

WELDING MACHINES

aXe 320 double pulse (also HIGHT SPEED)

OPERATING MANUAL

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1. INTRODUCTION

Dear consumer,

Company ALFA IN a.s. thanks you for buying our product and believe that you will be satisfied with our machine.

Welding machine may be operated only by trained persons and only in the technical provisions. Company ALFA IN a.s. accept no responsibility for damage caused by improper use. Before commissioning please read carefully this manual  .

The machine complies with the appropriate CE mark.

For maintenance and repairs, use only original spare parts. There is of course a complex of our services.

Welding machine **aXe 320 double pulse** is designed for MIG / MAG continuous and pulse, MMA and gouging. By the machine **aXe 320 double pulse** you can weld different types of connections (butt, single-sided, double-sided, fillet, lap, etc.) using wire from diameter 0.8 to 1.2 respectively to 1.6 mm of different metals and alloys (carbon and alloy steels, aluminum alloys, etc.). They are designed primarily to medium and large industrial facilities where are high demands on ease of use, reliability and productivity with prolonged use.

Welding machines **aXe 320 double pulse** are available in:

1. aXe 320 double pulse COMPACT (Gas or H₂O, HIGHT SPEED option) compact welding machine and the option of a water cooled torch

We reserve the law of adjustments and changes in case of printing errors, change of technical paramaters, accessories etc. without previous notice. These changes may not be reflected in the manuals for use in paper or electronic form.



2. SAFETY PRECAUTIONS

1. Use and maintenance of welding and cutting machines can be dangerous. Please draw user's attention to follow the safety precautions to avoid injuries. Welding and cutting machines must be used appropriate and only by specialist staff. Please inform yourself constantly about the valid safety precautions and regulations of accident prevention by working with this machine*.
2. Remove all flammable material from the welding area for fire prevention before welding.
3. Do not weld at containers which were filled up before with flammable materials (fuel).
4. All inflammable material in the welding area which could be inflamed by sparks must be removed.
5. Check after welding the place conforming UVV.
6. Do not expose the unit to rain, steam and do not spray water in it.
7. Do not weld without protection shield. Keep attention to protect other persons in the welding area against arc-rays.
8. Please use absorbers or other systems to absorb the gases.
9. It is not possible to absorb all the gases correctly please use a breathing apparatus.
10. Stop operation immediately at a defect or damaging of the mains cable. Do not touch the cable. Unplug the unit before each service or repair. Do not use the machine if the mains cable is defect.
11. Place an extinguisher near the welding area.
12. Check the welding area against fire after welding.
13. Never try to repair a defect pressure reducer. Replace the defect one.
14. Keep attention to connect the ground cable near the welding location. Welding current through chains, ball-bearing or steel-cables may destruct or melt it.
15. Secure yourself and the unit at higher or inclinational places.
16. Connect the unit only at mains with correct connection to ground/earth and at prolongations and sockets too.
17. Wear correct protective clothing, gloves and leather apron.
18. Protect the welding area with curtains or mobile walls against rays.
19. Do not thaw frozen waterpipes or conductions with this unit.
20. In high electrical risk areas (in confined spaces) it is only allowed to use machines with –sign S.
21. Switch off the machine at breaks and close the valve of the gas cylinder.
22. Secure the gas cylinder with a chain against falling over.
23. Please take off the gas cylinder from the machine for transportation.
24. Disconnect the plug from the mains before changing the welding

area or repairs at the machine.

*) Please follow the current safety regulations corresponding to your country.

UNIT PROTECTION

1. This unit is protected electronically against overloading.
2. Close the side lid before welding.
3. Connect the workpiece with the groundcable to the unit.
4. Remove welding spatter from the inside of the gas nozzle with a special pair of pliers. Spray with anti spatter spray inside the gas nozzle to avoid adherence of spatters. Spray sloping to avoid the obstruction of the gasoutlet.
5. At transportation of the unit only use the purposed transportation facilities, do not use a fork-lift truck or something similar.

EMISSION OF SOUND

The sound level of the unit is smaller as 70 dB (A) measured at standard load conforming EN 60 974 at the max. workpoint.

NOTE:

Device complies with IEC 61000-3-12.

ELECTROMAGNETIC COMPATIBILITY

The welding device is in terms of interference designed primarily for industrial areas. It meets the requirements of EN 60974-10 class A and it isn't designed for using in residential areas, where the electrical energy is supplied by public low-voltage power supply network. It can be here potential problems with ensuring of electromagnetic compatibility in this areas, due to interference caused by power lines as well as the radiated interference.

During operation, the device may be the source of interference.

 Caution 

We warn users, that they are responsible for possible interference from welding.

3. TECHNICAL DATA

Method		MIG/MAG
Mains voltage	V/Hz	3x400/50-60
Welding current range	A	20 - 320
Open-circuit voltage U_{20}	V	71,0
Mains protection	A	20 @
Max. effective current I_{1eff}	A	14,2
Welding current (DC=100%) I_2	A	230
Welding current (DC=60%) I_2	A	280
Welding current (DC=x%) I_2	A	45%=320
Protection		IP 23S
Standards		EN 60974-1, EN 60974-10 cl. A
Dimensions (w x l x h) generator	mm	572 x 1035 x 880
Weight - generator /compact	kg	96,8
Wire speed	m/min	1 - 20
Spool diameter	mm	300
Spool weight	kg	18
Cooling power (Q=1l/min)	kW	0,74
Total liquid content	l	3,0
Max. pressure	Bar	3,5
Max. flow	l/min	8



Attention

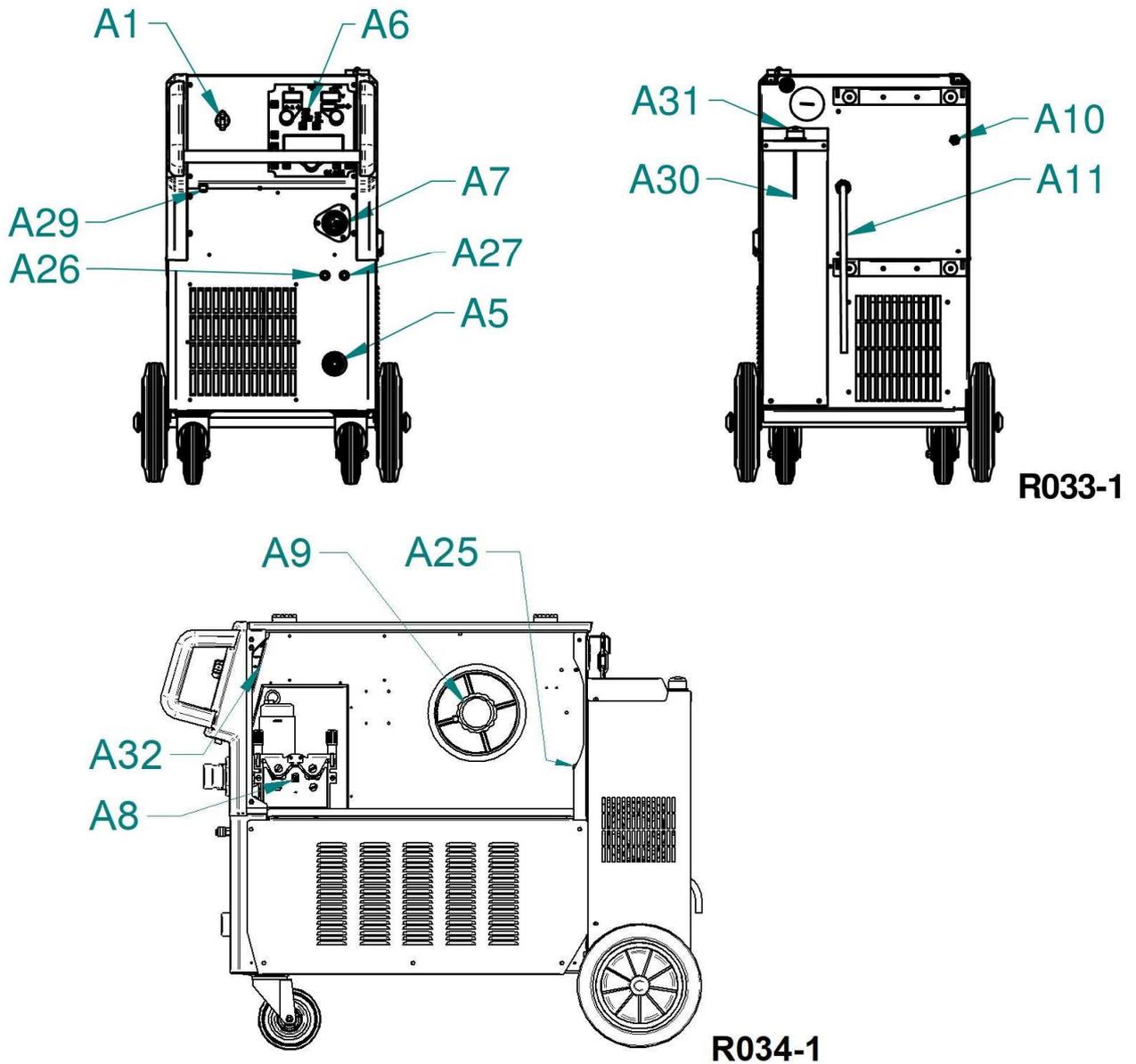
Given the size of the installed capacity, the connection of the device to the power supply must be approved by distribution companies.



