PoWer TIG Series

GeKaMac®

PoWer TIG 2200 and 2600 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 2200 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 imzalayan / Signed for and on behalf of:

Hatice Özel, Equipment Business Unit Director

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EN IEC 60974-1
EN IEC 60974-10

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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.

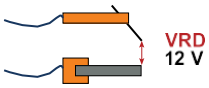
Description

POWER TIG 2200 DC PULSE
Powerful, compact, and light weight, the POWER TIG 2000 DC PULSE units represent the most innovative, high performance, and technically advanced single-phase inverter generators for TIG welding to be found. The **PFC** (**Power Factor Correction**) device fitted optimizesabsorption of energy from the mains, means that these high power generators can be connected to power supply systems with 16A fuses without any problem. POWER TIG 2000 DC PULSE when used in direct current, it allows TIG welding of stainless steel, carbon steel, cop- per and its alloys, also ensuring ideal performance in MMA weld, with any type of electrode. The POWER TIG 2000 DC PULSE units are the ideal solution for all professional welding applications and for maintenance work that calls for power and portability.
POWER TIG 2600 DC PULSE
Using the most modern IGBT based inverter technology, the three-phase TIG generator with high frequency ignition, comes with an innovative digital control for all welding parameters.
Technologically cutting-edge, robust, easy to use, fitted with high potential digital control, this generator can be used for high quality TIG welding, in direct current, of all metals including aluminium and alloys. This means that the machine is particularly suitable for specific uses in industry and the maintenance sector.
It also guarantees excellent performance for MMA welding, even when using particularly difficult cellulosic and basic electrodes.

Features

The characteristics found in all welding machines in the POWER TIG range are:
- Innovative and compact design.
- Compact size and light weight for easy transportation.
- Metallic main structure with shock-proof plastic front panel.
- Protective visor on the control panel.
- Robust handle integrated into the chassis.
- Digital control, regulation and monitoring of all welding 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 (Hold-function).
- coldTACK function in TIG DC. Innovative device to achieve precise and safe spot with a minimal thermal input. This function makes it possible to do cold tack welds in rapid sequence, in order to further amplify the benefits of a single tack. “Perfect-Point” function, allows to obtain the most precise spot positioning.
- TIG RCT “RUNNING COLD TACK” welding mode in TIG DC in 2 and 4 stroke. New welding mode in TIG DC that makes it possible to form very cold welding beads. This welding mode makes it pos- sible to benefit from all the advantages of “coldTACK” spot, re-peating a single tack in continuous mode, to achieve a perfect, cold welding bead. When “TIG RCT” is used, the welding bead is much colder than can be achieved using “Pulse TIG”, which makes it the ideal solution for welding thin materials with very low heat transfer.
- Feature that makes it possible to save and call up personalised welding programs.
- Self-diagnosis device.
- Overheating thermostatic protection.
- Automatic compensation for mains voltage fluctuations within ±20%.
- Safety barrier against excess voltage from mains.
- Electromagnetic disturbance is reduced due to high frequency being involved only during the arc ignition phase.
- “Energy Saving” function to operate the power source cooling fan and the torch water cooling only when necessary.
- Low absorbed current consumption.
- This generator also conforms to all the standards and directives in force in the European Community.

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



  - "Arc Force" adjustable to select the best dynamic characteristics for the welding arc.
  - "Hot Start" adjustable to improve ignition with particularly difficult electrodes.
  - Anti-sticking function to avoid the electrodes sticking.

POWER TIG 2200 DC PULSE

- The PFC device makes the wave form of the current absorbed sinusoidal, which results in no harmonic disturbance on the mains and optimisation of absorption, which allows you to use the generator's full power with a 16 A fuse, as well as ensuring greater protection of the welding machine against fluctuations in the power supply voltage.

POWER TIG 2600 DC PULSE

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

Usage limits (IEC 60974-1)

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

Technical data

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

Table 1

Model		POWER TIG 2200 DC PULSE		POWER TIG 2600 DC PULSE	
		TIG	MMA	TIG	MMA
Power supply 50/60 Hz	V	1~ 230 ±20%		3~ 400 ±20%	
Power supply: Z_{max}	Ω	(*)		0,092	
Input power @ I_2 Max	kVA	6,0	6,6	7,1	9,6
Delayed fuse (I_2 @ 100%)	A	16		10	
Power factor / cosφ		0,99/0,99		0,95/0,99	0,95/0,99
Efficiency degree	η	0,82		0,85	
Input power at IDLE state	W	15		15	
Open circuit voltage	V	85		85	
Current range	A	1÷220	10÷180	1÷260	10÷250
Duty cycle @ 100% (40°C)	A	160	120	200	190
Duty cycle @ 60% (40°C)	A	190	150	230	220
Duty cycle @ X% (40°C)	A	220 (30%)	180 (30%)	260 (40%)	250 (40%)
Usable electrodes	mm	1,2÷2,4	1,6÷4,0	1,2÷4,0	1,6÷5,0
Standards		IEC 60974-1 • IEC 60974-3 • IEC 60974-10 CE S			
Protection class		IP 23 S		IP 23 S	
Insulation class		F		F	
Dimensions	mm	465 - 390 - 185		495 - 390 - 185	
Weight	kg	14		17,5	

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

POWERTIG 2200 DC PULSE
(*) This equipment meets the requirements laid down in the **EN/IEC 61000-3-12** standard on harmonic currents.

POWER TIG 2600 DC PULSE
This equipment complies with **EN/IEC 61000-3-12** provided that the maximum permissible system impedance Z_{max} is less than or equal to 0,092 at the interface point between the user's supply and the public system. It is the responsibility of the installer or user of the equipment to ensure, by consultation with the distribution network operator if necessary, that the equipment is connected only to a supply with maximum permissible system impedance Z_{max} less than or equal to 0,092.

How to lift up the machine

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

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

Open the packaging

The system essentially consists of:
- **POWER TIG 2200/2600 DC PULSE** weld unit.
- Separately:
  - Welding TIG torches (optional).
  - Neck strap (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).

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”.

Power TIG 2200 DC PULSE **Single-phase power supply**

Use the welder’s own plug to connect it up to the main power supply. Proceed as follows if you have to replace the plug:
- 2 conducting wires are needed for connecting the machine to the supply.
- The third, which is YELLOW GREEN in colour is used for making the “GROUND” connection.

Power TIG 2600 DC PULSE **Three-phase power supply**

The four-pole cable supplied with the system must be used for the connection to the mains power supply. This cable is made up of:
- Three conductors that are used to connect the machine to the power supply.
- The fourth, which is color, 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.*

Instructions for use

COMMAND AND CONTROL UNITS (Fig. A)

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

Table 2

Model		Power TIG 2200 DC PULSE		Power TIG 2600 DC PULSE	
		TIG	MMA	TIG	MMA
Input power @ I_2 Max	kVA	6,0	6,6	7,1	9,6
Delayed fuse (I_2 @ 100%)	A	16		10	
Duty cycle @ X% (40°C)	A	220 (30%)	180 (30%)	260 (40%)	250 (40%)
Mains cable Length Section	 m mm^2	 3,5 2,5		 4 2,5	
Ground cable Section	mm^2	25		35	

POWER TIG 2200 DC PULSE

POWER TIG 2600 DC PULSE

FIG. A

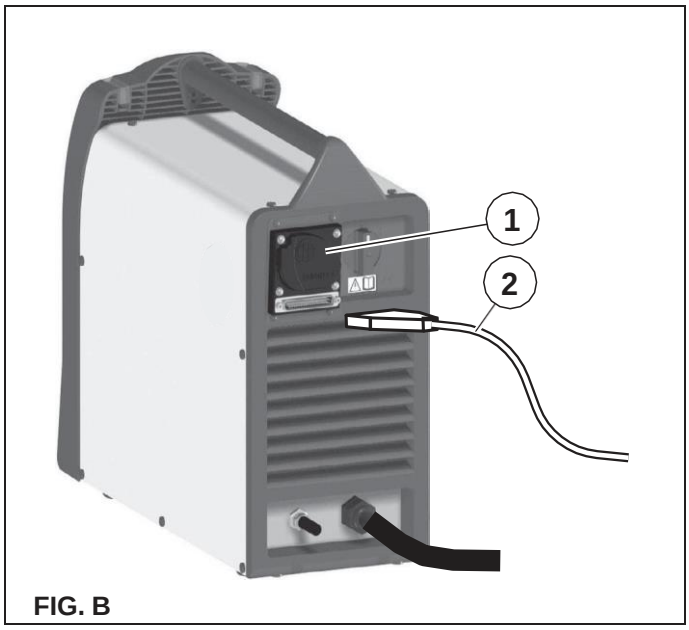


FIG. B

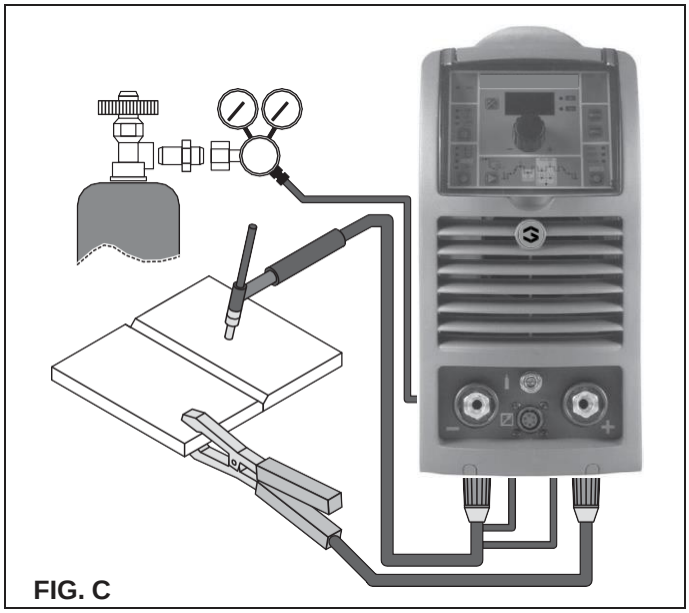


FIG. C

Interfacing accessories (optional)

“RoboMAT 1” analogue / digital robot interface
Fitted on the back of the POWER TIG 2600 DC PULSE welding machine (see example, Pos. 1, Fig. B).

“RoboMAT 1” analogue / digital robot interface connection cable - Cutting robot or for automatic equipment
Connect the cable to the analogue / digital interface as shown in figure (Pos. 2, Fig. B).
To connect the other end of this cable see the diagram in the manualfor the “RoboMAT 1” analogue / digital robot interface.

IMPORTANT: *Do not keep the “RoboMAT 1” analogue / digital robot interface connected to the generator, unless it is also powered by the automatic system.*

TIG welding

In the TIG process welding is achieved by melting the two metal pieces to be joined, with the possible addition of material from the outside, using an arc ignited by a tungsten electrode. The molten bath and the electrode are protected by and inert gas (for 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. C):
   - Connect the gas hose to the Argon cylinder.
   - With the machine switched off:
     - Connect the ground cable to the snap-on connector marked + (positive).
     - Connect the relative ground clamp to the workpiece or to the workpiece support in an area free of rust, paint, grease, etc..
     - Connect the TIG torch power cable to the snap-on connector marked - (negative).
     - Connect the torch gas tube to the connection (Pos. 3, Fig. A).
     - Insert the torch button connector in the 6 poles holder (Pos. 4, Fig. A).
2) Switch the welding machine on by moving the power supply switch to **I** (Pos. 6, Fig. A).
3) Make the adjustments and select the parameters on the control panel (for further information see the MTH / MTB control panel manual).

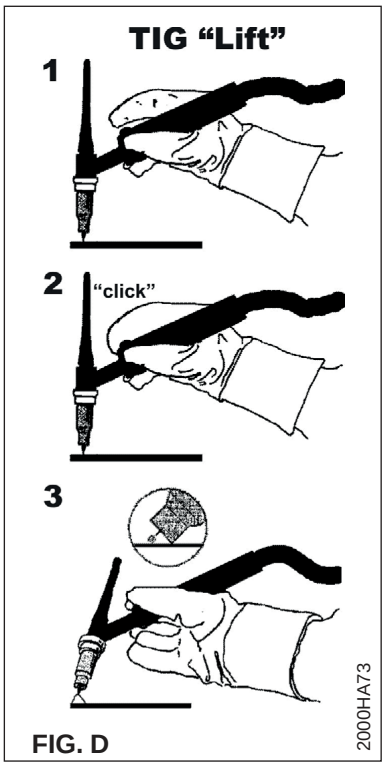


FIG. D

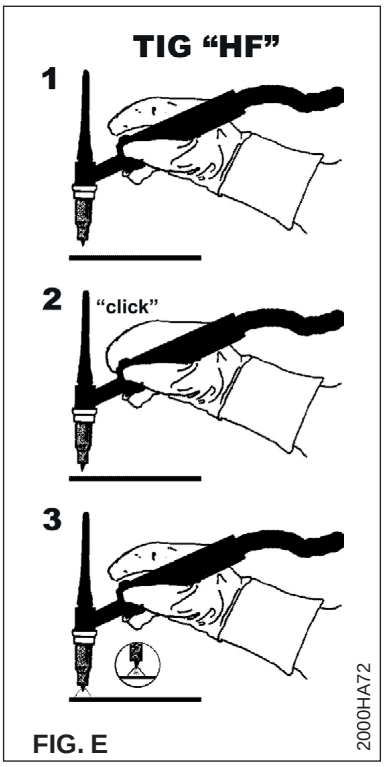


FIG. E

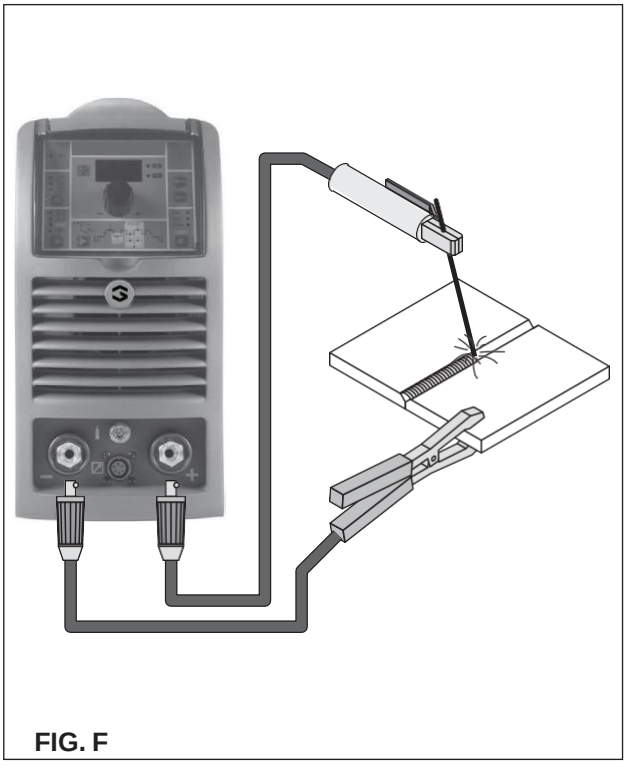


FIG. F

TIG WELDING WITH "Lift" TYPE STRIKING

4a) Open the gas cylinder and flow regulator.
5a) Put the electrode at the point at which welding is to begin, put the TIG torch at an angle so that the edge of the gas nozzle is not on top of the piece to be welded, keeping contact between the point of the electrode and the piece to be welded (Fig. D-1).
6a) Press the torch button.
7a) The "Lift" function strikes the arc when the TIG torch electrode comes into contact with the workpiece and is then removed (Fig. D-2)
8a) Carry out TIG welding (Fig. D-3).
To end welding:
- Lift the torch slowly, at a certain point the welding current decreases, and then stop.
- The welding machine follows an automatic down slope along with extinguishing of the arc.

