



WELD THE WORLD

Pioneer Pulse 321MKS

Instruction Manual





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1 INTRODUCTION

 	IMPORTANT!
<p><i>This handbook must be consigned to the user prior to installation and commissioning of the unit. Read the "General prescriptions for use" handbook supplied separately from this manual before installing and commissioning the unit.</i></p> <p><i>The meaning of the symbols in this manual and the associated precautionary information are given in the "General prescriptions for use".</i></p> <p><i>If the "General prescriptions for use" are not present, it is mandatory to request a replacement copy from the manufacturer or from your dealer.</i></p> <p><i>Retain these documents for future consultation.</i></p>	

KEY

	DANGER!
<p><i>This pictogram warns of danger of death or serious injury.</i></p>	

	WARNING!
<p><i>This pictogram warns of a risk of injury or damage to property.</i></p>	

	CAUTION!
<p><i>This pictogram warns of a potentially hazardous situation.</i></p>	

	INFORMATION!
<p><i>This pictogram gives important information concerning the execution of the relevant operations.</i></p>	

- ➔ This symbol identifies an action that occurs automatically as a result of a previous action.
- ① This symbol identifies additional information or a reference to a different section of the manual containing the associated information.
- § This symbol identifies a reference to a chapter of the manual.
- *1 The symbol refers to the associated numbered note.










NOTES

The figures in this manual are purely guideline and the images may contain differences with respect to the actual equipment to which they refer.

1.1 PRESENTATION

Pioneer Pulse 321MKS is a professional three-phase inverter-based welding unit with 4-roll wire feeder designed to operate in extreme environmental conditions. This power source is ideal for workshop applications and the metalworking, automotive and transport industries requiring high quality construction work and it can be easily transported in difficult work areas thanks to its rugged frame. Available MIG/MAG mode: manual, synergic, pulsed synergic and double pulsed synergic. Pulsed Synergic and Double Pulsed Synergic modes ensure excellent appearance of the weld bead, without spatter or deformation when welding aluminium, stainless steel and regular steels. A broad range of synergic MIG-MAG programs facilitates the selection of precise welding parameters rapidly and using all types of wire.

The welding modes and procedures available are those indicated in the table.

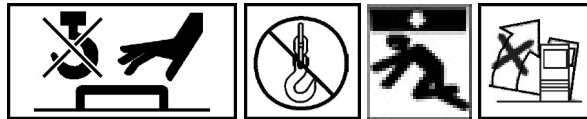
MODE		PROCEDURE	
 MANUAL	MANUAL MIG/MAG		TWO STROKE (2T) TWO SPOT STROKE (2T-SPOT)
			FOUR STROKE (4T)
 SYNERGIC MIG/MAG  PULSED SYNERGIC MIG/MAG  DOUBLE PULSED SYNERGIC MIG/MAG			TWO STROKE (2T) TWO SPOT STROKE (2T-SPOT)
			FOUR STROKE (4T)
			THREE LEVEL (3T)

2 INSTALLATION



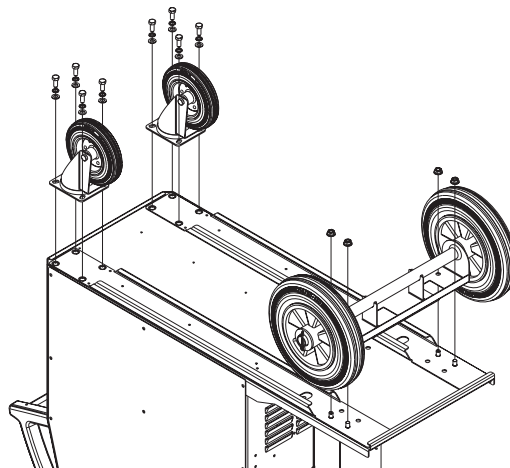
DANGER! **Lifting and positioning**

Read the warnings highlighted by the following symbols in the "General prescriptions for use".

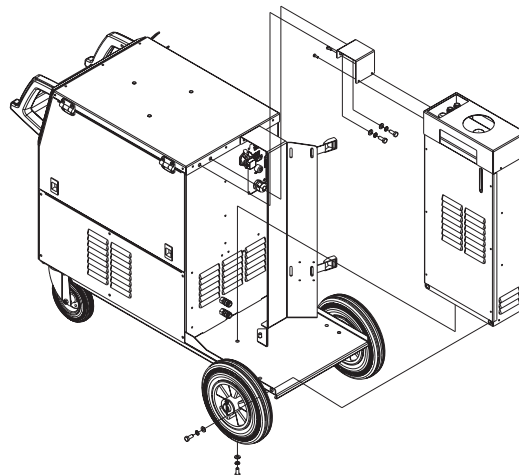


2.1 UNIT ASSEMBLY

1. Fit the front swivel wheels with the supplied screws.
2. Screw the fixed rear wheels to the studs in the base of the unit and secure them with the supplied nuts.



3. Mount the cooler in the relevant location.
4. Screw the cooler fixing bracket to the welding power source chassis using the supplied screws.
5. Screw the base of the cooler to the unit base using the supplied screws.

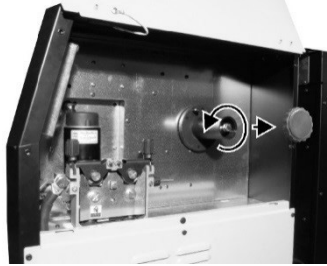
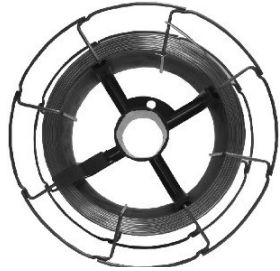





2.2 CONNECTIONS TO THE ELECTRICAL MAINS NETWORK

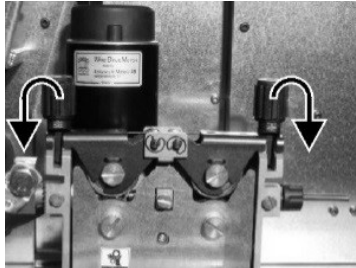
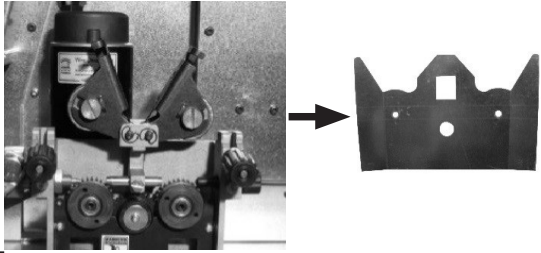

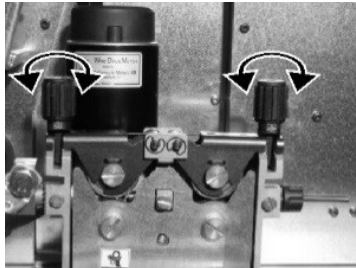

The characteristics of the mains power supply to which the equipment shall be connected are given in the section entitled "13.1 Pioneer Pulse 321MKS TECHNICAL DATA". The machine can be connected to motorgenerators provided their voltage is stabilised.

Connect/disconnect the various devices with the machine switched off.


2.3 WIRE SPOOL POSITIONING

<ol style="list-style-type: none"> 1. Open the unit side door to gain access to the spool compartment. 2. Unscrew the cap of the spool holder. 	
<ol style="list-style-type: none"> 3. If necessary, fit an adapter for the wire spool. 	
<ol style="list-style-type: none"> 4. Fit the spool in the spool holder, ensuring it is located correctly. 	
<ol style="list-style-type: none"> 5. Adjust the spool holder braking system by tightening/loosening the screw in such a way that the wire feed force is not excessive and when the spool stops rotating no excess wire is released. 	
<ol style="list-style-type: none"> 6. Refit the plug. 	

2.4 POSITIONING THE WIRE IN THE WIRE FEEDER

<p>1. Lower the wire feeder pressure devices.</p>	
<p>2. Raise the wire feeder pressure arms. 3. Remove the protective cover.</p>	
<p>4. Check that the feed rolls are suitable for the wire gauge.</p> <p>① § "15.3 WIRE FEEDER ROLLS"</p> <ul style="list-style-type: none">• The diameter of the roll groove must be compatible with the diameter of the welding wire.• The roll must be of suitable shape in relation to the composition of the wire material.• The groove must feature a "U" profile for soft materials (Aluminium and its alloys, CuSi3).• The groove must be "V" shaped for harder materials (SG2-SG3, stainless steels).• Rolls with a knurled groove profile are available for flux-cored wire. <p>5. Feed the wire between the wire feeder rolls and insert it into the MIG/MAG TORCH connector plug.</p> <p>6. Make sure the wire is located correctly in the roll grooves.</p>	
<p>7. Close the wire feeder pressure arms. 8. Adjust the pressure system so that the arms press the wire with a force that does not deform it while also ensuring constant feed rate without slipping.</p>	
<p>9. Refit the protective cover. 10. Set the welding power source ON/OFF switch to "I" (unit powered). 11. Feed the wire through the torch until it protrudes from the tip, pressing button  on the unit front panel.</p>	

2.5 CONNECTIONS TO SOCKETS

1. Set the welding power source ON/OFF switch to "O" (unit de-energized).
2. Plug the power cable plug into a mains socket outlet.
3. Connect the gas hose from the welding gas cylinder to the relative socket.
4. Open the cylinder gas valve.
5. Connect the power supply cable of the cooling unit to the auxiliary power socket on the power source.
6. Attach the coolant hoses to the relevant connectors on the cooler and on the power source rear panel.
7. Connect the MIG/MAG torch plug to the EURO TORCH welding socket.
8. Attach the coolant hoses of the MIG/MAG torch to the relevant connectors on the power source front panel.
9. Connect the plug of the ground clamp to the welding socket on the basis of the polarity required.
10. Connect the earth clamp to the workpiece being processed.
11. Set the welding power source ON/OFF switch to "I" (unit powered).
12. Feed the wire through the torch until it protrudes from the tip, pressing button  on the unit front panel.
13. Select the torch trigger procedure on the user interface.
14. Press the torch trigger with the torch well clear of any metal parts. This serves to open the gas solenoid valve without striking the welding arc.
15. Use the flow control valve to adjust the flow of gas as required while the gas is flowing out.
16. Set the required welding parameter values on the user interface.

- ① On connecting and enabling a remote controller [RC] certain settings can be modified from said controller without having to take action on the user interface of the welding power source.

The system is ready to start welding.

2.6 MIG/MAG INSTALLATION

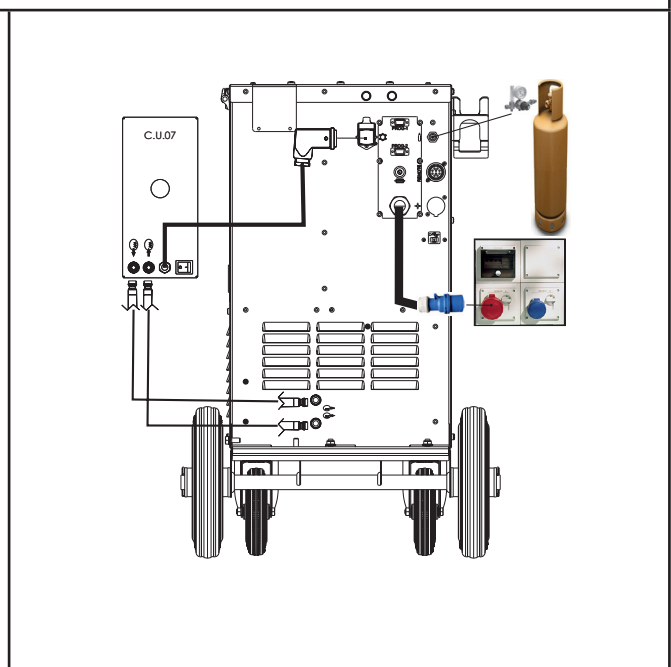
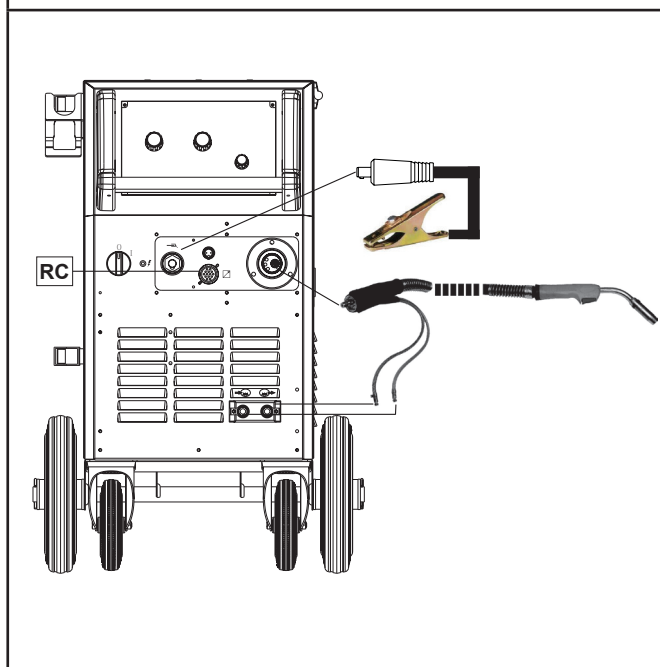


DANGER!

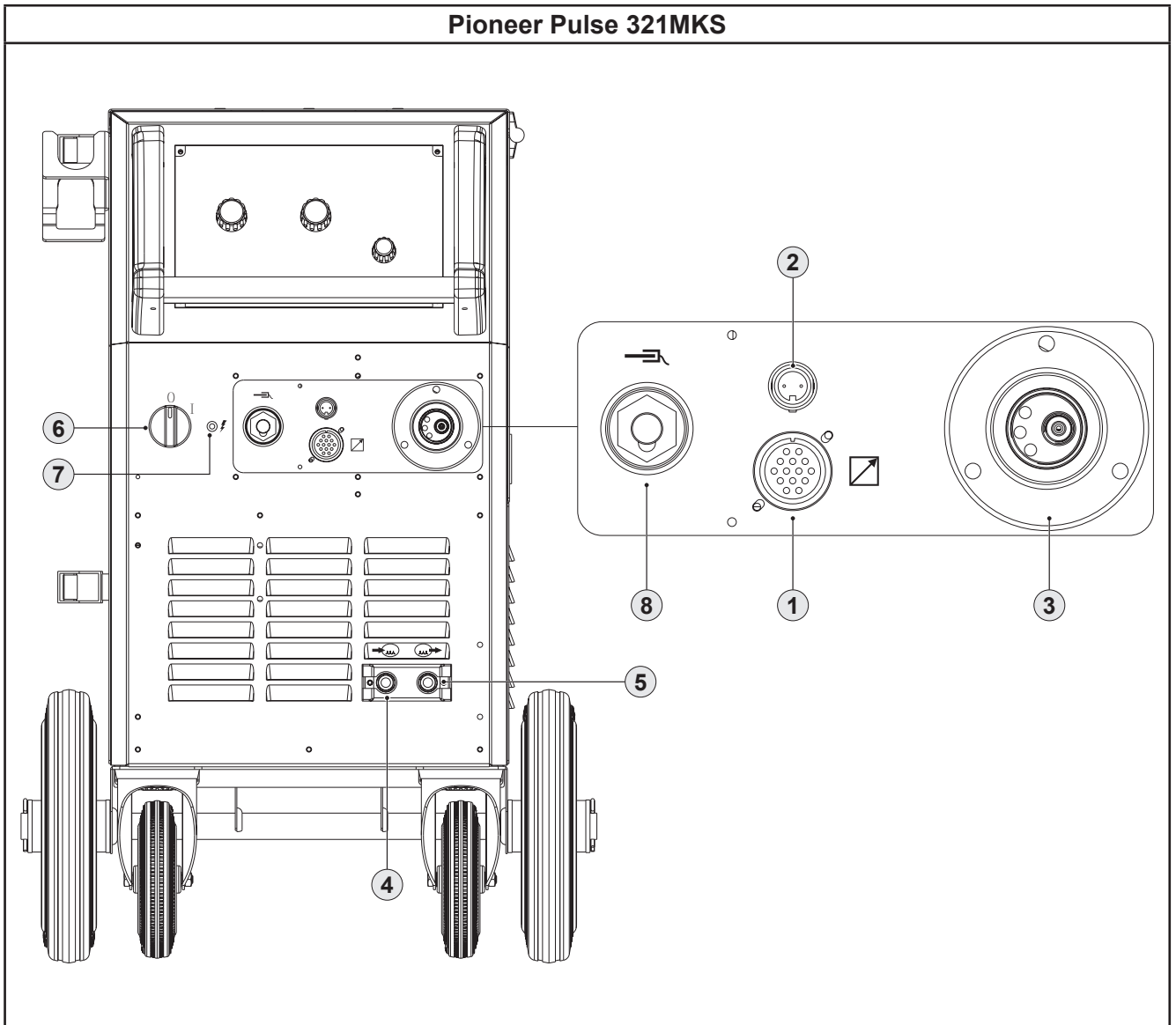
Electric shock hazard!
Read the warnings highlighted by the following symbols in the "General prescriptions for use".



