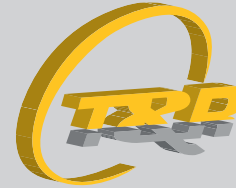




Multi Synergic 250 - Multi Synergic 380 - Multi Synergic 500 and Accessories



English
GB

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WARNING

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

INTRODUCTION

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

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

ROUTINE MAINTENANCE

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

- Clean the power source inside by means of low-pressure compressed air and soft bristle brushes.
- Check the electric connections and all the connection cables.

For the use and maintenance of the pressure reducers, consult the specific manuals.



1. DECLARATION OF CONFORMITY

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

Declares that generators described in this manual, in particular the:

Multi Synergic 280

Multi Synergic 350

Multi Synergic 500

and accessories:

wire feeder unit

DRC remote control unit

DRC remote control unit for automation

Multi Synergic cooling unit with cable assembly and torches

has been designed in compliance with the following standards:


– EN 60974-12 - EN 60974-1 - EN 60974-10

– EN 60974-2 - EN 60974-5

Direttore Generale

Date 22/02/2010

Maurizio Terzo

(Maurizio Terzo).....



IN CASE OF ANY TECHNICAL PROBLEM ASK FOR QUALIFIED SERVICE ASSISTANCE

2. RAEЕ STANDARDS



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

3. SAFETY PRECAUTIONS

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

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The user must therefore be educated against the hazards, summarized below, deriving from welding operations.

ELECTRIC SHOCK – May be fatal



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

FUME and GASES – May be hazardous to your health



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

ARC RAYS – May injure the eyes and burn the skin



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

RISK of FIRE and BURNS



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

NOISE



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

PACE MAKER



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

EXPLOSIONS

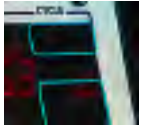


Do not weld in the vicinity of containers under pressure, or in the presence of explosive dust, gases or fumes. All cylinders and pressure regulators used in welding operation should be handled with care.

4. GENERAL DESCRIPTION

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

5. STAND BY



The machine stops its main functions when it is not continuously used, in order to reduce the power consumption at 10W; the “STANDBY” icon lights. The fan works only when the machine needs to be cooled down; during light applications, the fan normally doesn't work.

The water cooling unit, if any, works only on MIG process; at the end of the mig welding process, it works for further 180 sec.

6. VRD - VOLTAGE REDUCTION DEVICE



This feature reduces the output no load voltage <25V.

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

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

On manual MIG process it becomes automatically “off”.

To set the VRD on On or Off, push the pushbutton for ten seconds up to the icon VRD light on or the icon V>20 light on

7. ALARMS AND SETTINGS

The power sources Multi synergic are completed with a monitoring system of the machine conditions in order to avoid failure in the machine and in the welding.

In particular the alarms involve in:

Power supply quality in the voltage, in the missing phase, in the frequency.

Output welding conditions, short circuit or welding over limits Inverter over heating or over load or over current.

Auxiliary electronic warning and failure wire feeder status water cooling unit status communication with the external wire feeder.

REFER TO THE TROUBLESHOOTING, PARAGRAPH FOR THE DETAILS

8. POWER SUPPLY QUALITY IN THE VOLTAGE, IN THE MISSING PHASE, IN THE FREQUENCY:

The tri-phase welding generators have an input voltage of 400V (min 340V – max 480V). MULTI SYNERGIC versions can be supplied with motor generators and/or long cables (within the min/max input voltage limits).

In case current exceeds the mentioned limits (current peaks), machine functions stop and display shows the detected current peak.

Reset the machine by switching the main ON/OFF knob.

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

In the case of shift of supply net frequency the machine is stopped and the appropriate alarm is shown in the display (this case can occur when the supply is coming from motor generator and the the frequency goes outside the limits of 50-60 Hz.

9. OUTPUT WELDING CONDITIONS, SHORT CIRCUIT OR WELDING OVER LIMITS

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

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

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

The “anti sticking” icon lights too.

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

Reasons may be found on:

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

- damaged cables, with insulation losses, etc.

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

The MULTI series generators are characterised by its ED factor – 40% at 40°C and power supply may, in certain cases, be sufficient for this output but the used can adjust higher power output causing damages on the existing supply network. (or can use long interconnecting cable at maximum output current).

The MULTI SYNERGIC series controls regularly the output power Vs the input power value and in case of any discrepancy the welding stops and the display will shows:

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

INVERTER OVER HEATING OR OVER LOAD OR OVER CURRENT

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

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

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

ALL OL

10. AUXILIARY ELECTRONIC WARNING AND FAILURE

The Internal electronic is governed by software and when errors come from the execution of the cycles the display shows the alarms that can be ALL MEM, ALL TAB, I2C OCC, when those alarms occurs may be the machine still works, refer to the troubleshooting for the solution.

WIRE FEEDER STATUS

The wire feeder is digitally controlled, and ever, the wire speed has the right value, in the case that something doesn't works properly two alarms indicates the kind of failure :

ALL ENC and ALL BRA that means a wrong or missing speed or a wrong or missing brake status of the motor at the end of the welding, refer to the troubleshooting for the solution.

11. WATER COOLING UNIT STATUS

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

The cooling unit pump is activated switching the torch trigger and turns off after some time that the welding job end.

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

ALL h2o

Reset the machine switching the main knob ON/OFF.

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

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

12. COMMUNICATION WITH THE EXTERNAL WIRE FEEDER

The external wire feeder can be connected to the connectors of the back panel of the machine, the machine recognise the wire feeder and starts to communicate.