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

TIG WELDING WITH HIGH FREQUENCY STRIKING (HF)

4b) Open the gas cylinder and flow regulator.
5b) Put the electrode at the point at which welding is to begin, put the TIG torch at an angle so that the edge of the gas nozzle is not on top of the piece to be welded, keeping a 2-3 mm gap between the point of the electrode and the piece to be welded (Fig. E-1).
6b) Press the torch button.
7b) The voltaic arc strikes even without contact between the TIG torch electrode and the workpiece (Fig. E-2).
8b) To continue welding put the torch back in its normal position (Fig. E-3).

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

PART TO BE WELDED

The part to be welded must always be connected to ground in 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 3 shows the currents to use with the respective electrodes for TIG welding. This input is not absolute but is for your guidance only; read the electrode manufacturers' instructions for a specific choice. The diameter of the electrode to use is directly proportional to the current being used for welding.

Table 3

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

Electrode welding (MMA)

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

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

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WELDING PARAMETERS

Table 4 shows some general indications for the choice of electrode, based on the thickness of the parts to be welded. The values of current to use are shown in table 5 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.

Table 4

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

Table 5

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

The current to be used depends on the welding positions and the type of joint, and it increases according to the thickness and dimensions of the part.
The current intensity to be used for the different types of welding, within the field of regulation shown in table 5 is:
- High for plane, frontal plane and vertical upwards welding.
- Medium for overhead welding.
- Low for vertical downwards welding and for joining small 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 MTH / MTB control panel manual). Just turn the adjustment knob on the welder to change the maximum output value.

FOOT SWITCH

The foot switch replaces the torch button and the welding current setting knob. The display will show the previous maximum weld current value set on the welder. The pedal will adjust the welding current from the minimum to this value (for further information see the MTH / MTB control panel manual). Just turn the adjustment knob on the welder to change the maximum output value.

NOTE:

- *To use the pedal control correctly, set the "welding mode" to 2-STROKE and then the welding parameters SLOPE UP time to 0 sec., SLOPE DOWN time to 0 sec.*
- *When using the machine for TIG welding the operator can use the torch button to start the weld and the pedal to regulate the welding current remotely.*.

AIR AND/OR WATER-COOLED TORCH UP/ DOWN

The up/down torch acts as 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: *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.

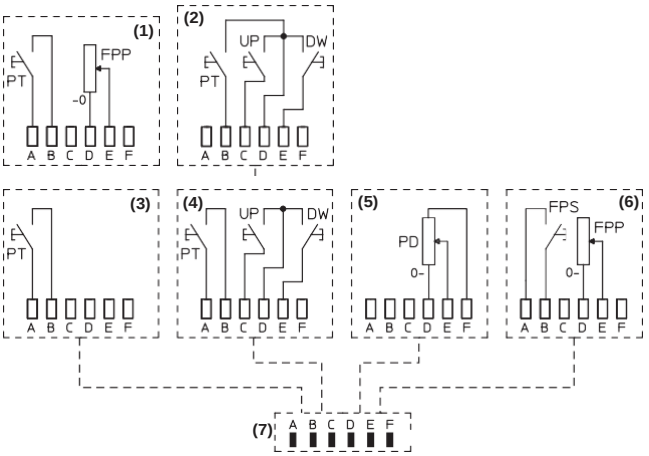
NOTE: ***It is not possible to memorize or open programmes when the remote controls are connected (except for the torch with UP/DOWN commands).***

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.

A6 kit for connecting non-standard GEKAMAC torches

To connect non-standard GEKA TIG torches.

Wiring diagram for 6-pole connector connection



(1)	Torch with potentiometer	DW	Down button
(2)	Torch UP / DOWN with no.4 wires	FPP	Potentiometer 10 kΩ
(3)	Torch	FPS	Start button
(4)	Torch UP / DOWN with no.5 wires	PD	Potentiometer 10 kΩ
(5)	CD 6 remote control	PT	Torch button
(6)	Foot remote control	UP	Up button
(7)	Amphenol male connector 6 poles		

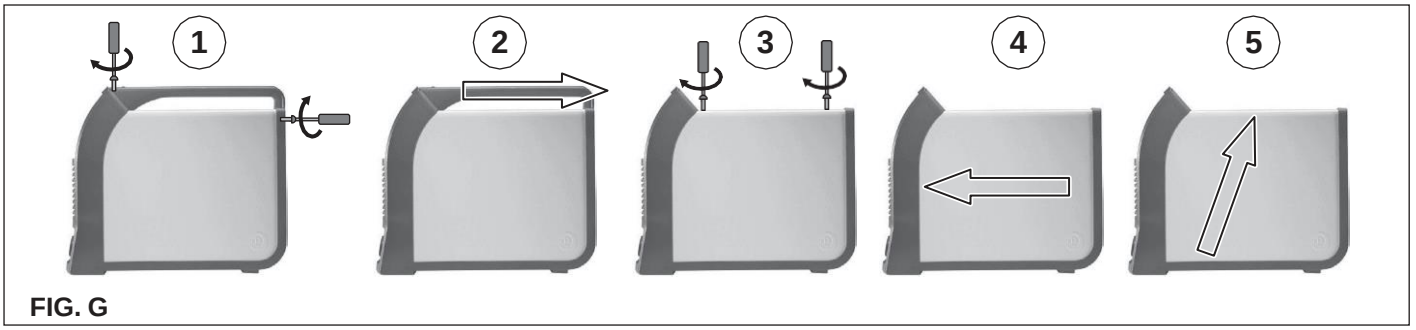


FIG. G

The pointing out of any difficulties and their elimination

The supply line is attributed with the cause of the most common difficulties. In the case of breakdown, proceed as follows:

1) Check the value of the supply voltage
2) Check that the power cable is perfectly connected to the plug and the supply switch
3) Check that the power fuses are not burned out or loose
4) Check whether the following are defective:
   - The switch that supplies the machine.
   - The plug socket in the wall.
   - The generator switch.

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

Digital interface PCB replacement

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

Procedure for cover assembly and disassembly

Proceed as follows (Fig. G):

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

Proceed vice versa for assembly.

Meaning of graphic symbols on machine

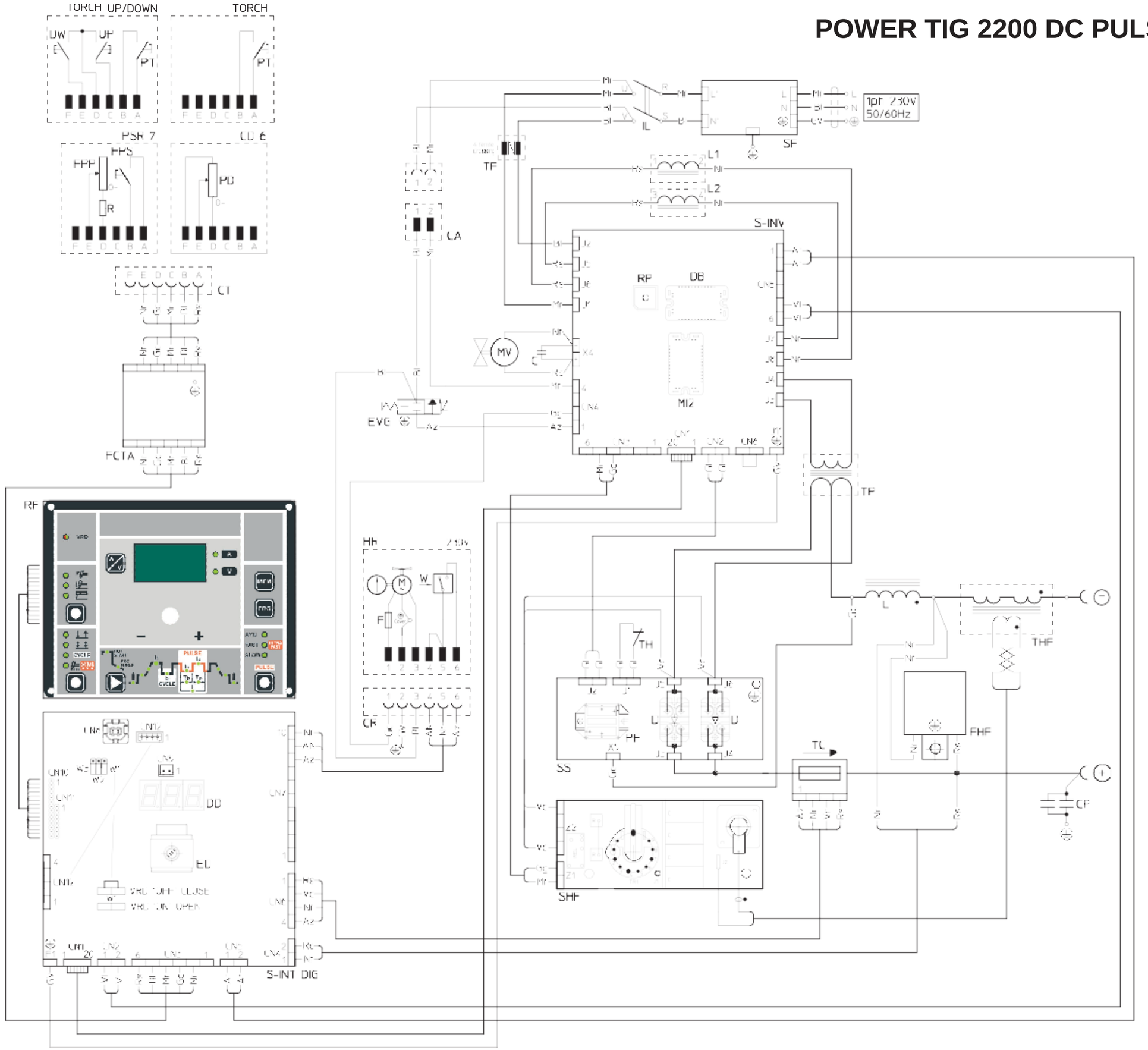
0 I	Power supply switch
S	System for use in environments with increased risk of electroshock
CE	Product suitable for free circulation in the European Community
	Danger! High voltage
	Grounding
+	Positive pole snap-in connector
−	Negative pole snap-in connector

