1 SAFETY PRECAUTIONS

WELDING AND ARC CUTTING CAN BE HARMFUL TO YOURSELF AND OTHERS.

The user must therefore be educated against the hazards, summarized below, deriving from welding operations. For more detailed information, order the manual code 3.300.758

ELECTRIC SHOCK - May be fatal.

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

FUMES AND GASES - May be hazardous to your health.

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

ARC RAYS - May injure the eyes and burn the skin.

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

RISK OF FIRE AND BURNS

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

NOISE

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

PACEMAKERS

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

EXPLOSIONS

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

ELECTROMAGNETIC COMPATIBILITY

This machine is manufactured in compliance with the instructions contained in the harmonized standard IEC 60974-10, and must be used solely for professional purposes in an industrial environment. There may be potential difficulties in ensuring electromagnetic compatibility in non-industrial environments.

DISPOSAL OF ELECTRICAL AND ELECTRONIC EQUIPMENT

Do not dispose of electrical equipment together with normal waste! In observance of European Directive 2002/96/EC on Waste Electrical and Electronic Equipment and its implementation in accordance with national law, electrical equipment that has reached the end of its life must be collected separately and returned to an environmentally compatible recycling facility. As the owner of the equipment, you should get information on approved collection systems from our local representative. By applying this European Directive you will improve the environment and human health!

IN CASE OF MALFUNCTIONS, REQUEST ASSISTANCE FROM QUALIFIED PERSONNEL.

2 GENERAL DESCRIPTIONS

2.1 SPECIFICATIONS

This welding machine is a constant current power source built using INVERTER technology, designed to weld covered electrodes (not including cellulosis) and for TIG procedures, with contact starting and high frequency. IT MUST NOT BE USED TO DEFROST PIPES.

2.2 EXPLANATION OF THE TECHNICAL SPECIFICATIONS LISTED ON THE MACHINE PLATE.

N°. Serial number, which must be indicated on any type of request regarding the welding machine.

Three phase static transformer-rectifier frequency converter.

Drooping-characteristic.

MMA Suitable for welding with covered electrodes.

TIG Suitable for TIG welding.

U0. Secondary open-circuit voltage

X. Duty cycle percentage. % of 10 minutes during which the welding machine may run at a certain current without overheating.

I2. Welding current

U2. Secondary voltage with current I2

U1. Rated supply voltage

I1 max. This is the maximum value of the absorbed current.

I1 eff. This is the maximum value of the actual current absorbed, considering the duty cycle.

IP23C Protection grade of the housing, approving the equipment as suitable for use outdoors in the rain.

C: The additional letter C means that the equipment is protected against access to the live parts of the power circuit by a tool (diameter 2.5 mm).

Suitable for hazardous environments.

NOTES: The welding machine has also been designed for
use in environments with a pollution rating of 3. (See IEC 664).

2.3 DESCRIPTION OF PROTECTIVE DEVICES

2.3.1 Thermal protection
This machine is protected by a temperature probe, which prevents the machine from operating if the allowable temperatures are exceeded. When the thermostat is tripped the message “OPn” appears on the display O on the control panel.

2.3.2 - Block protection.
This welding machine is equipped with various safety devices that stop the machine before it can suffer damage. When any protection is tripped, the message “Err” appears on the display O along with a number that appears on the display U.

If a low water level is detected for the cooling unit the abbreviation H2O flashes on the display O.

3 INSTALLATION

Make sure that the supply voltage matches the voltage indicated on the specifications plate of the welding machine.

When mounting a plug, make sure it has an adequate capacity, and that the yellow/green conductor of the power supply cable is connected to the earth pin.

The capacity of the overload cutout switch or fuses installed in series with the power supply must be equivalent to the absorbed current I1 of the machine.

3.1. START-UP

Only skilled personnel should install the machine. All connections must be carried out according to current regulations, and in full observance of safety laws (CEI 26-23/IEC-TS 62081).