Attention

Users are reminded that they are responsible for any interference from welding.

4. MAIN PARTS OF THE MACHINE



Picture 1 - The main part

A1	ON/OFF switch
A5	Quick connector (-)
A6	PCB control panel
A7	EURO connector
A8	Wire Feeder
A9	Spool Holder
A10	Solenoid Valve
A11	Mains Cable
A25	Fuse 500mA 6x32
A26	Adaptor W (red)

A27	Adaptor W (blue)
A29	Connector remote control
A30	CU aXe Cooling unit
A31	Cup
A32	Connector for USB connection

5. ACCESSORIES

INCLUDED IN DELIVERY

1. Power generator
2. Feed unit
3. Connecting cable
4. 3 m long earthing cable with clamp
5. Rolls for wire with diametres from 1,0 to 1,2 mm
6. Reducting for the spool wire 5 kg and 18 kg
7. Hose for gas connection

ACCESSORIES ON REQUEST

1. Pressure regulator
2. Set of four crane wheels (code 3.0199)
3. Gas bottle
4. Spare parts for the torch
5. 4 – 5 m long earthing cable
6. Rolls 0,6 – 0,8, 1,0 – 1,2, 1,4 – 1,6, 1,6 – 2,4
7. Remote control UP-DOWN

TORCHES ON REQUEST

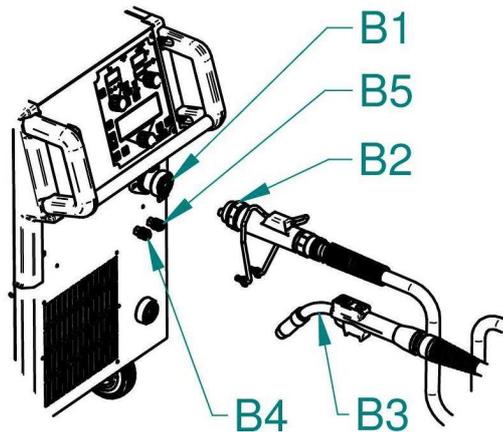
1. Torches 3, 4, 5 m UP-DOWN
2. Torch PUSH-PULL up to 25 m

6. GETTING STARTED

Getting started must be consistent with technical data and conditions of use.

TORCH INSTALATION

1. Never connect the torch in the machine if it's still running!
2. Connect the EURO connector male **B2** to EURO connector **B1**. Then, connect Quick connector torch W (red) **B6** to the Quick connector W (red) **B4** and the Quick connector torch W (blue) **B7** to the Quick connector W (blue) **B5**
3. When connecting a gas-cooled torch, it is necessary to interconnect the quick connectors with water hose of the hydraulic circuit. If this condition is not met, it may result in damage to the pump.



Picture 2 – Torch installation

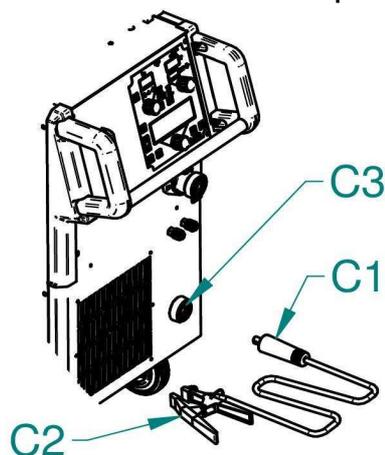
B1	EURO connector
B2	EURO connector male
B3	Torch
B4	Quick connector W (red)
B5	Quick connector W (blue)

EARTHING CABLE CONNECTION

1. Connect the quick connector of the earthing cable **C1** to the quick connector located on the machine **C3** (-), secure it thoroughly by turning it clockwise. Attach the earthing clamp to weldment **C2**.

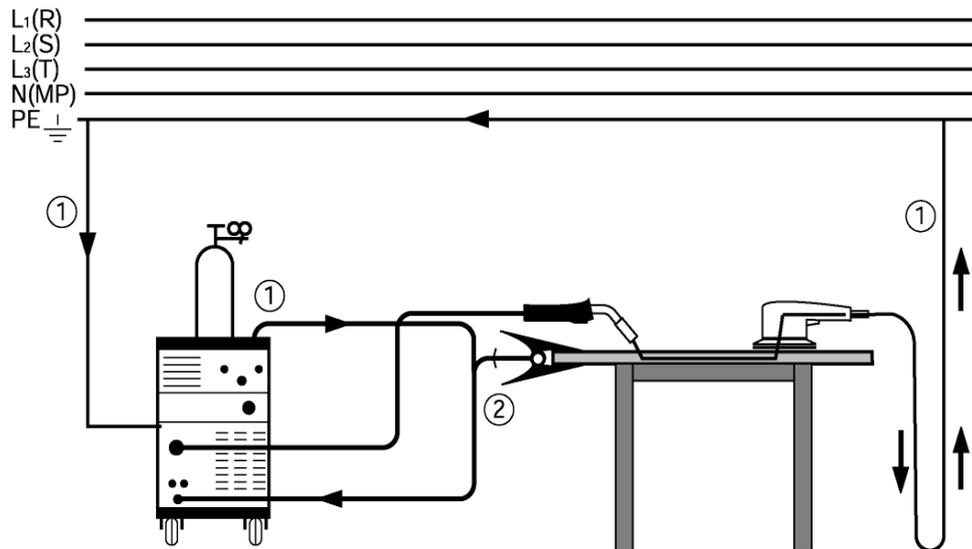
EARTHING CLAMP CONNECTION

1. Attach the earthing clamp near the weld. It is important to ensure that the connection with workpiece is as strong as possible.



Picture 3 – Earthing clamp connection

C1	Quick Connector male
C2	Earthing Clamp
C3	Quick Connector (-)



Picture 4 - Earthing clamp connection

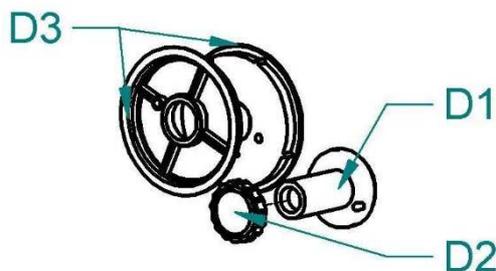
- ① Do not place the earthing clamp on the welding machine or a gas bottle!
- ② Firmly connect the earthing clamp to weldment or welding table.

CONNECTING TO POWER SUPPLY

1. Plug the power plug into the wall socket. Circuit breakers must conform to the technical dates of the machine.

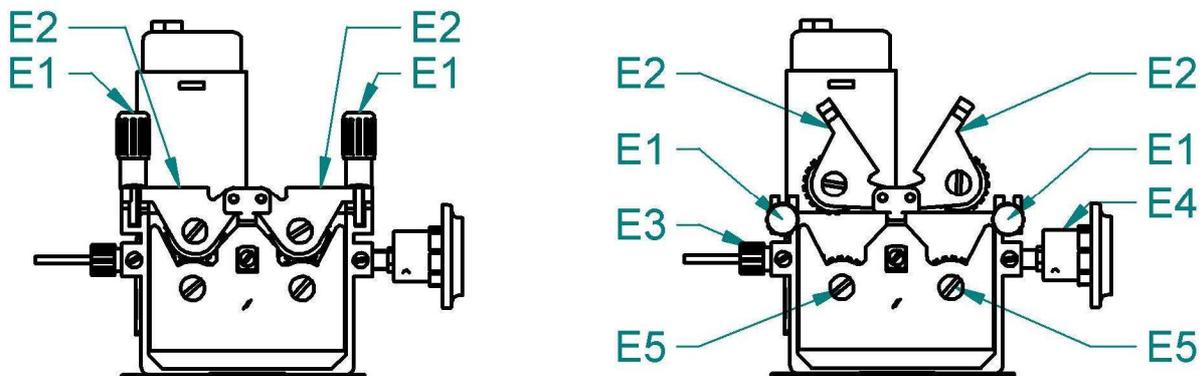
INSERTING THE WIRE

1. Open the side cover of the wire feeder space
2. Put the wire spool on the wire spool holder **D1** using the adapter **D3** and fix it with the fixing nut **D2**
3. Cut off the curved or damaged end of welding wire and lead it through the inlet liner **E3**, and the roll into the liner inside the EURO torch connector (about 5 cm). Make sure, that you use the suitable groove.
4. Put the pressure arm **E2** down in that way, that the teeth or the gear fit and fix it by setting the lever **E1** into vertical position.
5. Adjust the pressure nut that way that it provides constant movement of wire but it does not deform wire.