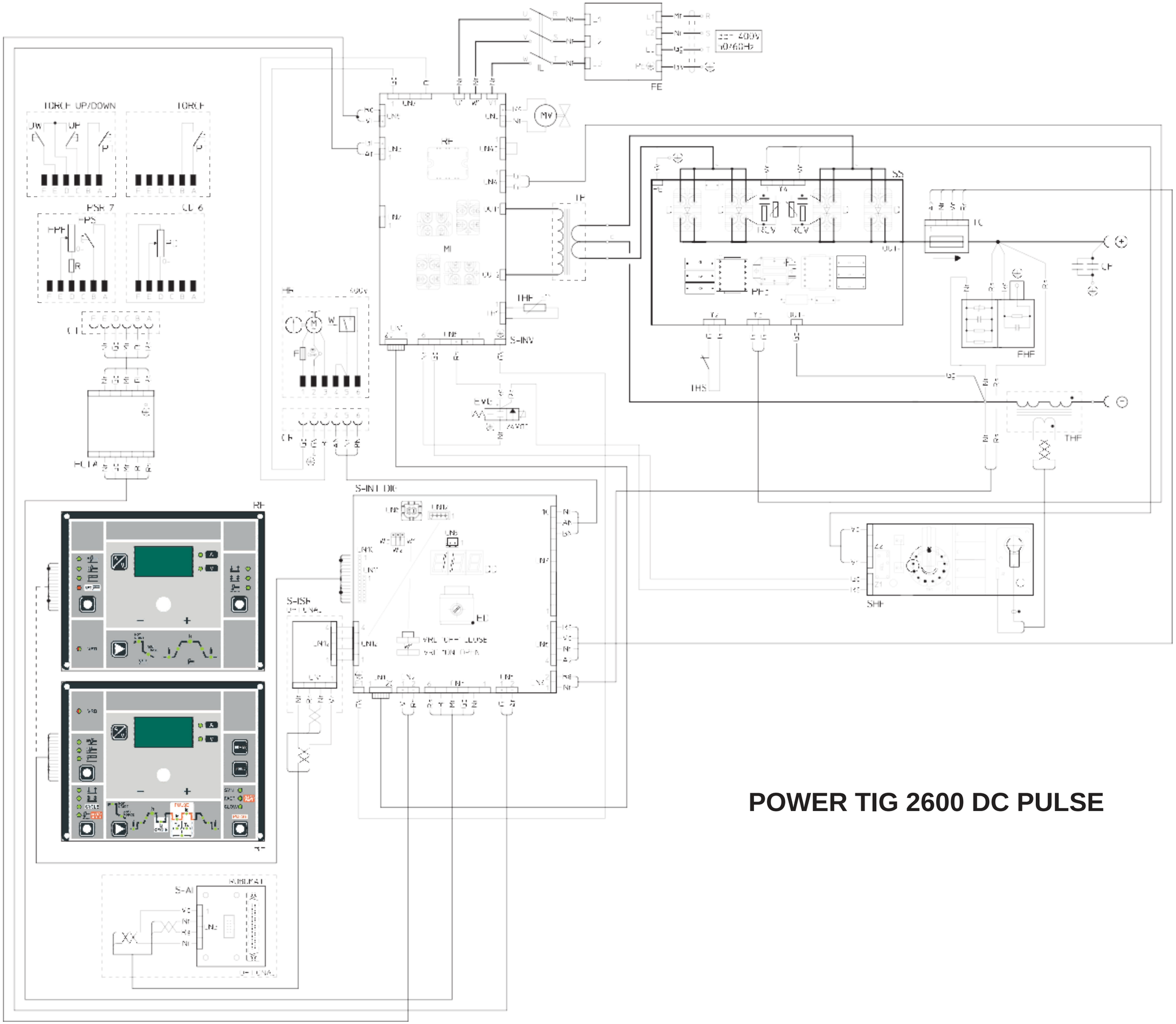
	Connector for the remote control
	Warning!
	Fast coupling TIG torch gas tube
	Before using the equipment you should carefully read the instructions included in this manual
	MMA welding
	TIG welding
	Special disposal

Key to the electrical diagram

CA	Power supply connector 230V 50/60Hz
CP	EMC capacitors
CR	Power supply connector for the cooling system
CT	TIG torch connector
D	Secondary diode
DB	“Dual Boost Chopper” IGBT
DD	Digital display
ED	Encoder
EVG	Gas solenoid valve
F	Fuse
FCTA	Torch filter complete with connector
FE	EMC filter
FHF	HF filter
HR	Water cooling system
IL	Power supply switch
L	Inductor
L1-2	PFC inductances
M	Electric pump
MI	Primary IGBT circuit
MI2	“Full Bridge” IGBT
MIH	Primary upper IGBT
MIL	Lower primary IGBT
MV	Fan motor
P1	Primary transformer (start)
P2	Primary transformer (end)
PF	Secondary rectifier
PF3	Rectifier diode ultrafast
RCV	R-C / Secundary diode varistor
RF	Membrane keyboard
RP	Primary rectifier
S-AI	Interface for automation (optional extra)
S-DOUBLER	Booster board
S-INT DIG	Digital interface PCB
S-INV	Inverter PCB
S-ISR	Automation interface isolation board (optional extra)
S-LINK	Capacitors PCB
SF	EMC filter PCB
SG	High frequency (HF) spark gap contacts board
SHF	High frequency (HF) PCB
SR	Relay PCB
SS	Secondary circuit PCB
TA	Auxiliary transformer
TC	Current transducer
TF	Toroidal ferrite
TH	Secondary circuit diode thermostat
THF	HF transformer
THP	Primary circuit thermistor
THS	Secondary circuit thermostat
TP	Transformer
W	Pressure switch

POWER TIG 2200 DC PULSE





POWER TIG 2600 DC PULSE

PoWer TIG Series

GeKaMac®

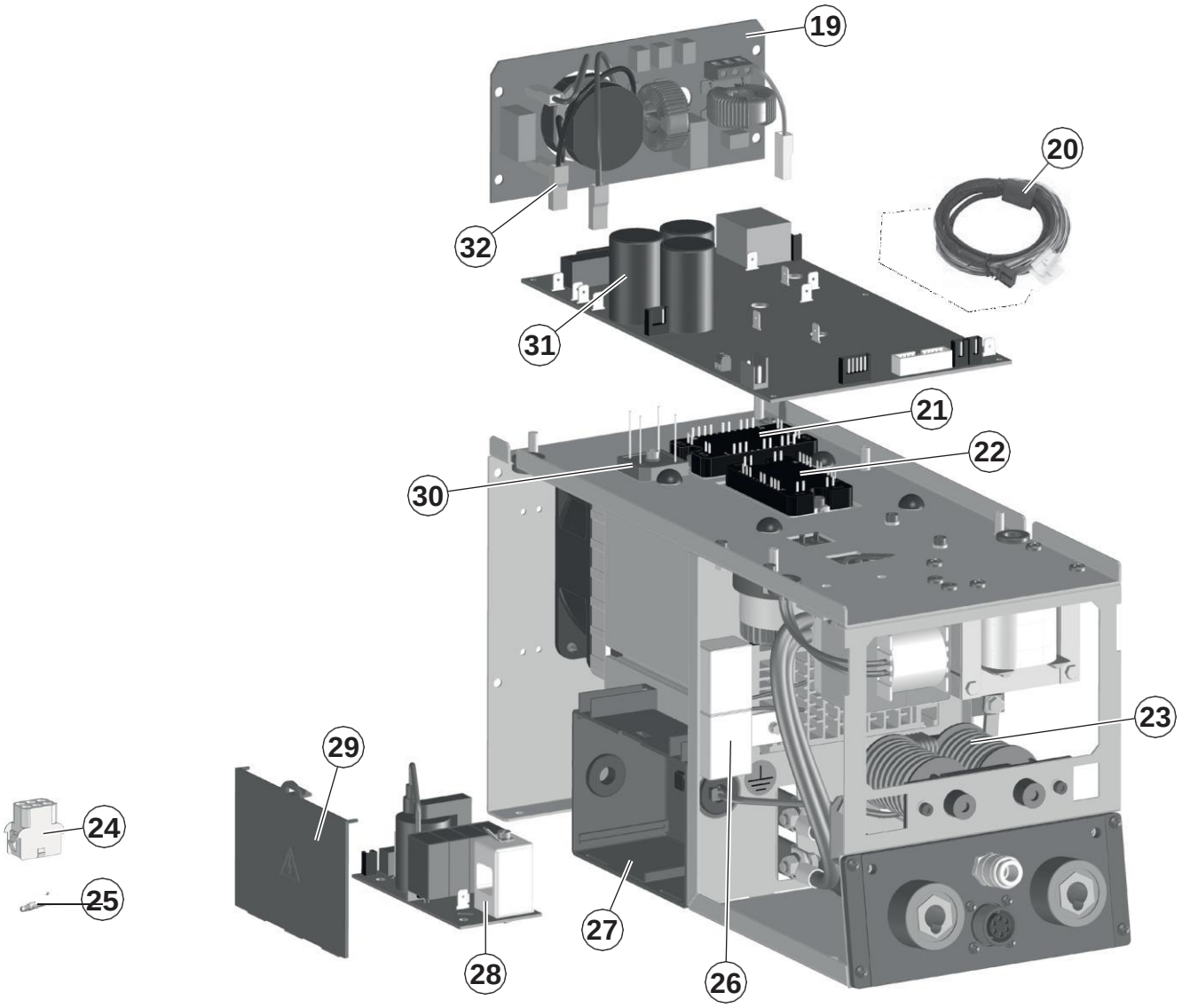
PoWer TIG 2200 and 2600 DC Pulse

Users Manual

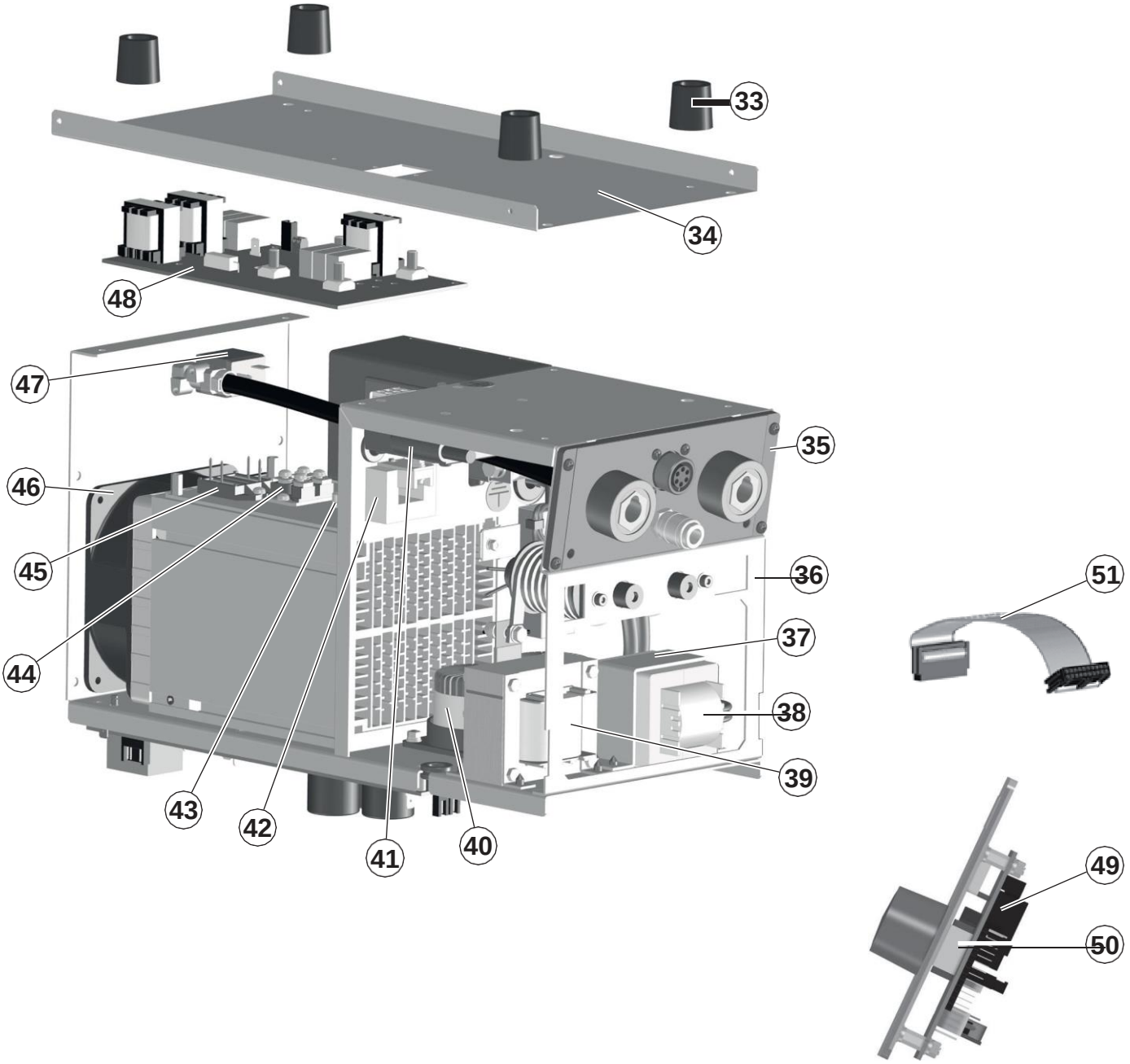
Please Read and Understand This Manual
Before Operating The Welding Machine

www.gedikwelding.com

Pos.	POWER TIG 2200 DC PULSE	Description
1	352453	Front rack transparent visor
2	447845	POWER TIG 2200 DC PULSE membrane keyboard
3	438888	Ø29mm Knob without index
4	468191	GEKA logo sticker Ø20mm
5	352452	Front panel without GEKA logo sticker Ø20mm
6	403611	Quick connection
7	403635	Gas quick connection
8	468282	Dinse sticker
9	419050	Remote control socket
10	462694	Carrying belt hook
11	438108	Handle
12	438710	Mains switch knob
13	435375	Mains switch
14	235942	Mains cable
15	427895	Cable clamp with lock ring
16	352404	Rear panel
17	485040	Gas tube
18	420493	Cover with GEKA logo stickers