Pioneer Pulse 321MKS

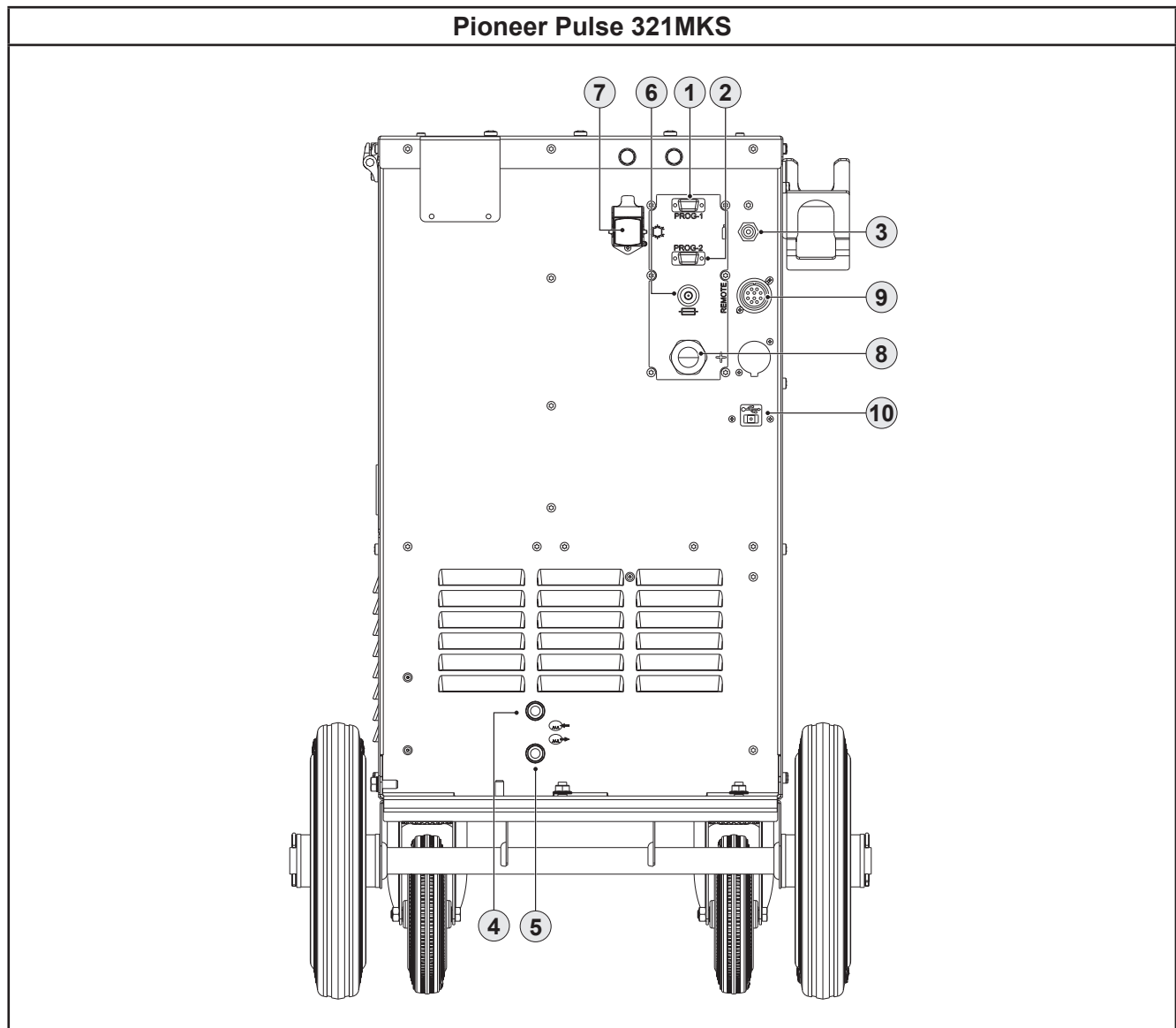


2.7 FRONT PANEL



- 1: Remote controller connector.
- 2: Provision for connection of the push pull torch (purchasing and installing the relative kit).
- 3: EURO TORCH welding socket.
- 4: Connector for coolant hose.
Torch → Power source
- 5: Connector for coolant hose.
Power source → Torch
- 6: Welding power source ON/OFF switch.
- 7: Mains protection ON LED.
This LED illuminates if an incorrect operating condition occurs:
Absence of a phase in the power supply line.
- 8: Earth welding socket

2.8 REAR PANEL



- 1: Connector for connection to the programmer.
(Programming connector for the process circuit board.)
You can update the software of the equipment using the programming kit.
- 2: Connector for connection to the programmer.
(Programming connector for the motor circuit board.)
You can update the software of the equipment using the programming kit.
- 3: Gas rear connector. This is for the connection of the gas pipe coming from the bundle of cables.
- 4: Connector for coolant hose.
Cooler → Power source
- 5: Connector for coolant hose.
Power source → Cooler
- 6: Power supply transformer fuse.
 - Type Delayed acting (T)
 - Amperage 3.15 A
 - Voltage 500 V

7: Cooler power feeding connector.

- Voltage 230 V~
- Current Output 0.8 A
- IP protection rating IP20 (cap open)
IP66 (cap closed)



WARNING!
High voltage!

If the socket is not connected to any devices always close the cap: presence of hazardous voltage levels!

8: Power cable.

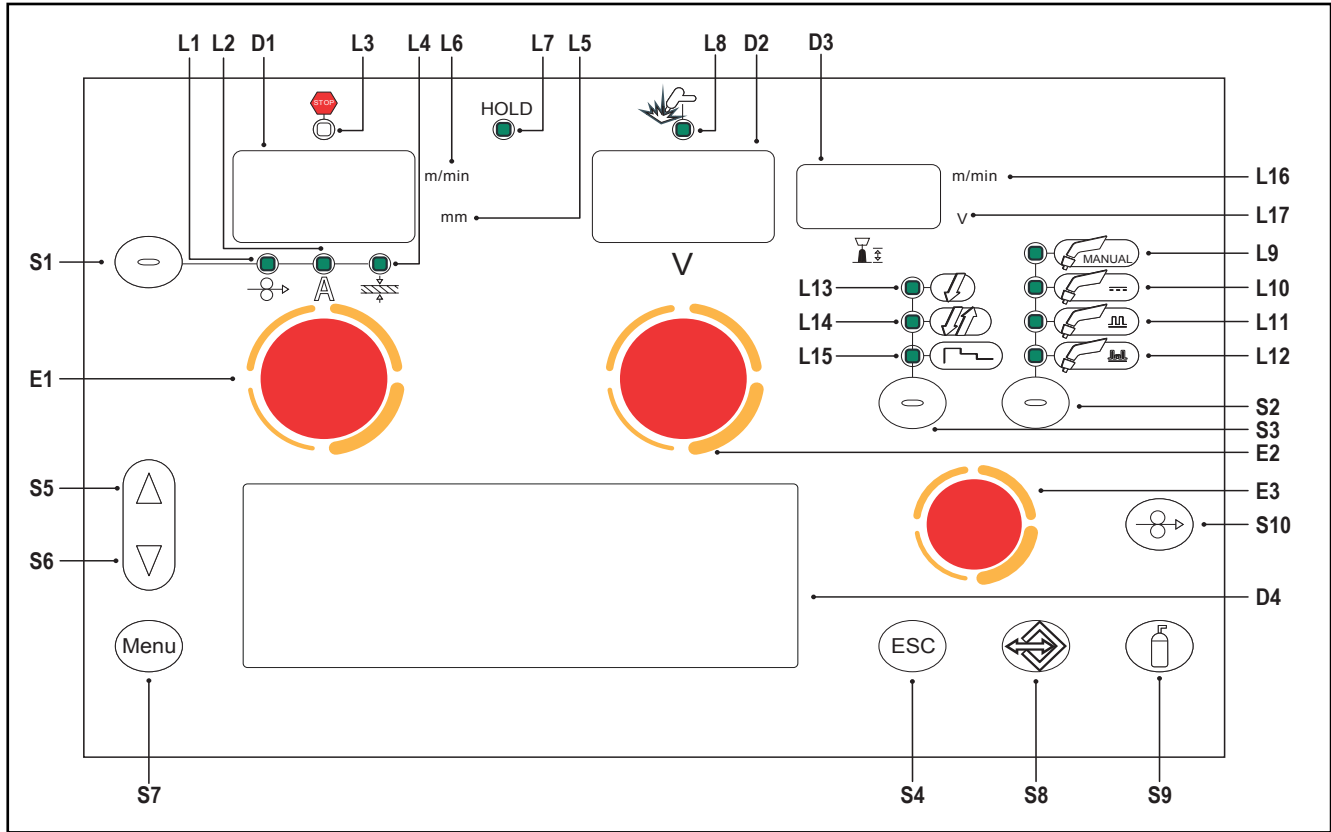
- Total length (including internal part) 4,5 m
- Number and Cross section of Wires 4 x 4,0 mm²
- Power plug type Not supplied

9: Signals connector for automatic application.









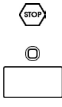


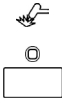













10: Port provided to connect a USB memory stick to export/import JOBs.

3 USER INTERFACE





Pioneer Pulse 321MKS



CODE	SYMBOL	DESCRIPTION
L1		illumination shows that the following parameter can be set: WIRE FEED RATE The value appears on the following display: D1
L2	A	Short-Spray, pulsed and synergic MIG/MAG welding: illumination shows that 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: D1
L3		This LED illuminates to show an anomaly in the operating conditions. An alarm message appears on the following display: D4 ① § "7 ALARM MANAGEMENT"
L4		illumination shows that 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: D1
L5	mm	Illuminates to show a value in the following unit of measurement: MILLIMETRES Illuminates together with the following LED: The value appears on the following display: D1
L6	m/min	Illuminates to show a value in the following unit of measurement: METRES PER MINUTE Illuminates together with the following LED: The value appears on the following display: D1
L7	HOLD	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 display : D1-D2

CODE	SYMBOL	DESCRIPTION
L8		This LED illuminates to confirm the presence of power on the output sockets.
L9		This LED illuminates to show that the following welding mode is selected: MANUAL MIG/MAG
L10		This LED illuminates to show that the following welding mode is selected: SYNERGIC MIG/MAG
L11		This LED illuminates to show that the following welding mode is selected: PULSED SYNERGIC MIG/MAG
L12		This LED illuminates to show that the following welding mode is selected: DOUBLE PULSED SYNERGIC MIG/MAG
L13		Illumination shows that the following function has been activated: 2 stroke procedure ① § "12.1 2T MIG/MAG WELDING" A flashing signal means the following function is activated: 2 stroke procedure ① § "12.2 2T SPOT MIG/MAG WELDING"
L14		Illumination shows that the following function has been activated: 4 stroke procedure ① § "12.3 4T MIG/MAG WELDING" / § "12.4 4T B-LEVEL MIG/MAG WELDING"
L15		Illumination shows that the following function has been activated: 3 levels procedure ① § "12.5 2T - 3 LEVEL MIG/MAG WELDING" / § "12.6 2T SPOT - 3 LEVEL MIG/MAG WELDING" / § "12.7 4T - 3 LEVEL MIG/MAG WELDING" / § "12.8 4T B-LEVEL - 3 LEVEL MIG/MAG WELDING".
D1		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.
D2		Data setting: The display shows the value, in Volts, of the selected welding voltage.
		Welding: The display shows the effective voltage value during welding.
		HOLD function (at welding end): The display shows the latest measured voltage value.
D3		Manual MIG/MAG welding: The display is not active. The display shows " - - - ".
		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.
D4		Data setting: The display shows the various welding menus relative to the selected processes. The display shows the selected parameter.
S1		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 / 
S2		This button selects the welding mode.
S3		This button selects the torch trigger procedure. ① § "12 TORCH TRIGGER MODES"
S4		The button restores the main menu of display D4, starting from any other page. The button serves to exit any menu without saving any changes.
S5		The button scrolls the selection made on the menus upwards or to the right.
S6		The button scrolls the selection made on the menus downwards or to the left.
S7		The button selects the various submenus visible in the following display: D4
S8		The button enables management of the personalised programs that can be shown on the following display: D4 ① § "11 JOBS MANAGEMENT"
S9		This button opens the gas solenoid valve to fill the circuit and calibrate the pressure with the regulator on the gas cylinder. ① § "6.4 GAS FLOW ADJUSTMENT"

ENGLISH

CODE	SYMBOL	DESCRIPTION
S10		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.
E1		Data setting: The encoder adjusts the main welding (and synergy) parameter, shown on the following display: D1 During welding operations with an active JOB: The encoder temporarily modifies the main welding parameter, shown on the following display: D1
E2		Manual MIG/MAG mode: The encoder adjusts the welding voltage, and the relative value is shown, in volts, on the following display: D2
		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: D3 During welding operations with an active JOB: The encoder temporarily modifies the main welding parameter, shown on the following display: D2
E3		The encoder changes the setting of the selected parameter shown on the following display: D4 The selected parameter is shown by the following symbol: ➔.
		Not welding, with a loaded JOB: jobs to be scrolled regardless of the sequence they belong to.

4 UNIT POWER-UP

Set the welding power source ON/OFF switch to “I” to switch on the unit.
The message appears on the following displays: D4

Tab. 1- Messages at power-up

MOTOR BOARD FW: YY.YY.YYY PROGRAM UPDATE PIONEER POWER PULSE ZZZ FW: YY.YY.YYY POWER SOURCE OK	YY.YY.YYY= power source software version.
---	---

First power-up or power-ups following a RESET procedure

- ➡ The welding power source sets up for welding with the factory presets.

Subsequent power-ups

- ➡ The welding power source sets up for welding in the latest stable welding configuration that was active at the time of power-off.
- ➡ During power-up all functions are inhibited and the following displays remain blank: D1, D2, D3

5 RESET (LOAD FACTORY SETTINGS)

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

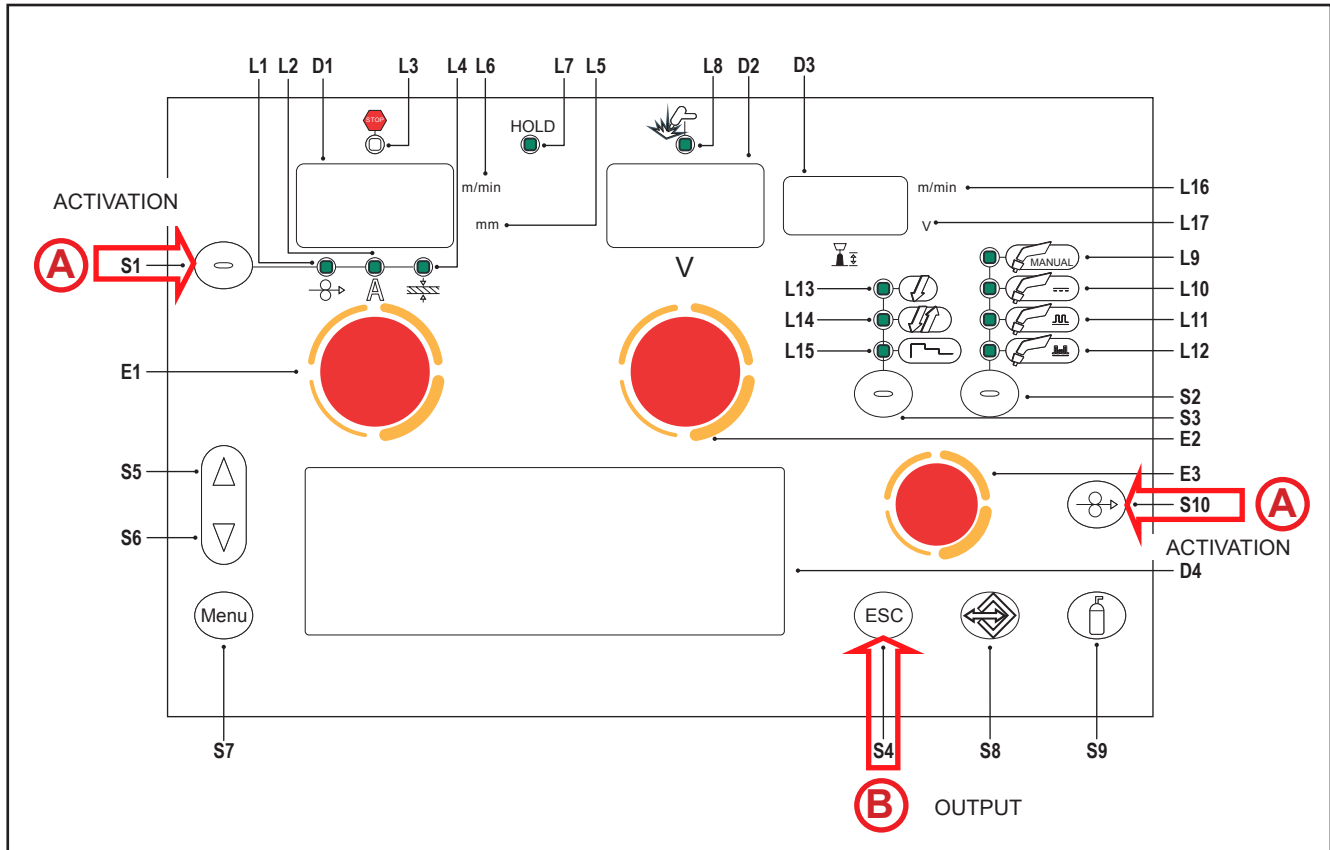
The reset procedure is useful in the following cases:

- Too many changes made to the welding parameters so user finds it difficult to restore defaults.
- Unidentified software problems that prevent the welding power source from functioning correctly.

5.1 PARTIAL RESET

The reset procedure involves restoration of the parameter values and settings, except the following settings:

- Settings of the SETUP menu.
- saved JOBS.



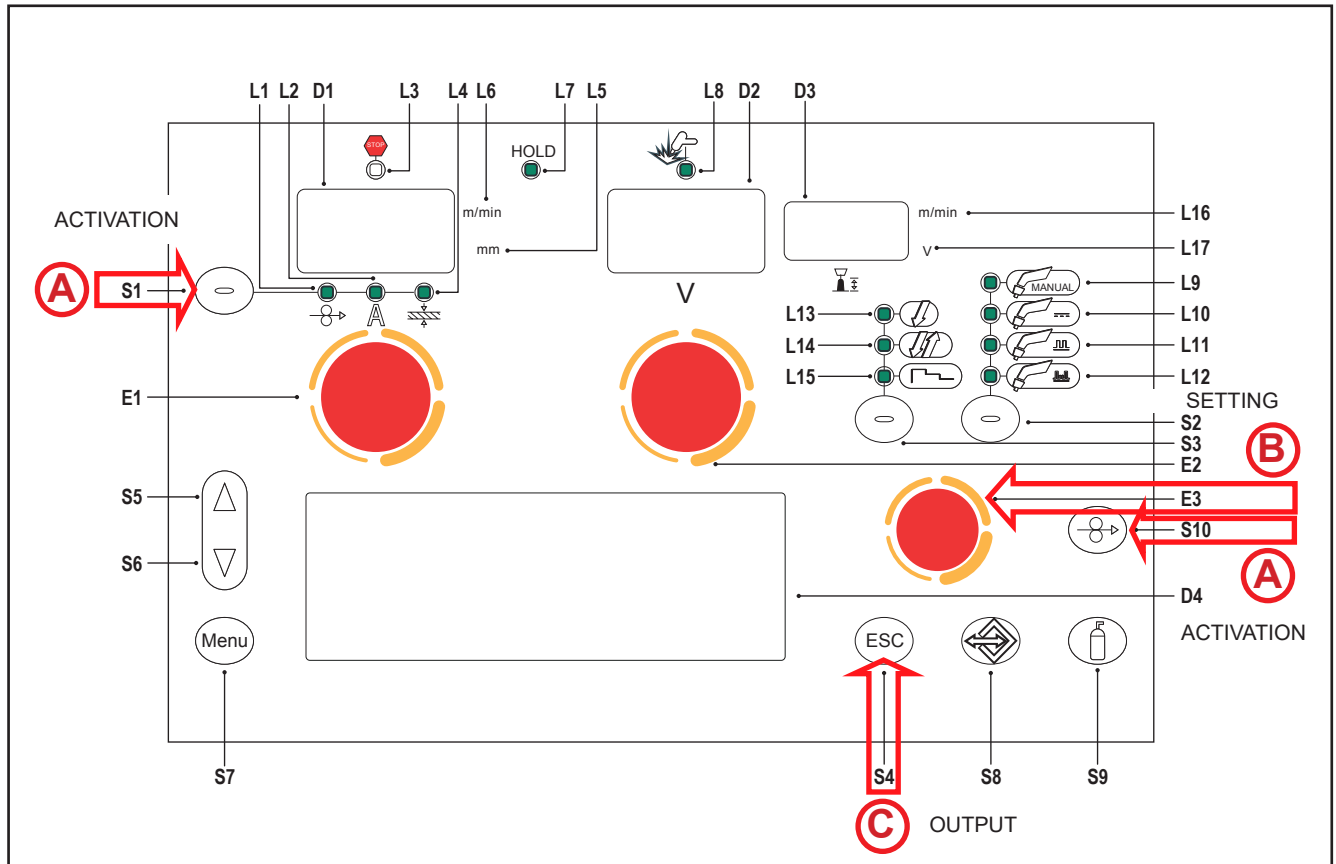
- Set the welding power source ON/OFF switch to “O” to switch the unit off.
- Set the welding power source ON/OFF switch to “I” to switch on the unit.
- Ⓐ ○ Simultaneously press the keys **S1** and **S10** [**This operation must be carried out before the wording “PROGRAM UPDATE” appears in the following display: D4**]
- **PARTIAL RESET SELECT TYPE OF RESET** : The message will appear on display: D4

- **Exit without confirmation**
 - 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.
- Ⓑ ○ **Exit with confirmation**
 - Press **S4** to save the setting and quit the menu.
 - The display **D4** will show the message: **MEMORY CLEANING**
 - Wait for the memory clear procedure to terminate.
 - The unit restarts with the power-up procedure.

