thicknesses.

WARNING: *LED* **L23** *switched on and flashing.*

L24 ***SOFT TIG***

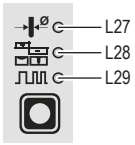
Sinusoidal wave: gentle, soft arc with low noise, ideal for average thicknesses.

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

■ ELECTRODE DIAMETER / BALANCING and FREQUENCY

During TIG welding with HF ignition, it makes it possible to set one of the following parameters, using the relevant key:

L27 ***ELECTRODE DIAMETER***
L28 ***BALANCING of the TIME and AMPLITUDE of the AC welding current (BALANCE PLUS)***
L29 ***FREQUENCY of the AC welding current***



L27 ***ELECTRODE DIAMETER***

For TIG welding with HF ignition, it allows you to use the relevant key to set the diameter of the tungsten electrode used, and/or to change it using the ENCODER knob, in order to achieve the best control of the arc in a synergic manner.

WARNING: *The electrode diameter CANNOT be selected when the welding machine is set for the SPECIAL configuration.*

L28 ***BALANCING of the TIME and AMPLITUDE of the AC welding current (BALANCE PLUS)***

It is possible to adjust both the time (t) and the amplitude of the current (I) independently or simultaneously, using positive or negative values for the time the electrode stays in place. These settings ensure perfect control of penetration and cleanliness, with a drastic reduction in side incisions.

L29 ***FREQUENCY of the AC welding current***

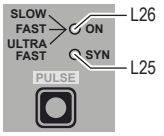
The high frequency makes it possible to weld minor thicknesses with excellent results, while the low frequency is ideal for welding average thicknesses, or where edge preparation is poor.

WARNING: *LED* **L29** *switched on and flashing.*

■ PULSE

When using one of the 3 TIG welding processes, it makes it possible to set one of the **4** pulsation modes available on the welding machine, using the relevant button:

L25 ***SYN PULSE***
L26 ***SLOW PULSE***
L26 ***FAST PULSE***
L26 ***ULTRA FAST PULSE***



L25 ***Synergic pulsations (SYN PULSE)***

WARNING:

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

This can only be programmed when the **TIG DC with HF ignition** *or* **TIG DC with "Lift" type ignition** *welding processes are used.*

L26 ***Slow pulsations (SLOW PULSE)***

WARNING:

LED **L26** *on and flashing slowly (hold the PULSATION button down until the LED* **L26** *flashes slowly).*

This can only be programmed when the **3 TIG** *welding processes are used.*

L26 ***Fast pulsations (FAST PULSE)***

WARNING:

LED **L26** *on and flashing quickly (hold the PULSATION button down until the LED* **L26** *flashes quickly).*

This can only be programmed when the **TIG DC with HF ignition** *or* **TIG DC with "Lift" type ignition** *welding processes are used.*

L26 ***Ultra fast pulsations (ULTRA FAST PULSE)***

WARNING:

LED **L26** *on and flashing very quickly (hold the PULSATION button down until the LED* **L26** *flashes very quickly).*

Attivabile solo con i processi di saldatura **TIG DC con innesco HF** *o* **TIG DC con innesco tipo "Lift"**.

WARNING: *The operator can decide to TIG weld without using any pulsation mode. If this is the case, the* **2** *LEDs are switched off.*

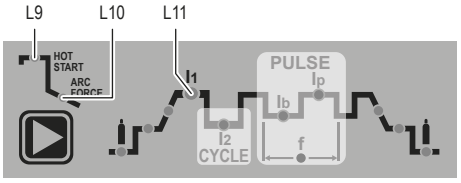
■ WELDING PARAMETERS

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:

L9 ***HOT START***
L10 ***ARC FORCE***
L11 ***PRINCIPAL welding CURRENT*** I_1



1B - STANDARD CONFIGURATION TIG welding

When one of the **3** TIG welding processes available on the welding machine is activated, this allows you to select the following welding parameters, based on which LED is flashing:

L12 ***PRE-GAS duration***
L13 ***SLOPE UP duration***
L18-L21 ***BASE current duration*** T_b

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

L19-L21 ***PEAK current duration*** T_p

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

L14 ***SLOPE DOWN duration***
L15 ***POST-GAS duration***

L16 ***INITIAL welding CURRENT***
L11 ***PRINCIPAL welding CURRENT*** I_1
L17 ***CYCLE CURRENT*** I_2

WARNING: *This can only be programmed when the* **CYCLE** *welding mode is active.*

L18 ***BASE CURRENT*** I_b

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

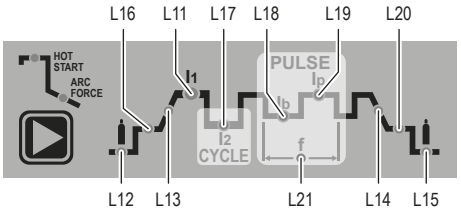
L19-L11 ***PEAK CURRENT*** I_p

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

L20 ***FINAL welding CURRENT***

L21 ***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 defined for the STANDARD configuration, you can also set the following parameters:

L9 ***IGNITION CURRENT***

WARNING: *This can only be programmed when the* **TIG AC with HF ignition** *or* **TIG DC with HF ignition** *welding processes are used.*

L9 ***IGNITION TIME duration***

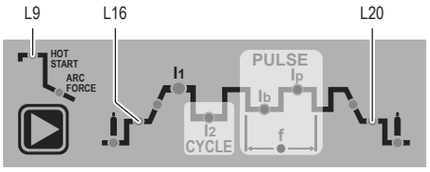
WARNING: *Only programmable when the* **TIG AC with HF ignition** *welding process is activated.*

L16 ***INITIAL welding CURRENT***

WARNING: *This can only be programmed when the* **TIG AC with HF ignition** *or* **TIG DC with HF ignition** *welding processes and the* **2 STROKES** *welding mode are used.*

L20 ***FINAL welding CURRENT***

WARNING: *This can only be programmed when the* **TIG AC with HF ignition** *or* **TIG DC with HF ignition** *welding processes and the* **2 STROKES** *welding mode are used.*

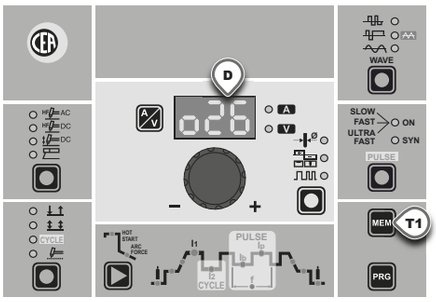


WARNING: ***This special parameter is only to be activated by qualified personnel, or those trained by technicians.***

Displaying the software version installed

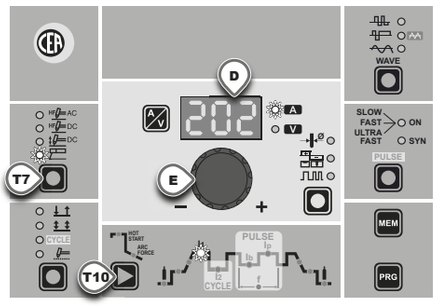
The **GeKaMac AC/DC** are fitted with a digital control with software on board defined in the factory. This software is subject to continuous evolution and improvement. The software is identified by a specific number that can be viewed on the DISPLAY (D) as follows:

1) When the welding machine is off, push and hold the **"MEM" SAVE** key down (T1).
2) Start the welding machine by turning the power supply switch to position **I**.
3) For a few seconds the DISPLAY (D) shows the type of software on board (e.g. o26) where:
   - **o** indicates the welding machine model.
   - **26** indicates the VERSION of the software installed



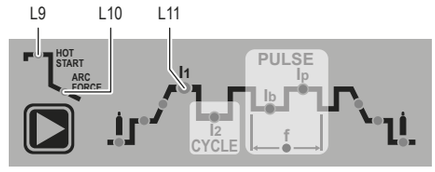
Electrode welding (MMA)

1) Start the welding machine by turning the power supply switch to position **I**.
2) **WELDING PROCESS SELECTION**
   Push the WELDING PROCESS SELECTION key (T7) to select the ELECTRODE welding processes for welding with "HOT START" or "ARC FORCE" devices that can be programmed by the user.
3) 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.

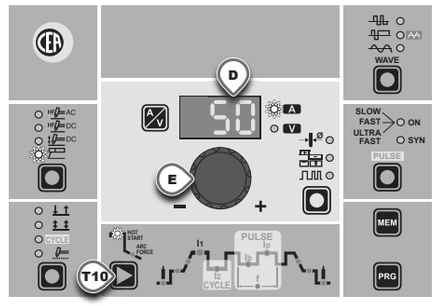


4) **WELDING PARAMETERS SELECTION**
   To refine the weld quality, the following parameters can be set by pushing the WELDING PARAMETERS SELECTION key (T10) in succession:
   - **HOT START -** This increases the welding current, in percentage terms, for a time interval that can be set at the start of the welding process, thereby reducing the risk of poor fusion at the start of the joint (**L9** - HOT START - 00-100).
   - **MMA ARC FORCE -** Regulates, in percentage terms, the dynamic characteristics of the arc (**L10** - ARC FORCE - 00-100).
   - **PRINCIPAL welding CURRENT** I1 (**L11**):

4000 AC/DC	5000 AC/DC
10 ÷ 400 A	10 ÷ 500 A



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

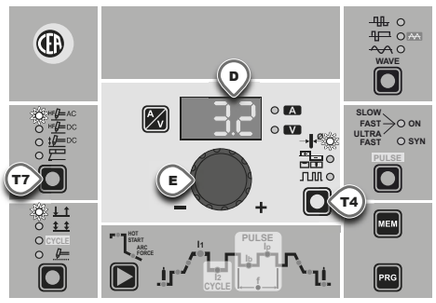


5) To exit these functions hold the WELDING PARAMETERS SELECTION key (T10) down for about **1** second.
6) Once the all the selections/regulations indicated above have been made, welding can begin.
7) During the welding process the DISPLAY (D) shows the real Amps (A) at which the operator is actually welding.

4000 AC DC.pdf 1 5.11.2021 09:30

TIG “AC” welding

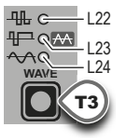
1) Start the welding machine by turning the power supply switch to position **I**.
2) Push the WELDING PROCESS SELECTION key (T7) to select the **TIG “HF AC”** welding processes for TIG welding in alternating current with high frequency (HF) ignition.
3) **ELECTRODE DIAMETER SELECTION**
Select the diameter of the electrode to achieve the best control of ignition in a synergic manner. Selection is done by pushing the ELECTRODE DIAMETER Key (T4) (ELECTRODE DIAMETER LED flashing) and using the ENCODER Knob (E) to regulate the value indicated on the DISPLAY (D).



To confirm the diameter selected, simply push the ELECTRODE DIAMETER Key (T4) again (ELECTRODE DIAMETER LED off).

4) **SELECTING THE WAVE SHAPE**
By pushing the WAVE (T3) button the operator can choose the best wave shape for their welding needs, from the **4** wave shapes included:

L22 ***DYNAMIC TIG***
L23 ***SPEED TIG***
L23 ***COLD TIG***
L24 ***SOFT TIG***



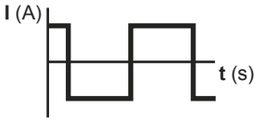
L22 DYNAMIC TIG
Square wave: highly dynamic arc for all applications.

WARNING:

LED **L22** *switched on and steady.*

The display shows the peak current for pre-setting and welding.

	4000 AC/DC
TIG AC DYNAMIC TIG	5 ÷ 400 A



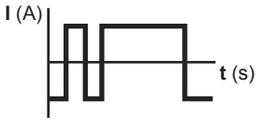
L23 SPEED TIG
Mixed wave: excellent penetration with high welding speed and low electrode consumption. Ideal for average / thick thicknesses and vertical welds. Increases penetration, thermal control of the arc, and lifespan of the electrode.

WARNING:

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

The display shows the peak current for pre-setting and welding.

	4000 AC/DC
TIG AC SPEED TIG	5 ÷ 400 A



L23 COLD TIG
Triangular wave: low heat generation with reduced distortion, ideal for minor thicknesses.

WARNING:

LED **L23** *switched on and flashing.*

The display shows the “RMS” current value for pre-setting and welding.

	4000 AC/DC
TIG AC COLD TIG	5 ÷ 231 A

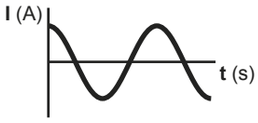
L24 SOFT TIG
Sinusoidal wave: ensures a gentle, soft arc with limited noise, ideal for average thicknesses and butt welding.

WARNING:

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

The display shows the “RMS” current value for pre-setting and welding.

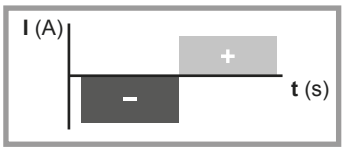
	4000 AC/DC
TIG AC SOFT TIG	5 ÷ 283 A



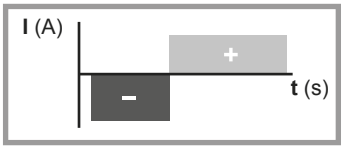
5A) **BALANCING of the TIME (t)** (-35÷+10)
It allows you to adjust the time (t) the positive or negative electrode stays in place independently, guaranteeing perfect control of penetration and cleanliness, drastically reducing side incisions.