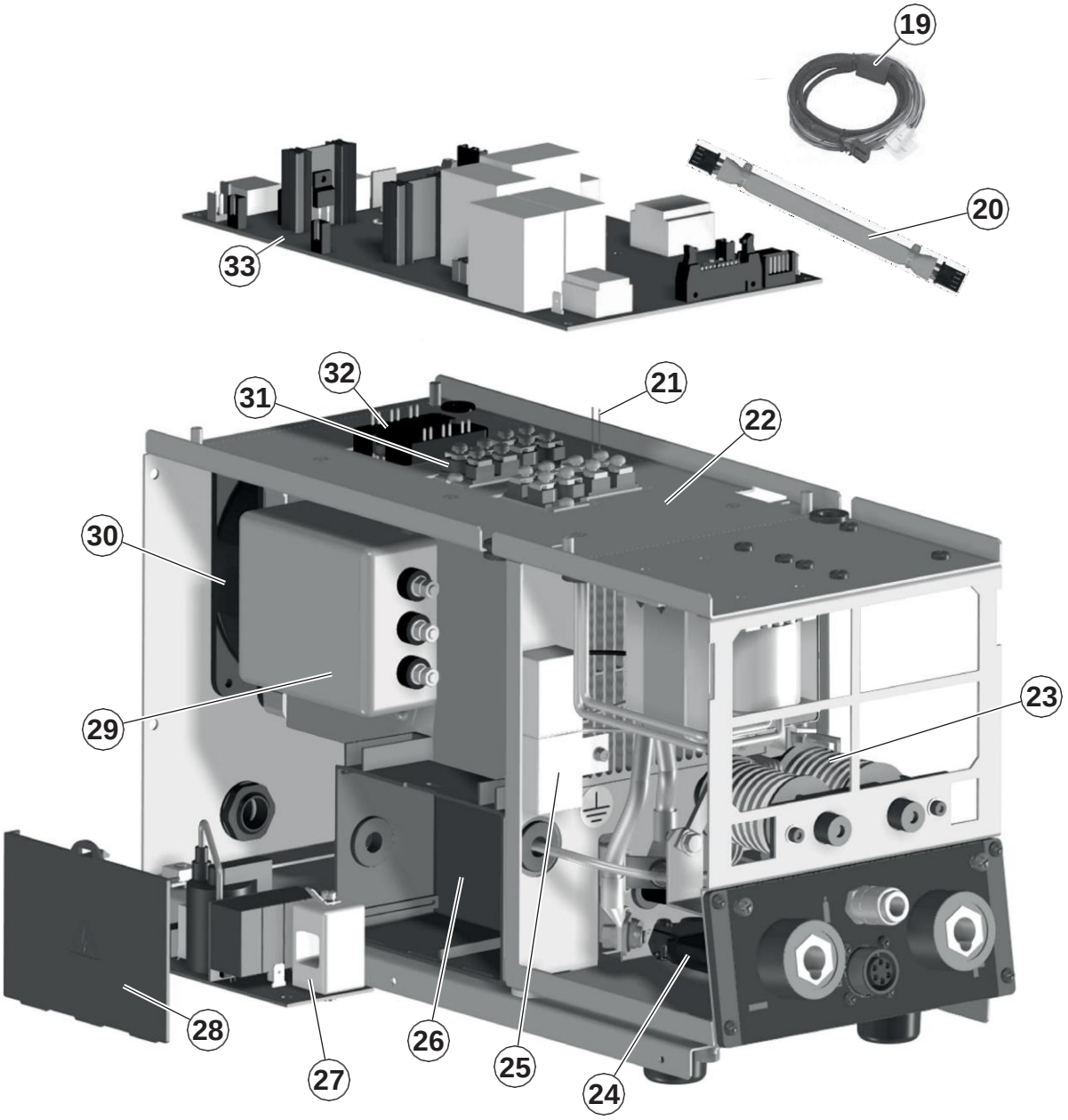
Pos.	POWER TIG 2200 DC PULSE	Description
19	377094	EMC filter PCB
20	413537	Auxiliary wiring
21	286036	"Dual Boost Chopper" IGBT
22	286038	"Full Bridge" IGBT
23	239995	HF transformer
24	419074	3x2 Poles female connector
25	403782	Terminal for 3x2 poles female connector
26	427683	HF filter
27	352466	HF PCB box
28	377059	High frequency (HF) PCB
29	352468	HF PCB cover
30	455509	Primary rectifier
31	240494	Primary inverter PCB assembly +IGBTs + Primary rectifier
32	413538	EMC filter PCB wiring



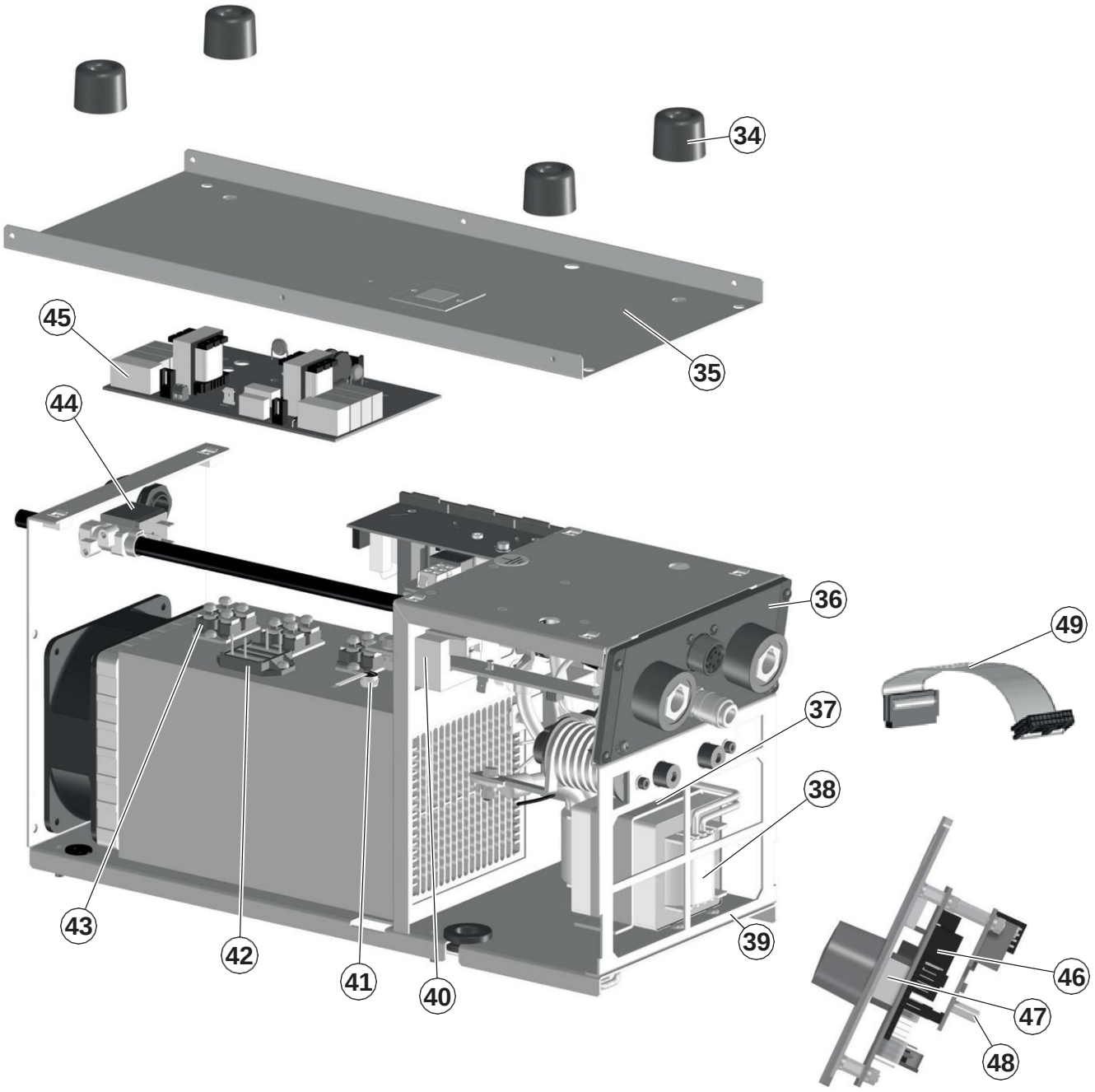
Pos.	POWER TIG 2200 DC PULSE	Description
33	431331	Foot
34	404933	Base
35	352944	Dinse Insulation
36	449495	Internal metallic frame
37	463217	Transformer support
38	481402	Transformer
39	240234	Inductor
40	240232	PFC inductors
41	376930	Torch switch filter PCB
42	481946	Hall effect transformer
43	478786	Secondary thermostat
44	423236	Secondary diode
45	455511	Secondary rectifier
46	486383	Fan motor
47	425933	Gas solenoide valve
48	377107	Secondary circuit PCB (without diodes module)
49	377244G	Digital Interface PCB "STM32"
50	454150	Encoder
51	413422	Flat cable

EN Spare parts list (POWER TIG 2600 DC PULSE)

Pos.	POWER TIG 2600 DC PULSE	Description
1	352453	Front rack transparent visor
2	447867	MTH Membrane Keyboard POWER TIG 2600 DC PULSE
	447860	MTH Membrane Keyboard POWER TIG 2600 DC PULSE
	447863	MTB Membrane Keyboard POWER TIG 2600 DC PULSE
3	438888	Ø29mm Knob without index
4	468191	GEKA logo sticker Ø20mm
5	352452	Front panel without GEKA logo sticker Ø20mm
6	403611	Quick connection
7	403635	Gas quick connection
8	468282	Front sticker
9	419050	Remote control socket
10	462694	Carrying belt hook
11	438104	Handle
12	438710	Mains switch knob
13	435755	Mains switch
14	235994	Mains cable
15	427895	Cable clamp with lock ring
16	352404	Rear panel
17	485040	Gas tube
18	420487	Cover with GEKA logo stickers



Pos.	POWER TIG 2600 DC PULSE	Description
19	413467	Auxiliary wiring
20	413518	RoboMat 1 – POWER TIG 2600 DC PULSE
21	478867	Primary circuit thermistor
22	353052	Inverter PCB insulation
23	239989	HF transformer
24	376930	Torch filter with connector
25	427681	HF filter
26	352466	HF PCB box
27	377059	High frequency (HF) PCB
28	352468	HF PCB cover
29	376887	EMC Filter
30	486383	Fan motor
31	286046	Primary circuit IGBT
32	455508	Primary circuit rectifier
33	240459	Primary inverter PCB assembly with primaryrectifier and without IGBTs primary



Pos.	POWER TIG 2600 DC PULSE	Description
34	431329	Foot
35	404912	Base
36	352944	Dinse Insulation
37	463218	Transformer support
38	481436	Transformer
39	449485	Internal metallic frame
40	481946	Current transducer
41	478848	Secondary circuit thermostat
42	455511	Secondary rectifier
43	423236	Secondary diode
44	425938	Gas solenoide valve
45	377153	Secondary circuit PCB (without diodes module)
46	377244K	POWER TIG 2600 DC PULSE digital interface PCB "STM32"
	454150	Encoder
	377243	Robotic interface isulation PCB (only for POWER TIG 2600 DC PULSE)
47	413422	Flat cable

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. - for POWER TIG 2200 DC PULSE - 400 V -50/60 Hz - Serial number .....

PoWer TIG Series

EN *Operator's manual*

READ CAREFULLY

GeKaMac®

EN ENGLISH

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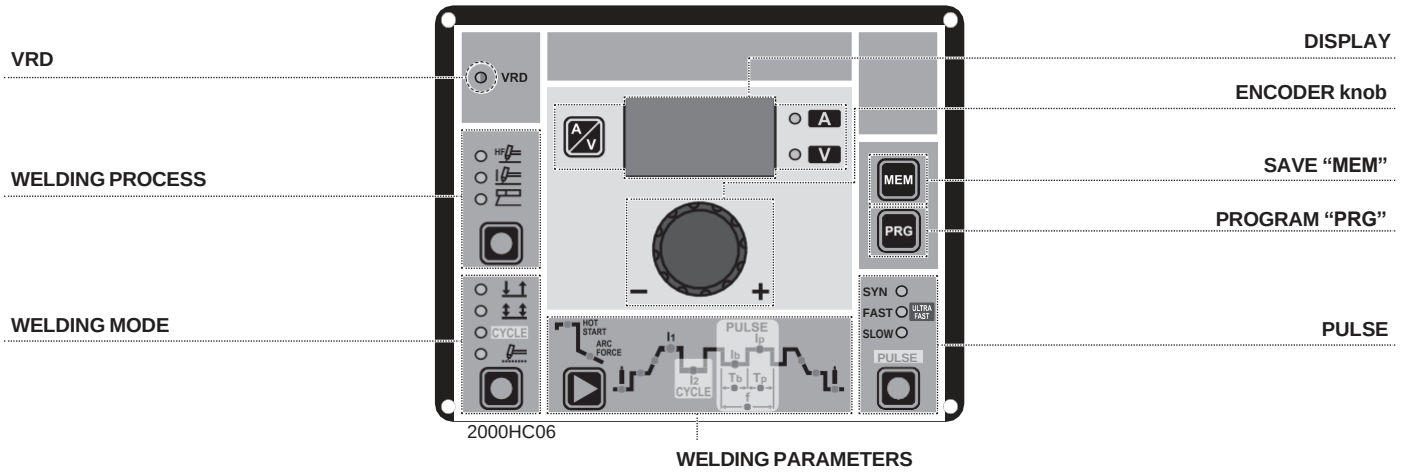
Introduction

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

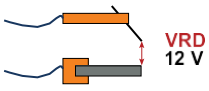
- **POWER TIG 22**
- **POWER TIG 26**

Control panel



■ VRD

The Voltage Reduction Device (VRD) is a safety device that reduces the voltage. It prevents voltages forming on the output terminals that may pose a danger to people.



Two-tone LED (off - red - green) indicates enabling of the VRD device.

The standard, preset settings for the firm do not activate the VRD function on the welding machine and so this LED is normally off. To activate the VRD device, see the relevant paragraph.

■ WELDING PROCESS

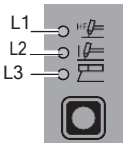
The GEKAMAC welding machine offers **4** TIG/Electrode welding processes. Each time the button is pushed, the welding machine switches to select the welding process indicated by the LED that stays lit, in the following order:

L1 ***TIG with HF ignition***

L2 ***TIG DC with “Lift” start without HF for standard TIG torches with torch button - L2 LED on steady***

L2 ***TIG DC with “Lift” start without HF for TIG torches with manual gas valve - L2 LED flashing***

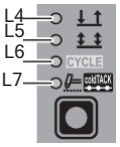
L3 ***ELECTRODE (MMA)***



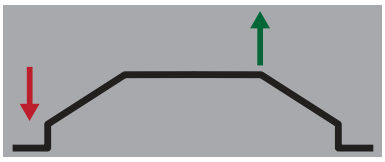
■ WELDING MODE

The GEKAMAC welding machine offers **5** 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:

L4 ***2 STROKES***
L5 ***4 STROKES STANDARD - (DEFAULT) – LED switched on and steady***
L5 ***4 STROKES AUTO - LED L5 flashing***
L6 ***CYCLE***
L7 ***SPOT WELDING***

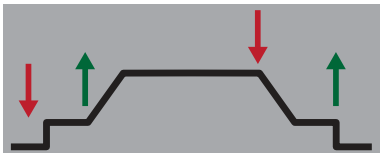


L4 ***2 STROKES***



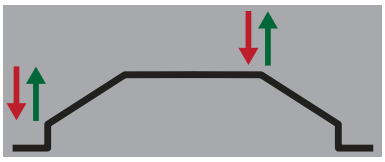
When the torch button is pushed welding begins starting with the INITIAL CURRENT (if SLOPE UP is selected), while when it is released welding ends when the FINAL CURRENT is reached (if SLOPE DOWN is set).