5.2 TOTAL 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!



- 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.
- (A)** ○ Simultaneously press the keys **S1** (⏻) and **S10** (⊕) [⚠️ **This operation must be carried out before the wording “PROGRAM UPDATE” appears in the following display: D4**]
 - ➡ **PARTIAL RESET SELECT TYPE OF RESET** : The message will appear on display: D4

- (B)** ○ Use the **encoder E3** (⌚), to select the following **“TOTAL RESET”**.

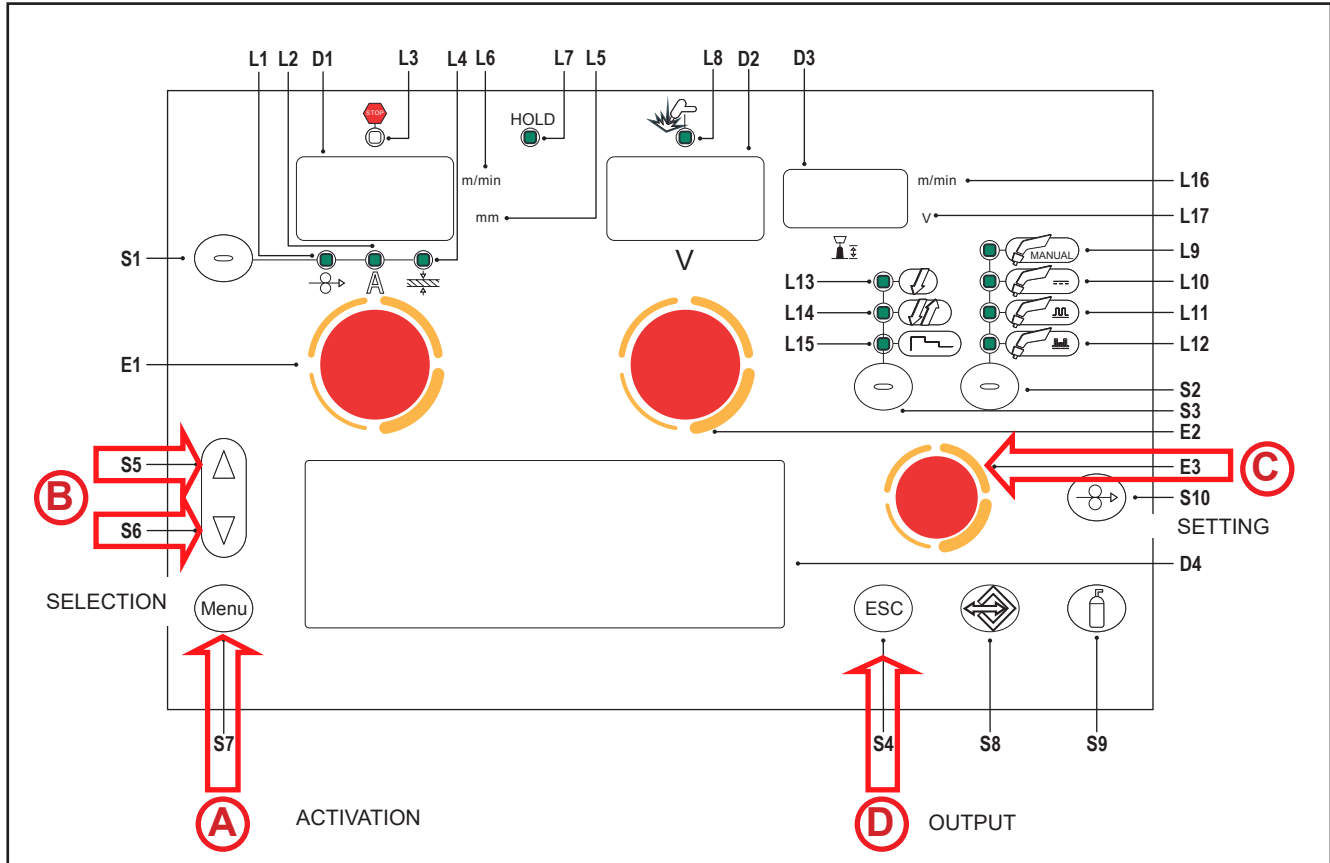
- (C)** ○ **Exit without confirmation**
 - Set the welding power source ON/OFF switch to “O” to switch the unit off.
 - Set the welding power source ON/OFF switch to “I” to switch on the unit.
- **Exit with confirmation**
 - Press **S4** (ESC) to save the setting and quit the menu.
 - ➡ The display **D4** will show the message: **MEMORY CLEANING**
 - Wait for the memory clear procedure to terminate.
 - ➡ The unit restarts with the power-up procedure.

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



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

① § “6.3 LOCKING PROCEDURE”.



SET UP at machine power on

- 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.
- Simultaneously press button **S7** (Menu) [⚠ This operation must be carried out before the wording “PROGRAM UPDATE” appears on the following display: **D4**]
 - SET UP X/Y : The message will appear for a few seconds on display **D4**.
 - X = number of the currently displayed menu page.
 - Y = total number of menu pages.

B


- Press buttons **S5** (▲) and **S6** (▼) to scroll down the list of settings to edit.
 - Activation of the ADJUSTMENTS BLOCK calls for a specific procedure.
 - ① § “6.3 LOCKING PROCEDURE”

C

- Using the **encoder E3** (◻), edit the value of the selected setting.

D

- Press **S4** (ESC) to save the setting and quit the menu.
 - The unit restarts with the power-up procedure..

NOTE: During the normal operation, the operator can enter the SET UP menu by pressing the key **S7**  for 5 seconds (SET UP can therefore be accessed with machine on).

Tab. 2 - Setup settings

MENU PAGE	SETTING	MIN	DEFAULT	MAX	NOTES	
SET UP 1/11	SELECT LANGUAGE				ENGLISH, ITALIANO, FRANÇAIS, DEUTSCH, ESPAÑOL, PORTUGUES, DUTCH, CESKY SRBSKI, POLSKI, SUOMI	
SET UP 2/11	COOLING TYPE	ON	AUTO	AUTO		
SET UP 3/11	DISPLAY CONTRAST	0 %	50 %	100 %		
SET UP 4/11	CONTROL TYPE	OFF	OFF	RC08	OFF	No control
					RC03	n°1 potentiometer
					RC04	n°2 potentiometers
					RC05	n°1 UP/DOWN
					RC06	n°2 UP/DOWN
					RC08	
SET UP 5/11	LOCK STATUS	OFF	OFF	LOCK 2	OFF	All adjustments enabled.
					LOCK 1	All adjustments are disabled with the exceptions shown in "Tab. 3 - Functions not disabled by Locks" on page 25.
					LOCK 2	
SET UP 6/11	ARC CORRECTION	VOLTS	VOLTS	m/min		
SET UP 7/11	HOUR COUNTER	0.0 h	0.0 h	0.0 h		
SET UP 8/11	CONNECTION TYPE	OFF	OFF	NC02	OFF	Communication with the IR is disabled
					NC01	Data is being sent to the IR
					NC02	Data is being sent to and received by the IR
SET UP 9/11	TRIGGER TYPE	OFF	OFF	T01	OFF	Normal operation of torch button.
					T01	Enable Job scroll function in welding by pressing the torch button.
SET UP 10/11	SERVICE	CUR- RENT VAL.	C U R - R E N T VAL.	CALI- BRA- TION		Access to the submenu of the calibration and validation services
SET UP 11/11	PUSH-PULL	OFF	OFF	ON		

ENGLISH

Cooler activation

- ON= The cooler is always running when the power source is switched on. This mode is preferable for heavy duty and automatic welding procedures.
- OFF= The cooler is always disabled because an air-cooled torch is in use.
- 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 plus a number of seconds equivalent to the average current value shown using the HOLD function.

Service

This setting enables the machine validation (VAL.) and calibration (CALIBRATION) operations.

- **CURRENT VAL.**
 - o The validation procedure allows the current value (Ampere) to be correctly detected and displayed on the equipment display. The validation procedure requires the equipment to be connected to a suitable static load.
- **VOLTAGE VAL.**
 - o The validation procedure allows the voltage value (Volt) to be correctly detected and displayed on the equipment display. The validation procedure requires the equipment to be connected to a suitable static load.
- **WIRE S. VAL.**
 - o The validation procedure allows the wire feed rate (m/min) to be correctly detected and displayed on the equipment display.
- **CALIBRATION**
 - o The calibration procedure allows the machine current to be calibrated.

The SERVICE procedure is not described in this manual as it can be carried out only by specialised, suitably trained and equipped technical staff.

The testing methods and the equipment required are set out in the relevant technical standards.

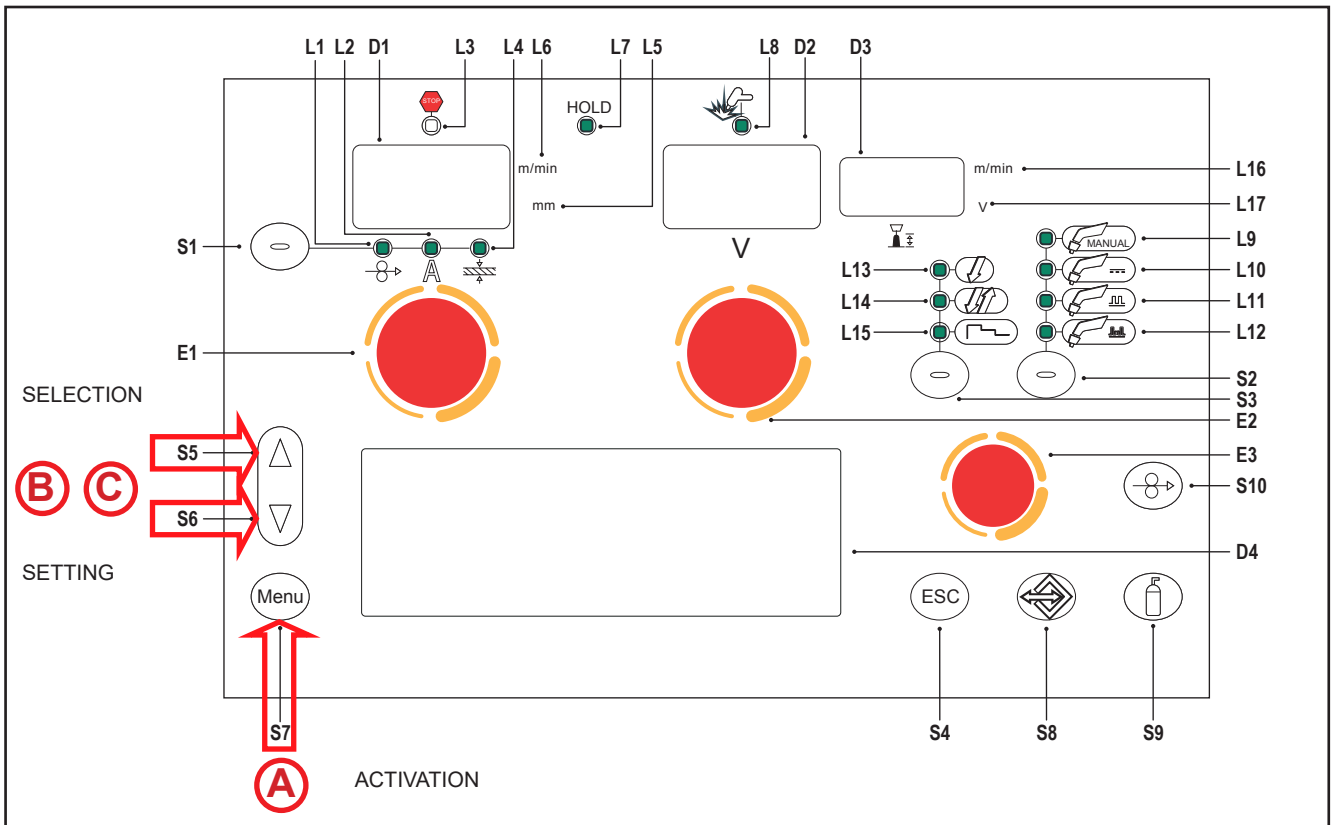
6.1 OPERATING HOUR COUNTER

The menu page shows the processing hour counters.

- **POWER ON** = Total number of hours the machine has been on (mains powered).
- **T.ARC ON** = Total number of hours of welding arc on.
- **P.ARC ON** = Partial number of hours of welding arc on.

SET UP	7/11
POWER ON	7.2 h
T. ARC. ON	5.3 h
P. ARC ON	0.7 h

The reading is carried out as follows: 7 hours and (0.2x60) 12 minutes.



- (A) Partial count reset**
 - Press and hold down the key **S7** (Menu) for 3 seconds (SET UP with machine on).
- (B)**
 - Press keys **S5** (▲) and **S6** (▼) to select line "SET UP 7/11".
- (C)**
 - Simultaneously hold down keys **S5** (▲) and **S6** (▼) for 3 seconds.
 - ➡ The value **P.ARC ON** will be taken to 0.0 h

6.2 TRIGGER TYPE

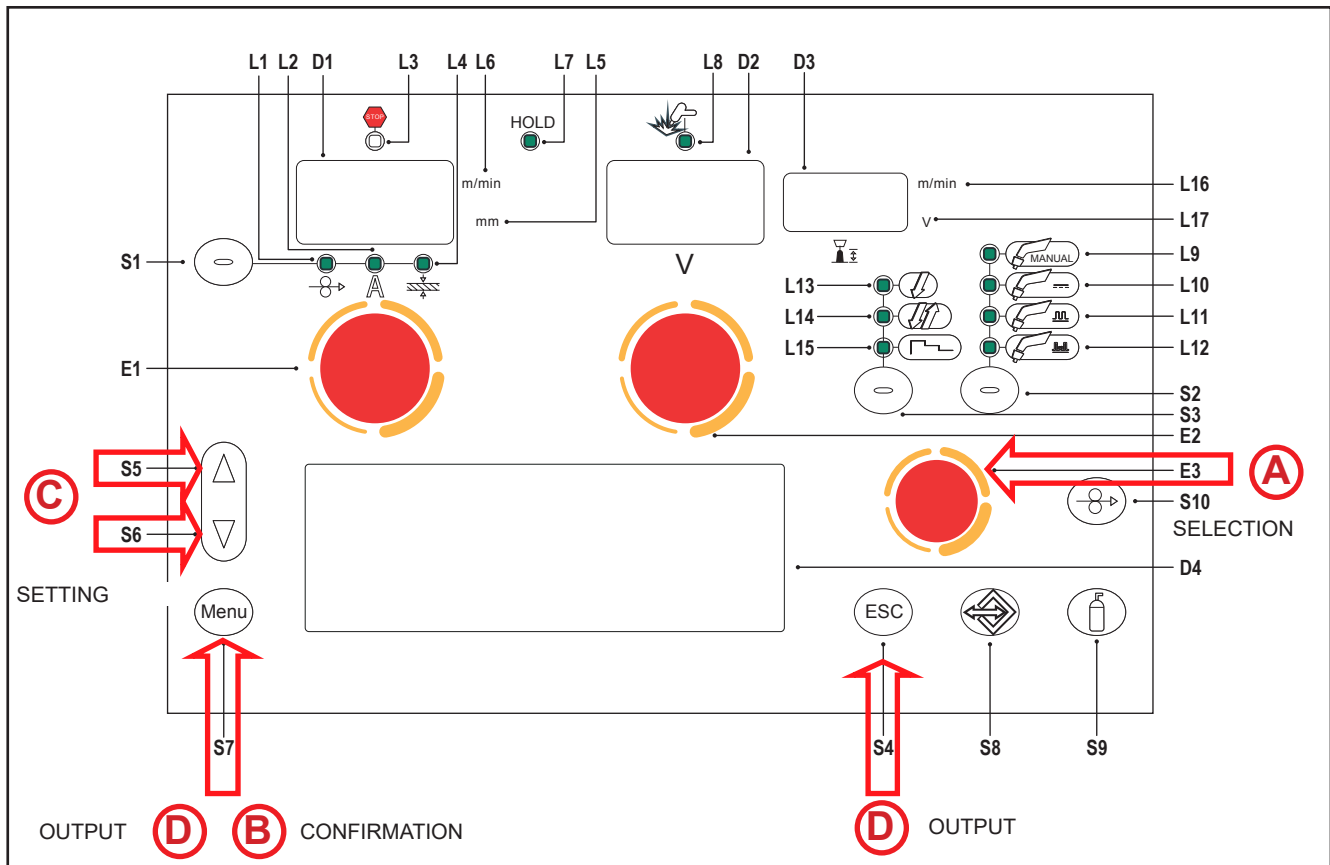
If T01 mode is activated, the job scroll function in welding is enabled by pressing the torch button. In T01 mode, the torch button operates in 4 strokes or 4 strokes 3 levels with Bilevel functions disabled. Therefore, if jobs are saved with different modes, they are automatically provided according to these conditions (which are not saved).

6.3 LOCKING 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 (LOCK STATUS = OFF) and if you wish to set up a limitation on use of the welding power source, display page 5/10 of the SETUP menu.



- (A)** ○ Use the **encoder E3** to select the required lock status.
- (B)** ○ Press the **S7 (Menu)** button to confirm.
ENTER PASSWORD: 0000 - The message will appear on display: **D4**
 - ⓘ Default password: 0000
- (C)** ○ Enter a 4 digit numerical password.
 ○ Use buttons **S5** (▲) and **S6** (▼) to select the digit to be changed.
 ○ The selected digit will flash .
 ○ Use **encoder E3** to set up the value.