Display	-	+
-35	85%	15%

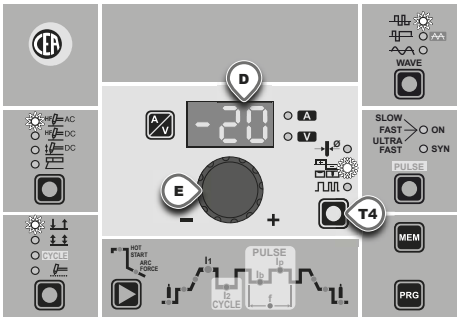
Display	-	+
0	50%	50%



Display	-	+
+10	40%	60%



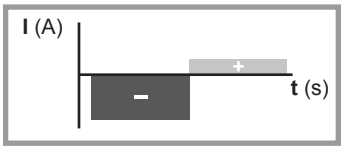
Push the BALANCING and FREQUENCY key (T4) once and use the ENCODER Knob (E) to regulate the value indicated on the DISPLAY (D).



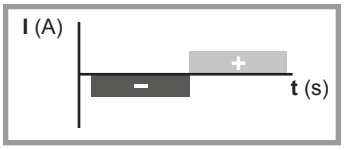
LED **L28** switched on and flashing.
To exit, simply push the BALANCING and FREQUENCY (T4) key again (BALANCING LED off).

5B) **BALANCING the AMPLITUDE of the CURRENT (I)** (-50÷+20)
It is possible to adjust the amplitude of the current (I) while the electrode stays in place independently, using positive or negative values, guaranteeing perfect control of penetration and cleanliness, drastically reducing side incisions.

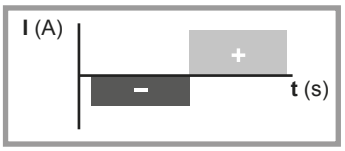
Display	-	+
-50	150%	50%



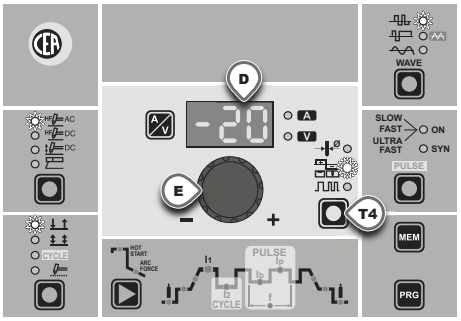
Display	-	+
0	100%	100%



Display	-	+
+20	80%	120%



Press the BALANCING and FREQUENCY (T4) key once, wait a few seconds, and hold the same key down for at least **2** seconds. Then use the ENCODER Knob (E) to adjust the value shown on the DISPLAY (D).



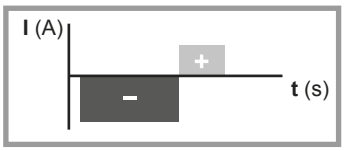
LED **L28** *flashing intermittently.*

To exit, simply push the BALANCING and FREQUENCY (T4) key again (BALANCING LED off).

5C) **BALANCING (BALANCE PLUS)**
It is possible to adjust the time (t) and amplitude of the current (I) while the electrode stays in place simultaneously and independently, using positive or negative values, guaranteeing perfect control of penetration and cleanliness, drastically reducing side incisions.

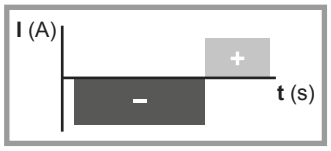
For simultaneous setting of the parameters, following the instructions given in points 5A and 5B in succession, with the help (if necessary) of the example shown below.

Display	-	+
t -15	65%	35%
I -20	120%	80%

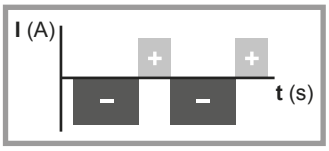


6) **FREQUENCY CONTROL IN AC** (40 ÷ 250 Hz)
This controls the frequency for the various wave shapes, for better directional control, reducing the thermally altered area, with greater penetration and lower electrode consumption. The high frequency makes it possible to weld very small thicknesses with excellent results, while the low frequency is ideal for welding average thicknesses, or where edge preparation is poor.

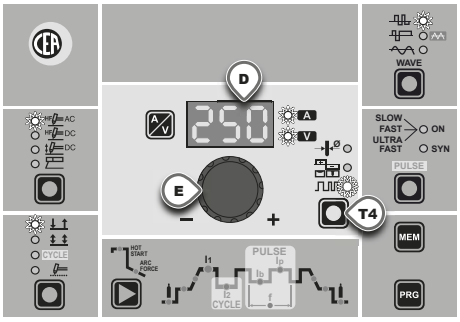
MIN 40 Hz



MAX 250 Hz



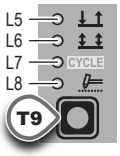
To regulate the FREQUENCY push the BALANCING and FREQUENCY key (T4) (FREQUENCY LED flashing) and use the ENCODER Knob (E) to regulate the value indicated on the DISPLAY (D).



To exit, simply push the BALANCING and FREQUENCY (T4) key again (FREQUENCY LED off).

7) Press the WELDING MODE SELECTION Key (T9) and go to one of the **4** options available:

L5 ***2T***
L6 ***4T***
L7 ***CYCLE***
L8 ***SPOT WELD***

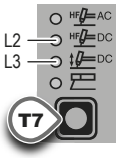


8) By pushing the WELDING PARAMETERS SELECTION key a number of times it is possible to set the various TIG WELDING PARAMETERS (see the “TIG AC and DC Welding” paragraph - WELDING PARAMETERS).
9) Once the all the selections/regulations indicated above have been made, welding can begin.
10) During the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

TIG “DC” welding

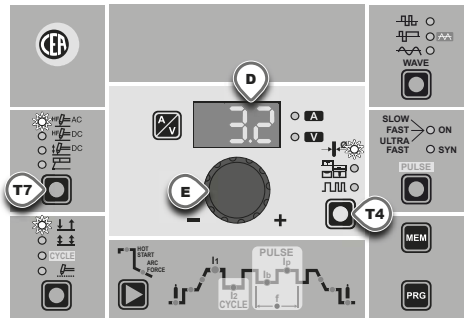
1) Start the welding machine by turning the power supply switch to position **I**.
2) Press the WELDING PROCESS SELECTION Key (T7) and select:

L2 a TIG “HF DC” welding process for direct current TIG welding with high frequency ignition.
L3 a TIG “Lift DC” welding process for direct current TIG “Lift” type welding without high frequency.



WARNING: *The “Lift” ignition current is created by pushing the torch button only after having touched the workpiece with the electrode.*

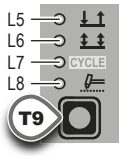
3) **ELECTRODE DIAMETER SELECTION**
Select the diameter of the electrode to achieve the best control of ignition in a synergic manner. Selection is done by pushing the ELECTRODE DIAMETER Key (T4) (ELECTRODE DIAMETER LED flashing) and using the ENCODER Knob (E) to regulate the value indicated on the DISPLAY (D).