3.2 DESCRIPTION OF THE EQUIPMENT (Fig.1-1/A).

BA) Negative output terminal (-).
BB) Positive output terminal (+).
BC) TIG torch trigger connector.
   Connect the wires of the torch trigger to pins 1 and 9.
BD) Fitting (1/4 gas).
   This is where the gas hose of the TIG welding torch is to be connected.
BE) Main switch.
BF) Tank cap.
BG) Power cord.
BH) Gas supply fitting.
BI) Hot water inlet fitting
   (use only for TIG torches).
BL) Cold water outlet fitting
   (use only for TIG torches).
BM) Slot for fluid level check.
BN) Fittings for MIG torches
   (there must not be any short-circuits).
BO) Connector type DB9 (RS 232).
   To be used for updating the microprocessor programs.
BP) Fuse holder.
BQ) Power cord socket.
BR) Pressure switch socket.

NOTE: The cooling unit is optional for art. 351.
3.3 DESCRIPTION OF THE PANEL (Fig.2).

**Process key AT.**

One of the LEDs **AX**, **AV**, or **AW** lights when selected.

- LED **AX**: MMA welding active.
- LED **AV**: "HOT START"
- LED **AW**: TIG welding active.

**Mode key AS.**

One of the LEDs **D**, **C**, **E**, **B**, **A**, or **AU** lights when selected:

- LED **D**: "HOT START"
  - MMA welding active.
  - This LED lights to indicate that the display **U** displays the time, expressed in seconds, during which the welding machine delivers an overcurrent to improve electrode starting. It may be adjusted using the knob **Y**.

- LED **C**: "Arc-Force"
  - MMA welding active.
  - This is a percentage of the welding current. The display **U** displays its value, and the knob **Y** adjusts it. This overcurrent essentially aids in the transfer of drops of molten metal.

- LED **E**: CONTINUOUS TIG welding, started by means of a high voltage/frequency device.

- LED **B**: PULSE TIG welding, started by means of a high voltage/frequency device.
  - The pulse frequency is adjustable from 0.16 to 500Hz (LED **AE**); the peak current and the base current may be activated via the LEDs **AG** and **AD**, respectively, and are adjustable using the knob **Y**.
  - From a pulse frequency of 0.16 to 1.1Hz, the display **O** alternately shows the peak (main) current and the base current. The LEDs **AD** and **AD** light alternately; above 1.1 Hz the display **O** shows the average of the two currents.

- LED **A**: CONTINUOUS TIG welding with contact starting (striking).

- LED **AU**: PULSE TIG welding with contact starting (striking). The operating logic is the same as described for LED **B**.

**Program key AR.**

One of the LEDs **G**, **F**, **W**, **X**, **Z**, or **AA** lights when selected:

- LED **G**: Spot-welding (Manual).
  - After selecting the welding current (LED **AG**) and the spot welding time (LED **AE**) using the selector switch **AP**, set the values using the knob **Y**.
  - This welding mode is only used if continuous welding is selected and high-frequency start is used (LED **E** lit).
The operator presses the torch trigger, the arc lights and shuts off automatically after the pre-set spot welding time. To do the next spot, you must therefore release the torch trigger and press it again. Range from 0.1 to 30 sec.

**F - 2-stage TIG welding LED (manual)**
When the torch trigger is pressed, the current begins to increase over the previously set “slope up” time, until it reaches the value set by means of the knob **Y**. When the trigger is released, the current begins to drop over the previously set “slope down” time, until it returns to zero. In this position, you may connect the pedal control accessory ART. 193.

**W - 4-stage TIG welding LED (automatic).**
This program differs from the previous one in that the arc is both started and shut off by pressing and releasing the torch trigger.

**X - Special program LED**
To light the arc, press the torch trigger and hold it down; the current begins to increase at a fixed rate. If the torch trigger is released, the current immediately rises to the welding value (LED **AG**). To stop welding, press the torch trigger and hold it down; the current begins to drop at a fixed rate. The current immediately returns to zero if the trigger is released.

**Z - four-stage TIG welding LED with four levels of current (automatic).**
To set the three minimum welding currents, proceed as follows:
Press the selector switch **AP** until the LED **AD** lights, then adjust the maximum current value using the knob **Y**.
Press the selector switch **AP** until the LED **AY** lights, then adjust the starting current value using the knob **Y**.
When the arc strikes, the current reaches the first setting, LED **AI** lit. The operator may maintain this current as long as desired (for example until the part is heated). Pressing and immediately releasing the torch trigger causes the current to pass from the first to the second current over the “slope-up” time (LED **AH**); the LED **AG** lights once the welding current has been reached.
Should it be necessary to reduce the current during welding, without shutting off the arc (for instance when changing the welding material or working position, moving from horizontal to upright, etc.), press and immediately release the torch trigger: the current will switch to the second value selected, the LED **AD** will light and **AG** will go off.
To return to the previous main current, press and release the torch trigger once again. The LED **AG** will light, and the LED **AD** will go off. To stop welding at any time, simply hold down the torch trigger for more than 0.7 seconds, then release. The current begins to fall to zero within the previously set “slope down” time interval (LED **AC** lit).
If you press and immediately release the torch trigger during the “slope down” phase, you will return to “slope up” if it is set to greater than zero, or to the lesser current value of those set.
NOTE: The expression “PRESS AND IMMEDIATELY RELEASE” refers to a maximum time of 0.5 seconds.