D	<ul style="list-style-type: none"> ○ Exit without confirmation <ul style="list-style-type: none"> - Press the S4 (ESC) button. ➡ This action will automatically close the menu ○ Exit with confirmation <ul style="list-style-type: none"> - Press the S7 (Menu) button. ➡ The unit restarts with the power-up procedure. ⓘ The password becomes active. Make a note of the password you set!
----------	---

Tab. 3 - Functions not disabled by Locks

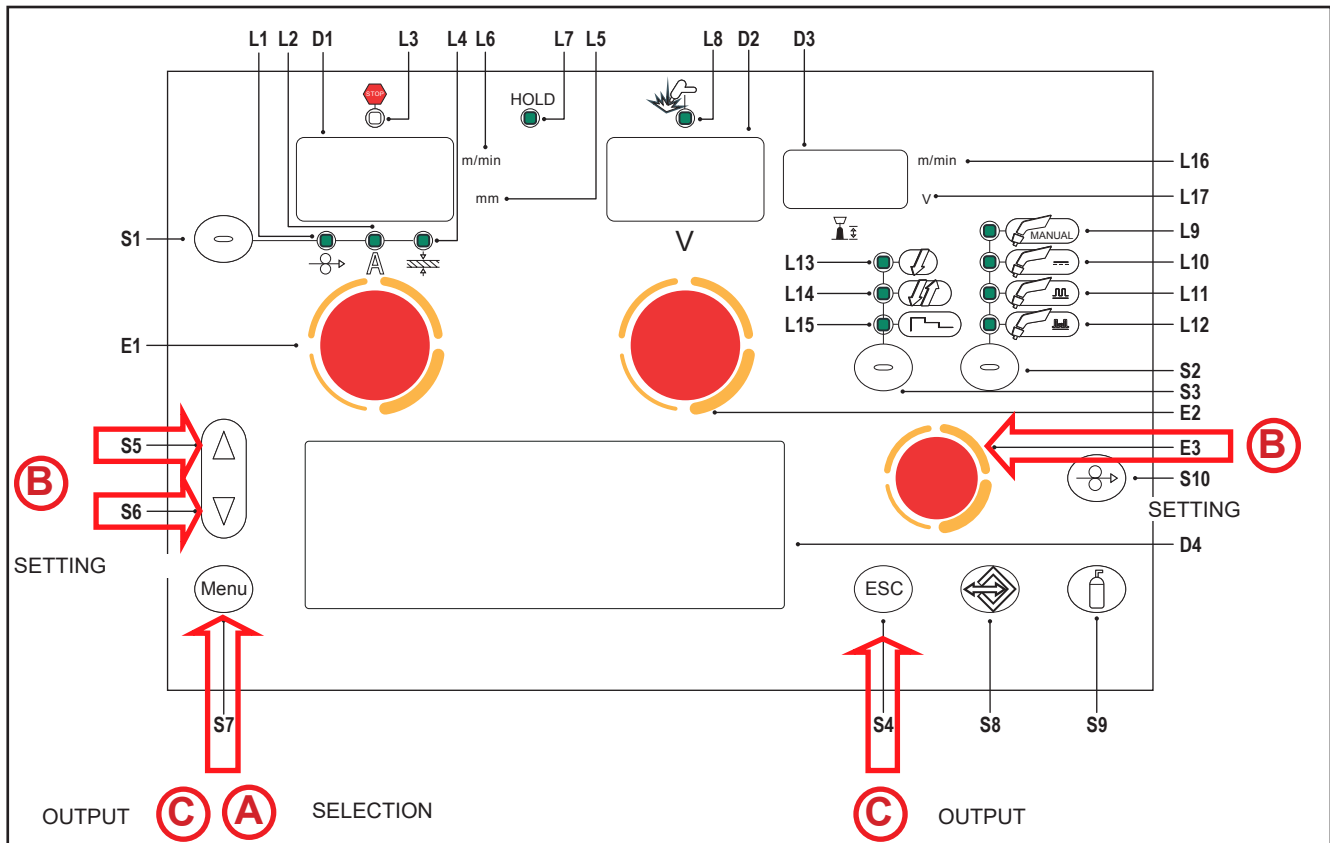
LOCK	TYPE OF REMOTE CONTROL					NOTE
	USER INTERFACE/RC08	RC03	RC04	RC05	RC06	
OFF	All adjustments enabled.	All adjustments enabled.	All adjustments enabled.	All adjustments enabled.	All adjustments enabled.	
1	Selection of torch trigger procedure (button S3) Display of main welding parameters (button 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 lock status is to perform the welding power source RESET procedure.

NOTE: The welding power source must be on and set up for welding.



- (A)**
 - Press and hold down the button **S7** (Menu) for 5 second.
 - The SET UP menu will be accessed, with the machine on.
 - **LOCK...WRITE PASSWORD : 0000** - The message will appear on display: **D4**
 - Enter the active 4 digit numerical password.
- (B)**
 - Use buttons **S5** (▲) and **S6** (▼) to select the digit to be changed.
 - The selected digit will flash..
 - Use **encoder E3** (◯) to set up the value.
- (C)**
 - **Exit without confirmation**
 - Press the **S4** (ESC) button.
 - This action will automatically close the menu
 - **Exit with confirmation**
 - Press the **S7** (Menu) button.
 - The unit restarts with the power-up procedure.

6.4 GAS FLOW ADJUSTMENT

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

- Open the gas solenoid valve by pressing and releasing button **S9** (🚒).
- Adjust the pressure of gas flowing from the torch by means of the flow meter connected to the gas cylinder.
- Close the gas solenoid valve by pressing and releasing the button **S9** (🚒).
- The solenoid valve closes automatically after 30 seconds.

6.5 TORCH LOADING



WARNING!

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.

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.



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.

☛ CHECK COOLING UNIT - The message will appear in display: **D4**

- Press button **S4**  or torch trigger to repeat the checking procedure for an additional 30 seconds.
 - If the problem persists rectify the cause of the alarm.
 - During this checking operation, the setup menu can be accessed by pressing button **S7**  for 5 seconds.

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.

6.6 WELDING CIRCUIT CALIBRATION

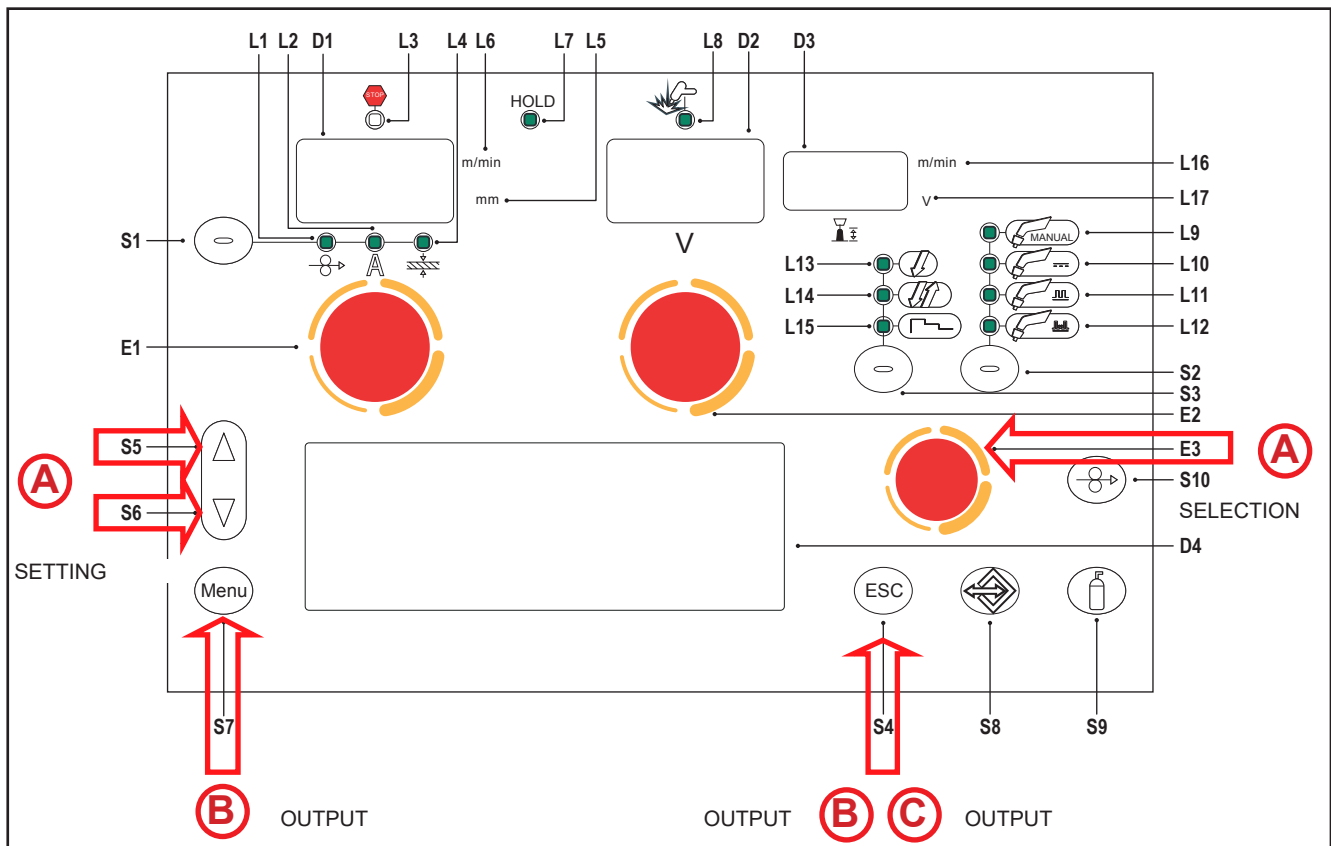
When the wire feeder is used with the associated cable bundle, the welding circuit “r” resistance must be measured by using the calibration function. This allows to achieve a consistent welding quality when the cable bundle length and the torch is changed. The welding circuit resistance depends on the cable bundle and the torch used, therefore the calibration procedure must be repeated when these components are changed.

CALIBRATION after power source RESET

If the power source total RESET is carried out, the calibration value will be replaced by the default value. If a partial RESET is carried out, the measured value will be stored.

Calibration is not compulsory therefore, should the user decide not to carry it out, the machine will keep the default value.

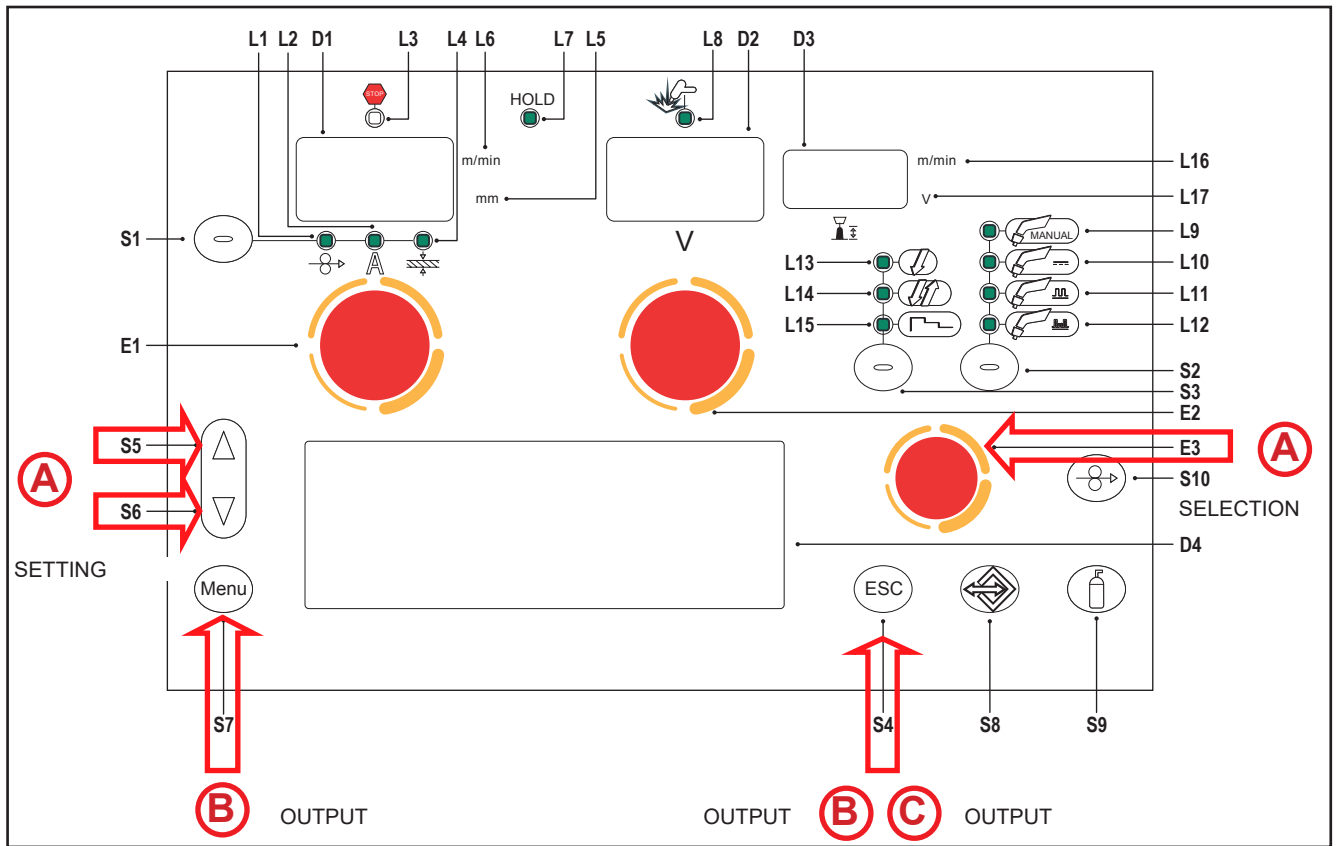
CALIBRATION PROCEDURE



The welding power source must be on and not set up for welding.
The power source remote control must be enabled.

- Press and hold down for 3 seconds buttons **S5** and **S6** .
- **TOUCH THE WORKPIECE WITH THE GUIDE WIRE TIP AND PRESS THE TORCH TRIGGER-** The message will appear on display: **D4**
- **CAL** - The message will appear on display: **D1**
- Display **D2** will show the welding circuit resistance value (mΩ) measured during the last calibration. After a total **RESET**, the default value will appear.

Remove the gas nozzle from the torch and lean the guide wire tip (without the wire) onto the surface of the workpiece, making sure it sticks well; check that the contact between the guide wire tip and the workpiece is on a clean area of the piece's surface. Press the torch button to perform the calibration.



Calibration carried out correctly

(B)

- **CALIBRATION SUCCESSFULLY COMPLETED** - The message will appear on display: **D4**.
- The calibration value appears on display : **D2**.

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

- **Exiting without saving**
 - Press the **S4** (ESC) button.
- **Exit and save**
 - Press the **S7** (Menu) button.

Calibration carried out incorrectly

(C)

- **CAL. Err.** - The message will appear on display: **D1 - D2**.
- **REPEAT THE MEASUREMENT** The message will appear on display: **D4**.

Press the torch trigger to perform the calibration.

- **Exiting without saving**
 - Press the **S4** (ESC) button.



7 ALARM MANAGEMENT




This LED illuminates if an incorrect operating condition occurs.

- An alarm message will appear on display **D4**.

Tab. 4 - Alarm messages

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 problem is solved, the welding power source will reset automatically.	All functions disabled. <u>Exceptions:</u> • cooling fan. • cooler (if switched on).	<ul style="list-style-type: none"> • 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 NO COMMUNICATION	Indicates the presence of problems in data communication between the power source and wire feeder. When the problem is solved, 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. <u>Exceptions:</u> • cooling fan. • cooler (if switched on).	<ul style="list-style-type: none"> • 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 problem is solved, the welding power source will reset automatically.	All functions disabled.	<ul style="list-style-type: none"> • 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. <u>Exceptions:</u> • cooling fan.	<ul style="list-style-type: none"> • 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 intact, 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. <u>Exceptions:</u> • cooling fan. • cooler (if switched on).	<ul style="list-style-type: none"> • Check that the programmed arc voltage value is not too high in relation to the thickness of the work to be welded.

MESSAGE	MEANING	EVENT	CHECKS
<p>WARNING CAN BUS</p>	<p>Indicates a CAN communication problem. Exit the alarm state by performing one of the following actions:</p> <ul style="list-style-type: none"> • Press the following button:  	<p>All functions disabled.</p> <p><u>Exceptions:</u></p> <ul style="list-style-type: none"> • cooling fan. • cooler (if switched on). 	<ul style="list-style-type: none"> • Make sure the IR board is powered on. • Make sure the LEDs on the interface board go on. • Check the correct connection and integrity of the cabling between the wire feeder and the IR board. • Switch off the machine, then switch it on again.

8 PARAMETERS ACTIVATION





The welding parameters are available in accordance with the selected welding mode and procedure. Certain parameters are available only after other parameters or functions of the unit have been enabled or set.

The table shows the settings required to enable each parameter.

√ : always available.

1: available in HSL line power sources on selecting one of the “PF” curves (e.g.: SG2/SG3 **PF**)

2: Available selecting one of the “PR” curves (e.g.: SG2/SG3 **PR**)

MENU ↓	MODE →											
	PROCEDURE →	↓	↕	↓	↕	↔	↓	↕	↔	↓	↕	↔
	PARAMETER ↓											
-	Arc correction in Volts			✓	✓	✓	✓	✓	✓	✓	✓	✓
-	Arc correction in metres per minute			✓	✓	✓	✓	✓	✓	✓	✓	✓
-	Arc correction with Power Root			2	2	2						
1st	Inductance	✓	✓									
2nd	Inductance			✓	✓	✓						
2nd	PR Start			2	2	2						
2°	Arc Set						✓	✓	✓	✓	✓	✓
2°	Pre Gas	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2°	Soft Start	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2°	Burn back	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2°	Post gas	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2°	Power focus			1	1	1						
2°	Spot time	✓		✓			✓			✓		
2°	B-level				✓	✓		✓	✓		✓	✓
2°	Start 3lev					✓			✓			✓
2°	Start time					✓			✓			✓
2°	Crater time					✓			✓			✓
2°	Crater 3lev					✓			✓			✓
2°	Slope 3lev 1					✓			✓			✓
2°	Slope 3lev 2					✓			✓			✓
2°	Freq 2puls									✓	✓	✓
2°	Range 2puls									✓	✓	✓
2°	Cycle 2puls									✓	✓	✓
2°	Arc2 2puls									✓	✓	✓
2°	Arc2 2puls									✓	✓	✓

8.1 WELDING PARAMETERS

• Arc correction in volts

- This parameter corrects the synergic voltage value relative to the synergic point of the synergic and pulsed MIG/MAG processes, while it manages correction of the voltage of the high value in the MIG/MAG double pulsed process.
- The default value for horizontal and frontal welding is 0.0 V.
- NOTE: A value >0 produces an increase in the length of the welding arc, while a value <0 produces a shorter arc.

• Arc correction in metres per minute

- This parameter corrects the wire feed rate synergic value relative to the synergic point of the synergic and pulsed MIG/MAG processes, while it manages the wire feed rate of the high value in the MIG/MAG double pulsed process.
- The default value for horizontal and frontal welding is 0.0 V.
- NOTE: A value <0 produces an increase in the length of the welding arc, while a value >0 produces a shorter arc.

• Arc correction with Power Root

- The parameter corrects the arc dynamics in the POWER ROOT process.
- The default value is 0.
- NOTE Values >0 produce a «softer» weld, while values <0 produce a «harder» weld.

• INDUCTANCE (MIG/MAG manual welding)

- Consequences of a higher value:
 - “Softer” welding.
 - Less spatter.
 - Less positive starting.
- Consequences of a lower value:
 - “Harder” welding.
 - More spatter.
 - More reliable starting.