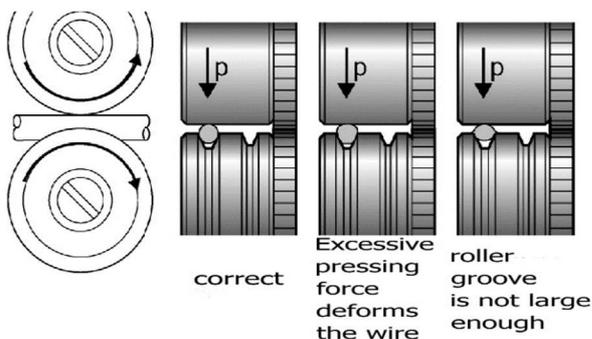
Picture 5 - Spool wire holder

D1	Spool Holder
D2	Nut Spool Holder
D3	Adapter



Picture 6 – Wire feed 4-roller

E1	Fixing shaft
E2	Pressure arm
E3	Liner- Feeder
E4	EURO connector
E5	Roll

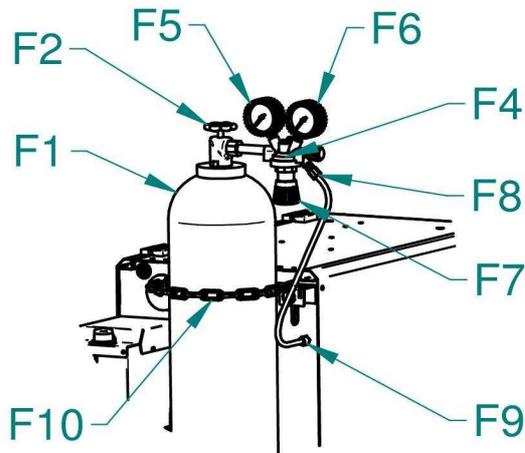


Picture 7 – Roller impact on the welding wire

GAS FLOW

1. Place the gas cylinder on the platform and fix it properly by the fixing chain. We recommend using bolts and nuts to fix it more safely.
2. Connect the pressure reduction valve on the gas cylinder.
3. Connect the gas hose to gas outlet **F8** on the valve and the gas inlet **F9** on the machine
4. Open the **F2** cylinder valve
5. Press the button Gas test **T23** for more then 4 s

- Adjust the amount of gas on the reduction gas valve (it is not a part of the welding machine) by the **F7** adjusting screw



Picture 8 - Adjusting the gas flow

F1	Gas Cylinder
F2	Cylinder Valve
F4	Pressure Reducer
F5	High Pressure Manometer
F6	Low Pressure Manometer
F7	Adjusting Screw
F8	Gas outlet
F9	Solenoid Valve
F10	Chain

COOLING SYSTEM OF THE WATER-COOLED TORCH

- Cooling unit **A30** is located in the rear part of the machine.
- In this ALFA IN machine is the pump seal specially designed for the cooling liquid ACL-10 (pink colour, ordering number: 4600, 5 l canister. Working area – ambient temperature -10 °C to +40 °C).
- When using other liquid, it may cause the leakage of the cooling circuit. The manufacturer's warranty is not applicable to defects in the cooling circuit when using liquids other than ACL-10.
- We recommend replacing the liquid completely in one to three years. The liquid must not be mixed with any other kind of liquid. The process of replacing the liquid can be found on the internet address https://www.alfain.eu/static/_dokumenty/1/2/9/7/1/1/Vymena-chladici-kapaliny1-navod-CZ.pdf
- Liquid level in the tank must be between maximum and minimum. (The maximum is the upper limit of the watermark and the minimum is

half the scale on the watermark after complete filling of the water circuit of the machine.)

If an error message for **Low liquid pressure** lights up during operation, turn off the main switch and check the liquid level on the watermark. After turning on the machine perform the cooling unit test. If the error recurs, the cause of the fault must be determined.

6. Liquid ACL-10 is not poisonous. However, due to its operation in the pump, the replaced liquid dispose of as hazardous waste. Do not burden the environment. In the worst case, take it to a collection yard in the original canister. You can find the safety data sheet on the link https://www.alfain.eu/static/_dokumenty/1/3/0/5/4/7/Safety-data-sheet-ACL-10.pdf



Note: When connecting a gas-cooled torch, it is necessary to interconnect the quick connectors with water hose of the hydraulic circuit. If this condition is not met, it may result in damage to the pump.

VENTING THE COOLING SYSTEM OF THE TORCH

After filling the empty cooling system of the torch (even in case of extensive leakage and venting) it is necessary to deaerate a complete circuit.

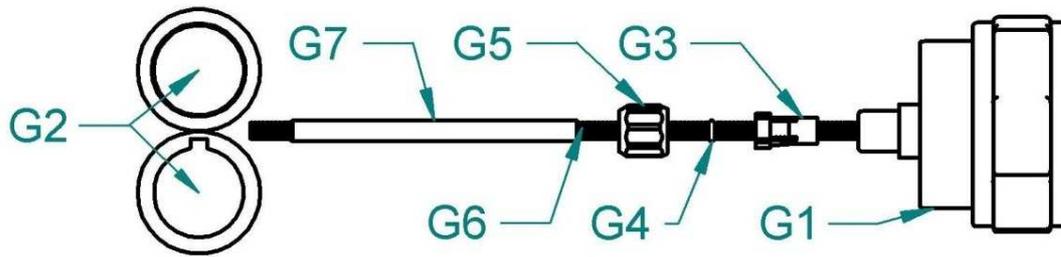
1. Remove the cover from the coolant reservoir and interconnect the quick connectors with water hose of the hydraulic circuit.
2. Run cooling test for about 30 seconds.
3. Plug the torch and run the cooling test for about 30 seconds.
4. If the error message for **Low liquid pressure** shows after you press the torch button, it is necessary to repeat the procedure.

ADJUSTING THE MACHINE FOR WELDING OF ALUMINIUM

1. Replace the rollers **G2** for rollers **G2** with U-profile of the groove (for AL welding)
2. Loosen the nut **G5** on EURO connector
3. Replace the torch used on steel for aluminum torch or at least replace the liner for Liner tefl. **G6**.
4. Replace the capillary from the EURO connector **G1**.
5. Cut end of the teflon liner **G6** so that it is near the rollers.
6. Thread the end of the teflon liner with sustainpipe for teflon and plastic

liner **G7** for stabilization.

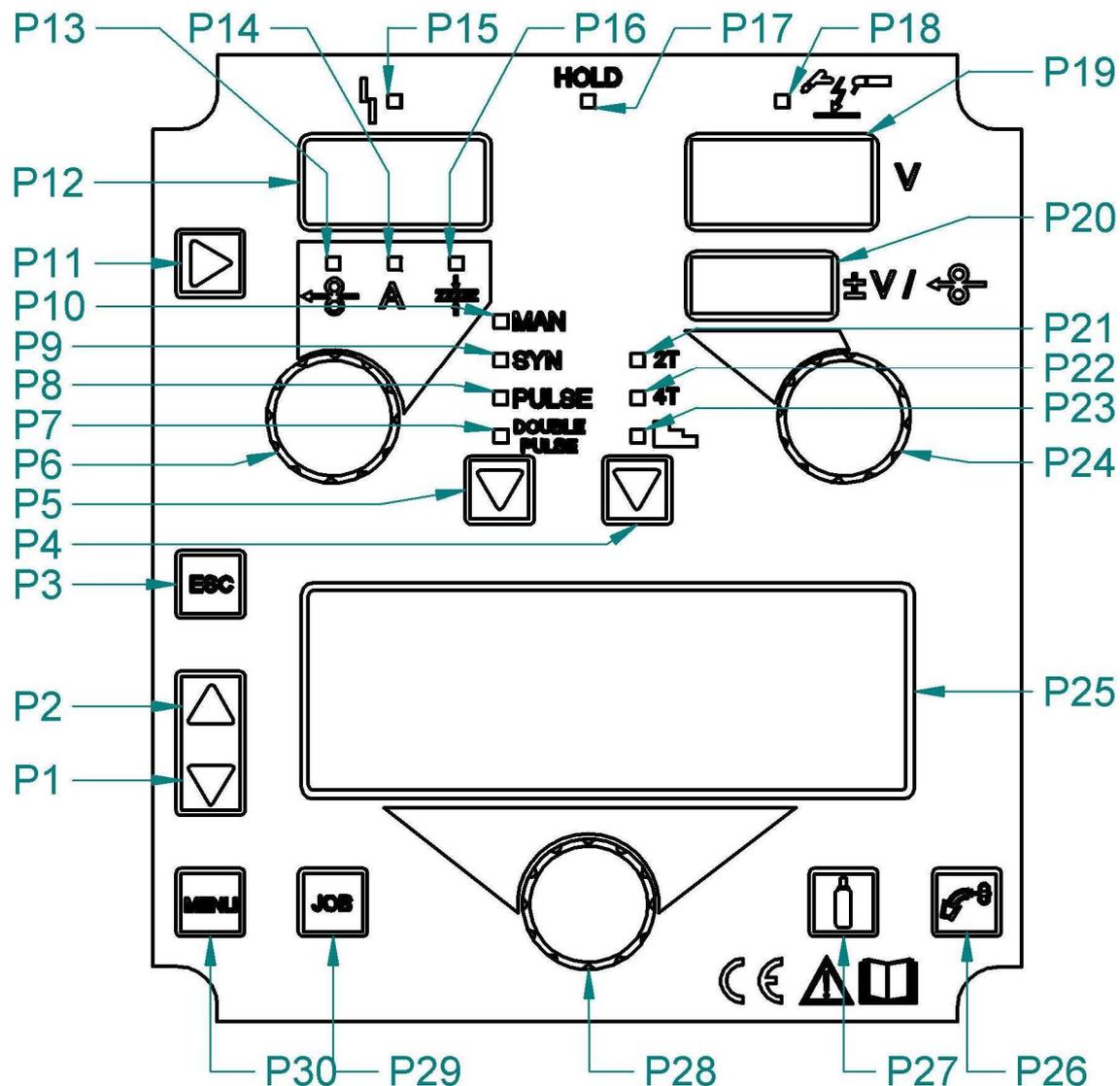
7. Put the torch on the EURO connector **G1** and insert the wire.