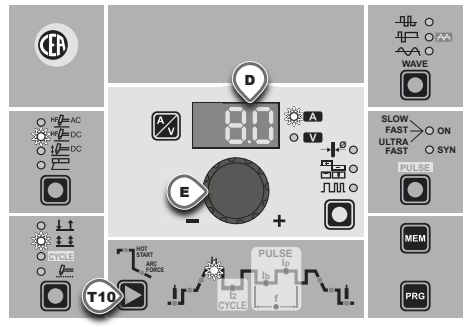
To confirm the diameter selected, simply push the ELECTRODE DIAMETER Key (T4) again (ELECTRODE DIAMETER LED off).

4) Press the WELDING MODE SELECTION Key (T9) and go to one of the **4** options available:

L5 ***2T***
L6 ***4T***
L7 ***CYCLE***
L8 ***SPOT WELD***



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

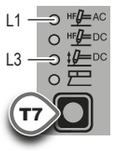


6) By pushing the WELDING PARAMETERS SELECTION (T10) key a number of times it is possible to set the various TIG WELDING PARAMETERS (see the “TIG AC and DC Welding” paragraph - WELDING PARAMETERS).
7) Once the all the selections/regulations indicated above have been made, welding can begin.
8) During the welding process the DISPLAY shows the real Amps (A) at which the operator is actually welding.

TIG “AC and LIFT DC” welding with the SPOT WELDING function on

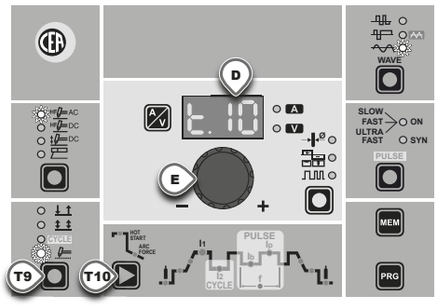
1) Start the welding machine by turning the power supply switch to position **I**.
2) Press the WELDING PROCESS SELECTION Key (T7) and select one of the welding machine’s **2** TIG processes:

L1 *TIG “HF AC”*
L3 *TIG “Lift DC”*



3) Press the WELDING MODE SELECTION Key (T9) and go to one of the **SPOT WELDING** function.
4) Press and release the WELDING PARAMETERS SELECTION Key (T10) until the SPOT WELD LED starts flashing.
5) Rotate the ENCODER knob (E) to set the SPOT WELDING time required:

	4000 AC/DC
TIG AC	0,1 ÷ 10,0 sec
TIG LIFT DC	0,01 ÷ 10,0 sec

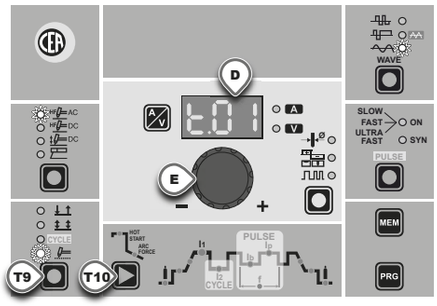


6) By pushing the WELDING PARAMETERS SELECTION (T10) key a number of times it is possible to set the various TIG WELDING PARAMETERS (see the “TIG AC and DC Welding” paragraph - WELDING PARAMETERS).
7) Hold the SELECT WELDING PARAMETERS (T10) key down to save the parameters chosen.
8) Once the all the selections/regulations indicated above have been made, welding can begin.
9) During the welding process the DISPLAY shows the real Amps (A) at which the operator is actually welding.

TIG HF DC welding with TACK function active and single ColdTack point

Innovative TIG HF DC tack weld device that makes it possible to do precise, safe tack welding with very little heat applied. Proceed as follows:
1) Start the welding machine by turning the power supply switch to position **I**.
2) Push the SELECT WELDING PROCESS (T7) key and select the TIG DC process, with HF ignition.
3) Press the WELDING MODE SELECTION Key (T9) and go to one of the **SPOT WELDING cold-Tack** function. The TACK WELD and ⊥↑ LEDs are lit continuously.
4) Press and release the WELDING PARAMETERS SELECTION Key (T10) until the SPOT WELD LED starts flashing.

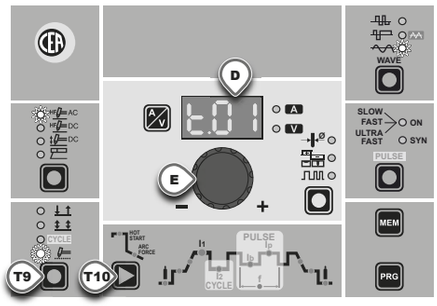
5) Rotate the ENCODER knob (E) to set the SPOT WELDING time required (0,01÷10,0 sec).



6) By pushing the WELDING PARAMETERS SELECTION (T10) key a number of times it is possible to set the various TIG WELDING PARAMETERS (see the “TIG Welding” paragraph - WELDING PARAMETERS).
7) Hold the SELECT WELDING PARAMETERS (T10) key down to save the parameters chosen.
8) Once the all the selections/regulations indicated above have been made, welding can begin.
9) During the welding process the DISPLAY shows the real Amps (A) at which the operator is actually welding.

TIG HF DC welding with TACK function active and Multi-ColdTack function

The Multi-ColdTack function can be used for cold tacking in quick succession, to further extend the benefits of an individual Cold-Tack point. Proceed as follows:
1) Start the welding machine by turning the power supply switch to position **I**.
2) Push the SELECT WELDING PROCESS (T7) key and select the TIG DC process, with HF ignition.
3) Press the WELDING MODE SELECTION Key (T9) and go to one of the **SPOT WELDING Multi-coldTack** function. The TACK WELD LED flashes, whereas the ⊥↑ LED is lit continuously.
4) Push and release the SELECT WELDING PARAMETERS (T10) key to be able to set the 2 parameters by rotating the ENCODER Knob (E):
   - Total tack welding time “t...” for the sequence of individual ColdTack points (0,01-10,0 sec).
   - Individual ColdTack point “P...” time (0,01-1,0 sec).



5) By pushing the WELDING PARAMETERS SELECTION (T10) key a number of times it is possible to set the various TIG WELDING PARAMETERS (see the “TIG Welding” paragraph - WELDING PARAMETERS).
6) Hold the SELECT WELDING PARAMETERS (T10) key down to save the parameters chosen.
7) Once the all the selections/regulations indicated above have been made, welding can begin.
8) During the welding process the DISPLAY shows the real Amps (A) at which the operator is actually welding.

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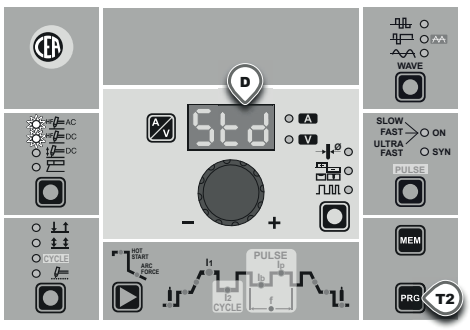
TIG “AC and DC” welding - Welding parameters

- The **GeKaMac AC/DC** 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).