• INDUCTANCE

- The value SYN=100 denotes the optimal synergic inductance value chosen by the manufacturer.
- IMPORTANT NOTE: This inductance value does not correspond to the equivalent number set in manual MIG/MAG welding.
- Consequences of a higher value:
 - “Softer” welding.
 - Less spatter.
 - Less positive starting.
- Consequences of a lower value:
 - “Harder” welding.
 - More spatter.
 - More reliable starting.

ENGLISH

• PR START

- The value SYN=100 denotes the optimal synergic inductance value chosen by the manufacturer.
- IMPORTANT NOTE: This inductance value corresponds to start-up with the POWER ROOT curves.
- Consequences of a higher value:
 - Less positive starting.
- Consequences of a lower value:
 - More reliable starting.

• ARC SET

- In pulsed synergic welding this parameter directly influences the size of the welding pulses.
- The value SYN=100 denotes the optimal synergic value chosen by the manufacturer.
- IMPORTANT NOTE: This parameter should be adjusted as little as possible. To correct synergy it is advisable to use arc correction by means of the voltage parameter. This parameter can be useful if the material or gas used is different from that of the synergic curve.
- If you set a value other than SYN, this value is stored and fixed.
- Consequences of a higher value:
 - Hotter welding.
- Consequences of a lower value:
 - Cooler welding.

• PRE GAS

- Time of gas delivery before the arc strike.
- CAUTION: an excessively long value will slow the welding procedure. Other than in the presence of special requirements the value should generally be kept at 0.0 s or anyway very low.
- Consequences of a higher value:
 - This parameter allows a shielded environment to be created, thereby eliminating contaminants at the start of the welding pass.

• SOFT START (MIG/MAG manual welding mode)

- The SOFT START is the wire approach speed to the workpiece.
- The value is expressed as a percentage of the set feed rate.
- Consequences of a lower value:
 - The start of welding is "softer".
- Consequences of a higher value:
 - The welding start may prove difficult.

• SOFT START

- The SOFT START IS THE WIRE APPROACH SPEED TO THE WORKPIECE.
 - The value is expressed as a percentage of the set feed rate.
 - In synergic welding the optimal SOFT START value (indicated with SYN) varies in general with variations of the synergic parameters.
 - In synergic welding, if the value SOFT START = SYN is selected the welding power source will always have the optimal SOFT START value set when the main welding parameter changes.
 - If you set a value other than SYN, this value is stored and fixed.
 - Consequences of a lower value:
 - The start of welding is "softer".
 - Consequences of a higher value:
 - The welding start may prove difficult.
-

• BURN BACK (MIG/MAG manual welding mode)

- The BURN BACK value is associated with the quantity of wire that is burnt at the end of the welding procedure.
- Consequences of a higher value:
 - Wire significantly retracted into the torch nozzle.
- Consequences of a lower value:
 - Stick-out at welding start is longer.

• BURN BACK

- The BURN BACK value is associated with the quantity of wire that is burnt at the end of the welding procedure.
- In synergic welding the optimal BURN BACK value (indicated with SYN) varies in general with variations of the synergic parameters.
- In synergic welding, if the value BURN BACK = SYN is selected the welding power source will always have the optimal BURN BACK value set when the main welding parameter changes.
- If you set a value other than SYN, this value is stored and fixed.
- Consequences of a higher value:
 - Wire significantly retracted into the torch nozzle.
- Consequences of a lower value:
 - Stick-out at welding start is longer.

• POST GAS

- Time of post gas delivery when the welding arc is extinguished.
- This is useful when welding at high current values or with materials that oxidise readily to cool the weld pool in an uncontaminated atmosphere.
- In the absence of specific requirements the value should generally be kept low.
- Consequences of a higher value:
 - More effective pickling (improved appearance of workpiece at the end of the welding pass).
 - Higher gas consumption.
- Consequences of a lower value:
 - Lower gas consumption.
 - Oxidation of electrode tip (more difficult arc strike).

• POWER FOCUS

- The parameter changes the concentration of the electric arc, increasing or reducing the energy transferred to the workpiece.
- Consequences of a higher value:
 - Welding arc concentration.
 - Penetration increase.

• SPOT TIME

- When the torch trigger is pressed the welding arc persists for the time set in the parameter.
- Press the torch trigger again to resume the welding process.
- The welding process cannot be interrupted once it has been started.
- When the torch trigger is pressed, if the arc does not strike within 10 seconds, the process is deactivated.
- The welding parameters can be modified during the welding process.

ENGLISH

• B-LEVEL

- The parameter enables a special torch trigger function.
- Pressing and releasing the torch trigger rapidly in welding mode (in time 2) serves to switch from the main welding current to a secondary current.
- Pressing and releasing the torch trigger again switches from the secondary current to the main current. This switching can be performed repeatedly at the discretion of the operator.
- To close the welding cycle (time 3) operate the torch trigger with a prolonged press. When the trigger is released the welding cycle will close (time 4).

• START 3LEV

• Start in 3 levels operation

- The parameter adjusts the 1st level wire feed rate as a percentage of the wire feed rate set for welding (2nd level).
- The time is determined by the operator on the basis of the time he presses the torch trigger during the third time.
- This is helpful to start the weld run with different heat input compared to steady state welding conditions.
- High values (e.g. 130 %) are generally required by aluminium alloys to create a weld pool.

• CRATER 3LEV

• Crater in 3 levels operation

- The parameter adjusts the 3rd level wire feed rate as a percentage of the wire feed rate set for welding (2nd level).
- The time is determined by the operator on the basis of the time he presses the torch trigger during the third time.
- This is helpful to finish the weld run with different heat input compared to steady state welding conditions.
- This function is generally required with aluminium alloys, in which the final crater must be filled.
- Consequences of a lower value:
 - Less formation of the welding final crater (crater filler).

• SLOPE 3LEV 1

• Initial slope in 3-level operation

- The parameter controls the slope time connecting the HOT START level and the welding level.
- The setting is dependent on the specific needs of the operator.
- Values from 0.5 s to 1.0 s are suitable for the vast majority of applications.

• SLOPE 3LEV 2

• Final slope in 3-level operation

- The parameter controls the slope time connecting the welding level and the crater filler level.
- The setting is dependent on the specific needs of the operator.
- Values from 0.5 s to 1.0 s are suitable for the vast majority of applications.

• FREQ 2PULS

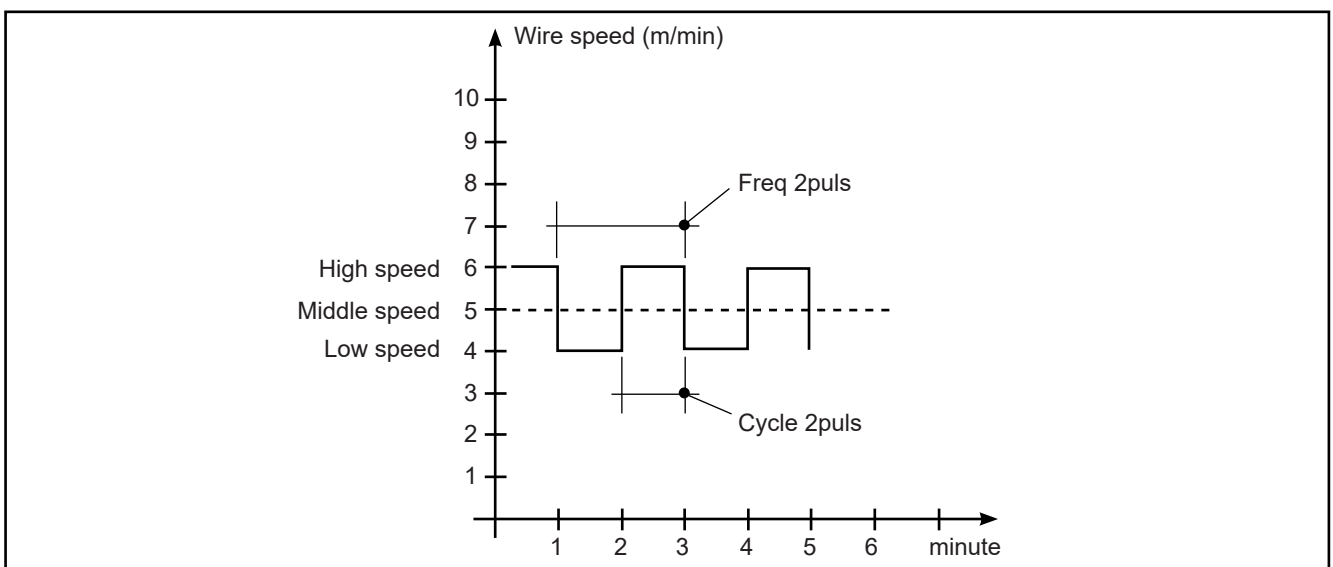
• Double pulsed frequency

- This parameter adjusts the frequency of alternation of the two wire feed rates set with RANGE 2PULS parameter.
- The setting is dependent on the specific needs of the operator.
- The best results are obtained with frequencies of approximately 1.5 Hertz.

• RANGE 2PULS

• Double pulsed range

- This parameter generates the two wire feed rates (high and low) utilised in double pulsed mode, which alternate with the frequency defined by the parameter FREQ 2PULS.
- Values that are not excessively high are preferable for stability of the welding arc.
- This value is expressed as a percentage of the set wire feed rate and it determines the high and low feed rate values in compliance with the following rule:
- High wire feed rate = wire feed rate (D1) + [wire feed rate (D1)*RANGE 2PULS]/2
- Low wire feed rate = wire feed rate (D1) - [wire feed rate (D1)*RANGE 2PULS]/2
- Example: if a rate of 5 m/min is set on the main adjustment (on display D1) (average feed rate) and 40 % on RANGE 2PULS (on display D4), the wire feed rate will vary between 4 m/min (low feed rate) and 6 m/min (high feed rate).



• CYCLE 2PULS

• Double pulsed duty cycle

- The parameter adjusts the high feed rate time.
- The value is expressed as a percentage over the pulse frequency period.

• ARC2 2PULS

• Arc2 voltage in double pulsed mode

- The parameter corrects the synergic voltage value relative to the low wire feed rate of double pulsed mode.
- NOTE: A value >0 produces an increase in the length of the welding arc, while a value <0 produces a shorter arc.

• ARC2 2PULS

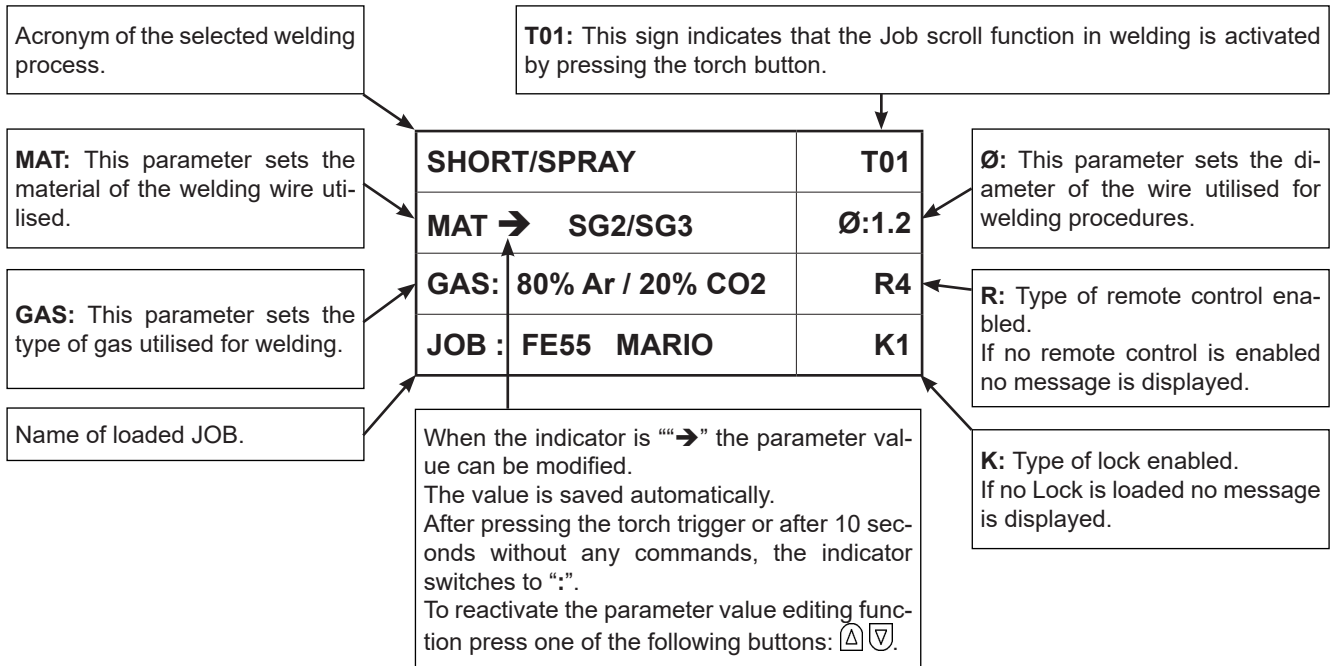
• Arc2 wire feed rate in double pulsed mode

- The parameter corrects the synergic value of the wire feed rate relative to the low voltage value of double pulsed mode.
- NOTE: A value <0 produces an increase in the length of the welding arc, while a value >0 produces a shorter arc.

9 CHARACTERISTICS OF THE MENU LEVELS

9.1 1ST LEVEL

The menu shows the setting of the most important welding parameters (or synergic settings) relative to the selected welding process.



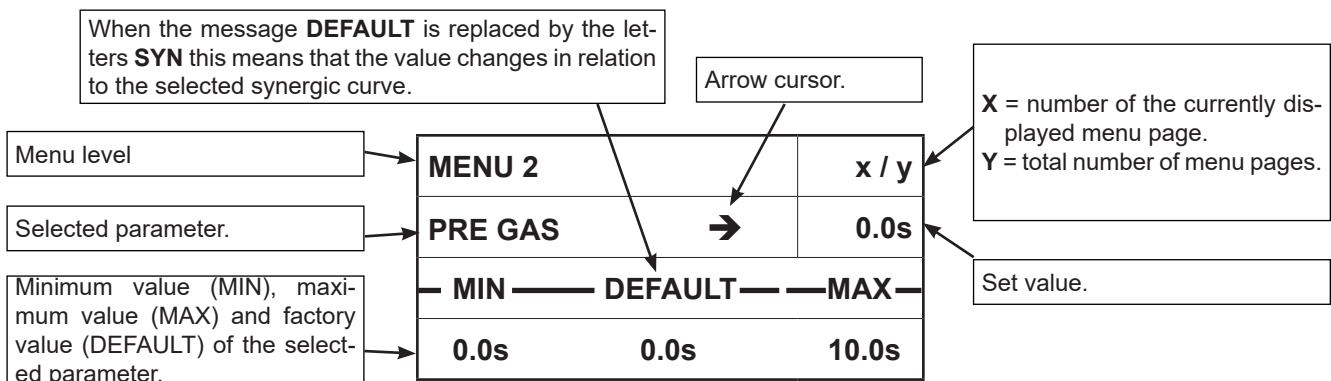
9.2 2ND LEVEL

For each process selection the menu shows the "secondary" welding parameters that can be modified with respect to their synergic values.

If the type of wire, gas, or diameter is changed within a welding process, the second level parameters return to their default values.

The changed parameters remain saved for the relative process selection (manual MIG/MAG, synergic, pulsed synergic, double pulsed synergic).

To save and retrieve the changes made, utilise the JOBS storage procedure.

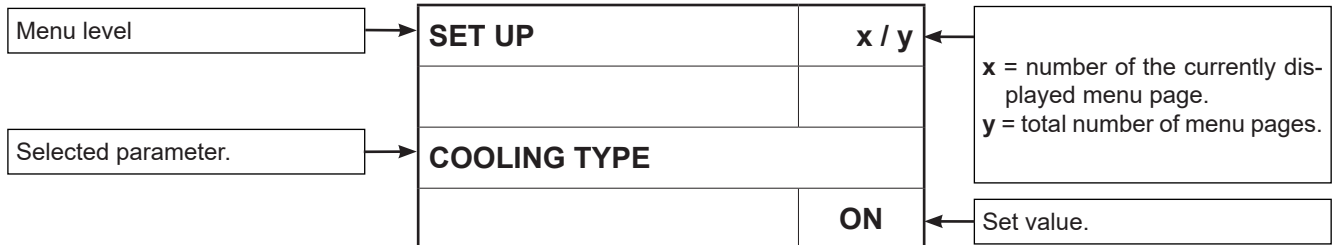


9.3 3RD LEVEL

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.










§ “6 SET-UP (INITIAL SET-UP OF THE WELDING POWER SOURCE)”.



10 WELDING SETTINGS

10.1 WELDING CURVES SELECTION

SHORT/SPRAY	
MAT → SG2/SG3	Ø:1.2
GAS: 80% Ar / 20% CO2	R4
JOB : FE55 MARIO	K1

- Select parameter **MAT** by pressing buttons **S5**  and **S6** .
 - Using the **encoder E3** , edit the value of the selected parameter.
- Select parameter **Ø** by pressing buttons **S5**  and **S6** .
 - Using the **encoder E3** , edit the value of the selected parameter.
- Select parameter **GAS** by pressing buttons **S5**  and **S6** .
 - Using the **encoder E3** , edit the value of the selected parameter.

ENGLISH

10.1.1 Special curves: HIGH SPEED, HIGH CONTROL, POWER FOCUS and POWER ROOT

No specific procedures are required to activate these curves. The special curves appear in the list together with the standard curves.

HIGH SPEED CURVES: the curves are available in HSL series power sources in the PULSED MIG/MAG - DOUBLE PULSED MIG/MAG mode.

Pulsed HS is a special function in the pulsed MIG/MAG mode, featuring a very short and intense arc, EASILY controlled by the welder. HS pulsed, compared to other high deposition welding systems, allows the welder to achieve a comfortable arc without increased stress.

These curves differ from the other standard curves because of the acronym **HS** which is displayed after the reference to the welding wire material.

Example:

PULSED MODE	
MAT → SG2/SG3 HS	Ø:1.2
GAS: 80% Ar / 20% CO2	R4
JOB : FE55 MARIO	K1

HIGH CONTROL CURVES: the curves are available in HSL series power sources in PULSED MIG/MAG - DOUBLE PULSED MIG/MAG welding mode.

The new HC (High Control) Pulsed curve features a very fast arc control in order to achieve a very fast drop detachment with a highly reduced energy. The welding benefits are:

- Increased arc stability
- Very reactive arc to the torch movement
- Reduced energy transmitted to the welded workpiece
- Very linear transfer and optimal edge wettability
- Very fast operation
- Spatters and microprojections almost entirely absent.

These curves differ from the other standard curves because of the acronym **HC** which is displayed after the reference to the welding wire material.

Example:

PULSED MODE	
MAT → SG2/SG3 HC	Ø:1.2
GAS: 80% Ar / 20% CO2	R4
JOB : FE55 MARIO	K1

POWER FOCUS CURVES: the curves are available in HSL series power sources in SYNERGIC SHORT SPRAY MIG/MAG welding mode.