Picture 9 – Customization of the feed for the aluminum wire

G1	EURO connector
G2	Rolls
G3	Liner terminal
G4	O - ring
G5	Nut
G6	Liner tefl.
G7	Sustainpipe for teflon and plastic liner

7. CONTROL PANEL

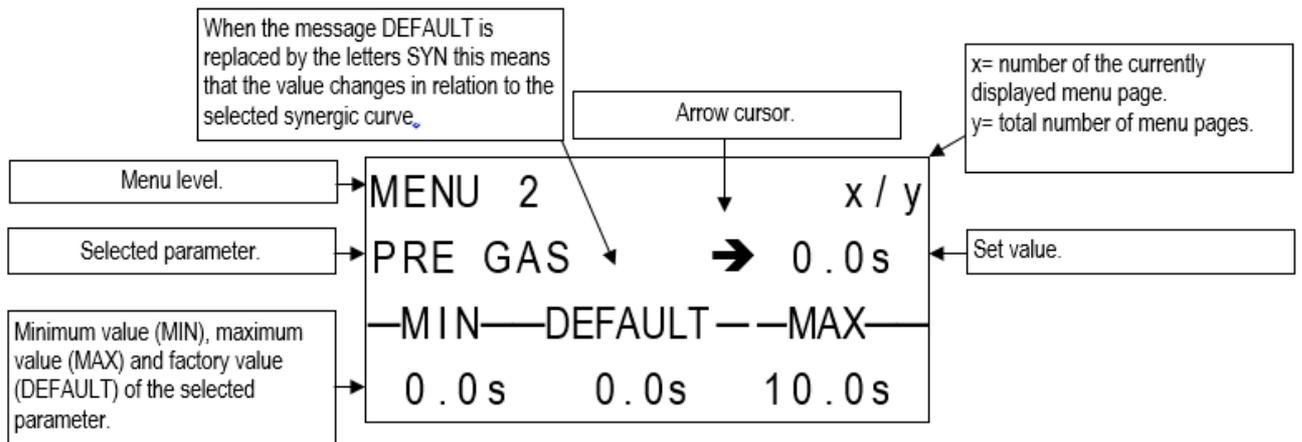


Picture 10 - Panel of the machine

P1	The button scrolls the selection made on the menus downwards or to the left.
P2	The button scrolls the selection made on the menus upwards or to the right.
P3	The button restores the main menu of display P25 , starting from any other page. The button serves to exit any menu without saving any changes.
P4	This button selects the torch trigger procedure. 10 TORCH TRIGGER MODES
P5	This button selects the welding mode.
P6	Data setting: The encoder adjusts the main welding (and synergy) parameter, shown on the following display: P12
P7	This LED illuminates to show that the following welding mode is selected: DOUBLE PULSED SYNERGIC MIG/MAG

P8	This LED illuminates to show that the following welding mode is selected: PULSED SYNERGIC MIG/MAG
P9	This LED illuminates to show that the following welding mode is selected: SYNERGIC MIG/MAG
P10	This LED illuminates to show that the following welding mode is selected: MANUAL MIG/MAG
P11	Manual MIG/MAG mode: The button is not active. Synergic MIG/MAG mode: The button cycles through the following LEDs in sequence, selecting only one:  / A / 
P12	During illumination of the following LEDs:  / A /  The display shows the value of the selected parameter. Welding: The display shows the effective amperes value during welding. HOLD function (at welding end): The display shows the latest measured current value.
P13	When this LED illuminates the following parameter can be set: WIRE FEED RATE The value appears on the following display: P12 .
P14	Short-Spray, pulsed and synergic MIG/MAG welding: When this LED illuminates the following parameter can be set: WELDING CURRENT HOLD function (at welding end): Illuminates to show a value in the following unit of measurement: AMPERES The value appears on the following display: P12
P15	This LED illuminates to show an anomaly in the operating conditions. An alarm message appears on the following display: P19 12 ALARMS MANAGEMENT
P16	When this LED illuminates the following parameter can be set: WELDING THICKNESS (Reference is made to "T" fillet welds on identical thicknesses. The relative value is purely guideline). The value appears on the following display: P12
P17	Illuminates to show the last voltage and current values measured during welding. The LED switches off when a new welding procedure is started, or when any of the welding settings is modified. The value appears on the following displays: P12 - P19
P18	This LED illuminates to confirm the presence of power on the output sockets.
P19	Data setting: The display shows the value, in Volts, of the selected welding voltage.

	<p>Welding: The display shows the effective voltage value during welding.</p> <hr/> <p>HOLD function (at welding end): The display shows the latest measured voltage value.</p>
P20	<p>Manual MIG/MAG welding: The display is not active. The display shows “- - -”.</p> <hr/> <p>Synergic MIG/MAG welding: The display shows the arc correction value imposed by the operator with respect to the default value of the synergic curve.</p>
P21	<p>Illumination shows that the following function has been activated: 2 times procedure 2T MIG/MAG WELDING A flashing signal means the following function is activated: 2 times procedure 2T SPOT MIG/MAG WELDING</p>
P22	<p>Illumination shows that the following function has been activated: 4 times procedure 4T MIG/MAG WELDING / 4T B-LEVEL MIG/MAG WELDING</p>
P23	<p>Illumination shows that the following function has been activated: 3 levels procedure 3 LEVEL - 2T B-LEVEL MIG/MAG WELDING / 3 LEVEL - 2T SPOT MIG/MAG WELDING 3 LEVEL - 4T B-LEVEL MIG/MAG WELDING / 3 LEVEL - 4T B-LEVEL MIG/MAG WELDING</p>
P24	<p>Manual MIG/MAG mode: The encoder adjusts the welding voltage, and the relative value is shown, in volts, on the following display: P19</p> <hr/> <p>Synergic MIG/MAG mode: The encoder is used to correct the factory-set value of the selected synergic curve, the value of which is shown on the following display: P20</p>
P25	<p>Data setting: The display shows the various welding menus relative to the selected processes. The display shows the selected parameter.</p>
P26	<p>This button activates wire feed to insert it through the MIG/MAG torch. The insertion speed is 2 m/min for 3 seconds, subsequently increasing to 10 m/min. This function produces a slower feed rate and hence greater precision when inserting the wire when it enters the torch nozzle.</p>
P27	<p>This button opens the gas solenoid valve to fill the circuit and calibrate the pressure with the regulator on the gas cylinder. TORCH LOADING</p>

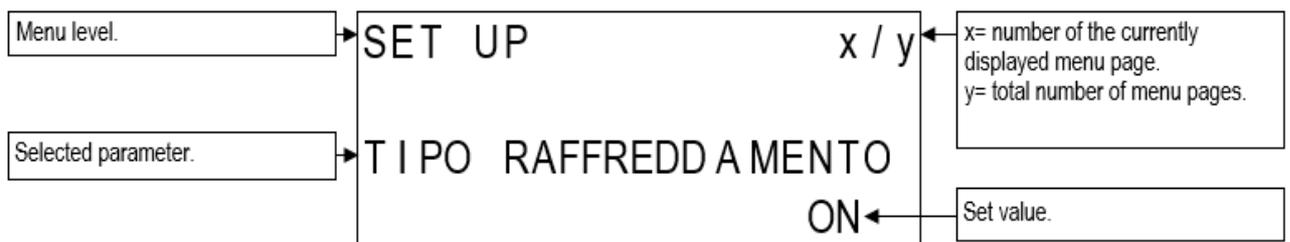


3RD LEVEL

The menu contains the settings and values that are changed infrequently and are to be set up the first time the unit is powered up.

The changed parameters remain saved until the next modification or reset of the unit.

11 SET-UP (INITIAL SET-UP OF THE WELDING POWER SOURCE)



9. JOBS MANAGEMENT

Personalised welding settings, or JOBS, can be saved in memory locations and subsequently uploaded.

Up to 99 jobs can be saved (j01-j99).

The settings of the SETUP menu are not saved.

SAVING A JOB

This function is available when welding mode is not active.

P29  Press the button.

➔ The job menu appears in the following displays: P25

P2  P1  Use these buttons to select the following parameter: OPT

① The selected parameter is shown by the following symbol: ➔

P28  Use the encoder to select the following setting: SAVE

P2  P1  Use these buttons to select the following parameter: JOB

- ① The first free memory location is displayed.
If all the memory locations are occupied, the word JOB flashes and the first JOB is displayed.
If the memory location is already occupied by another job, when a new JOB is written to the location it will overwrite the existing JOB.
The names of unassigned jobs are “-“ by default after a space following the number corresponding to the memory location.
Naming jobs
Save and keep original

P28 Using the encoder, select one of the unoccupied jobs.
Exit without confirmation

P3 Press the button.

- ➡ This action will automatically close the menu.
Exit with confirmation

P29 Press the button.

- ➡ This action will automatically close the menu.
Save and replace original

P28 Using the encoder, select one of the occupied jobs.

P29 Press the button.

- ➡ CONFIRM JOB The message appears on the
CHANGE following displays: P25
Exit without confirmation

P28 Use the encoder to select the following setting: NO

P29 Press the button.

- ➡ This action will automatically close the menu.
Exit with confirmation

P28 Use the encoder to select the following setting: YES

P29 Press the button.

- ➡ This action will automatically close the menu.

NAMING JOBS

JOBs can be named and renamed (maximum 9 characters) in the JOB menu, LOAD, or SAVE.

This function is available when welding mode is not active.