The control from the machine is passed to the wire feeder when the torch switch of the wire feeder is pressed or when one of the pushbuttons of the wire feeder is touched.

When an error in the communication between the machine and the wire feeder appear, the two display of the wire feeder show thee lines instead the values, this problem often occurs when the interconnecting cable connectors are loose or internal wires of the interconnecting cable are open.

13. ACCESSORIES

The Multi synergic series has the capability to recognise the accessory connected and install it. The external wire feeder can be connected through the interconnecting cable and the machine recognise it and switch from internal control to wire feeder control just using the torch switch or with a simple touch in the wire feeder or machine control. The interconnecting cable is recognised in its impedance and automatically the parameter make a compensation in order to grant the same results also with different length of the cables.

Digital torches, MIG or TIG can be installed also in a second time, the process recognise their presence and start to work in the SMART mode.

Water cooling unit can be installed with a simple operation to put the power source over it and connect the cable. The process recognise it and start to drive the water cooler in MIG or TIG, only during the welding and control the flow rate of the cooling liquid. Remote control as manual or foot control can be connected in the front of the machines and gives the adjustment in the main parameter without any extra setting by the user. Digital remote control can be connected in the wire feeder, they work in simple way, giving to the user a powerful extra control up to a smart interface to mechanical automatised applications.

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14. MAIN FEATURES MULTI SYNERGIC 280 :

DESCRIPTION	MULTI SYNERGIC 280K
Power supply (+15% / -15%) V	400 3 Ph
Fuses (Tig) A	T12
Rated duty cycle in 10 min 40 °C	40% ED
Rated secondary current A	280
Permanent sec. current 100% A	180
Rated Power (Stick)KVA	12
Permanent power 100% (Stick) KVA	6,1
Overload protection	Thermal
Regulation field in STICK mode A	20 ÷ 280
Regulation field in TIG DC mode A	5 ÷ 280
Regulation field in MIG-MAG mode A	20 ÷ 280
No load voltage (S) (K) V	68
Max secondary current A	400
Short circuit limit A	520
Stick electrode possibility mm	5
Protection class	Ip 21-S
Insulation class	H
Hot Start	OK
Anti Sticking	OK
Arc Force	OK
Tig ignition	Lift Arc
Remote control receptacle	Analog/and digital
VRD Voltage reduction device 20V	OK.
Water cooling unit	NO
Gas botthe trolley	Built in
Width-Height-Length mm	310 x 430 x 550
Weight Kg	60

The base machine includes the trolley and the bottle support, water cooling cannot be used in the Multi Synergic 280, the accessories as external wire feeder and interconnecting cable can be used at any time as expansion. The other accessories as digital torches and DRC can be connected at any time.



Three phase multifunction developed for light in-dustrial applications. The base machine is equipped with robust digital controlled wire feeder built in, the trolley and ro-bust gas bottle support. Especially appreciate in the synergic MIG-MAG applica-

tions with fast mig characteristic and for its easy to use au-to-learning front panel. Offer also the very often used pulse mig programs for aluminium wire 1,2mm, stainless steel 1,0 mm, mild steel 1,0 mm and silicon bronze 0,8 mm for these applications that needs something more, (the base program use the plus concept technology with double pulse capability).

Included the welding process of Stick electrode and TIG features with manual adjustment or synergic direct thickness adjustment.

This version of Multi Synergic 280 has the second wire feeder connected with five meters interconnecting cable.

The external wire feeder can use a different process with also different wire and gas from the built in wire feeder and allow an easy change of the work in use.

The selection between the two process, the internal or the external is done only by pressing the torch switch of the process selected.

Different length of interconnecting cable can be selected from the accessory list.

15. MAIN FEATURES MULTI SYNERGIC 350 :

DESCRIPTION	MULTI SYNERGIC 350K
Power supply (+15% / -15%) V	400 3 Ph
Fuses (Tig) A	T20
Rated duty cycle in 10 min 40 °C	40% ED
Rated secondary current A	350
Permanent sec. current 100% A	225
Rated Power (Stick)KVA	19
Permanent power 100% (Stick) KVA	9
Overload protection	Thermal
Regulation field in STICK mode A	20 ÷ 350
Regulation field in TIG DC mode A	5 ÷ 350
Regulation field in MIG-MAG mode A	20 ÷ 350
No load voltage (S) (K) V	72
Max secondary current A	600
Short circuit limit A	650
Stick electrode possibility mm	6,0
Protection class	Ip 21-S
Insulation class	H
Hot Start	OK
Anti Sticking	OK
Arc Force	OK
Tig ignition	Lift Arc
Remote control receptacle	Analog/and digital
VRD Voltage reduction device 20V	OK.
Water cooling unit	OPTIONAL.
Gas botthe trolley	Built in
Width-Height-Length mm	310 x 430 x 550
Weight Kg	65

The base machine includes the trolley and the bottle support, water cooling cannot be used in the Multi Synergic 350 base but must be chosen the Multi Synergic 350W that have built in the water cooling unit , the accessories as external wire feeder and interconnecting cable can be used at any time as expansion. The other accessories as digital torches and DRC can be connected at any time.



Complete version of the Multi synergic 350 for universal applications with the the water cooling unit built in the bottom side of the trolley and the second wire feeder connected with five meters interconnecting cable.

The external wire feeder can use a different process with also different wire and gas from the built in wire feeder and allow an easy change of the work in use.