The difference between a standard MIG MAG and Power Focus is its concentration and pressure. The POWER FOCUS arc concentration allows the welder to focus the high temperature of the arc in the central section of the deposition, thus avoiding to overheat the sides of the welding. The thermally changed area with the Power Focus arc is less widespread.

These curves differ from the other standard curves because of the acronym **PF** which is displayed after the reference to the welding wire material.

Example:

SHORT/SPRAY		
MAT → SG2/SG3 PF		Ø:1.2
GAS: 80% Ar / 20% CO2		R4
JOB : FE55 MARIO		K1

POWER ROOT CURVES: the curves are available in SYNERGIC SHORT SPRAY MIG/MAG welding mode.

Power Root is an optimised short arc transfer with the feature of having a cold drop transfer. Power Root allows to achieve a very high quality in root passes.

These curves differ from the other standard curves because of the acronym **PR** which is displayed after the reference to the welding wire material.

Example:

SHORT/SPRAY		
MAT → SG2/SG3 PR		Ø:1.2
GAS: 80% Ar / 20% CO2		R4
JOB : FE55 MARIO		K1

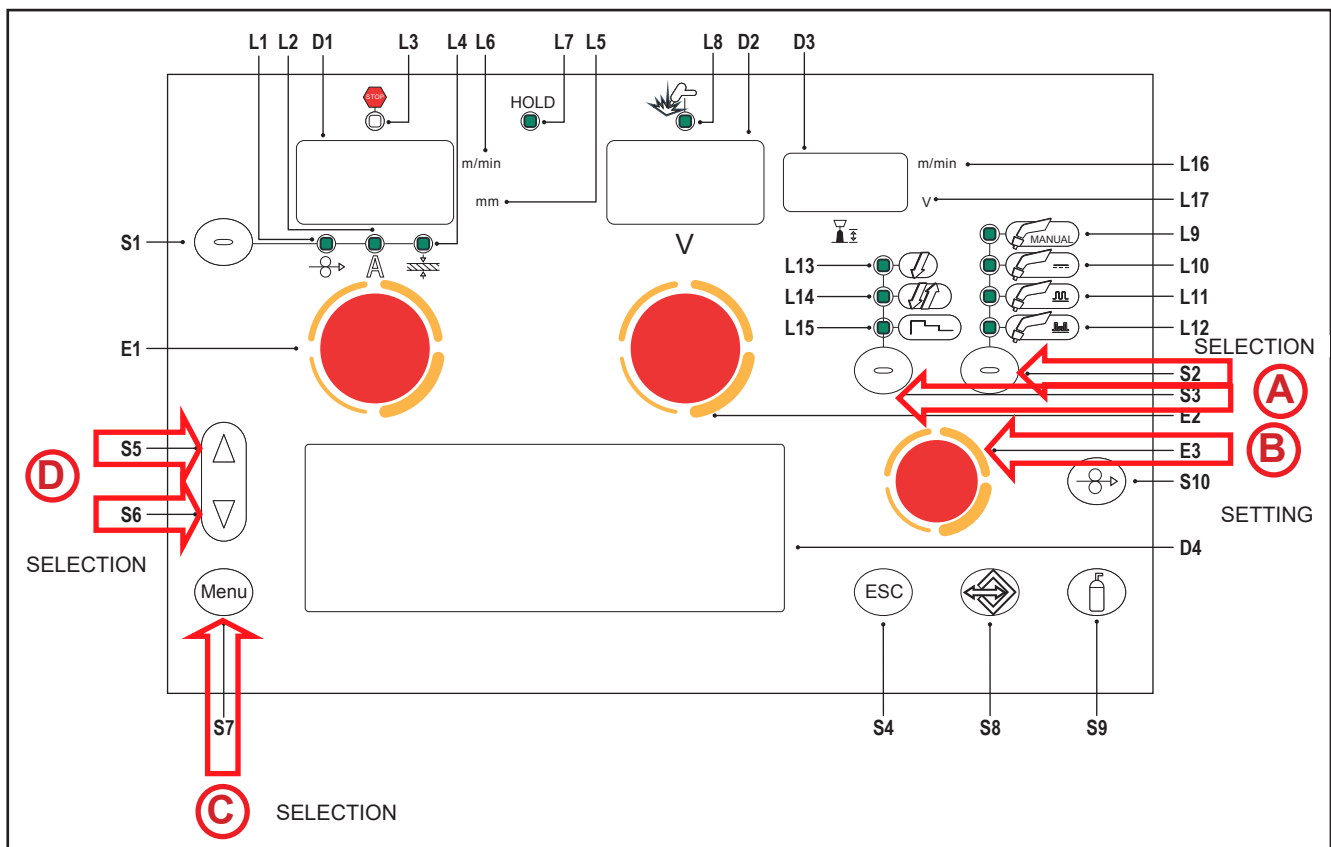
10.2 MANUAL MIG/MAG WELDING

Welding is of the Short/Spray type.

Adjustment of the main welding parameters, wire feed rate and voltage is entirely at the discretion of the operator. The optimal work point must be identified for the required welding type.

During a welding operation with an active JOB, it is possible to temporarily change the parameters shown in the displays D1 and D2 with their encoders to test the temporary changes made to the welding operation. At the end of the welding operation (and HOLD is quit) the values of the loaded JOB are reset.

When the welding operation is not being carried out and a JOB is active through encoder E3, the JOBS belonging to its sequence can be scrolled.




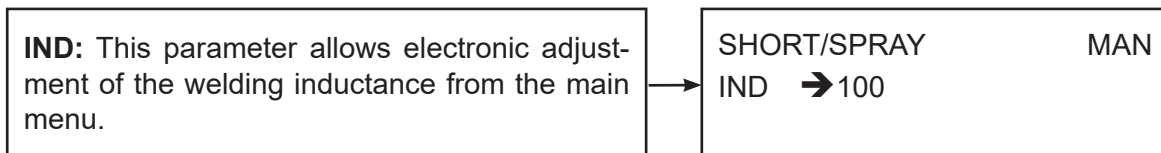
<p>S2 </p> <p>A S3 </p>	<p>This button serves to select the following welding mode:</p> <p>MANUAL MIG/MAG</p> <p>Use this button to select one of the following torch trigger procedures:</p> <ul style="list-style-type: none"> 2 STROKE 2 STROKE SPOT: The procedure is active when the "SPOT TIME" parameter is set to a value other than "OFF". 4 STROKE
--	---

Tab. 5 - Main settings and displays in MANUAL MIG/MAG mode





	DISPLAY D1	DISPLAY D2	DISPLAY D3
Data setting	Shows the wire feed rate setting in m/min, which can be altered by means of the following encoder: (E1).	Shows the set welding voltage, which can be adjusted with the following encoder: (E2).	Shows "----".
Welding	Shows the average current measured during welding.	Shows the average voltage measured during welding.	Shows "----".
HOLD function (At welding end)	Shows the average current measured during the last welding procedure performed.	Shows the average voltage measured during the last welding procedure performed.	Shows "----".

10.2.1 Manual MIG/MAG parameters setting (1st level): inductance setting.

- Ⓑ Using the **encoder E3** , edit the value of the selected parameter
① The value is saved automatically.



10.2.2 MANUAL MIG/MAG PARAMETERS SETTING (2ND LEVEL)

- Ⓒ Press the button **S7**  to enter the 2nd level menu.
- Ⓓ Scroll down the list of parameters to be edited by pressing buttons **S5**  and **S6** .
- Ⓑ Using the **encoder E3** , edit the value of the selected parameter
① The value is saved automatically.

Tab. 6 - 2nd level menu parameters in MANUAL MIG/MAG mode

PROCEDURE	PARAMETER	MIN	DEFAULT	MAX	NOTES
↙ 2 STROKE 2 STROKE SPOT	INDUCTANCE (row 1/6)	1	100	200	
	PRE GAS (row 2/6)	0.0 s	0.0 s	10.0 s	
	SOFT START (row 3/6)	1 %	35 %	100 %	
	BURN BACK (row 4/6)	1 %	25 %	200 %	
	POST GAS (row 5/6)	0.0 s	1.0 s	10.0 s	
	SPOT TIME (row 6/6)	0.1 s	OFF	25.0 s	The parameter value is saved for each welding mode.
↕ 4 STROKE	INDUCTANCE (row 1/5)	1	100	200	
	PRE GAS (row 2/5)	0.0 s	0.0 s	10.0 s	
	SOFT START (row 3/5)	1 %	35 %	100 %	
	BURN BACK (row 4/5)	1 %	25 %	200 %	
	POST GAS (row 5/5)	0.0 s	1.0 s	10.0 s	

10.3 SYNERGIC MIG/MAG WELDING

Set the welding data (material, wire diameter, gas type), shown on display D4 and just one welding parameter, chosen among wire feed rate, Amperes, and workpiece Thickness, shown on display D1.

NOTE: The synergic curves were created with reference to a fillet weld in position PB (horizontal-vertical) with 10 mm stick-out (distance from torch to workpiece).

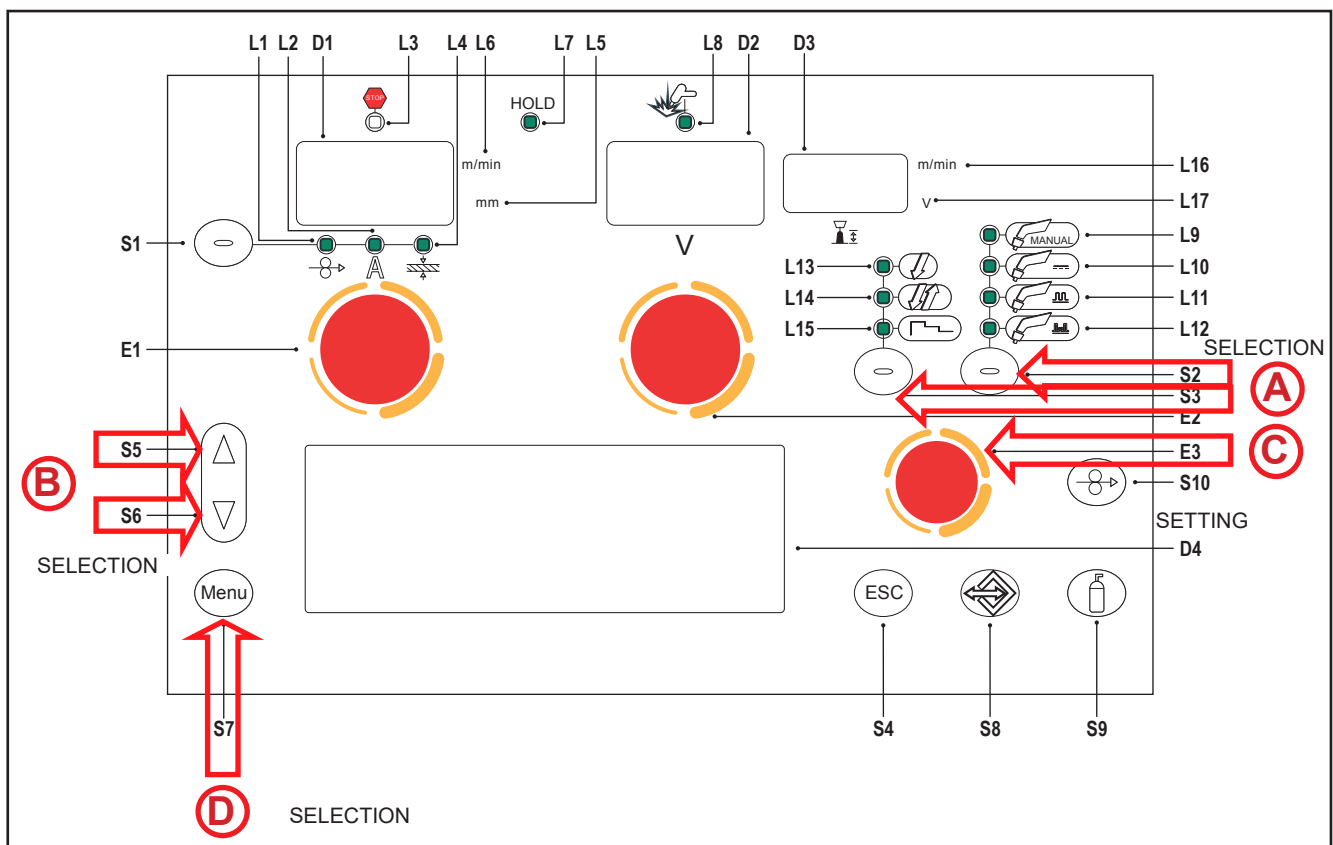
In general, the parameter set is the wire feed rate (associated with the deposition of filler material) and the synergic welding power source automatically sets the most suitable welding voltage.












Encoder E2 can be adjusted to correct the arc shown on display D3, in order to make minor adjustments in accordance with requirements.

During a welding operation with an active JOB, it is possible to temporarily change the parameters shown in the displays D1 and D2 with their encoders to test the temporary changes made to the welding operation. At the end of the welding operation (and HOLD is quit) the values of the loaded JOB are reset.

When the welding operation is not being carried out and a JOB is active through encoder E3, the JOBS belonging to its sequence can be scrolled.

The welding power source also automatically adjusts several secondary parameters that are relevant for welding quality.






A	S2 	This button serves to select the following welding mode:
		SYNERGIC MIG/MAG
	S3 	Use this button to select one of the following torch trigger procedures:
		2 STROKE
		2 STROKE SPOT: The procedure is active when the "SPOT TIME" parameter is set to a value other than "OFF".
		4 STROKE
	4 STROKE B-LEVEL: The procedure is active when the "B-LEVEL" parameter is set to a value other than "OFF"	
	3 LEVEL 2 STROKE	
	3 LEVEL 2 STROKE SPOT: The procedure is active when the "SPOT TIME" parameter is set to a value other than "OFF". If the "SPOT TIME" parameter is active in the 3 LEVELS procedure, its value denotes the time for which the main welding current is supplied.	
	3 LEVEL 4 STROKE	
	3 LEVEL 4 STROKE B-LEVEL: The procedure is active when the "B-LEVEL" parameter is set to a value other than "OFF"	





Tab. 7 - Main settings and displays in SYNERGIC MIG/MAG mode

	DISPLAY D1	DISPLAY D2	DISPLAY D3
Data setting	Shows the main synergy parameter (wire feed rate, Amperes, recommended thickness), which can be adjusted with the following encoder: (E1).	Shows the set welding voltage, which can be adjusted with the following encoder: (E2).	Shows the arc correction executed by the operator with encoder (E2). Displays D2 and D3 change simultaneously, but while display D2 shows the absolute value, display D3 shows the correction with respect to the standard and optimal value proposed by the manufacturer. The parameter corrects the arc dynamics in the POWER ROOT process.
Welding	Shows the average current measured during welding.	Shows the average voltage measured during welding.	Shows the arc correction executed by the operator.
HOLD function (At welding end)	Shows the average current measured during the last welding procedure performed.	Shows the average voltage measured during the last welding procedure performed.	Shows the arc correction executed by the operator.




10.3.1 Synergic MIG/MAG parameters setting (1st level): synergic curve setting


- B** ○ Scroll down the list of parameters to be edited by pressing buttons **S5**  and **S6** 
- C** ○ Using the **encoder E3** , edit the value of the selected parameter
① The value is saved automatically.

10.3.2 Manual MIG/MAG parameters setting (2nd level)

- D** ○ Press the button **S7**  to enter the 2nd level menu.
- B** ○ Scroll down the list of parameters to be edited by pressing buttons **S5**  and **S6** 
- C** ○ Using the **encoder E3** , edit the value of the selected parameter
① The value is saved automatically.

Tab. 8 - 2nd level menu parameters in SYNERGIC MIG/MAG mode

PROCEDURE	PARAMETER	POWER SOURCE TYPE		MIN	DEFAULT	MAX	NOTES
		POWER PULSE	POWER PULSE HSL				
 2 STROKE 2 STROKE SPOT	INDUCTANCE	(row 1/6)	(row 1/7)	1	SYN	200	
	PR START	(row 1/6)	(row 1/7)	1	SYN	200	This parameter is present exclusively with POWER ROOT.
	PRE GAS	(row 2/6)	(row 2/7)	0.0 s	0.0 s	10.0 s	
	SOFT START	(row 3/6)	(row 3/7)	1 %	SYN	100 %	
	BURN BACK	(row 4/6)	(row 4/7)	1 %	SYN	200 %	
	POST GAS	(row 5/6)	(row 5/7)	0.0 s	1.0 s	10.0 s	
	SPOT TIME	(row 6/6)	(row 6/7)	0.1 s	OFF	25.0 s	The parameter value is saved for each welding mode.
	POWER FOCUS	-	(row 7/7)	-100 %	SYN	100 %	
 4 STROKE 4 STROKE B-LEVEL	INDUCTANCE	(row 1/6)	(row 1/7)	1	SYN	200	
	PR START	(row 1/6)	(row 1/7)	1	SYN	200	This parameter is present exclusively with POWER ROOT.
	PRE GAS	(row 2/6)	(row 2/7)	0.0 s	0.0 s	10.0 s	
	SOFT START	(row 3/6)	(row 3/7)	1 %	SYN	100 %	
	BURN BACK	(row 4/6)	(row 4/7)	1 %	SYN	200 %	
	POST GAS	(row 5/6)	(row 5/7)	0.0 s	1.0 s	10.0 s	
	B-LEVEL	(row 6/6)	(row 6/7)	1 %	OFF	200 %	The parameter value is saved for each welding mode.
	POWER FOCUS	-	(row 7/7)	-100 %	SYN	100 %	
 3 LEVEL 2 STROKE 3 LEVEL 2 STROKE SPOT	INDUCTANCE	(row 1/12)	(row 1/13)	1	SYN	200	
	PR START	(row 1/12)	(row 1/13)	1	SYN	200	This parameter is present exclusively with POWER ROOT.
	PRE GAS	(row 2/12)	(row 2/13)	0.0 s	0.0 s	10.0 s	
	SOFT START	(row 3/12)	(row 3/13)	1 %	SYN	100 %	
	START 3LEV	(row 4/12)	(row 4/13)	10 %	130 %	200 %	
	START TIME	(row 5/12)	(row 5/13)	0.0 s	0.5 s	10.0 s	
	SLOPE 3LEV 1	(row 6/12)	(row 6/13)	0.1 s	0.5 s	10.0 s	
	SLOPE 3LEV 2	(row 7/12)	(row 7/13)	0.1 s	0.5 s	10.0 s	
	CRATER 3LEV	(row 8/12)	(row 8/13)	10 %	80 %	200 %	
	CRATER TIME	(row 9/12)	(row 9/13)	0.0 s	0.5 s	10.0 s	
	BURN BACK	(row 10/12)	(row 10/13)	1 %	SYN	200 %	
	POST GAS	(row 11/12)	(row 11/13)	0.0 s	1.0 s	10.0 s	
	SPOT TIME	(row 12/12)	(row 12/13)	0.1 s	OFF	25.0 s	The parameter value is saved for each welding mode.
	POWER FOCUS	-	(row 13/13)	-100 %	SYN	100 %	

PROCEDURE	PARAMETER	POWER SOURCE TYPE		MIN	DEFAULT	MAX	NOTES
		POWER PULSE	POWER PULSE HSL				
 <p>3 LEVEL 4 STROKE</p> <p>3 LEVEL 4 STROKE B-LEVEL</p>	INDUCTANCE	(row 1/10)	(row 1/11)	1	SYN	200	
	PR START	(row 1/10)	(row 1/11)	1	SYN	200	This parameter is present exclusively with POWER ROOT.
	PRE GAS	(row 2/10)	(row 2/11)	0.0 s	0.0 s	10.0 s	
	SOFT START	(row 3/10)	(row 3/11)	1 %	SYN	100 %	
	START 3LEV	(row 4/10)	(row 4/11)	10 %	130 %	200 %	
	SLOPE 3LEV 1	(row 5/10)	(row 5/11)	0.1 s	0.5 s	10.0 s	
	SLOPE 3LEV 2	(row 6/10)	(row 6/11)	0.1 s	0.5 s	10.0 s	
	CRATER 3LEV	(row 7/10)	(row 7/11)	10 %	80 %	200 %	
	BURN BACK	(row 8/10)	(row 8/11)	1 %	SYN	200 %	
	POST GAS	(row 9/10)	(row 9/11)	0.0 s	1.0 s	<u>10.0 s</u>	
	B-LEVEL	(row 10/10)	(row 10/11)	1 %	OFF	200 %	The parameter value is saved for each welding mode.
	POWER FOCUS	-	(row 11/11)	-100 %	SYN	100 %	

10.4 PULSED SYNERGIC MIG/MAG WELDING

Set the welding data (material, wire diameter, gas type), shown on display D4 and just one welding parameter, chosen among wire feed rate, Amperes, and workpiece Thickness, shown on display D1.