- P29  Press the button.
- ➡ The job menu appears in the following displays: P25
- P2  P1  Use these buttons to select the following parameter: OPT
- ① The selected parameter is shown by the following symbol: ➡
- P28  Use the encoder to select the following setting:
LOAD / SAVE
- P2  P1  Use these buttons to select the following parameter: JOB
- P28  Use the encoder to select the position of the job to be renamed.
- P29  Hold down the button for 3 seconds.
- ➡ The first letter of the name blinks.
- P28  Use the encoder to change the letter.
- P29  Press the button to confirm.
- P2  P1  Use these buttons to select the character to be modified.
Exit without confirmation
- P3  Press the button.
- ➡ Return to the job menu.
- P3  Press the button.
Exit with confirmation
- P29  Hold down the button for 3 seconds.
- ➡ Return to the job menu.
- P29  Press the button.

LOADING A USER JOB

If using a torch with UP/DOWN buttons you can scroll through the uploaded JOBS.

You can quit the uploaded job with the following methods:

turn encoders **P6** – **P24** to change the welding current or voltage.

press the welding mode selection button (button P5).

Pressing the following button: 

If there are no JOBS loaded, the UP/DOWN buttons on the torch serve to adjust the welding current.

This function is available when welding mode is not active.

P29  Press the button.

➡ The job menu appears in the following displays: P25

P2  P1  Use these buttons to select the following parameter: OPT

① The selected parameter is shown by the following symbol: ➡

P28  Use the encoder to select the following setting: LOAD

P2  P1  Use these buttons to select the following parameter: JOB

➡ The JOB displayed is the one that was most recently used.
When there are no saved jobs the following message appears on the bottom line: NO JOB

P28  Use the encoder to select one of the existing jobs.

Exit without confirmation

P3  Press the button.

➡ This action will automatically close the menu.

Exit with confirmation

P29  Press the button.

➡ This action will automatically close the menu.

DELETING A JOB

This function is available when welding mode is not active.

- P29  Press the button.
- ➔ The job menu appears in the following displays: P25
- P2  P1  Use these buttons to select the following parameter: OPT
- ① The selected parameter is shown by the following symbol: ➔
- P28  Use the encoder to select the following setting: DELETE
- P2  P1  Use these buttons to select the following parameter: JOB
- ① The JOB displayed is the one that was most recently used.
When there are no saved jobs the following message appears on the bottom line: NO JOB
- P28  Use the encoder to select one of the existing jobs.
Exit without confirmation
- P3  Press the button.
- ➔ This action will automatically close the menu.
Exit with confirmation
- P29  Press the button.
- ➔ CONFIRM JOB The message appears on
ERASURE the following displays: P25
- P28  Use the encoder to select the following setting: NO
- P29  Press the button.
- ➔ This action will automatically close the menu.
Exit with confirmation
- P28  Use the encoder to select the following setting: YES
- P29  Press the button.
- ➔ This action will automatically close the menu.

EXPORTING/IMPORTING JOBS THROUGH THE USB DISC

Note:

This function works only when the machine is equipped with the software that supports JOB export/import by means of the USB disc, and when the machine is equipped with the USB connector **A32**, which is inside the machine.

By means of the USB disc is possible to import the saved JOBS on the panel of the machine into another panel of the machine. If the USB disc is connected to the machine, the JOB MENU will display the items related to the export/import process.

WARNING

The JOBS are exported to the USB disc with the same JOB number, that is displayed on the panel of the machine. If the names/numbers of the JOBS saved onto the USB disc are changed by using a PC, after they are imported into the destination panel, they will still be saved with their original JOB name/number. This means that, if the destination panel already contains JOBS saved with the same name as those exported to the USB disc, they will be overwritten.

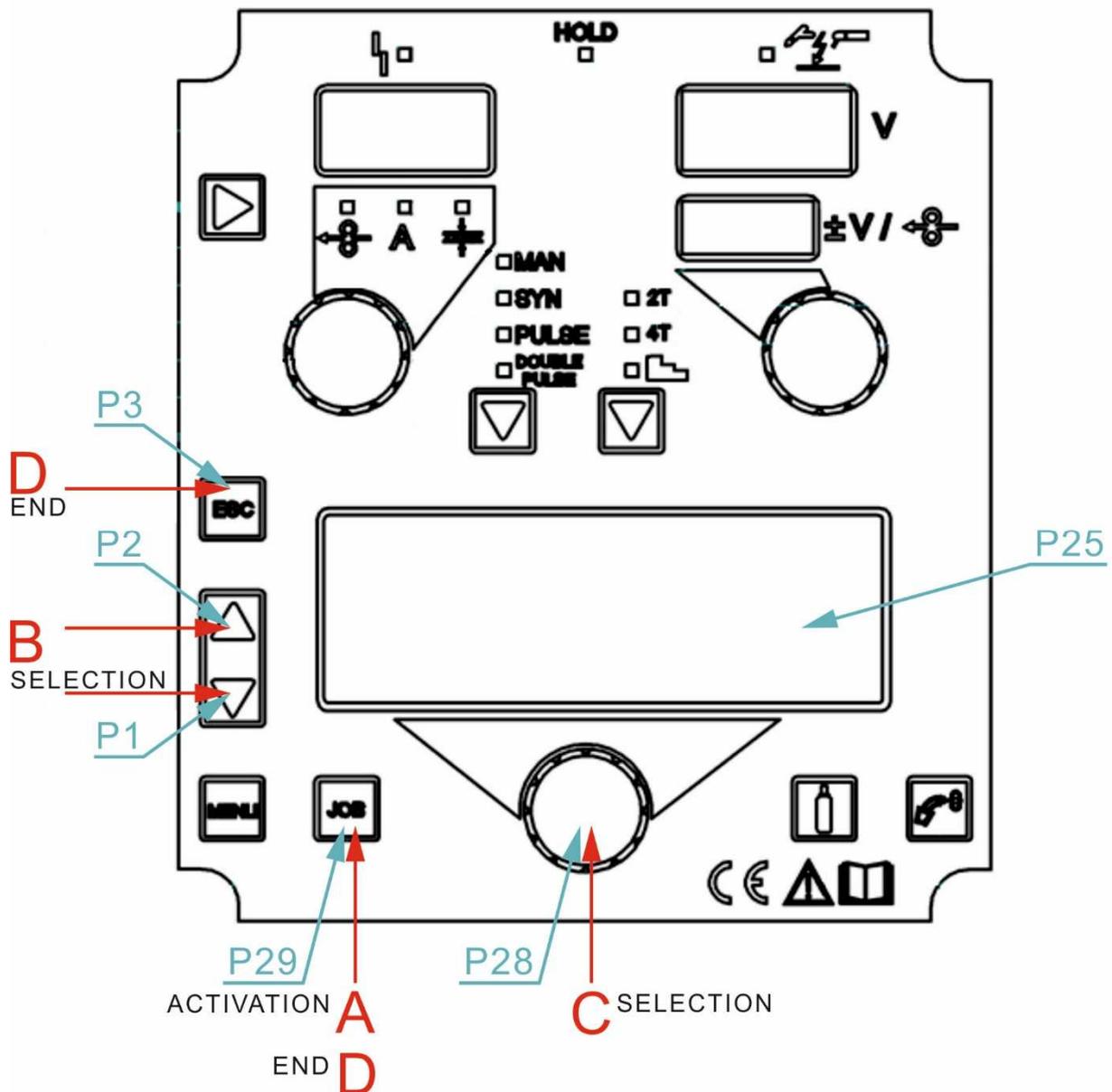
It isn't recommended to change the name of the files exported to the USB disc.

The file extension (.bin) must never be changed.

JOBS to be kept must be moved in a location of the destination panel different from the location of the JOBS exported to the USB disc.

Note: The USB disc must be formatted as FAT32.