The external wire feeder can use a water or air cooled torch.

The selection between the two process, the internal or the external is done only by pressing the torch switch of the process selected.

Different length of interconnecting cable can be select-ed from the accessory list.

This version of Multi Synergic 350W has the water cooling unit built in the bottom side of the trolley.

The water cooling system can be used in MIG-MAG and pulse mig process and also in the TIG applications . Special controls drive the water cooling unit only during the welding and monitor the efficiency of the cooling liq-uid flow.

High power 350 three phase Multifunction with the latest innovation of the Multi Synergic family.

With its 350A, 40% duty cycle is ideal for Industrial metal fabrications. The base machine is equipped with robust digital controlled wire feeder built in, the trolley and robust gas bottle support.

Especially appreciate in the synergic MIG-MAG applications with fast mig characteristic and for its easy to use au-to-learning front panel.

Offer also the very often used pulse mig programs for alu-minium wire 1,2mm, stainless steel 1,0 mm, mild steel 1,0 mm and silicon bronze 0,8 mm for these applications that needs something more, (the base program use the plus concept technology with double pulse capability.

Included the welding process of Stick electrode and TIG features with manual adjustment or synergic direct thick-ness adjustment.

16. MAIN FEATURES MULTI SYNERGIC 500

DESCRIPTION	MULTI SYNERGIC 500K
Power supply (+15% / -15%) V	400 3 Ph
Fuses (Tig) A	T25
Rated duty cycle in 10 min 40 °C	40% ED
Rated secondary current A	500
Permanent sec. current 100% A	320
Rated Power (Stick)KVA	32
Permanent power 100% (Stick) KVA	15
Overload protection	Thermal
Regulation field in STICK mode A	20 ÷ 500
Regulation field in TIG DC mode A	5 ÷ 500
Regulation field in MIG-MAG mode A	20 ÷ 500
No load voltage (S) (K) V	74
Max secondary current A	800
Short circuit limit A	850
Stick electrode possibility mm	6,0
Protection class	Ip 21-S
Insulation class	H
Hot Start	OK
Anti Sticking	OK
Arc Force	OK
Tig ignition	Lift Arc
Remote control receptacle	Analog/and digital
VRD Voltage reduction device 20V	OK.
Water cooling unit	OPTIONAL.
Gas botthe trolley	Built in
Width-Height-Length mm	310 x 430 x 550
Weight Kg	85

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The base machine includes the trolley and the bottle support, water cooling cannot be used in the Multi Synergic 500 base but must be chosen the Multi Synergic 500W that have built in the water cooling unit , the accessories as external wire feeder and interconnecting cable can be used at any time as expansion. The other accessories as digital torches and DRC can be connected at any time.

Complete version of the Multi synergic 500 for univer-sal and heavy applications with the the water cooling unit built in the bottom side of the trolley and the sec-ond wire feeder connected with five meters intercon-necting cable.

The external wire feeder can use a different process with also different wire and gas from the built in wire feeder and allow an easy change of the work in use.

The external wire feeder can use a water or air cooled torch.

The selection between the two process, the internal or the external is done only by pressing the torch switch of the process selected.

Different length of interconnecting cable can be se-lected from the accessory list.

This version of Multi Synergic 500 has the water cool-ing unit built in the bottom side of the trolley.

The water cooling system can be used in MIG-MAG and pulse mig process and also in the TIG applications .

Special controls drive the water cooling unit only dur-ing the welding and monitor the efficiency of the cool-ing liquid flow.

Three phase multifunction developed for heavy indus-trial applications with 500A at ED 40%. Complete manual and synergic multifunction with se-lection of MMA, TIG, MIG MAG ideal for any kind of application.

The base machine is equipped with robust digital con-trolled wire feeder built in, the trolley and robust gas bottle support.

Especially appreciate in the synergic MIG-MAG appli-cations with fast mig charac-teristic and for its easy to use au-to-learning front panel.

Offer also the very often used pulse mig programs for aluminium wire 1,2mm, stain-less steel 1,2 mm, mild steel 1,2 mm and silicon bronze for these applica-tions that needs something more, (the base program use the plus concept technology with double pulse capabi-lity).

Included the welding process of Stick electrode and TIG features with manual ad-justment or synergic direct thickness

17. FRONT PANEL FUNCTIONS AND ADJUSTMENTS

Area where are selected the manual mode or, in Synergy Mode, the material to be welded or the type of electrode used in MMA mode.

Area where are selected, in Synergy Mode, the size of the wire, or the size of electrode in MMA mode or the diameter of tungsten electrode in TIG mode.

Main display, show, the set and real voltage, in MIGMAG manual mode, or the set and real current in the other setting. In Alarm mode gets the ALL indication.

Second display, shows the set wire speed and real current in Manual MIG-MAG mode, or the voltage, the material thickness, the inductance, the frequency of double pulsation.. In function of the selected icon through the forth push button.

Warning indications for VRD, over heating, output in short circuit...

Torch switch cycle icons that can be selected through the fifth push-button between:
Timer, simple two step, two step with slopes, simple 4 step and 4 step with slopes.

Forth pushbutton, through this push-button it is possible to adjust other parameters that are in function with the working modality chosen with the first pushbutton.

Fifth pushbutton.
Through this pushbutton is possible to select the torch switch cycle: 2T; 2TS(with slopes); 4T; 4TS (with slopes); Timer.
In MMA is also possible select/de-select the function VRD holding the pushbutton for 5 seconds.