NOTE: The synergic curves were created with reference to a fillet weld in position PB (horizontal-vertical) with 10 mm stick-out (distance from torch to workpiece).

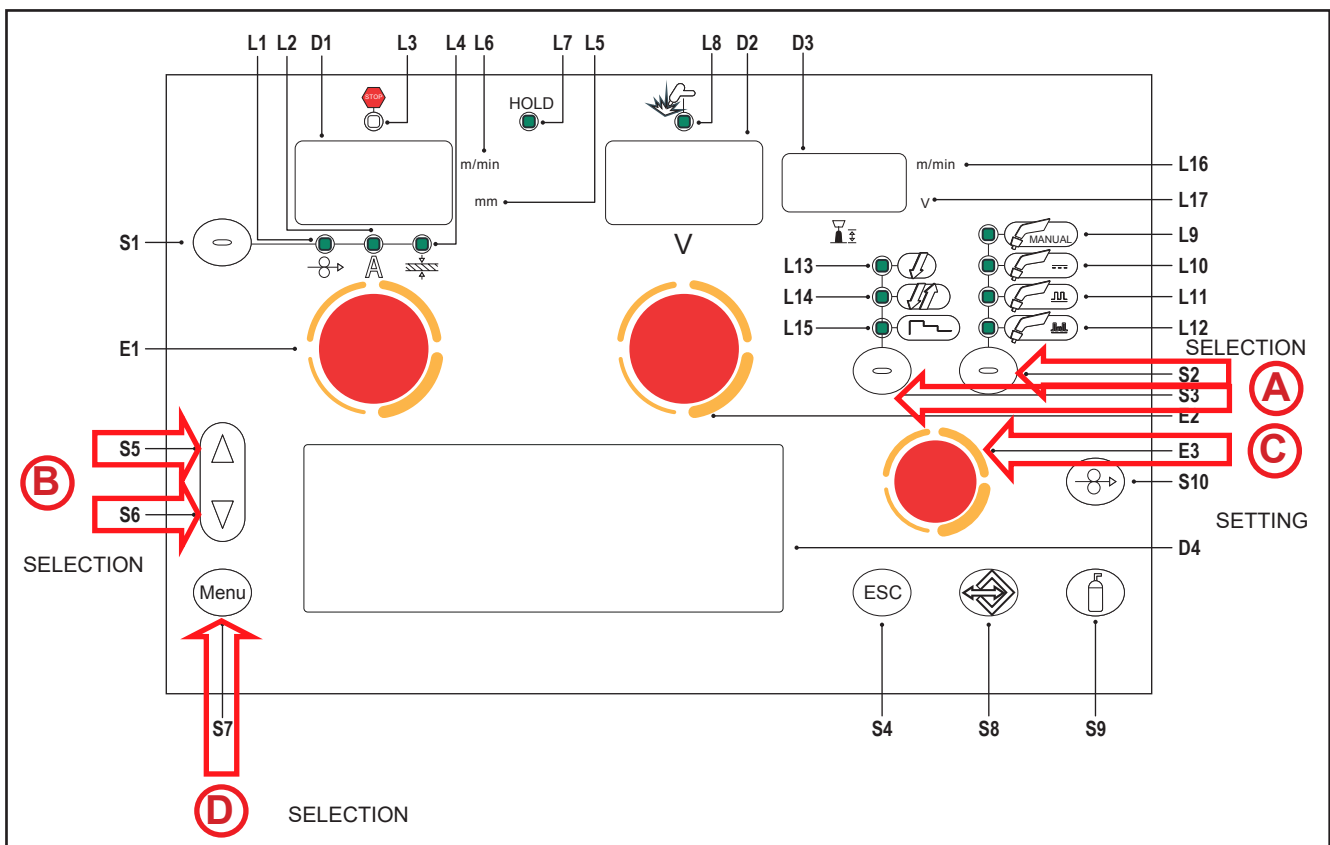
In general, the parameter set is the wire feed rate (associated with the deposition of filler material) and the synergic welding power source automatically sets the most suitable welding voltage.








Encoder E2 can be adjusted to correct the arc shown on display D3, in order to make minor adjustments in accordance with requirements.

During a welding operation with an active JOB, it is possible to temporarily change the parameters shown in the displays D1 and D2 with their encoders to test the temporary changes made to the welding operation. At the end of the welding operation (and HOLD is quit) the values of the loaded JOB are reset.

When the welding operation is not being carried out and a JOB is active through encoder E3, the JOBS belonging to its sequence can be scrolled.

The welding power source also automatically adjusts several secondary parameters that are relevant for welding quality.






A	<p>S2  This button serves to select the following welding mode:</p> <p> PULSED SYNERGIC MIG/MAG</p>
	<p>S3  Use this button to select one of the following torch trigger procedures:</p> <p> 2 STROKE 2 STROKE SPOT: The procedure is active when the "SPOT TIME" parameter is set to a value other than "OFF".</p> <p> 4 STROKE 4 STROKE B-LEVEL: The procedure is active when the "B-LEVEL" parameter is set to a value other than "OFF"</p> <p> 3 LEVEL 2 STROKE 3 LEVEL 2 STROKE SPOT: The procedure is active when the "SPOT TIME" parameter is set to a value other than "OFF". If the "SPOT TIME" parameter is active in the 3 LEVELS procedure, its value denotes the time for which the main welding current is supplied.</p> <p> 3 LEVEL 4 STROKE 3 LEVEL 4 STROKE B-LEVEL: The procedure is active when the "B-LEVEL" parameter is set to a value other than "OFF"</p>





Tab. 9 - Main settings and displays in PULSED SYNERGIC MIG/MAG mode

	DISPLAY D1	DISPLAY D2	DISPLAY D3
Data setting	Shows the main synergy parameter (wire feed rate, Amperes, recommended thickness), which can be adjusted with the following encoder: (E1).	Shows the set welding voltage, which can be adjusted with the following encoder: (E2).	Shows the arc correction executed by the operator with encoder (E2). Displays D2 and D3 change simultaneously, but while display D2 shows the absolute value, display D3 shows the correction with respect to the standard and optimal value proposed by the manufacturer. Shows the arc correction executed by the operator with encoder (E2). Displays D2 and D3 change simultaneously, but while display D2 shows the absolute value, display D3 shows the correction with respect to the standard and optimal value proposed by the manufacturer. The parameter corrects the arc dynamics in the POWER ROOT process.
Welding	Shows the average current measured during welding.	Shows the average voltage measured during welding.	Shows the arc correction executed by the operator.
HOLD function (At welding end)	Shows the average current measured during the last welding procedure performed.	Shows the average voltage measured during the last welding procedure performed.	Shows the arc correction executed by the operator.




10.4.1 Pulsed Synergic MIG/MAG parameters setting (1st level): synergic curve setting.


- B** ○ Scroll down the list of parameters to be edited by pressing buttons **S5**  and **S6** 
- C** ○ Using the **encoder E3** , edit the value of the selected parameter
 ⓘ The value is saved automatically.

10.4.2 Pulsed Synergic MIG/MAG parameters setting (2nd level).

- D** ○ Press the button **S7**  to enter the 2nd level menu.
- B** ○ Scroll down the list of parameters to be edited by pressing buttons **S5**  and **S6** 
- C** ○ Using the **encoder E3** , edit the value of the selected parameter
 ⓘ The value is saved automatically.

Tab. 10 - 2nd level menu parameters in PULSED SYNERGIC MIG/MAG mode

PROCEDURE	PARAMETER		MIN	DEFAULT	MAX	NOTES
 2 STROKE 2 STROKE SPOT	ARC SET	(row 1/6)	1	SYN	200	
	PRE GAS	(row 2/6)	0.0 s	0.0 s	10.0 s	
	SOFT START	(row 3/6)	1 %	SYN	100 %	
	BURN BACK	(row 4/6)	1 %	SYN	200 %	
	POST GAS	(row 5/6)	0.0 s	1.0 s	10.0 s	
	SPOT TIME	(row 6/6)	0.1 s	OFF	25.0 s	The parameter value is saved for each welding mode.
 4 STROKE 4 STROKE B-LEVEL	ARC SET	(row 1/6)	1	SYN	200	
	PRE GAS	(row 2/6)	0.0 s	0.0 s	10.0 s	
	SOFT START	(row 3/6)	1 %	SYN	100 %	
	BURN BACK	(row 4/6)	1 %	SYN	200 %	
	POST GAS	(row 5/6)	0.0 s	1.0 s	10.0 s	
	B-LEVEL	(row 6/6)	1 %	OFF	200 %	The parameter value is saved for each welding mode.
 3 LEVEL 2 STROKE 2 STROKE SPOT	ARC SET	(row 1/12)	1	SYN	200	
	PRE GAS	(row 2/12)	0.0 s	SYN	10.0 s	
	SOFT START	(row 3/12)	1 %	SYN	100 %	
	START 3LEV	(row 4/12)	10 %	130 %	200 %	
	START TIME	(row 5/12)	0.0 s	0.5 s	10.0 s	
	SLOPE 3LEV 1	(row 6/12)	0.1 s	0.5 s	10.0 s	
	SLOPE 3LEV 2	(row 7/12)	0.1 s	0.5 s	10.0 s	
	CRATER 3LEV	(row 8/12)	10 %	80 %	200 %	
	CRATER TIME	(row 9/12)	0.0 s	0.5 s	10.0 s	
	BURN BACK	(row 10/12)	1 %	SYN	200 %	
	POST GAS	(row 11/12)	0.0 s	1.0 s	10.0 s	
	SPOT TIME	(row 12/12)	0.1 s	OFF	25.0 s	The parameter value is saved for each welding mode.

PROCEDURE	PARAMETER		MIN	DEFAULT	MAX	NOTES
 3 LEVEL 4 STROKE 4 STROKE B-LEVEL	ARC SET	(row 1/10)	1	SYN	200	
	PRE GAS	(row 2/10)	0.0 s	SYN	10.0 s	
	SOFT START	(row 3/10)	1 %	SYN	100 %	
	START 3LEV	(row 4/10)	10 %	130 %	200 %	
	SLOPE 3LEV 1	(row 5/10)	0.1 s	0.5 s	10.0 s	
	SLOPE 3LEV 2	(row 6/10)	0.1 s	0.5 s	10.0 s	
	CRATER 3LEV	(row 7/10)	10 %	80 %	200 %	
	BURN BACK	(row 8/10)	1 %	SYN	200 %	
	POST GAS	(row 9/10)	0.0 s	1.0 s	10.0 s	
	B-LEVEL	(row 10/10)	1 %	OFF	200 %	The parameter value is saved for each welding mode.

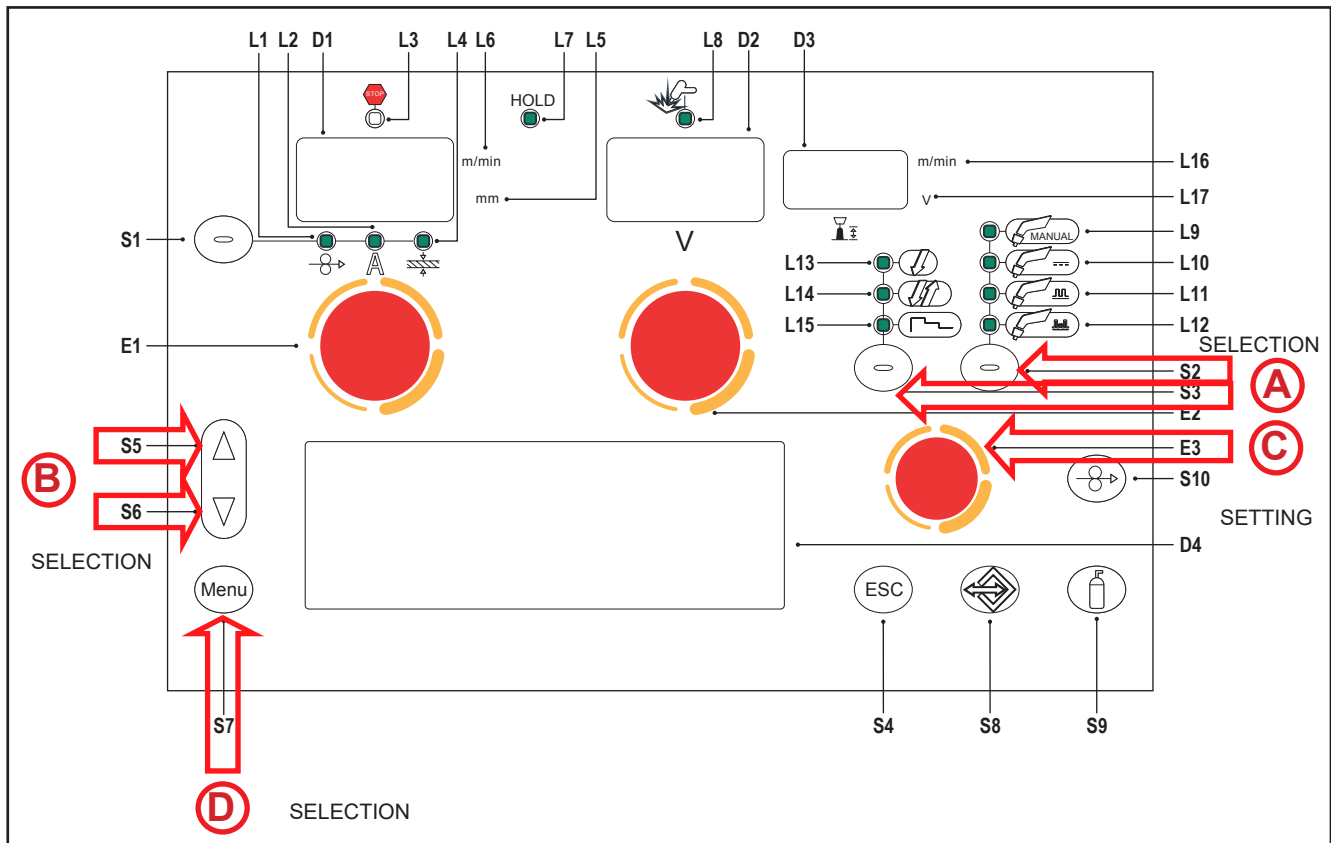
10.5 DOUBLE PULSED SYNERGIC MIG/MAG WELDING












Set the welding data (material, wire diameter, gas type), shown on display D4 and just one welding parameter, chosen among wire feed rate, Amperes, and workpiece Thickness, shown on display D1.

NOTE: The synergic curves were created with reference to a fillet weld in position PB (horizontal-vertical) with 10 mm stick-out (distance from torch to workpiece).

In general, the parameter set is the wire feed rate (associated with the deposition of filler material) and the synergic welding power source automatically sets the most suitable welding voltage. Encoder E2 can be adjusted to correct the arc shown on display D3, in order to make minor adjustments in accordance with requirements. During a welding operation with an active JOB, it is possible to temporarily change the parameters shown in the displays D1 and D2 with their encoders to test the temporary changes made to the welding operation. At the end of the welding operation (and HOLD is quit) the values of the loaded JOB are reset.

When the welding operation is not being carried out and a JOB is active through encoder E3, the JOBS belonging to its sequence can be scrolled. The welding power source also automatically adjusts several secondary parameters that are relevant for welding quality. This mode involves a variable frequency pulse between two parameters of the Pulsed Synergic curve.






(A)	<p>S2  This button serves to select the following welding mode:</p> <p> DOUBLE PULSED SYNERGIC MIG/MAG</p>
	<p>S3  Use this button to select one of the following torch trigger procedures:</p> <p> 2 STROKE</p> <p> 2 STROKE SPOT: The procedure is active when the "SPOT TIME" parameter is set to a value other than "OFF".</p> <p> 4 STROKE</p> <p> 4 STROKE B-LEVEL: The procedure is active when the "B-LEVEL" parameter is set to a value other than "OFF"</p> <p> 3 LEVEL 2 STROKE</p> <p> 3 LEVEL 2 STROKE SPOT: The procedure is active when the "SPOT TIME" parameter is set to a value other than "OFF". If the "SPOT TIME" parameter is active in the 3 LEVELS procedure, its value denotes the time for which the main welding current is supplied.</p> <p> 3 LEVEL 4 STROKE</p> <p> 3 LEVEL 4 STROKE B-LEVEL: The procedure is active when the "B-LEVEL" parameter is set to a value other than "OFF"</p>





Tab. 11 - Main settings and displays in DOUBLE PULSED SYNERGIC MIG/MAG mode

	DISPLAY D1	DISPLAY D2	DISPLAY D3
Data setting	Shows the main synergy parameter (wire feed rate, Amperes, recommended thickness), which can be adjusted with the following encoder: (E1).	Shows the set welding voltage, which can be adjusted with the following encoder: (E2).	Shows the arc correction executed by the operator with encoder (E2). Displays D2 and D3 change simultaneously, but while display D2 shows the absolute value, display D3 shows the correction with respect to the standard and optimal value proposed by the manufacturer.
Welding	Shows the average current measured during welding.	Shows the average voltage measured during welding.	Shows the arc correction executed by the operator.
HOLD function (At welding end)	Shows the average current measured during the last welding procedure performed.	Shows the average voltage measured during the last welding procedure performed.	Shows the arc correction executed by the operator.

10.5.1 Double pulsed synergic MIG/MAG parameters setting (1st level): synergic curve setting.




- (B)** ○ Scroll down the list of parameters to be edited by pressing buttons **S5**  and **S6** 
- (C)** ○ Using the **encoder E3** , edit the value of the selected parameter
① The value is saved automatically.