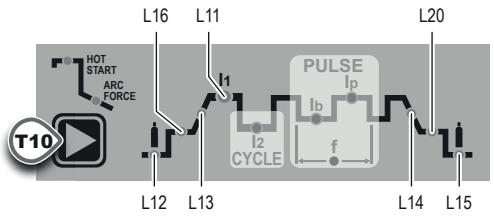


4) Press the “PRG” PROGRAM key (T2) to confirm.

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 (T10) a number of times to set:



L12 ***PRE-GAS duration (0,05 ÷ 1,00 sec)***

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

L16 ***INITIAL welding CURRENT***

	4000 AC/DC
TIG DC	5 ÷ 400 A
TIG AC DYNAMIC TIG SPEED TIG COLD TIG SOFT TIG	 5 ÷ 400 A 5 ÷ 400 A 5 ÷ 231 A 5 ÷ 283 A

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

L13 ***SLOPE UP duration (0,0 ÷ 5,0 sec)***

L11 ***PRINCIPAL welding CURRENT*** **I1**

	4000 AC/DC
TIG DC	5 ÷ 400 A
TIG AC DYNAMIC TIG SPEED TIG COLD TIG SOFT TIG	 5 ÷ 400 A 5 ÷ 400 A 5 ÷ 231 A 5 ÷ 283 A

L14 ***SLOPE DOWN duration (0,0 ÷ 8,0 sec)***

L20 ***FINAL welding CURRENT***

	4000 AC/DC
TIG DC	5 ÷ 400 A
TIG AC DYNAMIC TIG SPEED TIG COLD TIG SOFT TIG	 5 ÷ 400 A 5 ÷ 400 A 5 ÷ 231 A 5 ÷ 283 A

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

L15 ***POST GAS duration (0,5 ÷ 25,0 sec)***

WARNING: *When the post-gas LED flashes and the LED* **I1** *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 SELECTION key (T10) down for about **1 second**.

2 - WELDING PARAMETERS with PULSE mode active:

Pulsed TIG welding allows greater control of the arc and better deformation of the material.
The **GEKAMAC AC/DC** can be used for TIG AC and DC pulsed welding in **4** different modes:

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

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

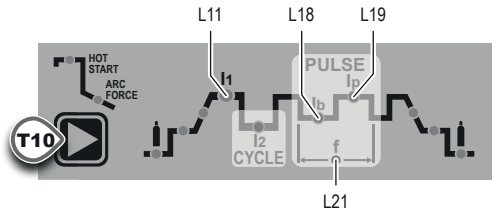
2A) SLOW PULSE

TIG pulse welding with manual setting of parameters.

WARNING: *This can only be programmed when the* **3** *TIG welding processes are used.*

Press the PULSE key (T5) until the requited pulsation is active.
The LED ON SLOW flashes slowly.

Press the WELDING PARAMETERS SELECTION Key (T10) a number of times to set the following (in addition to the WELDING PARAMETERS defined as being “BASIC”):



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L19-L11 ***PEAK CURRENT*** **Ip**

	4000 AC/DC
TIG DC	5 ÷ 400 A
TIG AC DYNAMIC TIG SPEED TIG COLD TIG SOFT TIG	 5 ÷ 400 A 5 ÷ 400 A 5 ÷ 231 A 5 ÷ 283 A

L18 ***BASE CURRENT*** **Ib**

	4000 AC/DC
TIG DC	5 ÷ 400 A
TIG AC DYNAMIC TIG SPEED TIG COLD TIG SOFT TIG	 5 ÷ 400 A 5 ÷ 400 A 5 ÷ 231 A 5 ÷ 283 A

L19-L21 ***PEAK current duration*** **Tp**

		4000 AC/DC
TIG DC	P	0,01 ÷ 0,99 sec
TIG AC	P	0,10 ÷ 0,99 sec

L18-L21 ***BASE current duration*** **Tb**

		4000 AC/DC
TIG DC	b	0,01 ÷ 0,99 sec
TIG AC	b	0,10 ÷ 0,99 sec

To exit the setting phase, hold the WELDING PARAMETERS SELECTION key (T10) down for about **1** second.

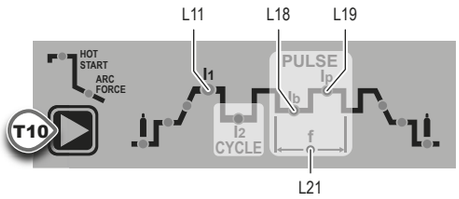
2B) FAST PULSE

TIG pulse welding with manual setting of parameters.

WARNING: *This can only be programmed when the* **TIG DC with HF ignition** *or* **TIG DC with "Lift" type ignition** *welding processes are used.*

Press the PULSE key (T5) until the requited pulsation is active.
The LED ON FAST flashes quickly.

Press the WELDING PARAMETERS SELECTION Key (T10) a number of times to set the following (in addition to the WELDING PARAMETERS defined as being "BASIC"):



L19-L11 ***BASE CURRENT*** **Ib**

4000 AC/DC
5 ÷ 400 A

L18 ***PEAK CURRENT*** **Ip**

4000 AC/DC
5 ÷ 400 A

L21 ***PULSATION FREQUENCY*** **f**

	4000 AC/DC
FAST	0,5 ÷ 500 Hz

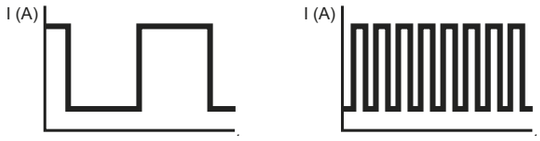
To exit the setting phase, hold the WELDING PARAMETERS SELECTION key (T10) down for about **1 second**.

2C) ULTRA FAST PULSE

TIG pulse welding with manual setting of parameters.

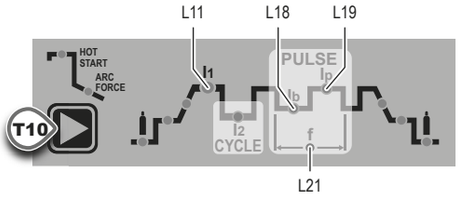
WARNING: *This can only be programmed when the* **TIG DC with HF ignition** *or* **TIG DC with "Lift" type ignition** *welding processes are used.*

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 reduction 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 PULSE key (T5) until the requited pulsation is active.
The LED ON ULTRA FAST flashes very quickly.

Press the WELDING PARAMETERS SELECTION Key (T10) a number of times to set the following (in addition to the WELDING PARAMETERS defined as being "BASIC"):



L19-L11 ***BASE CURRENT*** **Ib**

4000 AC/DC
5 ÷ 400 A

L18 ***PEAK CURRENT*** **Ip**

4000 AC/DC
5 ÷ 400 A

L21 ***PULSATION FREQUENCY*** **f**

	4000 AC/DC
ULTRA FAST	500 ÷ 2000 Hz

To exit the setting phase, hold the WELDING PARAMETERS SELECTION key (T10) down for about **1 second**.