Work mode in actual use. The icons light on when selected, between : Mma; TIG, TIG PULSE; MIG and MIG PULSE.

First pushbutton MODE, allow to change the working mode. The working MODE are: Mma; TIG, TIG PULSE; MIG and MIG PULSE.

Second pushbutton SYNERGIC Through this pushbutton, it is possible to the modality manual or synergic selecting the kind of material under welding.

Third push button Though this pushbutton is possible to select that diameter, in Mma the size of electrode, in TIG the tungsten, and in Mig and Pulse Mig the wire diameter.

This lamp, shows if the digital torch adjustment select jobs or adjust the welding parameter in analog way.

Job position, any welding process can have its own-jobs levels. To select jobs, the digital torch must be used.

Main knob Modify the main in welding: In MMA, TIG, Synergic MIG and Puls MIG adjust the current, in Manual MIG adjust the voltage.

Secondary knob. Adjust the second level parameters: MMA, Arc-force TIG, nothing Pulse TIG, frequency Manual MIG, wire speed Synergic Mig and Puls MIG, the arclenght



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18. FRONT PANEL LAYOUT

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FRONT PANEL

TIG TORCH SWITCH

REMOTE CONTROL SOCKET

MIG TORCH

POSITIVE OUTPUT

INTERNAL WIRE FEEDER ACCESS

NEGATIVE OUTPUT

TIG GAS OUT

19. MANUAL ELECTRODE SETTING. CONNECT THE WORK PIECE CABLE TO THE NEGATIVE RECEPTACLE, AND THE ELECTRODE OLDER T THE POSITIVE RECEPTACLE



1
GB SELECT MMA IN MANUAL:
 With the first push button, select STICK
 With the second push button select MANUAL
 With the main knob, adjust the welding current.



2
ADJUST THE WELDING DYNAMIC:
 With the forth pushbutton select the dynamic icon. The second display show the current set value.



3
ADJUST THE WELDING DYNAMIC:
 With the second knob, adjust the desired value
 The dynamic can be adjusted from 0 to 100%
 Dynamic increase the current for arc striking
 Dynamic increase the current during drop transfer.



4
SELECT MMA IN SYNERGYC:
 With the second push button, select the type of the electrode.



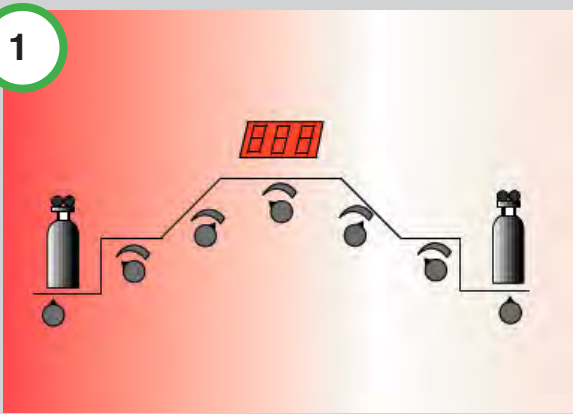
5
SELECT MMA IN SYNERGYC:
 With the third pushbutton select the size of the electrode.



6
ADJUST THE WELDING CURRENT AND DYNAMIC:
 With the FIRST knob, adjust the desired value,
 the second display shows the material thickness.
 Dynamic is automatic, but can be increased or
 Decreased in % as the operator desire.

20. TIG SETTING. CONNECT THE GAS INPUT TO THE GAS REGULATOR AND ADJUST THE GAS FLOW BETWEEN 6 TO 8 LITRES PER MINUTE.

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



GB Full control of the cycle and easy access control. Pre-gas; initial current; up slope; down slope; final craterfiller current; post gas pulser TIG version.



2 SELECT MANUAL TIG MODE:
With the first push button, select TIG



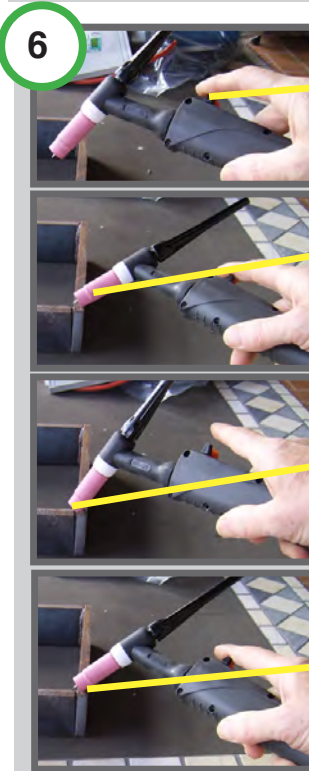
3 SELECT THE TORCH SWITCH CYCLE:
With the fifth push button select the torch switch Cycle.
If the timer cycle is selected, than the time is adjustable with the selection trough the forth Push button.



4 ADJUST THE SECOND LEVEL PARAMETER
With the forth push button select the other welding parameter and adjust, with the second knob, to the desired value PRE GAS; POST GAS, icons light on and the Second display shows the value.