JOBS EXPORT



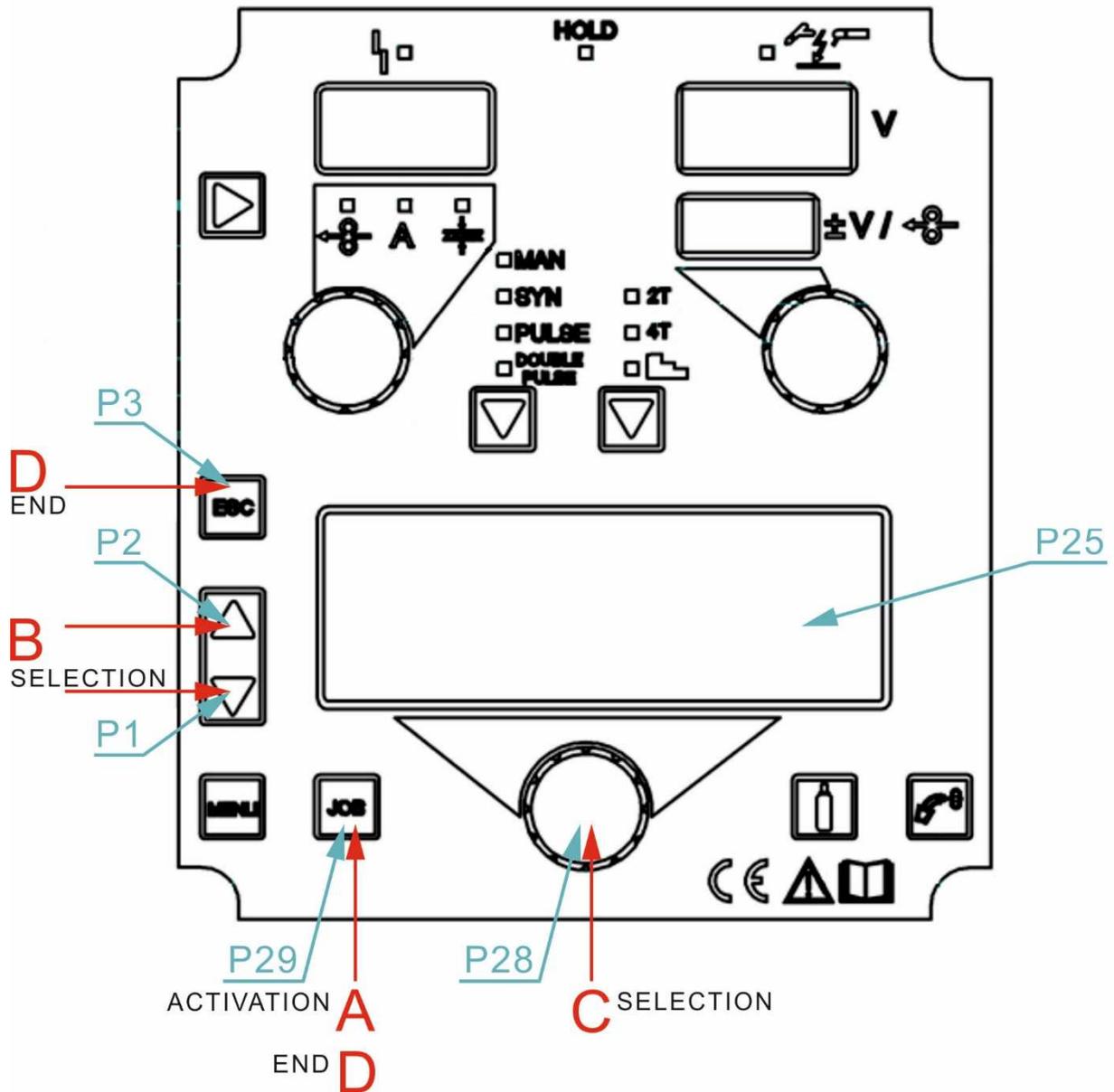
Pos.	Description
A	Insert the USB disc to the USB connector A32 . - Press the button P29  to activate the JOB MENU. - JOB MENU appears on the display P25 .
B	By means of the buttons P1  a P2  select the parameter OPT . - The selected parameter is shown by symbol \rightarrow .
C	By means of the encoder P28 select the USB EXPORT function. - When there are no saved JOBS in the machine, the following message appears on the bottom line: NO JOB .
D	Exit without confirmation:

	<ul style="list-style-type: none"> - Press the button P3 . - This action will automatically close the menu. <p>Exit with confirmation:</p> <ul style="list-style-type: none"> - Press the button P29 .
--	--

Table of exporting messages:

Message	Meaning	Checks
USB DEVICE NOT FOUND	USB device not found	<ul style="list-style-type: none"> - incorrectly inserted USB disc - USB disc removed before completing the operation
EXPORT FAILED	USB disc removed before completing the operation	<ul style="list-style-type: none"> - USB not formatted as FAT32 - unidentifiable generic error: re-insert the USB disc and retry - the connected USB disc is damaged
EXPORT IN PROGRESS	JOBs saved on the panel are being exported	
EXPORT COMPLETE	Exporting procedure completed	

JOBS IMPORT



Pos.	Description
A	Insert the USB disc to the USB connector A32 . - Press the button P29  to activate the JOB MENU. - JOB MENU appears on the display P25 .
B	By means of the buttons P1  a P2  select the parameter OPT . - The selected parameter is shown by symbol \rightarrow .
C	By means of the encoder P28 select the USB EXPORT function.
D	Exit without confirmation: - Press the button P3  . - This action will automatically close the menu.

	Exit with confirmation: - Press the button P29  .
--	---

Table of importing messages:

Message	Meaning	Checks
USB DEVICE NOT FOUND	USB device not found	- incorrectly inserted USB disc - USB disc removed before completing the operation
FILE NOT FOUND	File not found	- there are no JOBS loaded onto the USB disc
IMPORT FAILED	Importing procedure failed	- USB not formatted as FAT32 - unidentifiable generic error: re-insert the USB disc and retry - the connected USB disc is damaged
IMPORT IN PROGRESS	JOBS saved on the USB disc are being imported	
IMPORT COMPLETE	Importing procedure completed	

SELECTING JOBS USING THE TORCH BUTTONS

When an UP/DOWN torch is installed, JOBS can be selected in a JOB sequence using the buttons on the welding torch.

JOBS can be scrolled only when the welding operation is not being carried out. During the welding operation (with an active JOB) the parameter values displayed can be temporarily changed with the UP/DOWN keys; at the end of the welding operation, the original values are restored.

When a DIGIMANAGER torch is installed the operations described above can be carried out, with the following differences:

- a JOB can be loaded directly from the torch
- JOBS can be scrolled regardless of the sequence they belong to.

Sequence 1			JOB not saved	Sequence 2			JOB not saved	Sequence 3		
J.01	J.02	J.03		J.05	J.06	J.07		J.09	J.10	J.11

Select and upload one of the JOBS belonging to the desired sequence (e.g. J.06) through the power source user interface.

Use the torch buttons to scroll through the JOBs of sequence 2 (J.05, J.06, J.07).

10. TORCH TRIGGER MODES

2T MIG/MAG WELDING

1. Bring the torch up to the workpiece.
2. Press (1T) and keep the torch trigger pressed.
- ☹ The wire advances at the approach speed until making contact with the work.
The arc strikes and the wire feeder accelerates to the set feed rate value.
3. Release (2T) the trigger to start the weld completion procedure.
- ☹ Gas flow continues for the time set in the post gas parameter (adjustable time).

2T SPOT MIG/MAG WELDING

1. Bring the torch up to the workpiece.
2. Press (1T) and keep the torch trigger pressed.
- ☹ The wire advances at the approach speed until making contact with the work.
The arc strikes and the wire feeder accelerates to the set feed rate value.
The welding procedure continues, at the preset current, for the time set with the spot time parameter.
The welding completion procedure starts.
The arc is extinguished.
Gas flow continues for the time set in the post gas parameter (adjustable time).

4T MIG/MAG WELDING

1. Bring the torch up to the workpiece.
2. Press (1T) and release (2T) the torch trigger.
- ☹ The wire advances at the approach speed until making contact with the work.
The arc strikes and the wire feeder accelerates to the set feed rate value.
3. Press (3T) the trigger to start the weld completion procedure.
- ☹ Gas flow continues until the torch trigger is released.
4. Release (4T) the torch trigger to start the post gas procedure (adjustable time).

4T B-LEVEL MIG/MAG WELDING

1. Bring the torch up to the workpiece.
2. Press (1T) and release (2T) the torch trigger.
- ⊕ The wire advances at the approach speed until making contact with the work.
The arc strikes and the wire feeder accelerates to the set feed rate value. During normal speed welding, press and immediately release the torch trigger to switch to the second welding current.
- ⓘ The trigger must not be pressed for more than 0.3 seconds; otherwise, the weld completion stage will start.
When the trigger is pressed and released immediately, the system returns to the welding current.
3. Press (3T) the trigger and keep it pressed to start the weld completion procedure.
- ⊕ Gas flow continues until the torch trigger is released.
4. Release (4T) the torch trigger to start the post gas procedure (adjustable time).

3 LEVEL - 2T B-LEVEL MIG/MAG WELDING

1. Bring the torch up to the workpiece.
2. Press (1T) the torch trigger.
- ⊕ The wire advances at the approach speed until making contact with the work. If the arc does not strike after 10 cm wire protrusion, wire feeding is locked and the welding unit outputs are de-energized.
The welding arc strikes and the wire feed rate changes to the first welding level (hot start), which is set as a percentage of the normal welding feed rate.
- ⓘ This first level is used to create the weld pool: for example, when welding aluminium a value of 130 % is recommended.
3. The hot start level continues for the start time, which is settable in seconds; the switch to normal welding speed is performed in accordance with the start ramp, which can be set in seconds.
4. Release (2T) the torch trigger to switch to the third welding level (crater filler), which is set as a percentage of the normal welding feed rate.
- ⓘ The switch of welding current level in terms of crater filling is performed in accordance with the crater ramp, which can be set in seconds.
This third level is used to complete the weld and fill the final crater (crater filler) in the weld pool: for example, when welding aluminium a value of 80 % is recommended.
5. The crater filler level continues for the crater time, which is settable in

seconds; at the end of this time welding is interrupted and the post gas stage is performed.

3 LEVEL - 2T SPOT MIG/MAG WELDING

The welding process is the same as the 2T - 3 LEVELS process, except that the welding procedure continues, at the preset current, for the time set with the spot time parameter.

The weld is closed in the same way as with the 4T - 3 LEVELS process.