L5 ***4 STROKES STANDARD - (DEFAULT) – LED switched on and steady***



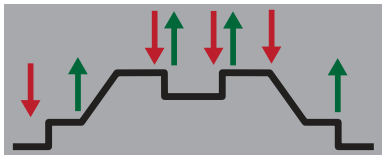
TIG welding takes place as follows:
- When the torch button is pushed welding begins at the INITIAL current.
- When the torch button is released the SLOPE UP process is carried out (if applicable) and the current returns to the PRINCIPAL value **I1**.
- When the torch button is pushed the SLOPE DOWN process is carried out (if applicable) and the current returns to the FINAL value.
- When the button is released the welding cycle ends.

L5 ***AUTO 4 STROKE - (Enable "on" – see the "Changing general welding parameters limits" paragraph) – LED L5 flashing***



TIG welding takes place as follows:
- Pressing and releasing the torch button, after the arc has ignited, starts the welding until the MAIN current I1 is reached (if a SLOPE UP is set, this will be carried out).
- Pressing and releasing the torch button carries out the SLOPE DOWN (if set) and welding stops.

L6 ***CYCLE***



When this function has been activated, TIG welding takes place as follows:
- When the torch button is pushed welding begins at the INITIAL current.
- When the torch button is released the SLOPE UP process is carried out (if applicable) and the current returns to the PRINCIPAL value **I1**.
- When the torch button is pressed and released within less than 1 second the welding current goes to the CYCLE value (**I2**), and by repeating this operating you can move between the two current levels (**I1**), (**I2**) an infinite number of times.
- When the torch button is pushed and held down (for longer than 1 second) you exit the cycle, the SLOPE DOWN process is carried out (if applicable) and the current returns to the FINAL value. When the torch button is released the welding cycle ends.

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

L7 ***SPOT WELDING - COLDTACK - TIG RCT***

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. Divided into 5 types:
- TIG LIFT DC with SPOT function.
- TIG HF DC with SPOT function.
- TIG HF DC with "coldTACK" function.
- TIG HF DC with "RCT" welding process 2 stroke.
- TIG HF DC with "RCT" welding process 4 stroke.

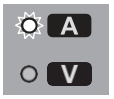
See the relevant paragraphs in the subsequent pages of this manual.

■ DISPLAY

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

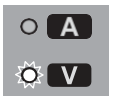
The button can also be used to view:

L26 ***AMPERE (CURRENT)***
- When the machine is in stand-by, the Amps (A) set.
- When the machine is welding the real Amps (A) at which the operator is actually welding.



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

L27 ***VOLT (VOLTAGE)***
- The actual VOLTS (V) at the welding clamps (the value displayed CANNOT BE CHANGED OR REGULATED).



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

■ ENCODER knob

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

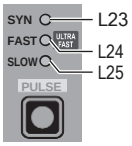
■ SAVE "MEM"

Used to save the parameters for the welding programs.

■ PROGRAM "PRG"

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

L23 ***SYN PULSE***
L24 ***FAST PULSE***
L24 ***ULTRA FAST PULSE***
L25 ***SLOW PULSE***



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

WARNING:

LED L23 switched on and steady.

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

WARNING:

LED L24 switched on and steady.

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

WARNING:

LED L24 switched on and flashing.

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

WARNING:

LED L25 switched on and steady.

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

■ WELDING PARAMETERS

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

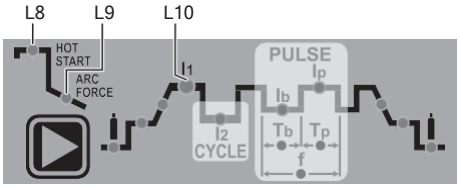
1A - STANDARD CONFIGURATION Electrode welding (MMA)

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

L8 ***HOT START***

L9 ***ARC FORCE***

L10 ***PRINCIPAL welding CURRENT*** 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:

L11 ***PRE-GAS duration***

L12 ***SLOPE UP duration***

L13 ***BASE current duration*** T_b

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

L14 ***PEAK current duration*** T_p

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

L15 ***SLOPE DOWN duration***

L16 ***POST-GAS duration***

L17 ***INITIAL welding CURRENT***

L10 ***PRINCIPAL welding CURRENT*** I_1

L18 ***CYCLE CURRENT*** I_2

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

L19 ***BASE CURRENT*** I_b

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

L20 ***PEAK CURRENT*** I_p

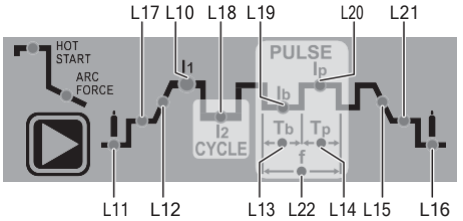
WARNING: *This can only be programmed when at least one pulsation mode is activated.*

L21 ***FINAL welding CURRENT***

WARNING: *In "Lift DC" TIG welding with manual gas valve TIG torches, adjust the parameter relating to the starting threshold of the «SmartStop» function.*

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

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



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

For this configuration, in addition to the parameters already defined for the STANDARD configuration, you can also set the following parameters:

L8 ***IGNITION CURRENT***

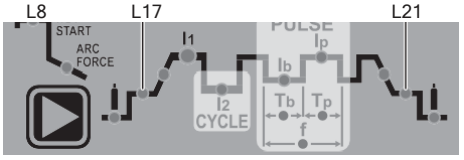
WARNING: *This can only be programmed when the* **TIG with HF ignition** *welding process is used.*

L17 ***INITIAL welding CURRENT***

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

L21 ***FINAL welding CURRENT***

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

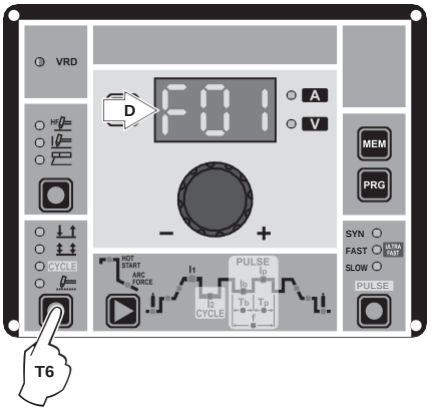


WARNING: ***This special parameter is only to be activated by qualified personnel, or those trained by technicians.***

Displaying the software version installed

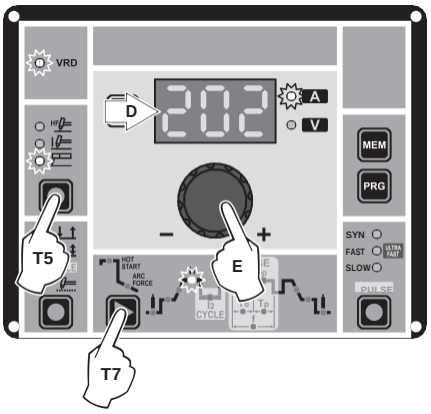
The **POWER TIG** is fitted with a digital control with software on board defined in the factory. This software is subject to continuous evolution and improvement. The software is identified by a specific number that can be viewed on the DISPLAY (D) as follows:

1) With the welding machine switched on, hold down the **WELDING MODE SELECTION** (T6) button for a few seconds.
2) The DISPLAY (D) shows the type of software installed (e.g. F01.00 n0286) where:
   - **F01.00** indicates the version and sub-version of the software installed.
   - **n0286** indicates the welding machine model.
3) Push any button to exit the display.



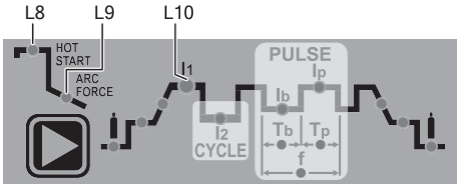
Electrode welding (MMA)

1) Start the welding machine by turning the power supply switch to position **I**.
2) **WELDING PROCESS SELECTION**
   Push the WELDING PROCESS SELECTION key (T5) 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.

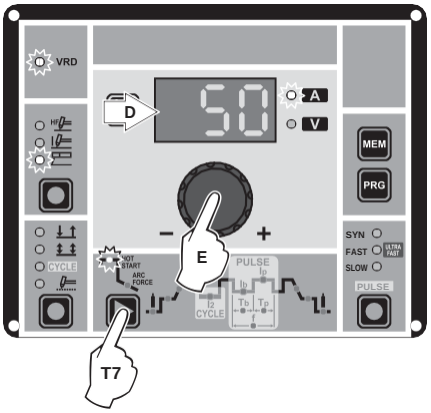


4) **WELDING PARAMETERS SELECTION**
   To refine the weld quality, the following parameters can be set by pushing the WELDING PARAMETERS SELECTION key (T7) in succession:
   - **HOT START -** This increases the welding current, in percentage terms, for a time interval that can be set at the start of the welding process, thereby reducing the risk of poor fusion at the start of the joint (**L8** - HOT START - 00-100).
   - **MMA ARC FORCE -** Regulates, in percentage terms, the dynamic characteristics of the arc (**L9** - ARC FORCE - 00-100).
   - **PRINCIPAL welding CURRENT I1** (**L10**):

2200	2600
10 ÷ 180 A	10 ÷ 250 A



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

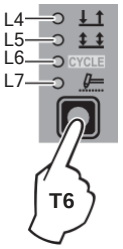


5) To exit these functions hold the WELDING PARAMETERS SELECTION key (T7) down for about **1** second, after which the DISPLAY INDICATION LED switches on and the welding machine is once again ready to weld at the current indicated on the DISPLAY (D).
6) Once the all the selections/regulations indicated 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.

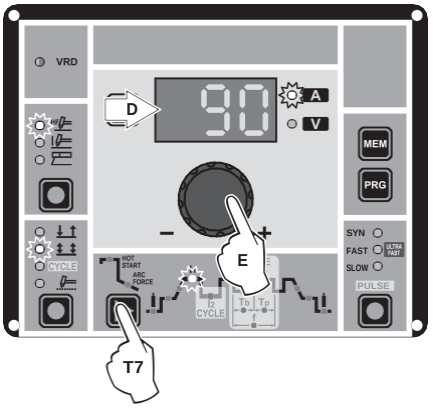
"HF DC" and "Lift DC" TIG welding with standard TIG torches with torch button

1) Start the welding machine by turning the power supply switch to position **I**.
2) Press the WELDING PROCESS SELECTION Key (T5) and select:
   L1 a TIG "HF" welding process for direct current TIG welding with high frequency ignition.
   L2 a TIG "Lift" welding process for direct current TIG "Lift" type welding without high frequency - (**L2** LED on steady).

   WARNING: *The "Lift" ignition current is created by pushing the torch button only after having touched the workpiece with the electrode.*
3) Press the WELDING MODE SELECTION Key (T6) and go to one of the **4** options available:
   L4 2T
   L5 4T - 4T AUTO
   L6 CYCLE
   L7 SPOT WELD - COLDTACK - "RCT" WELDING MODE



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

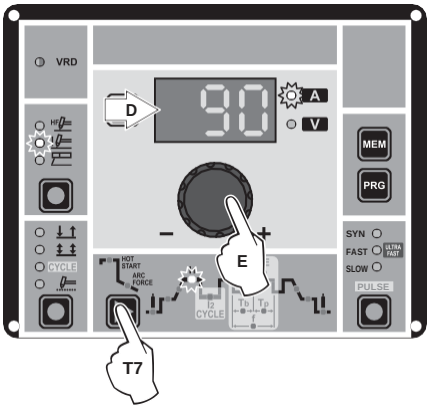


5) By pushing the WELDING PARAMETERS SELECTION (T7) key a number of times it is possible to set the various TIG WELDING PARAMETERS (see the "TIG Welding" paragraph - WELDING PARAMETERS).
6) Once the all the selections/regulations indicated above have been made, welding can begin.
7) During the welding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

“Lift DC” TIG welding with manual gas valve TIG torches

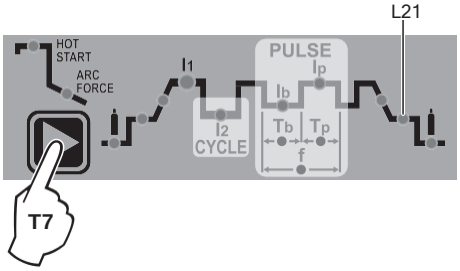
1) Start the welding machine by turning the power supply switch to position **I**.
2) Press the WELDING PROCESS SELECTION Key (T5) and select:
   L2 the “Lift DC” TIG welding process for “Lift” TIG welding in direct current without high frequency with manual gas valve TIG torches - (**L2** LED flashing).

   NOTE: *This process involves starting the arc without needing to use the torch button. In this process the gas is not delivered automatically but the operator must manage the gas. To start a weld, simply rest the tip of the electrode on the piece to be welded and lift the torch. Once the welding is complete, moving the torch away from the piece starts the slope down ramp (if applicable) and the generator turns off. The parameters that can be set are those required in 2-stroke mode with the exception of the pre-gas and post-gas time.*
3) Turn the ENCODER Knob (E) until the DISPLAY (D) shows the CURRENT VALUE at which you wish to weld.