**AA - TIG welding LED with two levels of current.**
This program differs from the previous one because when the arc lights the current always rises to the first setting,
LED AI lit, but the operator cannot maintain it and the slope-up time begins immediately (LED AH).

**Y - Knob**
Normally adjusts the welding current. Also, if you select a function with the selector switch AP, this knob adjusts its size.

**O - Display**
 Displays:
1. in no-load conditions, the preset current.
2. under load, the welding current and its levels.
3. in combination with the “Hold” LED lit, the last welding current.
4. In pulsed TIG mode, loaded, the alternating currents in the corresponding levels.
5. within the synergic parameters, the current in relation to the selected thickness.
6. the message “H2O” when the cooling unit is set, and the same message flashing when the cooling unit pressure switch is tripped.
7. the message “OPn” flashing when the thermostat is tripped.
8. while selecting free or saved programs, the message PL ...P01...P09

**A □ Led N**
Cannot be selected and lights when the display O displays a current.

**U - Display**
Displays:
1. in MMA mode without welding, the no-load voltage, and when welding the loaded voltage.
2. in continuous TIG mode, with button not pressed, zero; with button pressed but without welding, the no-load voltage, and when welding the loaded voltage.
3. displays numerically all values except for currents selected using the button AP.
4. displays the numerical combinations that refer to the various wave forms that may be selected when the AP button is used to select the LED AY (Wave).
5. when setting up the cooling unit, the messages: OFF, OnA, OnC.
6. in synergic mode (LED I lit) the abbreviation of the materials to be welded if the LED L is selected; the abbreviations of the welding positions if the LED M is selected; and the electrode diameters if the LED R is selected.

**ADDITIONALLY, with the LED P (Hold) lit, it displays the welding voltage.**

**LED Q**
May not be selected and lights when the display U displays a voltage.

**AQ - SELECTOR SWITCH**
The welding machine can save nine welding programs P01.....P09, and call them up using this button. A working program PL is also available.

**Selecting**
When this push-button is pressed briefly, the display O shows the next program number after the one being used. If it has not been saved the message will flash, otherwise it will remain steady.

**Saving (3.6)**
Once the program has been selected, hold for more than 3 seconds to save the data. In confirmation, the program number on the display O will stop flashing.

**AP - SELECTOR SWITCH**
When this button is pressed, the LEDs light in succession:

**Warning:** only those LEDs that refer to the chosen welding mode will light; i.e., in continuous TIG welding mode the LED AE, representing the pulse frequency, will not light.

Each LED indicates the parameter that may be adjusted by means of the knob Y while the LED itself is lit. Five seconds after the last change, the LED involved will shut off; the main welding current will be displayed, and the corresponding LED AG lights.

**THE FOLLOWINGLED S MAY BE SELECTED IN TIG DC (DIRECT CURRENT) TIG AC (ALTERNATING CURRENT) WELDING MODES:**

**AL - Pre-gas LED**
Range 0.05-2.5 seconds. Gas output time before welding begins.

**AI - Welding start current LED.**
This is a percentage of the welding current (LED AG).

**AH - Slope up LED.**
This is the time in which the current, beginning from the minimum, reaches the set current value. (0-10 sec.)

**AG - Main welding current LED.**

**AD - Second level of welding or base current.**
This current is always a percentage of the main current.

**AE - Pulse frequency LED (0.16-500 Hz).**
When spot-welding is selected (LED G) this LED lights to indicate that the display U displays the spot welding time that may be adjusted from 0.1 to 30 seconds using the knob Y.