5 ADJUST THE TIG CYCLE PARAMETERS:
When a cycle 2 step with slopes or 4 step with Slope, is selected, the forth knob has also the Capability to select the start current, up slope, down slope and stop current.
All the data are stored in the internal memory



6 push the torch trigger

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

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

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

21. MANUAL PULS TIG SET



1 SELECT MANUAL PULSE TIG MODE:
With the first push button, select TIG PULSE.



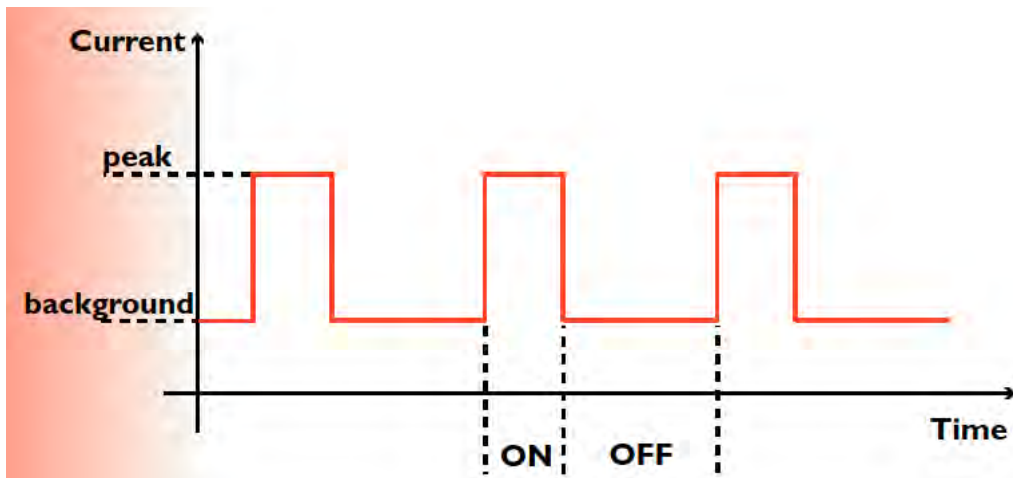
2 SELECT ALL THE OTHER PARAMETERS:
PULS TIG is a different session and have its own Torch switch cycle, and second level parameters, they will be recovered when Manual PULS TIG is selected, adjust all off them, as in Manual Tig.



3 SELECT THE FREQUENCY:
With the forth push button is possible also to select the frequency of pulsation and adjust it The adjustment is from 0,2 Hz up to 2 KHz.



4 SELECT PULSE TIG PARAMETERS:
For the expert welders is also possible to adjust The parameters of pulsation as :
I LOW (background current during pulsation) and Balance (ratio between ON and OFF in the pulse). The peak pulse is self calculate by the processor



22. SYNERGIC TIG SETTING



1 SELECT SYNERGY TIG OR PULSE MODE:
With the first push button, select TIG or TIG PULSE with the second push button select the material in welding.



2 COMPLETE THE TIG SYNERGY SELECTION:
with the third push button select the diameter of the tungsten electrode of the tig torch. From this time all the adjustment are automatically done from the synergy selection.



3 Adjust the welding current , in the little display
The value of the suggested thickness of the welding material is proposed. The selection of the Torch switch cycles is the same of the manual setting.



4 The second level parameters change as the set current change giving ever the optimal value.
If the expert user need to increase or decrease the synegetic value of one of these values, push the forth push button and select the value to be changes.



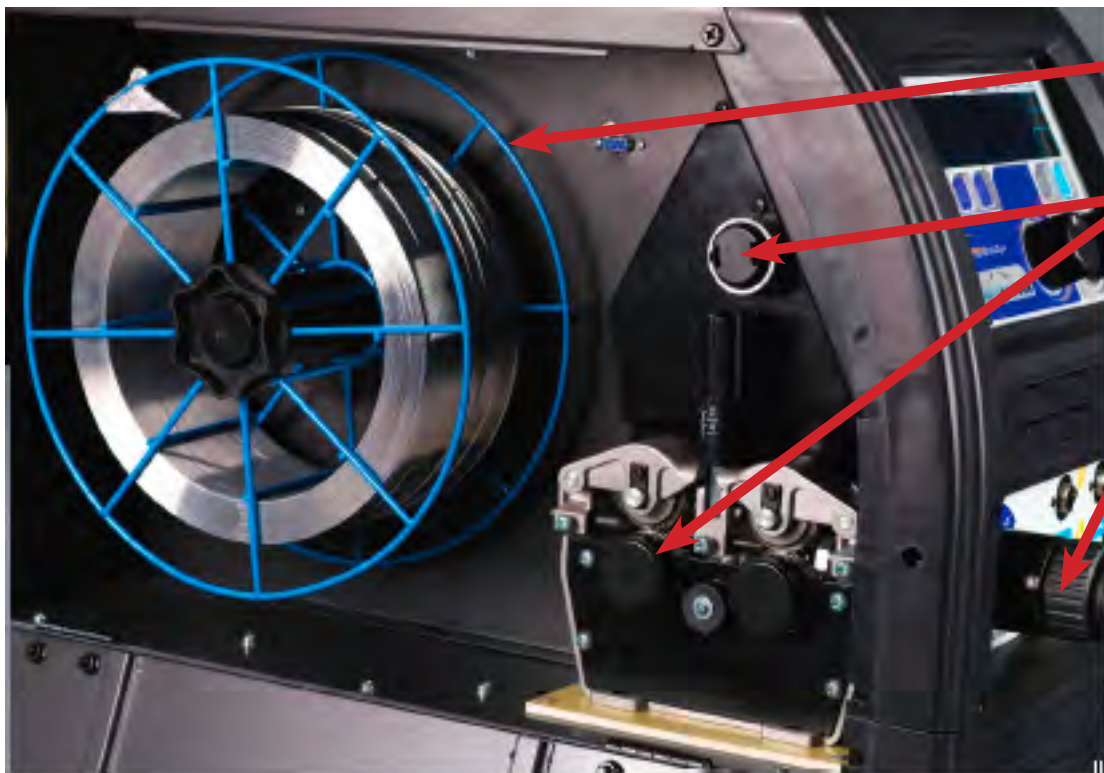
5 Once selected the value that need to be changed, Use the second knob to adjust.
The little display, shows the correction value in % That can increase or decrease up to 100% the current synergetic value.