4) By pushing the WELDING PARAMETERS SELECTION (T7) key a number of times it is possible to set the various TIG WELDING PARAMETERS (see the “TIG Welding” paragraph - WELDING PARAMETERS).

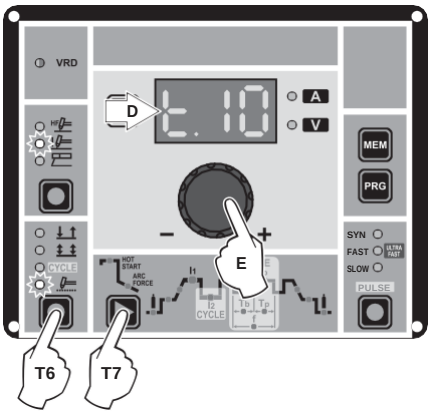
NOTE: *«**SmartStop**» function - Once welding is complete, moving the torch away from the piece starts the slope down ramp (if applicable) and the generator turns off. It is possible to adjust the parameter relating to the «**SmartStop**» function (**L21** LED) start threshold with a percentage increase ranging from **-50** to **+100** compared to the typical value*



5) Once the all the selections/regulations indicated above have been made, welding can begin.
6) During the welding process the DISPLAY shows the real Amps (A) at which the operator is actually welding..

TIG LIFT DC welding with the SPOT WELDING function active

1) Start the welding machine by turning the power supply switch to position **I**.
2) Push the SELECT WELDING PROCESS (T5) key and select the TIG process, with LIFT type ignition - (LED on steady).
3) Press the WELDING MODE SELECTION Key (T6) and go to one of the **SPOT WELDING** function.
4) Press and release the WELDING PARAMETERS SELECTION Key (T7) 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).

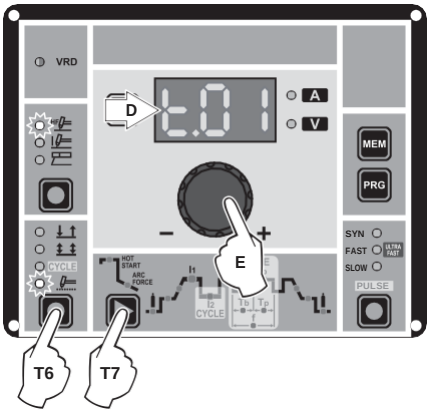


6) By pushing the WELDING PARAMETERS SELECTION (T7) key a number of times it is possible to set the various TIG WELDING PARAMETERS (see the “TIG Welding” paragraph - WELDING PARAMETERS).
7) Hold the SELECT WELDING PARAMETERS (T7) key down to save the parameters chosen.
8) Once the all the selections/regulations 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 SPOT function active

Innovative TIG HF DC spot weld device that makes it possible to do precise, safe spot welding with little heat applied. The “Perfect-Point” mode, guarantees perfect centring of the welding point. “Perfect-Point” mode comes about by touching he workpiece to be welded with the tungsten tip at the exact point at which you wish to do the spot weld, then push the button and lift the TIG torch. This will cause the Perfect-Point function to be activated automatically, ensuring a cold spot at the exact position required. Proceed as follows:

1) Start the welding machine by turning the power supply switch to position **I**.
2) Push the SELECT WELDING PROCESS (T5) key and select the TIG DC process, with HF ignition.
3) Press the WELDING MODE SELECTION Key (T6) and go to one of the SPOT WELDING function. The SPOT WELD is lit continuously.
4) Push and release the SELECT WELDING PARAMETERS (T7) Button to display the SPOT WELD TIME “t…”.
5) Rotate the ENCODER knob (E) to set the SPOT WELDING time required (0,01÷10,0 sec).

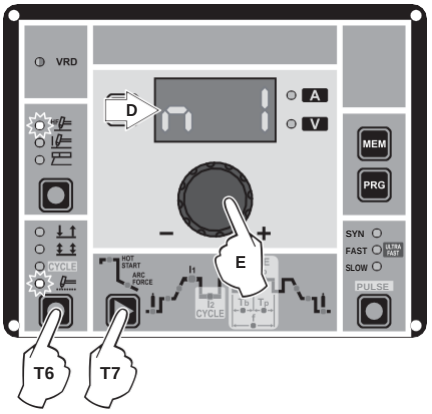


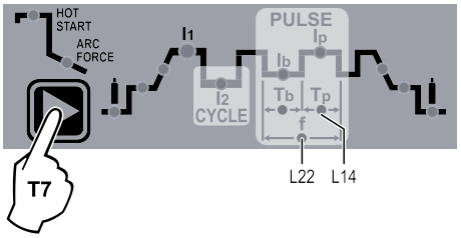
6) By pushing the WELDING PARAMETERS SELECTION (T7) key a number of times it is possible to set the various TIG WELDING PARAMETERS (see the “TIG Welding” paragraph - WELDING PARAMETERS).
7) Hold the SELECT WELDING PARAMETERS (T7) key down to save the parameters chosen.
8) Having completed all the previous selections / settings, welding can begin, ignite the arc “remotely” or by touching the workpiece to be welded with the tungsten tip in order to use “Perfect-Point” mode.
   “Perfect-Point” mode comes about by touching he workpiece to be welded with the tungsten tip at the exact point at which you wish to do the spot weld, then push the button and lift the TIG torch. This will cause the Perfect-Point function to be activated automatically, ensuring a cold spot at the exact position required.
9) During the welding process the DISPLAY shows the real Amps (A) at which the operator is actually welding.

TIG HF DC welding with “ColdTack” function active

The“ColdTack” mode can be used for cold tacking in quick succession, to further extend the benefits of an individual point. Thanks to the “Perfect-Point” mode, ColdTack guarantees perfect centring of the welding point. “Perfect-Point” mode comes about by touching he workpiece to be welded with the tungsten tip at the exact point at which you wish to do the spot weld, then push the button and lift the TIG torch. This will cause the Perfect-Point function to be activated automatically, ensuring a cold spot at the exact position required. Proceed as follows:

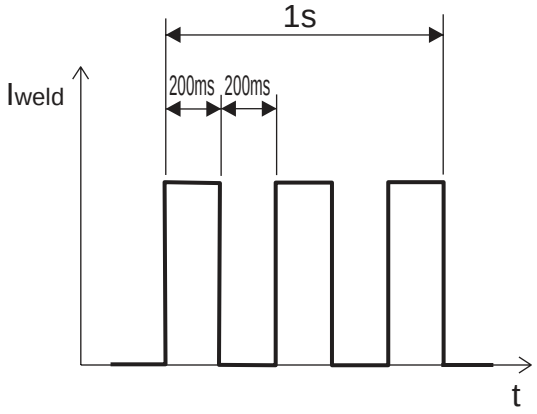
1) Start the welding machine by turning the power supply switch to position **I**.
2) Push the SELECT WELDING PROCESS (T5) key and select the TIG DC process, with HF ignition.
3) Press the WELDING MODE SELECTION Key (T6) and go to one of the **“coldTack”** mode. The “coldTack” LED is switched on and flashes.
4) Push and release the SELECT WELDING PARAMETERS (T7) key to be able to set the 2 parameters by rotating the ENCODER Knob (E):
   - Time during which the pulses are generated (0.01 ÷ 1sec) (**L14** on flashing).
   - Number of consecutive impulses in the sequence at the individual points “**n** ” (1 - 10) generated at a duty cycle of 50% (**L22** on and steady).





5) By pushing the WELDING PARAMETERS SELECTION (T7) key a number of times it is possible to set the various TIG WELDING PARAMETERS (see the “TIG Welding” paragraph - WELDING PARAMETERS).
6) Hold the SELECT WELDING PARAMETERS (T7) key down to save the parameters chosen.
7) Having completed all the previous selections / settings, welding can begin, ignite the arc “remotely” or by touching the workpiece to be welded with the tungsten tip in order to use “Perfect-Point” mode.
   “Perfect-Point” mode comes about by touching he workpiece to be welded with the tungsten tip at the exact point at which you wish to do the spot weld, then push the button and lift the TIG torch. This will cause the Perfect-Point function to be activated automatically, ensuring a cold spot at the exact position required.
8) During the welding process the DISPLAY shows the real Amps (A) at which the operator is actually welding.

One example of configuration could be t=1sec and n=3: this will generate 3 impulses each lasting 200 msec, separated by a 200 msec pause.



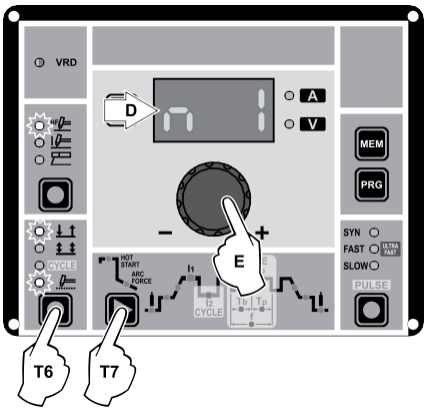
TIG HF DC with “RCT” welding mode 2 stroke / 4 strokee

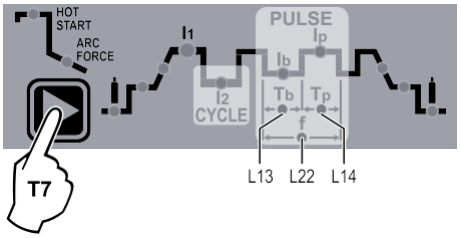
TIG RCT “RUNNING COLD TACK” welding process in TIG HF DC in 2 and 4 stroke. New welding process in TIG HF DC that makes it possible to form very cold welding beads. This welding process makes it possible to benefit from all the advantages of “coldTACK” welding, repeating a single spot in continuous mode, to achieve a perfect, cold welding bead. When “TIG RCT” is used, the welding bead is much colder than can be achieved using “Pulse TIG”, which makes it the ideal solution for welding thin materials with very low heat transfer.
In addition, it makes it possible to stay at the initial and final current for an arbitrary length of time.
During the initial and final current phases, the power supply is constant and not intermittent, making it possible to heat the workpiece up sufficiently before beginning to weld.
Another difference from spot welding, is the option to configure slope-up and slope-down ramps. During these ramps, the current is as applied in the settings.
TIG “RCT” is not available in all PULSE modes.
Thanks to the “Perfect-Point” mode, perfect centring of the welding point is guaranteed.
“Perfect-Point” mode comes about by touching he workpiece to be welded with the tungsten tip at the exact point at which you wish to do the spot weld, then push the button and lift the TIG torch. This will cause the Perfect-Point function to be activated automatically, ensuring a cold spot at the exact position required.
Proceed as follows:

1) Start the welding machine by turning the power supply switch to position **I**.
2) Push the SELECT WELDING PROCESS (T5) key and select the TIG DC process, with HF ignition.

3) Push the WELDING MODE SELECTION Button (T6) and go to the **TIG “RCT”** function.
   The “TIG DC HF” LED is on and flashes, the “SPOT WELD” LED is on and flashes, and the 2 stroke LED is on and steady.
4) To switch to 4 stroke mode push the WELDING MODE SELECTION Button (T6) again. The “TIG DC HF” LED is on and flashes, the “SPOT WELD” LED is on and flashes, and the 4 stroke LED is on and steady.

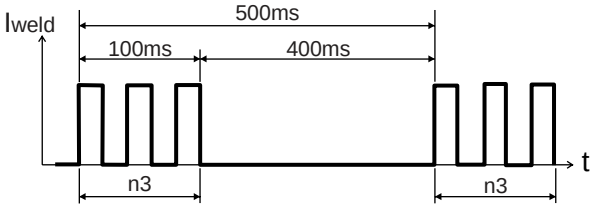
5) Push and release the WELDING PARAMETER SELECTION (T7) Button to be able to set the following 3 parameters by rotating the ENCODER Knob (E):
   - Time during which the pulses are generated (0.01 ÷ 1 sec) (**L14** on flashing).
   - Number of consecutive impulses in the sequence at the individual points “**n** ” (1 - 10) generated at a duty cycle of 50% (**L22** on and steady).
   - Switch-off time (0.01 ÷ 2 sec) (**L13** on flashing).





6) By pushing the WELDING PARAMETER SELECTION (T7) Button successively, it is possible to set the various WELDING PARAMETERS (see “TIG WELDING” - WELDING PARAMETERS paragraph).
7) Hold the WELDING PARAMETERS SELECTION (T7) Button down to save the parameters chosen.
8) Having completed all the previous selections / settings, welding can begin, ignite the arc “remotely” or by touching the workpiece to be welded with the tungsten tip in order to use “Perfect-Point” mode.
   “Perfect-Point” mode comes about by touching he workpiece to be welded with the tungsten tip at the exact point at which you wish to do the spot weld, then push the button and lift the TIG torch. This will cause the Perfect-Point function to be activated automatically, ensuring a cold spot at the exact position required.
9) During the welding process, the DISPLAY shows the real Amps (A) at which the operator is actually welding.

One example of configuration is as follows:
«Tp» pulse generation time = 100ms
«n» n° impulses = 3
«Tb» switch-off time = 400ms
In this way, within 100 msec, 3 impulses will be generated, followed by a 400 msec pause.

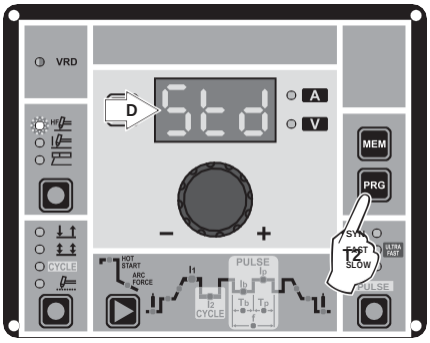


TIG welding - Welding parameters

The **POWER TIG 2200/2600 DC PULSE** can be configured in the following **2** ways:
- **STANDARD (Std)** configuration.
- **SPECIAL (SPE)** configuration.