**AF - LED**
Adjusts the ratio between the peak current time AG and the frequency AE. t/T (10-90 %) fig.3.
AC - Slope down LED. This is the time in which the current reaches the minimum and the arc shuts down (0-10 sec.).

AB - Post-gas LED. Adjusts the time gas escapes after welding ends. (0-30 sec.)

LED THAT MAY BE SELECTED ONLY IN TIG AC (ALTERNATING CURRENT) WELDING MODE:

AO Start LED
Adjusts the “hot-start” level to maximize starts in TIG AC mode for each electrode diameter. When this LED lights the display U shows a numerical value that refers to the electrode diameters. The operator may use the knob Y to set the diameter being used and obtain a good start immediately. Range from 0.5 to 4.8.

LED AY Wave
Selects the welding waveform. When this LED lights display U shows a number corresponding to the selected waveform (see table).
11 = square - square 22 = sine - sine
33 = delta - delta 12 = square - sine
13 = sine - delta 23 = sine - delta
21 = sine - square 32 = delta - sine
31 = delta - square.
Default = square - sine (12).
This combination of numbers may be changed using the encoder Y.

NOTE: The first number that makes up the figure refers to the negative or penetration half-wave, the second number refers to the positive or cleaning half-wave. Changing the type of waveform may also reduce noise in the arc in AC welding.

LED AN Hz
Adjusts the frequency of the alternating current. Range 50-100 Hz.

LED AM Adjusts the wave balance. Adjusts the percentage of the negative (penetration) half-wave in the alternating current period. Range -10/0/10 where 0 = 65% (recommended) -10 = 50% and 10 = 85%.

LED T:
LED indicating that the device to reduce the risk of electric shock is in good working order.

Key H:
Pressing briefly activates synergy, where available, and selects the LEDs I, L, M, S, and R (“briefly” refers to less than 0.7 sec).
If the electrode diameter is not confirmed after the parameters are selected, pressing this key briefly will exit synergy.
If instead you wish to exit synergy after confirming the electrode diameter, you must hold it down longer (meaning more than 0.7 sec.).

BC - 10-pin connector
This connector is connected to the remote controls described in paragraph 4. A clean contact is available between pins 3 and 6 which indicates when the arc is lit (max. 0.5 A - 125 VAC/ 0.3 A - 110 VDC/1A - 30 VDC).

3.3. GENERAL NOTES
Before using this welding machine, carefully read the standards CEI 26-23/IEC-TS 62081. Also make sure the insulation of the cables, electrode clamps, sockets and...
plugs are intact, and that the size and length of the welding cables are compatible with the current used.

### 3.4. MMA WELDING WITH COVERED ELECTRODES

- This welding machine is suitable for welding all types of electrodes, with the exception of cellulosic (AWS 6010).
- Make sure that the switch BE is in position 0, then connect the welding cables, observing the polarity required by the manufacturer of the electrodes you will be using; also connect the clamp of the ground cable to the workpiece, as close to the weld as possible, making sure that there is good electrical contact.
- Do NOT touch the torch or electrode clamp simultaneously with the mass terminal.
- Turn on the machine using the switch BE.
- Select the MMA procedure by pressing the button A, LED AW lit.
- Adjust the current based on the diameter of the electrode, the welding position and the type of joint to be made.
- Always remember to shut off the machine and remove the electrode from the clamp after welding.

If you wish to adjust the Hot-start (LED D) and Arc force functions (LED C), see the previous paragraph.

### 3.5. TIG WELDING

By selecting TIG AC welding mode you may weld aluminium, aluminium alloys, brass and magnesium, while selecting TIG DC allows you to weld stainless steel, iron and copper.

Connect the mass cable connector to the positive pole (+) of the welding machine, and the clamp to the workpiece as close as possible to the welding point, making sure there is good electrical contact.

Connect the power connector of the TIG torch to the negative pole (-) of the welding machine.

Connect the torch connector to the welding machine connector BC.

Connect the torch gas hose fitting to the fitting BD on the machine, and the gas hose from the cylinder pressure regulator to the gas fitting BH.

#### 3.5.1 Cooling unit. (optional for Art.351).

If using a water-cooled torch, use the cooling unit.

Insert the torch cooling hoses in the fittings BI and BL of the cooling unit, being careful to correctly place the delivery and return.

- **Description of protections**
  - **Coolant pressure protection.**
    This protection is achieved by means of a pressure switch, inserted in the fluid delivery circuit, which controls a microswitch. Low pressure is indicated from the flashing message H2O on the display O.