3 LEVEL - 4T B-LEVEL MIG/MAG WELDING

1. Bring the torch up to the workpiece.
2. Press (1T) the torch trigger.
- ⊖ The wire advances at the approach speed until making contact with the work.
The welding arc strikes and the wire feed rate changes to the first welding level (hot start), which is set as a percentage of the normal welding feed rate.
- ⓘ This first level is used to create the weld pool: for example, when welding aluminium a value of 130% is recommended.
3. Release (2T) the trigger to switch to normal welding speed; the switch to normal welding speed is performed in accordance with the start ramp, which can be set in seconds.
4. Press the torch trigger again (Level 3) to switch to the third welding level (crater filler), which is set as a percentage of the normal welding feed rate.
- ⓘ The switch of welding current level in terms of crater filling is performed in accordance with the crater ramp, which can be set in seconds.
This third level is used to complete the weld and fill the final crater (crater filler) in the weld pool: for example, when welding aluminium a value of 80% is recommended.
5. Release the torch trigger a second time (4T) to close the weld and run the post gas procedure.

3 LEVEL - 4T B-LEVEL MIG/MAG WELDING

- ⓘ The welding process is the same as the 4T - 3 LEVELS process except that during normal speed welding pressing and immediately releasing the torch trigger switches the unit to the second welding current.
The trigger must not be pressed for more than 0.3 seconds; otherwise, the weld completion stage will start.
When the trigger is pressed and released immediately, the system returns to the welding current.

1. Press (3T) the trigger and keep it pressed to start the crater filler procedure.
- ① The weld is closed in the same way as with the 4T - 3 LEVELS process.

11. SET-UP (INITIAL SET-UP OF THE WELDING POWER SOURCE)



With locked status active it is not possible to access this function.

LOOKING PROCEDURE

Set the welding power source ON/OFF switch to "I" to switch on the unit.

P30  Hold down the button.



PERFORM THIS OPERATION BEFORE THE MESSAGE "SYNCHRONISATION" APPEARS ON THE FOLLOWING DISPLAY: P25

- ① SET UP x/y The message appears on the following displays: P25
 x= number of the currently displayed menu page.
 y= total number of menu pages.

P2  P1  Use these buttons to scroll through the list of settings to edit.

- ① Activation of the ADJUSTMENTS BLOCK calls for a specific procedure
 LOOKING PROCEDURE

P28  Using the encoder, edit the value of the selected setting.

P3  Press any button to save the setting and quit the menu.
 The unit restarts with the power-up procedure.

MENU PAGE	SETTING	MIN	DEFAULT	MAX	
SET UP 1/7	SELECT LANGUAGE:				ENGLISH ITALIANO FRANÇAIS DEUTSCH ESPAÑOL PORTUGUES DUTCH CESKY SRBSKI POLSKI SUOMI
SET UP 2/7	COOLING TYPE	OFF	AUTO	ON	
SET UP 3/7	DISPLAY CONTRAST	0 %	80 %	100 %	
SET UP 4/7	CONTROL TYPE	OFF	OFF	RC08	OFF RC03 RC04 RC05 RC06 RC08 OFF LOCK 1 LOCK 2 LOCK 3
SET UP 5/7	LOCK STATUS	OFF	OFF	LOCK 3	No control n°1 potentiometer n°2 potentiometers n°1 UP/DOWN n°2 UP/DOWN All adjustments enabled. All adjustments are disabled with the exceptions shown in TAB. On the next page All adjustments are disabled with the exceptions shown in TAB. On the next page All adjustments are disabled with the exceptions shown in TAB. On the next page
SET UP 6/7	ARC CORRECTION	m/min	Volts	Volts	
SET UP 7/7	PUSH-PULL	OFF	OFF	ON	

Cooler activation

1. ON= The cooler is always running when the power source is switched on. This mode is preferable for heavy duty and automatic welding procedures.
2. OFF= The cooler is always disabled because an air-cooled torch is in use.
3. AUT= When the unit is switched on the cooler is switched on for 15 s. During welding procedures the cooler runs constantly. When welding is terminated the cooler continues to run for 90 s + a number of seconds equivalent to the average current value shown using the HOLD function.

LOOKING PROCEDURE

The procedure inhibits unit adjustments, allowing the user to modify only certain settings depending on the selected lock status.

The procedure is used to prevent accidental alteration of the unit settings and welding settings by the operator.

Enabling

If no locking status is selected (LOCKED STATUS = OFF) and if you wish to set up a limitation on use of the welding power source, display page 5/7 of the SETUP menu.

P28  Use the encoder to select the required lock status.

P30  Press the button to confirm.

WRITE

PASSW The message appears on the following
 ⤴ **ORD** displays: P25

0000

ⓘ Default password: 0000

Enter the 4 digit numerical password.

P2 ⏏ P1 ⏚ Use these keys to select the digit to be modified.

⤴ The selected digit blinks.

P28 ⌚ Use this encoder to select the value.

Exit without confirmation

P3  Press the button.

⤴ This action will automatically close the menu.

Exit with confirmation

P30  Press the button.

⤴ The unit restarts with the power-up procedure.

The password becomes the active password. Make a note of the password you set!

LOCK	USER INTERFACE/ RC08	RC03	RC04	RC05	RC06
OFF	All adjustments enabled.	All adjustments enabled.	All adjustments enabled.	All adjustments enabled.	All adjustments enabled.
1	Selection of torch trigger procedure (button S3) Display of main welding parameters (button S1) Arc correction (encoder E2) Wire insertion (button S10) Gas test (button S9)		Arc correction (Potentiometer Pot2)		Arc correction (UP/DOWN lever 2)
2	Selection of torch trigger procedure (button S3) Display of main welding parameters (button S1) Arc correction (encoder E2) Synergy (encoder E1) Wire insertion (button S10) Gas test (button S9)	All adjustments enabled.	All adjustments enabled.	All adjustments enabled.	All adjustments enabled.
3 (*1)	Selection of torch trigger procedure (button S3) Display of main welding parameters (button S1) JOB selection (encoder E2) Wire insertion (button S10) Gas test (button S9)			Scroll JOBS (UP/DOWN lever 1)	Scroll JOBS (UP/DOWN lever 1)

*1: The LOCK 3 setting becomes active only when a JOB is loaded. When no JOB is loaded, the user interface is completely unlocked.

Disabling

If a lock status is selected, you can only edit parameters permitted by the currently active lock status.

If you cannot recall the password the only way to exit locked status is to perform the welding power source RESET procedure.

P30  P2  Hold down these buttons simultaneously for 3 seconds.

LOCK ...

-  **WRITE** The message appears on the following displays: P25
-  **PASSWORD**
- 0000**

Enter the active 4 digit numerical password.

P2  P1  Use these keys to select the digit to be modified.

-  The selected digit blinks.

P28  Use this encoder to select the value.

Exit without confirmation

P3  Press the button.

-  This action will automatically close the menu.

Exit with confirmation

P30  Press the button.

-  The unit restarts with the power-up procedure.

Quit locked status.

GAS FLOW ADJUSTMENT

When the unit is powered on the solenoid valve opens for 1 second.
This serves to fill the gas circuit.

P27  Open the gas solenoid valve by pressing and releasing the button.
Adjust the pressure of gas flowing from the torch by means of the flow meter connected to the gas cylinder.

P27  Close the gas solenoid valve by pressing and releasing the button.
The solenoid valve closes automatically after 30 seconds.

TORCH LOADING

	WARNING!
<p>Make sure the torch in use is correctly sized in relation to the welding current required and for the available and selected cooling type. This prevents the risk of burns to which the operator is potentially exposed, potential faults, and irreversible damage to the torch and the system.</p> <p>If a torch is installed or replaced while the unit is running, the circuit of the newly installed must be filled with coolant to avoid the risk of damage to the torch in the case of high voltage arc strikes without any liquid in the circuit.</p>	

Power-up with operation of the cooler set to "ON" or "AUTO" mode

A check is performed automatically of the presence of liquid in the cooling circuit and the cooler is switched on for 30 seconds.

If the coolant circuit is full, the power source sets up in the most recent stable welding configuration.

If the coolant circuit is not full, all functions are inhibited and there will be no output power present.

 **COOLING SYSTEM TEST** The message appears on the following displays: P25

(any)  Press the button or torch trigger to repeat the checking procedure for an additional 30 seconds.

If the problem persists rectify the cause of the alarm.

Power-up with operation of the cooler set to "OFF"

 Operation of the cooler and the cooler alarm are disabled.

 Welding is performed without liquid cooling of the torch.

Torch change-over with operation of the cooler set to "AUTO"

Press and release the torch trigger.

 This serves to start the cooler for 80 seconds to fill the torch cooling circuit.

CALIBRATING THE WELDING CIRCUIT

When using the wire feed trolley with associated umbilical, it is advantageous practice to measure welding circuit impedance "r" using the calibration function. This makes it possible to achieve constant welding quality irrespective of the length of the umbilical and torch. Welding circuit impedance depends on the umbilical and torch installed, so the calibration procedure must be repeated whenever these components are changed.

CALIBRATION following a power source RESET

If you perform a total power source RESET the calibration value will return to the default setting.

In the case of a partial RESET the last measured value will remain saved in the memory.

Calibration is not therefore obligatory, and if the user decides to dispense with the procedure the unit will simply operate on the basis of a default value.

CALIBRATION PROCEDURE

The power source must be powered on and must not be in welding mode.

Power source management with remote controller must be enabled.

P2  P1  Hold down these buttons simultaneously for 3 seconds.

- TOUCH THE WORKPIECE WITH THE WIRE GUIDE TIP AND PRESS THE TORCH TRIGGER

 The message appears on the following displays: P25
-  CAL

The message appears on the following displays: P12
-  Display P19 will show the welding circuit impedance value (mΩ) measured at the time of the most recent calibration.

After a total RESET the default value will be displayed.