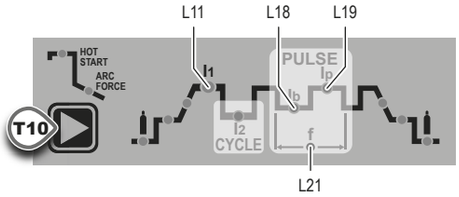
2D) SYN PULSE

TIG pulse welding with synergic setting of parameters.

WARNING: *This can only be programmed when the* **TIG DC with HF ignition** *or* **TIG DC with "Lift" type ignition** *welding processes are used.*

Press the PULSE key (T5) until the requited pulsation is active.
SYN LED on.

Press the WELDING PARAMETERS SELECTION Key (T10) a number of times to set the following (in addition to the WELDING PARAMETERS defined as being "BASIC"):



L19-L11 ***BASE CURRENT*** **Ib**

4000 AC/DC
30 ÷ 400 A

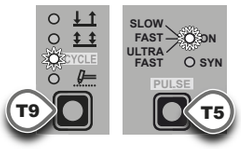
This function, which is good for less skilled operators, makes it possible to change the pulsation parameter (Peak current **Ip**) and the other values for the corresponding pulsation parameters (Base current **Ib** - Pulsation frequency **f**) vary automatically.
To exit the setting phase, hold the WELDING PARAMETERS SELECTION key (T10) down for about **1 second**.

3 - WELDING PARAMETERS with PULSE mode and CYCLE welding mode active (CYCLE LED on)

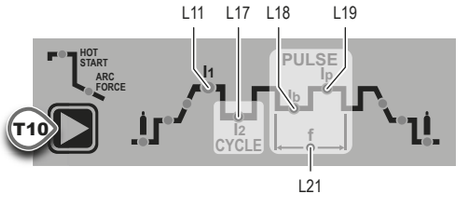
When this welding mode is active it is possible to work at **2** different pulse current levels (**I1** and **I2**). To do so you must also set (not only pulse parameters **Ib**, **Ip**, and **f**), but also the 2nd level PEAK current (**I2p**). The other 2nd level pulse parameters (BASIC CURRENT **I2b**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

3A - SLOW PULSE + CYCLE (TIG AC-TIG DC)

Press the PULSE key (T5) until the requited pulsation is active (the LED ON SLOW flashing slowly).
Press the WELDING MODE SELECTION key (T9) until the CYCLE welding mode is active (CYCLE LED on).



Press the WELDING PARAMETERS SELECTION Key (T10) a number of times to set the following (in addition to the WELDING PARAMETERS defined as being "BASIC"):



L19-L11 ***1st LEVEL PEAK CURRENT*** **I1p**

	4000 AC/DC
TIG DC	5 ÷ 400 A
TIG AC DYNAMIC TIG SPEED TIG COLD TIG SOFT TIG	 5 ÷ 400 A 5 ÷ 400 A 5 ÷ 231 A 5 ÷ 283 A

L17 ***2nd LEVEL PEAK CURRENT*** **I2p**

	4000 AC/DC
TIG DC	5 ÷ 400 A
TIG AC DYNAMIC TIG SPEED TIG COLD TIG SOFT TIG	 5 ÷ 400 A 5 ÷ 400 A 5 ÷ 231 A 5 ÷ 283 A

L18 ***1st LEVEL BASE CURRENT*** **I1b**

	4000 AC/DC
TIG DC	5 ÷ 400 A
TIG AC DYNAMIC TIG SPEED TIG COLD TIG SOFT TIG	 5 ÷ 400 A 5 ÷ 400 A 5 ÷ 231 A 5 ÷ 283 A

L19-L21 ***PEAK current duration*** **Tp**

		4000 AC/DC
TIG DC	P	0,01 ÷ 0,99 sec
TIG AC	P	0,10 ÷ 0,99 sec

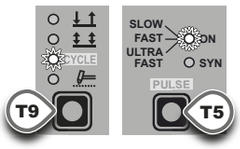
L18-L21 ***BASE current duration*** **Tb**

		4000 AC/DC
TIG DC	b	0,01 ÷ 0,99 sec
TIG AC	b	0,10 ÷ 0,99 sec

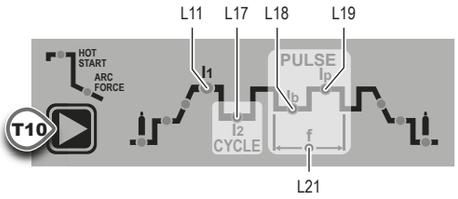
To exit the setting phase, hold the WELDING PARAMETERS SELECTION key (T10) down for about **1 second**.

3B - FAST PULSE + CYCLE (TIG DC)

Press the PULSE key (T5) until the requited pulsation is active (the LED ON FAST flashing quickly).
Press the WELDING MODE SELECTION key (T9) until the CYCLE welding mode is active (CYCLE LED on).



Press the WELDING PARAMETERS SELECTION Key (T10) a number of times to set the following (in addition to the WELDING PARAMETERS defined as being "BASIC"):



L19-L11 ***1st LEVEL PEAK CURRENT*** **I1p**

4000 AC/DC
5 ÷ 400 A

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L17 ***2nd LEVEL PEAK CURRENT*** **I2p**

4000 AC/DC
5 ÷ 400 A

L18 ***1st LEVEL BASE CURRENT*** **I1b**

4000 AC/DC
5 ÷ 400 A

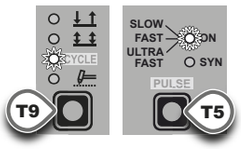
L21 ***PULSATION FREQUENCY*** **f**

	4000 AC/DC
FAST	0,5 ÷ 500 Hz

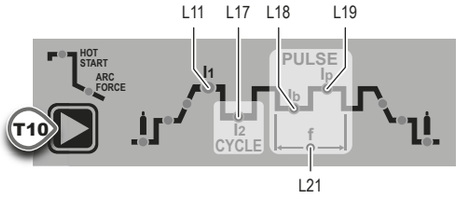
To exit the setting phase, hold the WELDING PARAMETERS SELECTION key (T10) down for about **1 second**.

3C - ULTRA FAST PULSE + CYCLE (TIG DC)

Press the PULSE key (T5) until the requited pulsation is active (the LED ON ULTRA FAST flashing very quickly).
Press the WELDING MODE SELECTION key (T9) until the CYCLE welding mode is active (CYCLE LED on).