- **Start-up.**
  Unscrew the cap BF and fill the tank (the equipment is supplied with approximately one liter of fluid).

It is important to periodically check through the slot BM that the fluid remains at the “max” level.

As a coolant, use water (preferably deionized) mixed with alcohol in percentages defined according to the following table:

<table>
<thead>
<tr>
<th>Temperature Range</th>
<th>Water/Alcohol</th>
<th>Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>-5°C up to –10°C</td>
<td>4L/1L</td>
<td>3.8L/1.2L</td>
</tr>
</tbody>
</table>

**NOTE** If the pump runs with no coolant present, you must remove all air from the tubes.

In this case shut off the power source, fill the tank, connect a hose to the fitting and insert the other end of the hose in the tank. Only for Art. 351, insert the pressure switch connector and the power cord into the sockets BR and BQ.

Run the power source for approximately 10/15 seconds, then re-connect the hoses.

Turn on the machine. To select the operating mode of the cooling unit, proceed as follows:

1. Select any TIG welding mode.
2. Press the key AQ and, while holding it down, press the key AP. Keep them pressed until the message H2O appears on the display O.
3. Select the operating mode using the knob Y
   - OFF = Unit off,
   - OnC = Continuous operation,
   - OnA = Automatic operation.

**To exit selection, briefly press the key AQ.**

**NOTE:** “Automatic mode” means that the cooling unit starts when the torch button is pressed and stops running approximately 2 minutes after the torch button is released.

**Warning!** If MMA electrode welding is selected, cooling is not on and may not be selected. It is normal for the machine display O to show the flashing message H2O on start-up.

#### 3.5.2 Start-up.

Do not touch live parts and output terminals while the machine is powered.

The first time the machine is turned on, select the mode using the push-button AS and the welding parameters by means of the key AP and the knob Y as described in paragraph 3.2.

**CAUTION** The adjustments for the LEDs AO = start, AY = wave, AN = Hz, AM = wave balance may only be selected in TIG AC mode.

The flow of inert gas must be set to a value (in liters per minute) approximately 6 times the diameter of the electrode.

If you are using gas-lens type accessories, the gas throughput may be reduced to approximately 3 times the diameter of the electrode. The ceramic nozzle diameter must be between 4 and 6 times the electrode diameter.

- Remember to shut off the machine and close the gas cylinder valve when you have finished welding.

#### 3.5.3 Preparing the electrode

Be especially careful when preparing the electrode tip. Grind it so that it has vertical grooves as shown in fig.3.

**WARNING:** LOOSE HOT METAL PARTICLES may cause personal injury, fire and equipment damage; TUNGSTEN CONTAMINATION may lower the quality of the weld.

- Use only a grinding machine equipped with adequate safety guards to shape the tungsten electrode.
- Protect the face, hands and body with suitable gear.
3.6. SAVING

Pressing the push-button Q briefly makes a selection; held down for more than 3 seconds, it saves the data. Each time it is turned on, the machine always shows the last welding condition used.

3.6.1. Saving data from the PL program

Using the machine for the first time

When the machine is turned on, the display shows the symbol PL; this disappears after 5 seconds, and a working current is displayed. Follow the instructions in paragraphs 3.2 and 3.5, then proceed as follows to save the data in the program P01:

- Briefly press the push-button AQ (mem+mem-); the message P01 will appear, flashing.
- Hold down the push-button AQ for more than 3 seconds, until the symbol P01 stops flashing: at this point, the data have been saved.
- Obviously, if you wish to save in a program other than P01, you should briefly press the push-button AQ as many times as necessary to display the desired program. P01 will be displayed the next time the machine is turned on.

PRESSING THE PUSH-BUTTON AQ BRIEFLY MAKES A SELECTION, WHILE HOLDING IT DOWN FOR MORE THAN 3 SECONDS SAVES THE DATA.

3.6.2. Save from a free program

The operator may edit and save a selected program by proceeding as follows:

- Press the push-button AQ briefly and select the desired program number.

The symbols of free programs are flashing.

Press the button AS to select the mode (paragraph 3.1).
- Turn the knob Y and set the welding current.
- The TIG procedure has been selected, activate the LED AB (post gas) by means of the push-button AP, and set the desired value via the knob Y (paragraph 3.1).