6 In this example, the down slope synergetic value is increased of 6%.
The value is stored in the internal memory.

23. MIG-MAG WELDING:

MULTI SYNERGIC POWER SOURCE HAS THE POSSIBILITIES TO PERFORM MIG-MAG WELDING IN MANUAL OR IN SYNERGY, FOR ADVANCED APPLICATION, THERE ARE ALSO THE POSSIBILITIES TO USE THE PROCESS PULS MIG FOR THE MOST COMMON MATERIALS.



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

a) match the driving rolls located into the driving motor with your wire type and size.

b) insert the wire into the driving rolls and push it till the machine euro adaptor. Lock the driving rolls properly.

c) connect the mig torch to the machine euro adaptor.

d) press the torch trigger: wire drives for 5 sec. and stops once the display will light "INC".

e) release the torch trigger and press it again: wire drives now into the torch at 10 mt/min, until trigger remain pressed.

f) Fit the shielding gas hose in to the back panel of the machine (gas nipple marked with MIG).

Adjust the flow rate between 16/22 lt/min. depending on the welding task.

g) connect the earth clamp plug to the negative polarity.

h) adjust the welding parameter in one of the following three mode : MANUAL, SYNERGY OR PULSE MIG.

24. MIG-MAG MANUAL



1

SELECT MIG-MAG IN MANUAL:
 With the first push button, select MIG With the second push button select MANUAL With the main knob, adjust the welding voltage The main display shows the preset voltage



4

SELECT THE TORCH SWITCH CYCLE:
 With the fifth push button select the torch switch Cycle. If the timer cycle is selected, than the time is adjustable with the selection trough the forth Push button



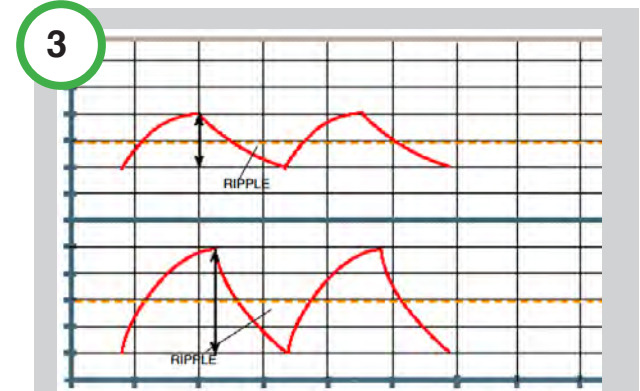
2

SELECT MIG-MAG IN MANUAL:
 With the second knob, adjust the WIRE SPEED The second display shows the preset speed.



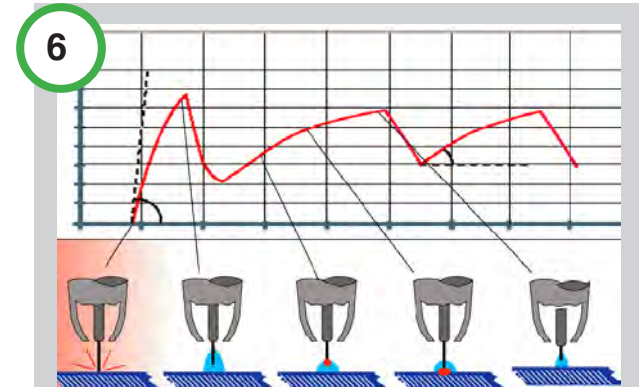
5

ADJUST THE SECOND LEVEL PARAMETER
 With the forth push button select the other welding parameter and adjust, with the second knob, to the desired value PRE GAS; POST GAS, icons light on and the Second display shows the value.



3

ADJUST THE WELDING DYNAMIC:
 With the forth push button is possible to select the Inductance icon, the display shows the preset value Between 1 to 20 (20 is maximum inductance value) Adjust the inductance according to the application.



6

ADJUST THE THE PARAMETERS:
 During the welding, the real voltage and real Current are shown in the two display, adjust the voltage and wire speed up to the optimal transfer Occurs . The inductance has important rules in the Welding result, adjust it as fine control.

25. MIG-MAG SYNERGIC



1
GB SELECT SYNERGY MIG-MAG MODE:
 With the first push button, select MIG With the second push button select the material in Welding.



2
 Complete the MIG Synergy selection:
 With the third push button select the diameter of The wire in use.. From this time all the adjustment are automatically done from the synergy selection.



3
 Some synergic programs has more than one version In this during the selection of the wire diameter. The main display shows an indication about this Program, use the main knob to select the desired ones.

After 3 seconds of the adjustment trough one of the two knobs, the right display show the wire speed auto selected for the setting parameter.



4
 Adjust the welding current , in the little display The value of the suggested thickness of the welding material is proposed.



5
 With the second knob, the arc length can e adapted to the welding, The adjustment of the arc length is +/- 20 and a symbol of the arc length light on during the regulation



6
 To modify the second level parameters, select with the forth push button. Once selected, use the second knob to adjust. The little display, shows the correction value in % That can increase or decrease up to 100% the current synergic value.