Remove the torch gas nozzle and place the wire guide tip (without protruding wire) on the surface of the workpiece ensuring it is firmly located; check that the wire guide tip is in contact with a clean area of the workpiece surface. Press the torch button to perform the calibration.

Calibration performed correctly

-  CALIBRATION COMPLETED SUCCESSFULLY

The message appears on the following displays: P25
-  The calibration value is shown on the following displays: P19

You can make several subsequent calibrations by pressing and releasing the torch button. In this case the last value revealed is memorized.

Output without memorizing

P3  Press the button.

Output with memorizing

P30  Press the button.

Calibration not performed correctly

 CAL. Err. The message appears on the following displays: P12-P19

 REPEAT MEASUREMENT The message appears on the following displays: P25

Press the torch button to perform the calibration.

Output without memorizing

P3  Press the button.

12. ALARMS MANAGEMENT



This LED illuminates if an incorrect operating condition occurs.

 An alarm message appears on the following display: P25

MESSAGE	MEANING	EVENT	CHECKS
WARNING POWER SOURCE	Indicates tripping of the welding power source thermal protection. Leave the unit running so that the overheated components cool as rapidly as possible. When the unit has cooled, the welding power source will reset automatically.	All functions disabled. Exceptions: - cooling fan. - cooler (if switched on).	- Make sure that the power required by the welding process is lower than the maximum rated power output. - Check that the operating conditions are in compliance with the welding power source data plate specifications. - Check for the presence of adequate air circulation around the welding power source.
WARNING COMMUNICATIONS	Indicates the presence of problems in data communication between the power source and wire feeder. NO When the unit has cooled, the welding power source will reset automatically. Exit the alarm state by performing one of the following actions: - Switch the power source off.	All functions disabled. Exceptions: - cooling fan. - cooler (if switched on).	- Check that the connecting cable between power source and wire feeder is intact and make sure the connectors are securely tightened. - Check the data transmission wiring inside the power source and the wire feeder. - Check for correct operation of the Control Board in the power source and the Motor Board in the wire feeder.
WARNING TRIGGER	Indicates that when the wire feeder was powered up a short circuit was detected on the torch trigger input. When the unit has cooled, the welding power source will reset automatically.	All functions disabled.	- Make sure the torch trigger is not pressed, jammed, or short circuiting. - Make sure the torch and MIG/MAG torch connector are intact.
WARNING COOLING SYSTEM	Indicates insufficient pressure in the torch liquid cooling circuit. To exit the alarm condition and perform an operating check of the cooling unit press the following button: 	All functions disabled. Exceptions: - cooling fan.	- Check that the connection to the cooler is correct. - Check that the O/I switch is set to I and that it illuminates when the pump is running. - Check that the cooler is filled with coolant. - Check that the cooling circuit is liquid tight, notably the torch hoses and the internal connections of the cooler.
WARNING PROTECTION CURRENT	Indicates tripping of the welding power source current surge protection. Exit the alarm state by performing one of the following actions: - Switch the power source off. - Press the following button: 	All functions disabled. Exceptions: - cooling fan. - cooler (if switched on).	- Check that the programmed arc voltage value is not too high in relation to the thickness of the work to be welded.

13. RESET

The reset procedure involves complete restoration of the default values, parameters and memory settings set in the factory.

All memory locations will be reset and hence all your personal welding settings will be lost!

The reset procedure is useful in the following cases:

1. too many changes made to the welding parameters so user finds it difficult to restore defaults.
2. unidentified software problems that prevent the welding power source from functioning correctly.

Set the welding power source ON/OFF switch to “O” to switch the unit off.

Set the welding power source ON/OFF switch to “I” to switch on the unit.

P11 and **P26**; Hold down both buttons simultaneously. Perform this operation before the message “SYNCHRONIZATION“ appears on the following display: **P25**.

FACTORY SETUP MEMORY CLEANING

The message appears on the following displays: **P25**

P11 and **P26** Release buttons.

Wait for the memory clear procedure to terminate.

The unit restarts with the power-up procedure.

14. CONSUMPTION TABLES

TABLE OF WIRE CONSUMPTION DURING WELDING

Wire diameter [mm]	Range of wire feed speed [m/min]	Maximal wire feed speed [m/min]	Weight of 1 m wire [g]	Wire consumption per 1 minute of welding [g/min]	Wire consumption per 1 hour of welding [g/hour]
Steel wire					
0,6	2 - 5	5	2,3	11,5	690
0,8	3 - 6	6	4	24	1440
1,0	3 - 12	12	6	72	4320
1,2	4 -18	18	9	162	9720
Stainless steel wire					
0,6	2 - 5	5	2,3	11,5	690
0,8	3 - 6	6	4	24	1440
1,0	3 - 12	12	6	72	4320
1,2	4 -18	18	9	162	9720
Aluminum wire					
0,6	2 - 5	5	0,8	4	240
0,8	3 - 6	6	1,3	7,8	468
1,0	3 - 12	12	2	24	1440
1,2	4 -18	18	3	54	3240

TABLE OF GAS CONSUMPTION DURING WELDING

Wire diameter [mm]	Gas flow [l/min]	Gas consumption per 1 hour of welding [l/hour]
0,6	6	6 * 60 = 360
0,8	8	8 * 60 = 480
1,0	10	10 * 60 = 600
1,2	12	12 * 60 = 720
1,6	16	16 * 60 = 960
2,0	20	20 * 60 = 1200

TABLE OF CONSUMPTION DURING TIG WELDING

Wolfram electrode diameter [mm]	Argon flow [l/min]
	Steel / stainless steel
0,5	3 – 4
1,0	3 – 5
1,6	4 – 6
2,4	5 – 7
3,2	5 – 9

TABLE OF ELECTRODE CONSUMPTION DURING WELDING

Electrode diameter [mm]	Range of welding current [A]	Total electrode length [mm]	Weight of boiled electrode without slag [g]	Boiled electrode time [s]	Weight of boiled electrode without slag per 1 second [g/s]
1,6	30 - 55	300	4	35	0,11
2,5	70 - 110	350	11	49	0,22
3,2	90 - 140	350	19	60	0,32
4,0	120 - 190	450	39	88	0,44

15. ROUTINE MAINTANCE & INSPECTION

1. The only routine maintenance required for the aXe range of machines is a thorough cleaning and inspection, with the frequency depending on the usage and the operating environment.

WARNING

Disconnect the aXe from the mains supply voltage before disassembling. Special maintenance is not necessary for the control unit parts in the Welder. If these parts are damaged for any reason, replacement is recommended.

CAUTION

2. Do not blow air into the welder during cleaning. Blowing air into the welder can cause metal particles to interfere with sensitive electronic components and cause damage to the welder.
3. To clean the welder, disconnect it from the mains supply voltage then open the enclosure and use a vacuum cleaner to remove any accumulated dirt and dust. The welder should also be wiped clean. If necessary, solvents that are recommended for cleaning electrical apparatus may be used.
4. Troubleshooting and repairing of aXe welding equipment should only be carried out only by suitably qualified or competent person.
5. A 'competent person' must be a person who has acquired through training, qualification or experience, or a combination of them, the knowledge and skills enabling that person to safely carry out a risk assessment and repairs to the electrical equipment in question.
The person carrying out the servicing needs and repairs must know what to look at, what to look for and what to do.

16. SERVICE

STATEMENT OF WARRANTY

1. In accordance with the warranty periods stated below, ALFA IN guarantees the proposed product to be free from defects in material or workmanship when operated in accordance with the written instructions as defined in this operating manual.
2. ALFA IN welding products are manufactured for use by commercial and industrial users and trained personnel with experience in the use and maintenance of electrical welding and cutting equipment.
3. ALFA IN will repair or replace, at its discretion, any warranted parts or components that fail due to defects in material or workmanship within the warranty period. The warranty period begins on the date of sale to the end user.
4. If warranty is being sought, please contact your ALFA IN product supplier for the warranty repair procedure.
5. ALFA IN warranty will not apply to:
 - a) Equipment that has been modified by any other party other than ALFA IN's own service personnel or with prior written consent obtained from ALFA IN Service Department.
 - b) Equipment that has been used beyond the specifications established in the operating manual.
 - c) Installation not in accordance with the installation/operating manual.
 - d) Any product that has been subjected to abuse, misuse, negligence or accident.
 - e) Failure to clean and maintain (including lack of lubrication, maintenance and protection), the machine as set forth in the operating, installation or service manual.
6. Within this operating manual are details regarding the maintenance necessary to ensure trouble free operation.



Warranty repairs must be performed by either an ALFA IN Service Centre, an ALFA IN distributor or an Authorised Service Agent approved by the company ALFA IN.

As a warranty list serves proof of purchase (invoice) on which is the serial number of the machine, eventually a warranty list on the last page of this manual.

The manufacturer's warranty is not applicable to defects in the cooling circuit when using liquids other than ACL-10.

17. DISPOSAL



Only for EU countries. Do not dispose of electric tools together with household waste material.

■ In accordance with European Council Directive 2002/96/EC on electrical and electronic equipment waste and its implementation in accordance with national law, electric tools that have reached the end of their service life must be collected separately and returned to an environmentally compatible recycling facility.

18. WARRANTY LIST

As a warranty list serves proof of purchase (invoice) on which is the serial number of the machine, eventually a warranty list below, which is filled in by an authorized dealer.

Serial number:	
Day, month (written in words) and year of sale:	
Stamp and dealer signature:	