Press the WELDING PARAMETERS SELECTION Key (T10) a number of times to set the following (in addition to the WELDING PARAMETERS defined as being “BASIC”):



L19-**L11** ***1st LEVEL PEAK CURRENT*** **I1p**

4000 AC/DC
5 ÷ 400 A

L17 ***2nd LEVEL PEAK CURRENT*** **I2p**

4000 AC/DC
5 ÷ 400 A

L18 ***1st LEVEL BASE CURRENT*** **I1b**

4000 AC/DC
5 ÷ 400 A

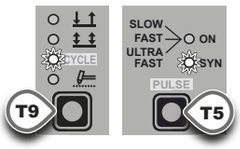
L21 ***PULSATION FREQUENCY*** **f**

	4000 AC/DC
ULTRA FAST	500 ÷ 2000 Hz

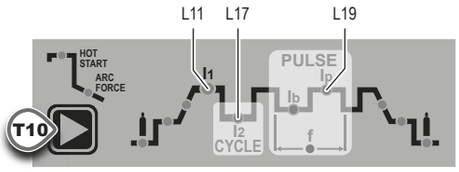
To exit the setting phase, hold the WELDING PARAMETERS SELECTION key (T10) down for about **1 second**.

3D - SYN PULSE + CYCLE (TIG DC)

Press the PULSE key (T5) until the requited pulsation is active (SYN LED on).
Press the WELDING MODE SELECTION key (T9) until the CYCLE welding mode is active (CYCLE LED on).



Press the WELDING PARAMETERS SELECTION Key (T10) a number of times to set the following (in addition to the WELDING PARAMETERS defined as being “BASIC”):



L19-**L11** ***1st LEVEL PEAK CURRENT*** **I1p**

4000 AC/DC
30 ÷ 400 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***).*

L17 ***2nd LEVEL PEAK CURRENT*** **I2p**

4000 AC/DC
5 ÷ 400 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 parameter selected flashes and the DISPLAY shows the value for the parameter you are setting.
To exit the setting phase, hold the WELDING PARAMETERS SELECTION key (T10) down for about **1 second**.

NOTE: *During the welding process if LED* **I1** *and LED* **Ip** *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)

In welding processes:
- TIG AC with HF ignition
- TIG DC with HF ignition

The **GEKAMAC AC/DC** makes it possible to activate modification of some WELDING PARAMETERS therefore providing a more expert welder with 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:

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).

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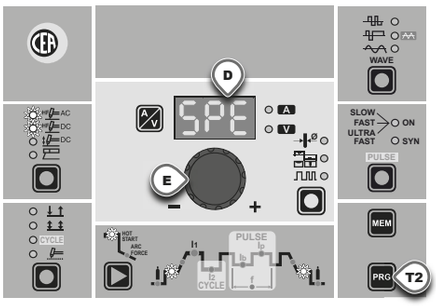
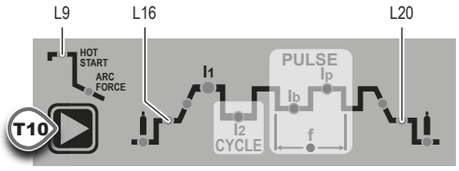
4) Turn the ENCODER Key (E) until the DISPLAY (D) shows the following message: **SPE** (welder configured in SPECIAL mode).



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 configuration, can be set by pushing the WELDING PARAMETER SELECTION button (T10) successively:



L9 ***IGNITION CURRENT***

4000 AC/DC
5 ÷ 400 A

WARNING: *This can only be programmed for* **TIG AC with HF ignition - TIG DC with HF ignition** *welding processes.*

L9 ***IGNITION TIME duration (t.01 (0,01 sec) - t.50 (0,50 sec))***

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

WARNING: *If the value of these* **2** *parameters is too low, this could prejudice ignition.*

L16 ***IGNITION welding CURRENT***

	4000 AC/DC
TIG DC	5 ÷ 400 A
TIG AC DYNAMIC TIG SPEED TIG COLD TIG SOFT TIG	 5 ÷ 400 A 5 ÷ 400 A 5 ÷ 231 A 5 ÷ 283 A

WARNING: *This can only be programmed when the* **TIG AC with HF ignition** *or* **TIG DC with HF ignition** *welding processes and the* **2 STROKES** *welding mode are used.*

L20 ***FINAL welding CURRENT***

	4000 AC/DC
TIG DC	5 ÷ 400 A
TIG AC DYNAMIC TIG SPEED TIG COLD TIG SOFT TIG	 5 ÷ 400 A 5 ÷ 400 A 5 ÷ 231 A 5 ÷ 283 A

WARNING: *This can only be programmed when the* **TIG AC with HF ignition** *or* **TIG DC with HF ignition** *welding processes and the* **2 STROKES** *welding mode are used.*

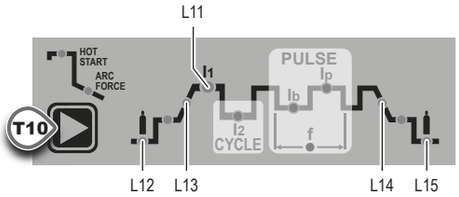
To exit the setting phase, hold the WELDING PARAMETERS SELECTION key (T10) down for about **1 second**.

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

Editing the maximum and minimum limits for welding parameters

Welding machine in SPECIAL (SPE) configuration:
In welding processes:
- TIG AC with HF ignition
- TIG DC with HF ignition

The **GEKAMAC AC/DC** makes it possible to activate modification of the MAXIMUM AND MINIMUM LIMITS for some WELDING PARAMETERS thereby providing a more expert welder with a more versatile welding machine.
Proceed as follows:
1) Switch on the welding machine by pushing and immediately releasing the WELDING PARAMETERS SELECTION Key (T10).
2) Press the WELDING PARAMETERS SELECTION Key (T10) a number of times to set the limits for the following welding parameters:



L12 ***PRE-GAS duration (maximum limit settable from 1,00 to 2,50 sec)***

L13 ***SLOPE UP duration (maximum limit settable from 5,00 to 10,0 sec)***

L11 ***MINIMUM CURRENT for remote controls - minimum limit settable:***

4000 AC/DC
5 ÷ 400 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 PRINCIPAL welding CURRENT* **I1**, *irrespective of the setting you have chosen for the remote control.*

L14 ***SLOPE DOWN duration (maximum limit settable from 8,00 to 15,0 sec)***

L15 ***POST-GAS duration (maximum limit settable from 10,0 to 25,0 sec)***

L8 ***SPOT WELDING TIME (maximum limit settable from 10,0 to 25,0 sec)***

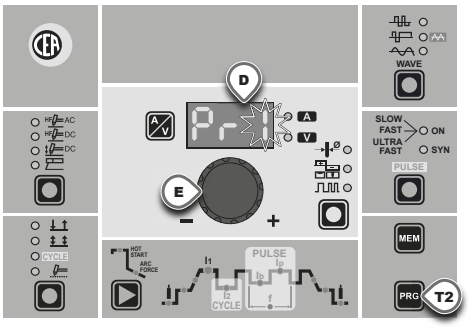
To exit the setting phase, hold the WELDING PARAMETERS SELECTION key (T10) down for about **1 second**. The values set are now active and welding can begin.