26. PULS MIG SYNERGIC

1



SELECT PULS MIG- MODE:

GB

There are only five puls program in Multi Synergic Starting from synergic program, push the first push button, if the program exist, the puls icon light on.

4



With the second knob, the arc length can be adapted to the welding, The adjustment of the arc length is +/- 20 and a symbol of the arc length light on during the regulation

2

Multi Synergic 280	Multi Synergic 350	Multi Synergic 500
puls mig program	puls mig program	puls mig program
SG2 1.0 mm	SG2 1.0 mm	SG2 1.2 mm
AL 5%Si 1.0 mm	AL 5%Si 1.2 mm	AL 5%Si 1.2 mm
AL 5% Mg 1.0 mm	AL 5% Mg 1.2 mm	AL 5% Mg 1.2 mm
SST 1.0 mm	SST 1.0 mm	SST 1.2 mm
CU Si3 0.8 mm	CU Si3 0.8 mm	CU Si3 0.8 mm

SELECT PULS MIG- MODE:

If the program in MIG is not included in one of the Table, the choose of pulse mig cannot be completed.

3



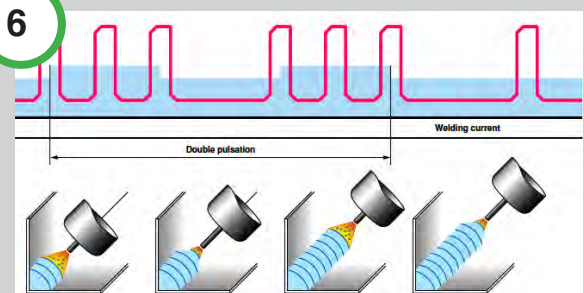
Adjust the welding current , in the little display The value of the suggested thickness of the welding material is proposed.

5



To modify the second level parameters, select with the forth push button. Once selected, use the second knob to adjust. The little display, shows the correction value in % That can increase or decrease up to 100% the current synergic value.

6



To select the double pulse, push the forth push button up to the icon FREQUENCY light on and Adjust the double frequency level with the second knob.

Any program of Pulse mig can be switched in double pulse at any time without the need to change the program.

All the adjustment de-scribed for the pulse mig are the same, the selection for doublepulsation is like a switch that allow to pass from a kind of continuously pulse mig welding to a pulsation with a variable frequency from 0,5 to 4 time per seconds, all the other parameters of double pulsation are set in automatic,.

NOTE: for expert welders it is possible to modify some parameters of double pulsation for special application, but the optimal regulation is the default one given from the synergy. All the program are store into session, these session are:

ELECTRODE session

TIG session

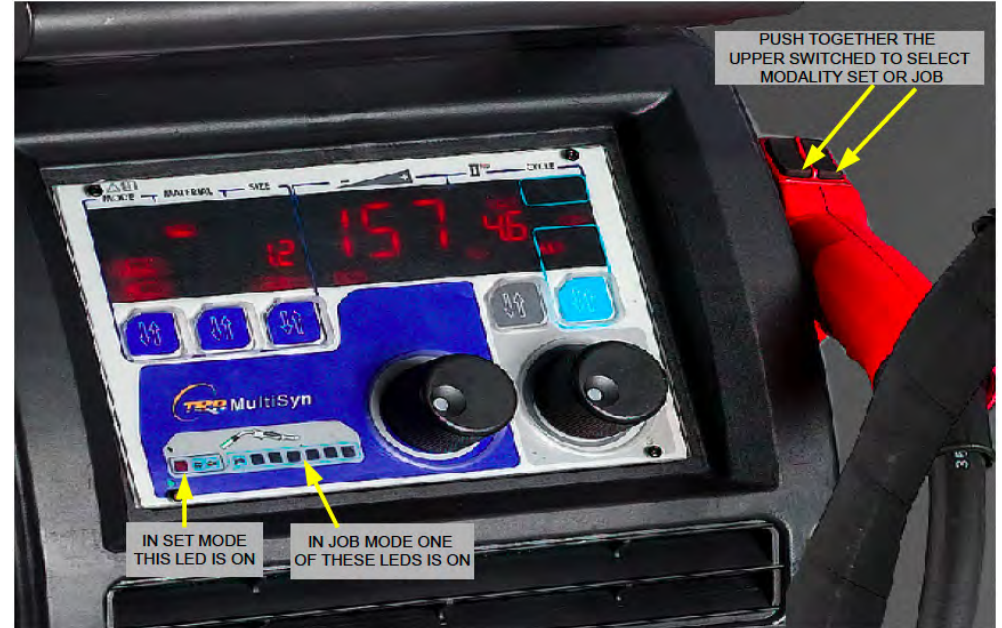
PULSE TIG session

MANUAL MIG-MAG session

PULSE MIG session

All the data, from the main parameter and torch cycles to the “second level user changes”, are stored inside the sessions.

GB The setting parameter and this session come back if selected with the first pushbutton of the welding modality or when the mig torch switch is pressed, for example after a welding in stick electrode, if the mig torch switch is pressed, the session became the last selected with the last parameters (in this case MIG-MAG manual with proper setting of voltage, wire speed,...) This setting is also stored as job point and can be selected between the six jobs of the session of MIG_MAG (refer to the job session).



Special torches can be used in the multi Synergic.

In TIG, when the digit torch is used, it is possible to adjust the welding current directly from the push buttons of the torch, in synergy mode, all the parameters changes according to the synergy selection. This kind of solution helps the user that don't need to adjust the other parameters at the new current set.