If you wish to adjust the “slope” times or other parameters, after making these adjustments which are necessary in order to weld, follow the steps described in paragraph 3.1.

To save in the previously selected program, press the button AQ for more than 3 seconds, until the number stops flashing.

To save in a different program, make your selection by briefly pressing the push-button AQ, then hold down the push-button AQ for more than 3 seconds.

3.6.3 Save from a saved program.

Beginning with a previously saved program, the operator may edit the data in memory to update the program itself, or to find new parameters to save in another program.

3.6.3.1 Updating

- After turning on the machine, select the parameters to be edited and edit them.
- Hold down the AQ button for more than 3 seconds, until the save is confirmed (program symbol changes from flashing to steady).

3.6.3.2 Save in a new program

- After turning on the machine, select the parameters to be edited and edit them.
- Weld, even briefly.
- Briefly press the selector switch AQ until the desired program is displayed.
- Hold down the AQ button until the save is confirmed (program symbol changes from flashing to steady).

3.6.4 Weld with synergy.

The purpose of “synergy” is to offer the operator a quick guide for setting the TIG welding parameters. It is therefore not compulsory, but only a suggestion. “Synergetic” relationships between current thickness and electrode diameter have been developed using Ceriati grey 2% electrodes (EN26848 WC20), at an alternating current frequency of 90 Hz.

The tests were carried out with the waveform n°. 12 (square penetration - sinusoidal cleaning).

The logic: The operator sets the type of material to be welded, the welding position and thickness in relation to the welding process; an electrode diameter is suggested based on these choices, and if confirmed the machine prepares for welding.

Turning on synergy.

Briefly press the key H (for less than 0.7 sec): the LED I (Syn) lights simultaneously with the LED L (material). The display O shuts off and the display U shows a message corresponding to the material to be welded (see description of LED L). Turn the knob Y to choose.

Pressing the button H again confirms the choice of material and causes the LED M to light. The display U shows the welding positions available (see description of LED M).

Turn the knob Y to choose. Pressing the button H again confirms the choice of position and causes the LED S to light. The display O shows the set current, while the display U shows the thickness in millimeters that corresponds to the current (see description of LED S).

Pressing the button H again confirms the choice of thickness and causes the LED R to light.

One or more electrode diameters are proposed based on the set choice of material, position, thickness and current.
The recommended electrode will be proposed first and the numerical value of the diameter will always be steadily lit, next to the letter A if the amp setting selected for welding falls within the current range of two diameters; the second choice of electrode diameter will be proposed only if the encoder \( Y \) is turned. The second choice will also be displayed steadily lit. If you turn the encoder further, the display \( U \) shows the diameter above the second choice and below the first choice, flashing.

Given that the electrode diameter mainly defines the start level \( AO \) and the minimum current \( AI \), the operator may choose a combination that is not recommended.

At this point the operator has two choices:
1. To exit synergy without confirming the choices made. To do so, briefly press the button \( H \); the LED \( I \) shuts off and the panel displays the settings in effect before you entered synergy.
2. Confirm the synergy by pressing the button \( H \) for longer than 0.7 sec. At this point all synergy functions are set and, if selected using the button \( AP \), the display \( U \) shows the message “AU” (automatic). The LED \( I \) remains lit to confirm that the parameters have been set.

To summarize, when you confirm the electrode diameter (by holding down the button \( H \) when the LED \( R \) is selected) the start, wave, Hz, balance and current \( AI \) functions are arranged according to the automatic logic described previously. When the electrode is confirmed, the LED \( R \) shuts off and the LED \( I \) lights.

4 REMOTE CONTROLS

The following remote controls may be connected to adjust the welding current for this welding machine:
- Art. 1256 TIG torch button only (water-cooled).
- Art. 1258 TIG torch UP/DOWN (water-cooled).
- Art. 193 Foot control (used in TIG welding)
- Art. 1192 + Art. 187 (used in MMA welding)
- Art. 1180 Connection to simultaneously connect the torch and the pedal control. Art 193 may be used in any TIG welding mode with this accessory.

**Commands that include a potentiometer regulate the welding current from the minimum to the maximum current set via the knob \( Y \).**

**Commands with UP/DOWN logic regulate the welding current from the minimum to the maximum.**

The remote control settings are always active in the PL program, while they are not active in a saved program.