STANDARD CONFIGURATION (Std)

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

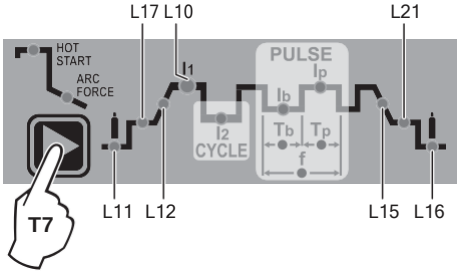


4) Press the "PRG" PROGRAM key (T2) to confirm.

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

1 - "BASIC" WELDING PARAMETERS

Press the WELDING PARAMETERS SELECTION Key (T7) a number of times to set:



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

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

L17 ***INITIAL welding CURRENT***

2200	2600
1 ÷ 220 A	1 ÷ 260 A

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

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

L10 ***PRINCIPAL welding CURRENT*** I_1

2200	2600
1 ÷ 220 A	1 ÷ 260 A

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

L21 ***FINAL welding CURRENT***

2200	2600
1 ÷ 220 A	1 ÷ 260 A

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

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

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

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

2 - WELDING PARAMETERS with PULSE mode active:

Pulsed TIG welding allows greater control of the arc and better deformation of the material.
The **GEKAMAC** can be used for TIG pulsed welding in **4** different modes:
- SLOW PULSE
- FAST PULSE
- ULTRA FAST PULSE
- SYN PULSE

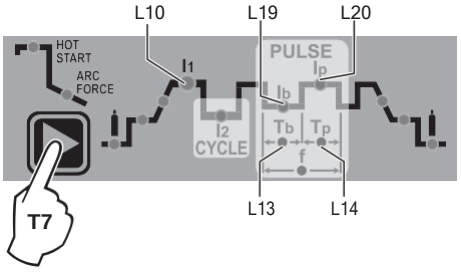
WARNING: *Pulsation is deactivated automatically for the duration of the INITIAL and FINAL current.*

2A) SLOW PULSE
TIG pulse welding with manual setting of parameters.

WARNING: *Not available for TIG HF DC welding, with the spot mode active, with the "coldTACK" mode, and the TIG "RCT" process.*

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

Press the WELDING PARAMETERS SELECTION Key (T7) a number of times to set the following (in addition to the WELDING PARAMETERS defined as being "BASIC"):



L10 L20 ***PEAK CURRENT*** I_p

2200	2600
1 ÷ 220 A	1 ÷ 260 A

L10 L19 ***BASE CURRENT*** I_b

2200	2600
1 ÷ 220 A	1 ÷ 260 A

L14 ***PEAK current duration*** T_p

2200 - 2600
0,01 ÷ 0,99 sec

L13 ***BASE current duration*** T_b

2200 - 2600
0,01 ÷ 0,99 sec

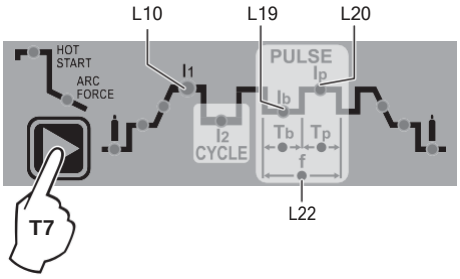
To exit the setting phase, hold the WELDING PARAMETERS SELECTION key (T7) down for about **1** second.

2B) FAST PULSE

TIG pulse welding with manual setting of parameters.

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

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



L10 L20 ***BASE CURRENT* Ib**

2200	2600
1 ÷ 220 A	1 ÷ 260 A

L10 L19 ***PEAK CURRENT* Ip**

2200	2600
1 ÷ 220 A	1 ÷ 260 A

L22 ***PULSATION FREQUENCY* f**

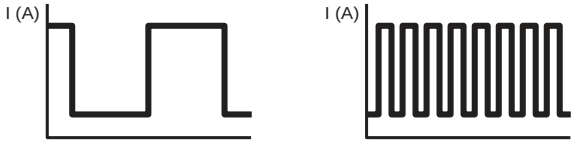
	2200 - 2600 -
FAST	0,5 ÷ 500 Hz

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

2C) ULTRA FAST PULSE

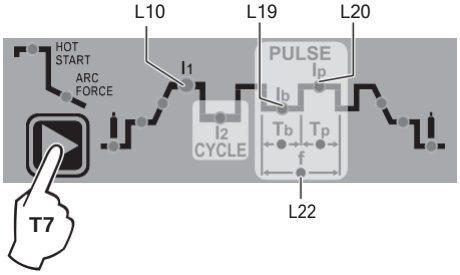
TIG pulse welding with manual setting of parameters.

The possibility of using pulsation frequencies that are not as high, up to 2000 Hz, ideal for welding minor thicknesses, makes it possible to achieve a great 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 (T3) until the requited pulsation is active (ULTRA FAST LED flashing).

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



L10 L20 ***BASE CURRENT* Ib**

2200	2600
1 ÷ 220 A	1 ÷ 260 A

L10 L19 ***PEAK CURRENT* Ip**

2200	2600
1 ÷ 220 A	1 ÷ 260 A

L22 ***PULSATION FREQUENCY* f**

	2200 - 2600
ULTRA FAST	550 ÷ 2000 Hz

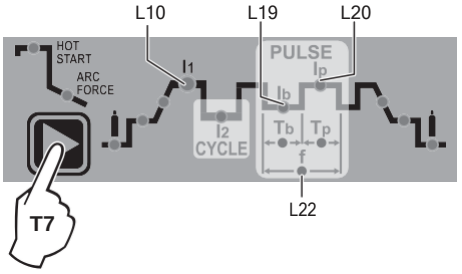
To exit the setting phase, hold the WELDING PARAMETERS SELECTION key (T7) down for about **1 second**.

2D) SYN PULSE

TIG pulse welding with synergic setting of parameters.

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

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



L10 L20 ***BASE CURRENT* Ib**

2200	2600
25 ÷ 220 A	25 ÷ 260 A

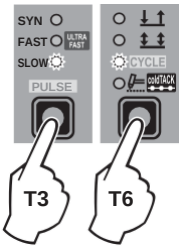
This function, which is good for less skilled operators, makes it possible to change the pulsation parameter (for example, the peak current **Ip**) and the other values for the corresponding pulsation parameters (Base current **Ib** - Pulsation frequency **f**) vary automatically.
To exit the setting phase, hold the WELDING PARAMETERS SELECTION key (T7) 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 (I_1 and I_2). To do so you must also set (not only pulse parameters I_b , I_p , and **f**), but also the 2nd level PEAK current (I_{2p}). The other 2nd level pulse parameters (BASIC CURRENT I_{2b} and FREQUENCY **f**) are achieved synergically. The FREQUENCY remains constant while the 2nd level BASIC CURRENT I_{2b} proportional to the ratio between the 1st level currents.

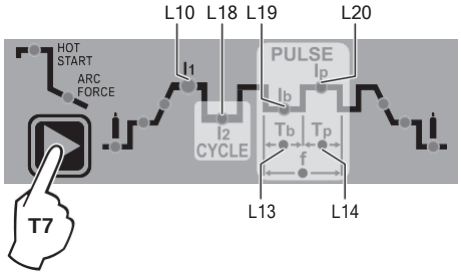
3A - SLOW PULSE + CYCLE

Press the WELDING MODE SELECTION key (T6) until the CYCLE welding mode is active (CYCLE LED on).



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

Press the WELDING PARAMETERS SELECTION Key (T7) a number of times to set the following (in addition to the WELDING PARAMETERS defined as being "BASIC"):



L10 - L20 ***1st LEVEL PEAK CURRENT*** I_{1p}

2200	2600
1 ÷ 220 A	1 ÷ 260 A

L18 L20 ***2nd LEVEL PEAK CURRENT*** I_{2p}

2200	2600
1 ÷ 220 A	1 ÷ 260 A

L10 L19 ***1st LEVEL BASE CURRENT*** I_{1b}

2200	2600
1 ÷ 220 A	1 ÷ 260 A

L14 ***PEAK current duration*** T_p

2200- 2600
0,01 ÷ 0,99 sec

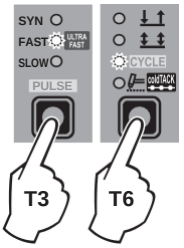
L13 ***BASE current duration*** T_b

2200 - 2600
0,01 ÷ 0,99 sec

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

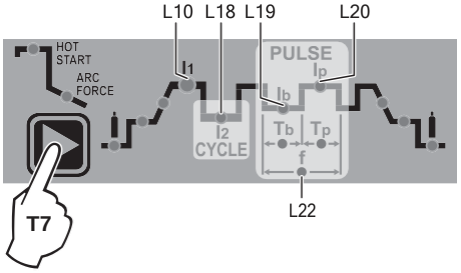
3B - FAST PULSE + CYCLE

Press the WELDING MODE SELECTION key (T6) until the CYCLE welding mode is active (CYCLE LED on).



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

Press the WELDING PARAMETERS SELECTION Key (T7) a number of times to set the following (in addition to the WELDING PARAMETERS defined as being "BASIC"):



L10 - L20 ***1st LEVEL PEAK CURRENT*** I_{1p}

2200	2600
1 ÷ 220 A	1 ÷ 260 A

L18 L20 ***2nd LEVEL PEAK CURRENT*** I_{2p}

2200	2600
1 ÷ 220 A	1 ÷ 260 A

L10 L19 ***1st LEVEL BASE CURRENT*** I_{1b}

2200	2600
1 ÷ 220 A	1 ÷ 260 A

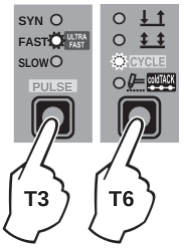
L22 ***PULSATION FREQUENCY*** **f**

	2200 - 2600
FAST	0,5 ÷ 500 Hz

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

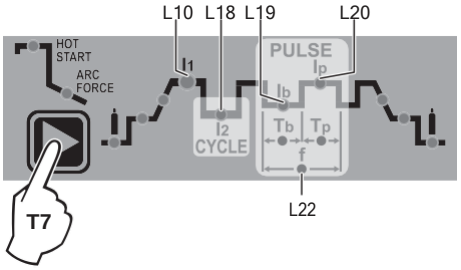
3C - ULTRA FAST PULSE + CYCLE

Press the WELDING MODE SELECTION key (T6) until the CYCLE welding mode is active (CYCLE LED on).



Press the PULSE key (T3) until the requited pulsation is active (ULTRA FAST LED flashing).

Press the WELDING PARAMETERS SELECTION Key (T7) a number of times to set the following (in addition to the WELDING PARAMETERS defined as being "BASIC"):



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

2200	2600
1 ÷ 220 A	1 ÷ 260 A

L18 L20 ***2nd LEVEL PEAK CURRENT*** **I2p**

2200	2600
1 ÷ 220 A	1 ÷ 260 A

L10 L19 ***1st LEVEL BASE CURRENT*** **I1b**

2200	2600
1 ÷ 220 A	1 ÷ 260 A

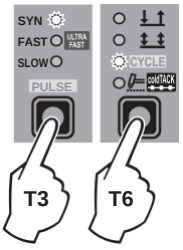
L22 ***PULSATION FREQUENCY*** **f**

	2200 HF - 2600 HF
ULTRA FAST	550 ÷ 2000 Hz

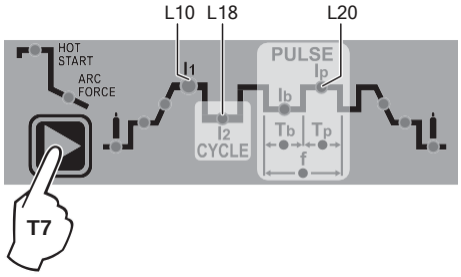
To exit the setting phase, hold the WELDING PARAMETERS SELECTION key (T7) down for about **1 second**.

3D - SYN PULSE + CYCLE

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



Press the WELDING PARAMETERS SELECTION Key (T7) a number of times to set the following (in addition to the WELDING PARAMETERS defined as being "BASIC"):



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

2200	2600
25 ÷ 220 A	25 ÷ 260 A

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

L18 L20 ***2nd LEVEL PEAK CURRENT*** **I2p**

2200	2600
1 ÷ 220 A	1 ÷ 260 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 (T7) down for about **1 second**.

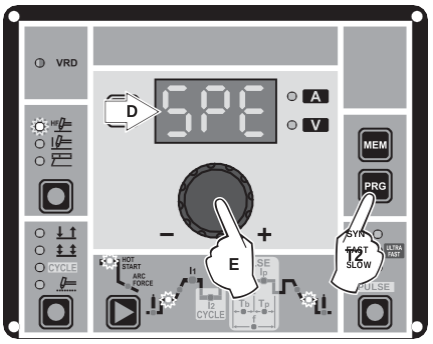
NOTE: *During the welding process if LED* **Ip** *and LED* **I1** *stay switched on on the DISPLAY, the 1st level current at which you are welding is displayed.*

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

SPECIAL CONFIGURATION (SPE)

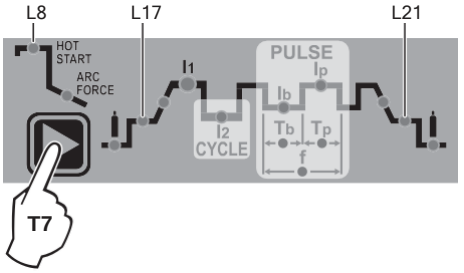
During TIG welding with HF ignition, the GEKAMAC units allow youto further modify the WELDING PARAMETERS, thereby provid-ing a more skilled welder and a more versatile welding machine.Activation will only take place after the machine configuration ischanged from STANDARD (Std) to SPECIAL (SPE), which mustbe 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).
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 (T7) successively:



L8 ***IGNITION CURRENT***

2200	2600
1 ÷ 220 A	1 ÷ 260 A

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

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

L17 ***IGNITION welding CURRENT***

2200	2600
1 ÷ 220 A	1 ÷ 260 A

WARNING: *Only programmable for the* **TIG HF ignition** *welding process and* **2 TIME** *or* **4 Time AUTO** *welding modes active***.**

L21 ***FINAL welding CURRENT***

2200	2600
1 ÷ 220 A	1 ÷ 260 A

WARNING: *Only programmable for the* **TIG HF ignition** *welding process and* **2 TIME** *or* **4 Time AUTO** *welding modes active***.**

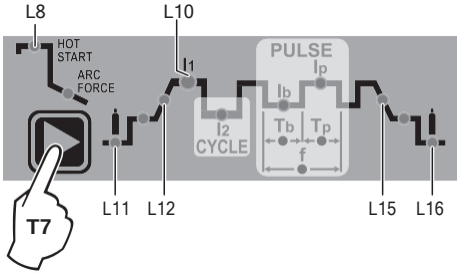
To exit the setting phase, hold the WELDING PARAMETERS SELECTION key (T7) down for about **1 second**.