In MIG, the use of the DIGIT MIG torch allow the direct setting from the handle of the torch. The DIGIT MIG Torch has four push buttons in the top of the handle.

It is enough to connect the torch to the Binzel connector and than the machine recognise the external control and accept the remote adjustment.

There are two mode of working with the torch:

Analog adjustment

Jobs adjustment

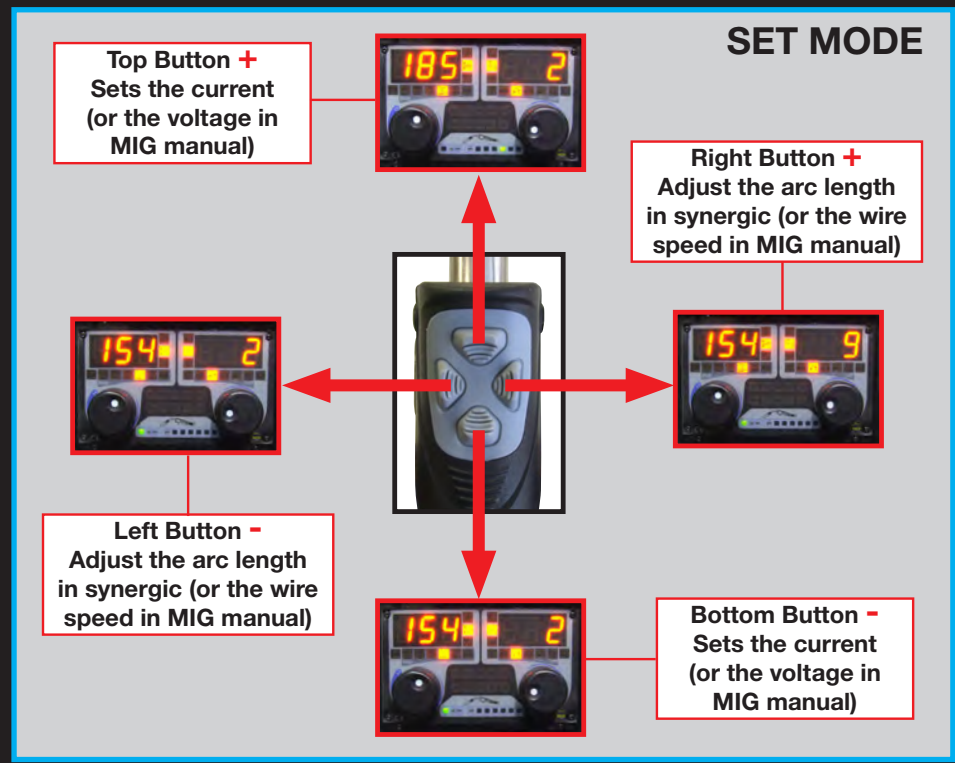
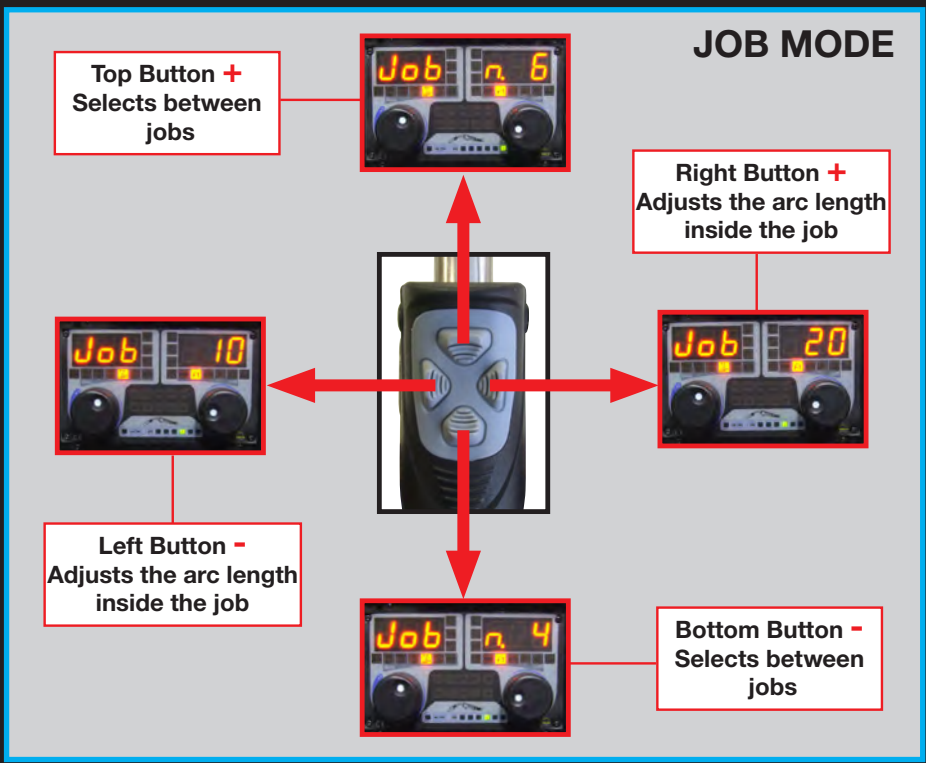
NOTE: The torch adjust trough its pushbuttons also during welding, but 4 step or 4 step + slopes cycles must be used.

MULTI-SYNERGIC - LOGIC TORCH OPERATION



UNIMIG

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





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