Creating and memorising automatic welding points

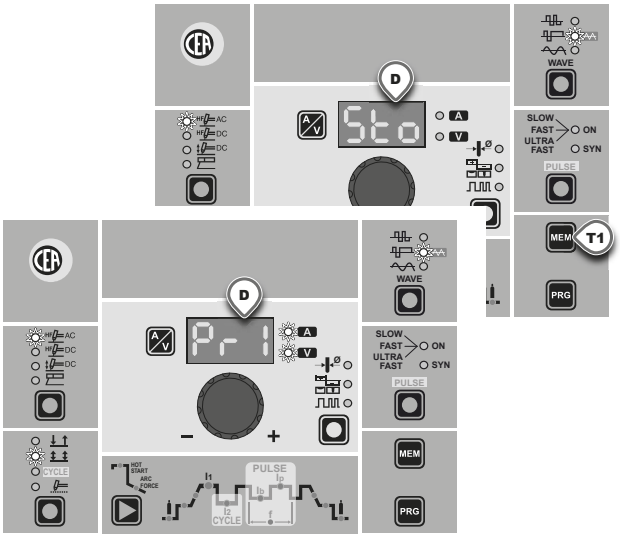
Once you have defined the parameters the operator requires to do their work properly, you can save them in the memory and create a WELDING PROGRAM by proceeding as follows.

WARNING: *To access the setting saving phase, the PRINCIPAL CURRENT LED* **I1** *must be switched on without flashing.*

1) Hold the "PRG" PROGRAM Key (T2) down for at least **5** consecutive seconds until the DISPLAY (D) reads **Pr**, accompanied 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 program for which the control panel has all the LEDs for the various settings switched off.
   WARNING: *The MTA control panel allows you to save a maximum of* **5** *WELDING PROGRAMS.*
   It is also possible to overwrite a program already saved.



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

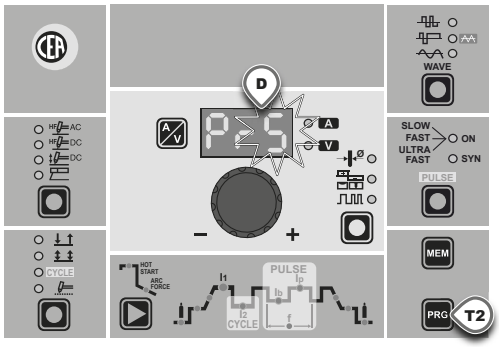


PROGRAMMED and/ or MANUAL welding

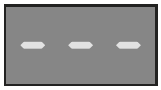
PROGRAMMED WELDING
When the WELDING PROGRAM has been saved, the operator can weld using only pre-set values as they cannot edit any type of parameter / function. To edit, switch to MANUAL welding mode.

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

1) Hold the "PRG" PROGRAM Key (T2) down (about **3** seconds) until the DISPLAY (D) shows the number of the program selected flashing (e.g. **Pr5**).



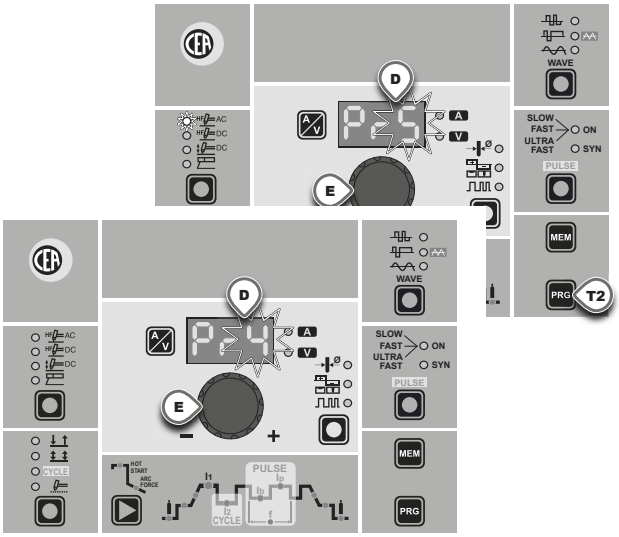
2) Turn the ENCODER Key (E) anticlockwise until the DISPLAY (D) shows 3 dashes.



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

Calling up saved programs

1) Hold the "PRG" PROGRAM Key (T2) down (about **3** seconds) until the DISPLAY (D) shows the number of the program selected flashing (e.g. Pr 5).
2) Turn the ENCODER Knob (E) until the DISPLAY (D) shows the program number (flashing) you wish to call up (e.g. Pr4).



NOTE: *If when you are rotating the ENCODER knob (E) to look for a saved welding program to call up the MTA 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!

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

Viewing the parameters set

1) Call up the program required (see the “Calling up saved programs” paragraph).
2) Press and release the WELDING PARAMETERS SELECTION Key (T10) to view the parameters set in sequence.
3) Hold the WELDING PARAMETERS SELECTION Key (T10) down for more than **1** second to go back to the program selected.

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

Auxiliary functions

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

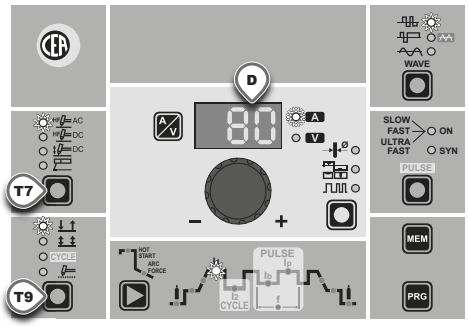
- **FAN MOTOR -** The fan is activated when:
  - During welding or for a certain period of time after this is finished.
  - When the thermostat intervenes or for a certain period of time after it has just been reset.
- **COOLING DEVICE -** The cooling device is activated:
  - For a few seconds when the machine switches on. This operation is used to make the cooling liquid circulate through the plant at the correct pressure. Call the technical service department if, when the cooling system is switched off, the error does not disappear from the DISPLAY (D).
  - During welding or for a certain period of time after this is finished.

Factory default

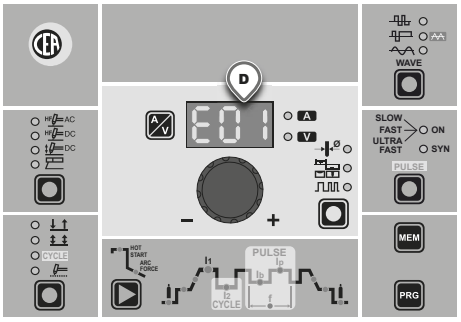
WARNING: *This operation results in complete resetting of all parameters to the factory settings.*

To reset the settings, you must:

- When the welding machine is off, push and hold the WELDING PROCESS SELECTION (T7) and WELDING MODE SELECTION (T9) 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 (depending 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 resolved 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 necessary.***

All of this is necessary to allow our technical assistance department (**which must be contacted each time error messages appear on the equipment’s operator interface**) to resolve problems 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** 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** 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.
E04	**OVER CURRENT** This message appears when the primary current exceeds values that are dangerous for the plant. 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.

PoWer TIG Series

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