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

Changing general welding parameters limits

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

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



L11 ***PRE-GAS duration (maximum limit settable from 1,00 to 2,50 sec)***

L12 ***SLOPE UP duration (maximum limit settable from 5,00 to 10,0 sec)***

L10 ***MINIMUM CURRENT for remote controls - minimum limit settable:***

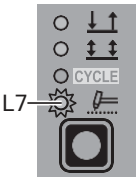
2200	2600
1 ÷ 220 A	1 ÷ 260 A

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.*

L15 ***SLOPE DOWN duration (maximum limit settable from 8,00 to 15,0 sec)***

L16 ***POST-GAS duration (maximum limit settable from 10,0 to 25,0 sec)***

L7 ***Maximum duration of the SPOT WELDING time (maximum settable limit from 10,0 to 25,0 sec)***



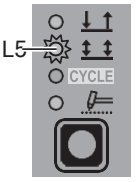
LEDs OFF ***Antisticking mode***

AS0	Antisticking deactivated in all processes
AS1	Antisticking activated in all processes (default)

LEDs OFF ***Cooling system operating mode***

Hon	Cooling system always **ON**
HoF	Cooling system always **OFF**
Hod	Cooling system **ON DEMAND** (default) 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 **H20** does not disappear from the DISPLAY (D). • During welding or for a certain period of time after this is finished.

L5 ***Enabling 4 STROKE STANDARD / AUTO***

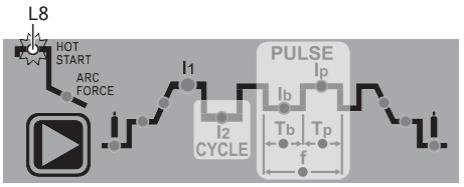


oFF	AUTO 4 stroke function **not enabled** (default) LED L5 flashing
on	AUTO 4 stroke function **enabled** LED L5 flashing

See the WELDING MODE paragraph to see the differences between the STANDARD 2 STROKE function and the AUTO 4 STROKE function.

L8 ***Automatic TIG arc reignition mode***
(L8 LED flashing)

iGn	Automatic reignition enabled in the first 3 seconds of welding (default)
OFF	Automatic reignition disabled
ON	Automatic reignition enabled throughout welding



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

Creating and memorising automatic welding points

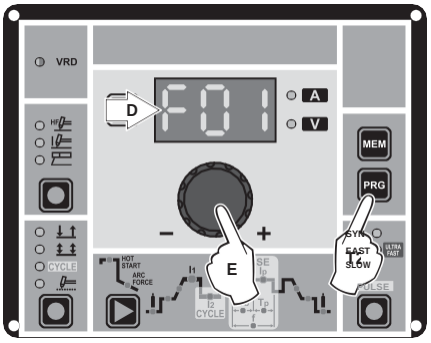
The welding machine has scope for saving up to 99 WELDING PROGRAMS broken down into two categories:

- **F** + 01÷99 = Free, non-saved programs.
- **P** + 01÷99 = Saved programs.

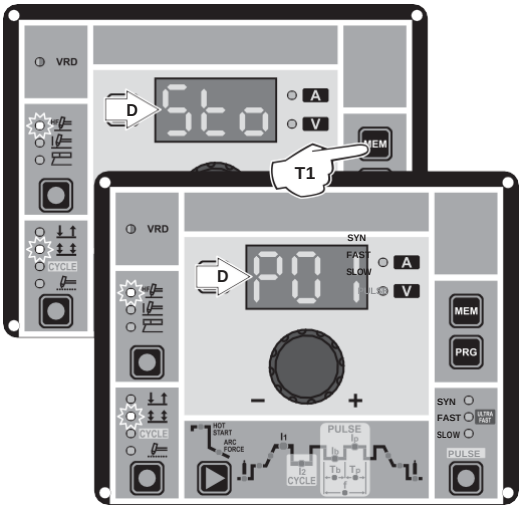
Once you have defined the parameters the operator requires to do their work properly, you can save them in the memory and create a WELDING PROGRAM by proceeding as follows.

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

1) Hold the PROGRAM "PRG" key (T2) down for at least **3** consecutive seconds until the DISPLAY (D) reads **F**, accompanied by a flashing number (e.g. F01).
   In order to be able to choose WELDING PROGRAM **F** that is free, simply rotate the ENCODER knob (E).
   It is also possible to overwrite a program **P** 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). The letter **F** (free program, for example: F01) will be replaced by the letter **P** (saved program, for example: P01).



PROGRAMMED and/ or MANUAL welding

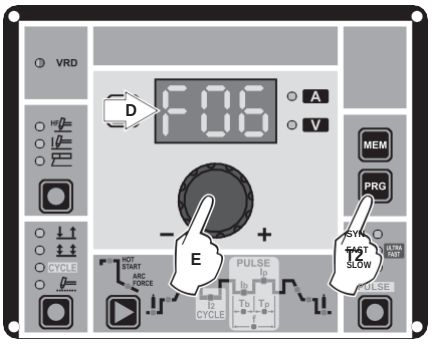
PROGRAMMED WELDING

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. **F06**).

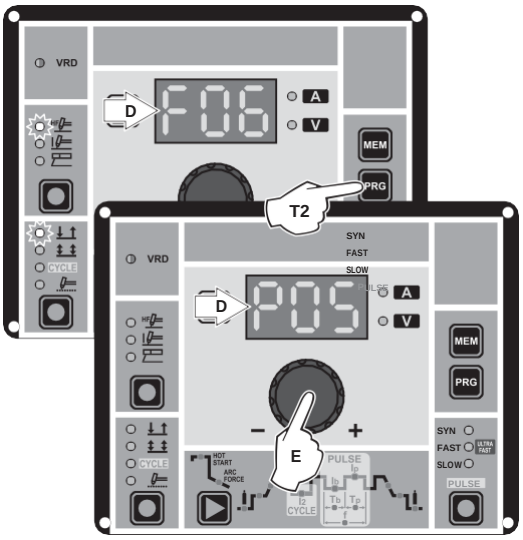


2) Turn the ENCODER (E) knob until the DISPLAY (D) reads **MAn**.

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. F06).
2) Turn the ENCODER Knob (E) until the DISPLAY (D) shows the program number (flashing) you wish to call up (e.g. P05).



NOTE: *The saved programs are those that begin with the letter* **P***, whereas the free programs available are those that begin with the letter* **F***.*

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

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

Activating the VRD device

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

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

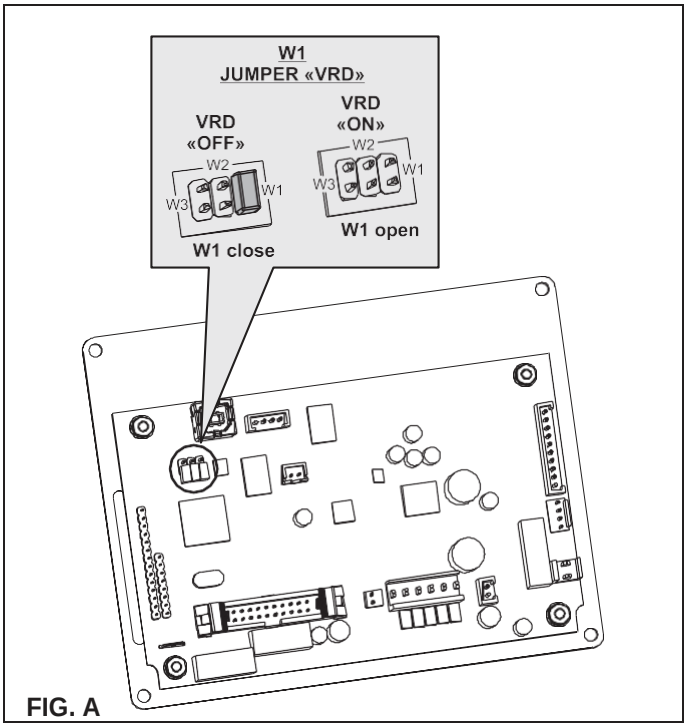


FIG. A

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

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

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

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 -** With the "**Hod**" default setting, the cooling system 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 **H20** does not disappear from the DISPLAY (D).
  - During welding or for a certain period of time after this is finished.

The "Changing general welding parameters limits" paragraph explains how to change the cooling system settings to:

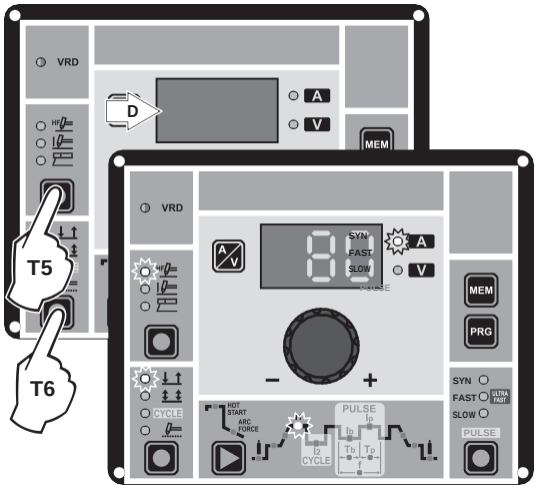
- "**Hon**" always on
- "**HoF**" always off (useful when using an air-cooled TIG torch, after having used a water-cooled TIG torch).

Factory default

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

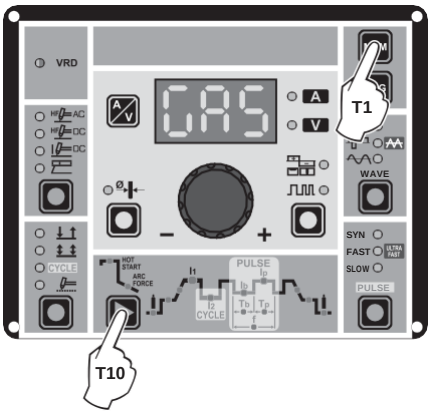
To reset the settings, you must:

- When the welding machine is on, push and hold the WELDING PROCESS SELECTION (T5) and WELDING MODE SELECTION (T6) keys down together.
- When the DISPLAY (D) switches off, release the two buttons.
- The reset procedure has now been completed successfully



Machine test menu

The machine test menu makes it possible to test functionality of the gas solenoid valve, the fan, and the cooling unit.
The access the menu, hold down the WELD PARAMETERS SELECTION (T10) and SAVE "MEM" (T1) keys together, for 2 seconds.

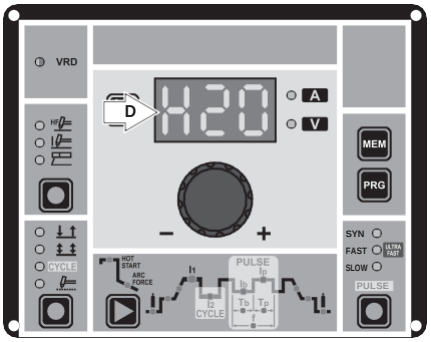


After accessing the menu, the options can be browsed using the encoder knob, to select the required function:

GAS	Gas solenoid valve
FAN	Fan
H2O	Cooling unit

Press SAVE "MEM" (T1) to activate the selected option.
Press SAVE "MEM" (T1) again, to deactivate the selected option.
Press the WELD PARAMETERS SELECTION (T10) key to exit the menu.

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	POWER TIG 2200 DC PULSE	POWER TIG 2600 DC PULSE
E0.1	**VOLTAGE READING ERROR** This is activated when an anomalous simultaneous Over Voltage and Under Voltage indication is detected.		•
E0.2	**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.		•
E0.3	**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.		•
E0.4	**OVER CURRENT** This message appears when the primary current exceeds the limits. If the fault persists look for the cause of the fault and contact our technical assistance department if necessary. Automatic reset error.		
E1.0	**USER FILE MISSING** User data are corrupted, default value will be loaded. Automatic reset error.	•	•
E1.2	**INTERNAL MEMORY ERROR** NON automatic reset error. Immediately contact technical assistance dept.	•	•
E1.3	**CALIBRATION DATA ERROR** Calibration data are corrupted, default value will be loaded. Automatic reset error and immediately contact technical assistance dept.	•	•
T°C	**THERMAL PROTECTION** The welding stops due to an excessively high temperature (thermostat activated). Automatic reset error.	•	•
H_2O	**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.	•	•

WARNING: ***The POWER TIG 2200 DC PULSE welding machine has a built-in electronic protective device to deal with fluctuations in mains voltage that switches the machine off automatically (voltage exceeding 300 V), without indicating any type of error or warn-ing message for the operator. Subsequently it starts functioning again automatically when the voltage has dropped to belowthe value indicated above.***

PoWer TIG Series

GeKaMac®

Gedik Welding Inc.
Ankara Caddesi No: 306 Şeyhli 34906 Pendik - İstanbul / Turkey
P. +90 216 378 50 00 • **F.** +90 216 378 20 44
www.gedikwelding.com