10.5.2 Double pulsed synergic MIG/MAG parameters setting (2nd level).

- (D)** ○ Press the button **S7**  to enter the 2nd level menu.
- (B)** ○ Scroll down the list of parameters to be edited by pressing buttons **S5**  and **S6** 
- (C)** ○ Using the **encoder E3** , edit the value of the selected parameter
① The value is saved automatically.

ENGLISH

Tab. 12 - 2nd level menu parameters in DOUBLE PULSED SYNERGIC MIG/MAG mode

PROCEDURE	PARAMETER		MIN	DEFAULT	MAX	NOTES
 2 STROKE 2 STROKE SPOT	ARC SET	(row 1/10)	1	SYN	200	
	PRE GAS	(row 2/10)	0.0 s	0.0 s	10.0 s	
	SOFT START	(row 3/10)	1 %	SYN	100 %	
	BURN BACK	(row 4/10)	1 %	SYN	200 %	
	POST GAS	(row 5/10)	0.0 s	1.0 s	10.0 s	
	SPOT TIME	(row 6/10)	0.1 s	OFF	25.0 s	The parameter value is saved for each welding mode.
	FREQ 2PULS	(row 7/10)	0.1 Hz	1.5 Hz	10.0 Hz	
	RANGE 2PULS	(row 8/10)	10 %	50 %	90 %	
	CYCLE 2PULS	(row 9/10)	10 %	50 %	90 %	
	ARC2 2PULS	(row 10/10)	- 9.9 V - 4.0 m/min	0.0 V 0.0 m/min	9.9 V 4.0 m/min	
 4 STROKE 4 STROKE B-LEVEL	ARC SET	(row 1/10)	1	SYN	200	
	PRE GAS	(row 2/10)	0.0 s	0.0 s	10.0 s	
	SOFT START	(row 3/10)	1 %	SYN	100 %	
	BURN BACK	(row 4/10)	1 %	SYN	200 %	
	POST GAS	(row 5/10)	0.0 s	1.0 s	10.0 s	
	B-LEVEL	(row 6/10)	1 %	OFF	200 %	The parameter value is saved for each welding mode.
	FREQ 2PULS	(row 7/10)	0.1 Hz	1.5 Hz	10.0 Hz	
	RANGE 2PULS	(row 8/10)	10 %	50 %	90 %	
	CYCLE 2PULS	(row 9/10)	10 %	50 %	90 %	
	ARC2 2PULS	(row 10/10)	- 9.9 V - 4.0 m/min	0.0 V 0.0 m/min	9.9 V 4.0 m/min	
 3 LEVELS 2 STROKE 2 STROKE SPOT	ARC SET	(row 1/16)	1	SYN	200	
	PRE GAS	(row 2/16)	0.0 s	SYN	10.0 s	
	SOFT START	(row 3/16)	1 %	SYN	100 %	
	START 3LEV	(row 4/16)	10 %	130 %	200 %	
	START TIME	(row 5/16)	0.0 s	0.5 s	10.0 s	
	SLOPE 3LEV 1	(row 6/16)	0.1 s	0.5 s	10.0 s	
	SLOPE 3LEV 2	(row 7/16)	0.1 s	0.5 s	10.0 s	
	CRATER 3LEV	(row 8/16)	10 %	80 %	200 %	
	CRATER TIME	(row 9/16)	0.0 s	0.5 s	10.0 s	
	BURN BACK	(row 10/16)	1 %	SYN	200 %	
	POST GAS	(row 11/16)	0.0 s	1.0 s	10.0 s	
	SPOT TIME	(row 12/16)	0.1 s	OFF	25.0 s	The parameter value is saved for each welding mode.
	FREQ 2PULS	(row 13/16)	0.1 Hz	1.5 Hz	10.0 Hz	
	RANGE 2PULS	(row 14/16)	10 %	50 %	90 %	
	CYCLE 2PULS	(row 15/16)	10 %	50 %	90 %	
	ARC2 2PULS	(row 16/16)	- 9.9 V - 4.0 m/min	0.0 V 0.0 m/min	9.9 V 4.0 m/min	

PROCEDURE	PARAMETER		MIN	DEFAULT	MAX	NOTES
 3 LEVELS 4 STROKE 4 STROKE B-LEVEL	ARC SET	(row 1/14)	1	SYN	200	
	PRE GAS	(row 2/14)	0.0 s	SYN	10.0 s	
	SOFT START	(row 3/14)	1 %	SYN	100 %	
	START 3LEV	(row 4/14)	10 %	130 %	200 %	
	SLOPE 3LEV 1	(row 5/14)	0.1 s	0.5 s	10.0 s	
	SLOPE 3LEV 2	(row 6/14)	0.1 s	0.5 s	10.0 s	
	CRATER 3LEV	(row 7/14)	10 %	80 %	200 %	
	BURN BACK	(row 8/14)	1 %	SYN	200 %	
	POST GAS	(row 9/14)	0.0 s	1.0 s	10.0 s	
	B-LEVEL	(row 10/14)	1 %	OFF	200 %	The parameter value is saved for each welding mode.
	FREQ 2PULS	(row 11/14)	0.1 Hz	1.5 Hz	10.0 Hz	
	RANGE 2PULS	(row 12/14)	10 %	50 %	90 %	
	CYCLE 2PULS	(row 13/14)	10 %	50 %	90 %	
	ARC2 2PULS	(row 14/14)		- 9.9 V - 4.0 m/min	0.0 V 0.0 m/min	9.9 V 4.0 m/min

11 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.

If T01 mode is activated, the torch button is enabled for Job change during welding.

In T01 mode, the torch button operates in 4 strokes or 4 strokes 3 levels with Bilevel functions disabled. Therefore, if jobs are saved with different modes, they are automatically provided according to these conditions (which are not saved).

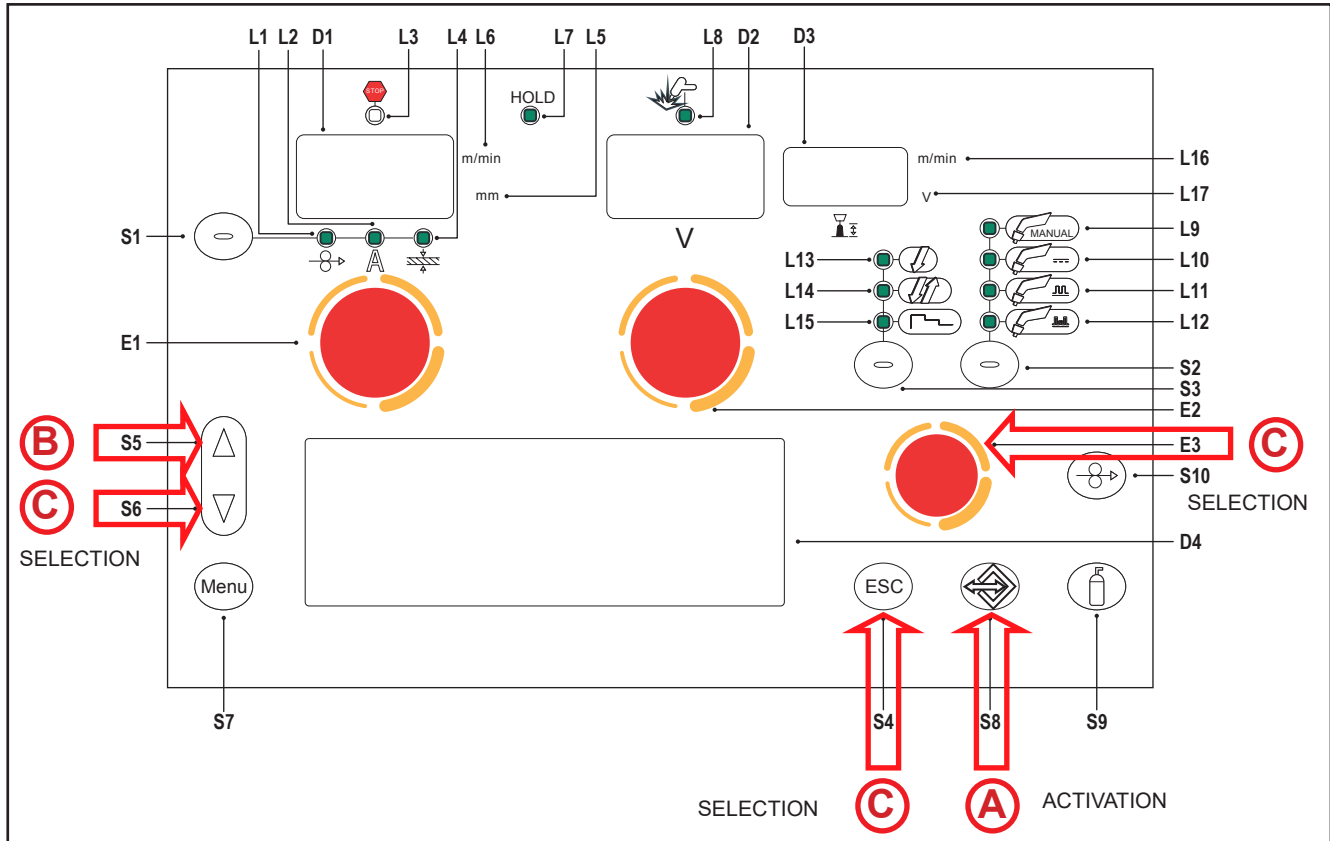
If there are no loaded Jobs, the torch button operates normally.

If there is a Job loaded, the torch button behaves as follows:

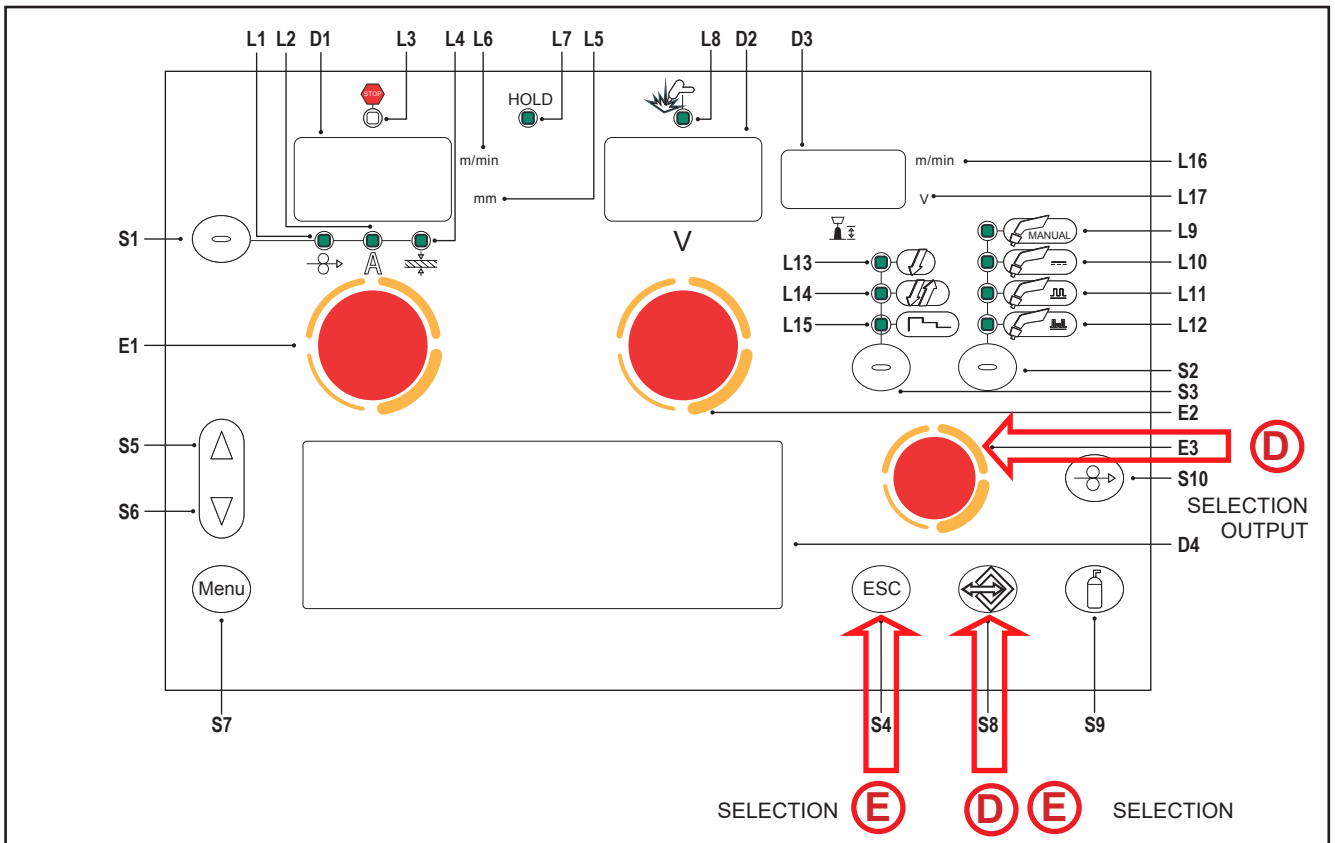
- Long pressure: to start and end welding.
- Short pressure: to scroll Jobs in the same sequence (both during welding and otherwise). If power is activated but welding is not being carried out (wire exit only), block wire exit and switch off power.

11.1 SAVING A JOB


This function is available when welding mode is not active.




- (A)** ○ Hold down button **S8** to activate the job menu.
 ● The job menu appears in display: **D4**.
- (B)** ○ Press buttons **S5** and **S6** to select parameter **OPT**.
 ● The selected parameter is shown by the following symbol “ ”.
- (C)** ○ Use the **encoder E3** , to select the **SAVE** function.
 ○ Press buttons **S5** and **S6** to select 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 unnamed jobs are “-” after a space following the number corresponding to the memory location by default
 § “11.2 NAMING JOBS”.




Save and keep original

- Using the **encoder E3** , select one of the unoccupied jobs.



Exit without confirmation

- Press the **S4**  button.
 - This action will automatically close the menu



Exit with confirmation

- Press the **S8** button. 
 - This action will automatically close the menu



Save by overwriting

- Using the **encoder E3** , select one of the occupied jobs.
- Press the **S8** button. 
 - CONFIRM JOB CHANGE:** The message will appear on display **D4**

Exit without confirmation

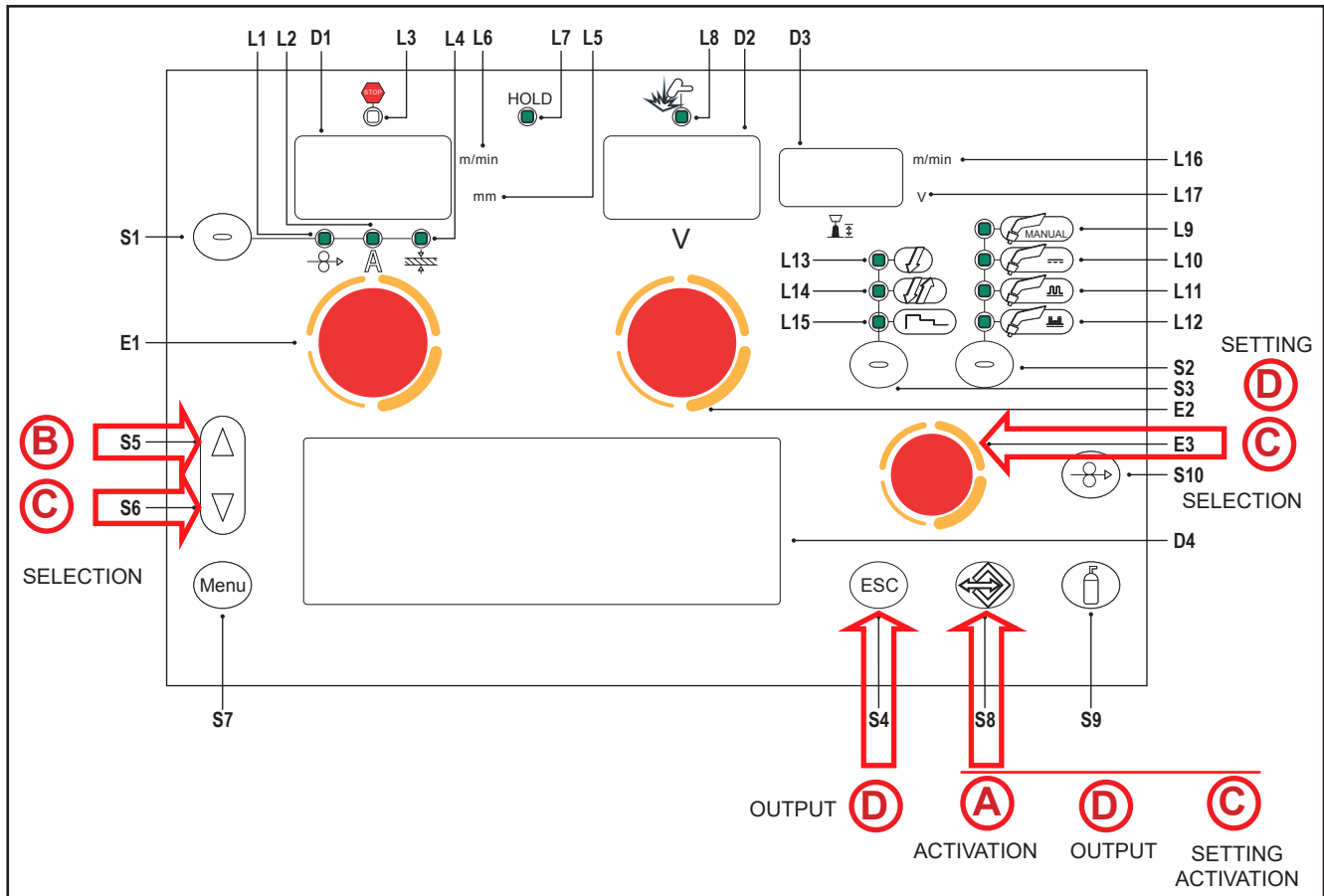
- Use the **encoder E3** , to select the "NO" function
- Press the **S8** button. 
 - This action will automatically close the menu

Exit with confirmation

- Use the **encoder E3** , to select the "YES" function
- Press the **S8** button. 
 - This action will automatically close the menu

11.2 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.



- A** ○ Hold down button **S8** to activate the job menu.
 ● The job menu appears in display: **D4**.

- B** ○ Press buttons **S5** and **S6** to select parameter **OPT**.
 ● The selected parameter is shown by symbol "→".

- C** ○ Use the **encoder E3** , to select the **LOAD/SAVE** function.
 ○ Press buttons **S5** and **S6** to select parameter **JOB**.
 ○ Use the **encoder E3** to select the position of the job to be renamed.
 ○ Hold down for 3 seconds button **S8** .
 ● The first letter of the name blinks.
 ○ Use the **encoder E3** to change the letter.
 ○ Press button **S8** to confirm.
 ○ Press buttons **S5** and **S6** to select the character to be changed.

D	<p>Exit without confirmation</p> <ul style="list-style-type: none">○ Press the S4  button.<ul style="list-style-type: none">➤ Return to the job menu.○ Press the S4  button to exit. <p>Exit with confirmation</p> <ul style="list-style-type: none">○ Hold down for 3 seconds button S8 .➤ Return to the job menu.○ Press button S8  again.
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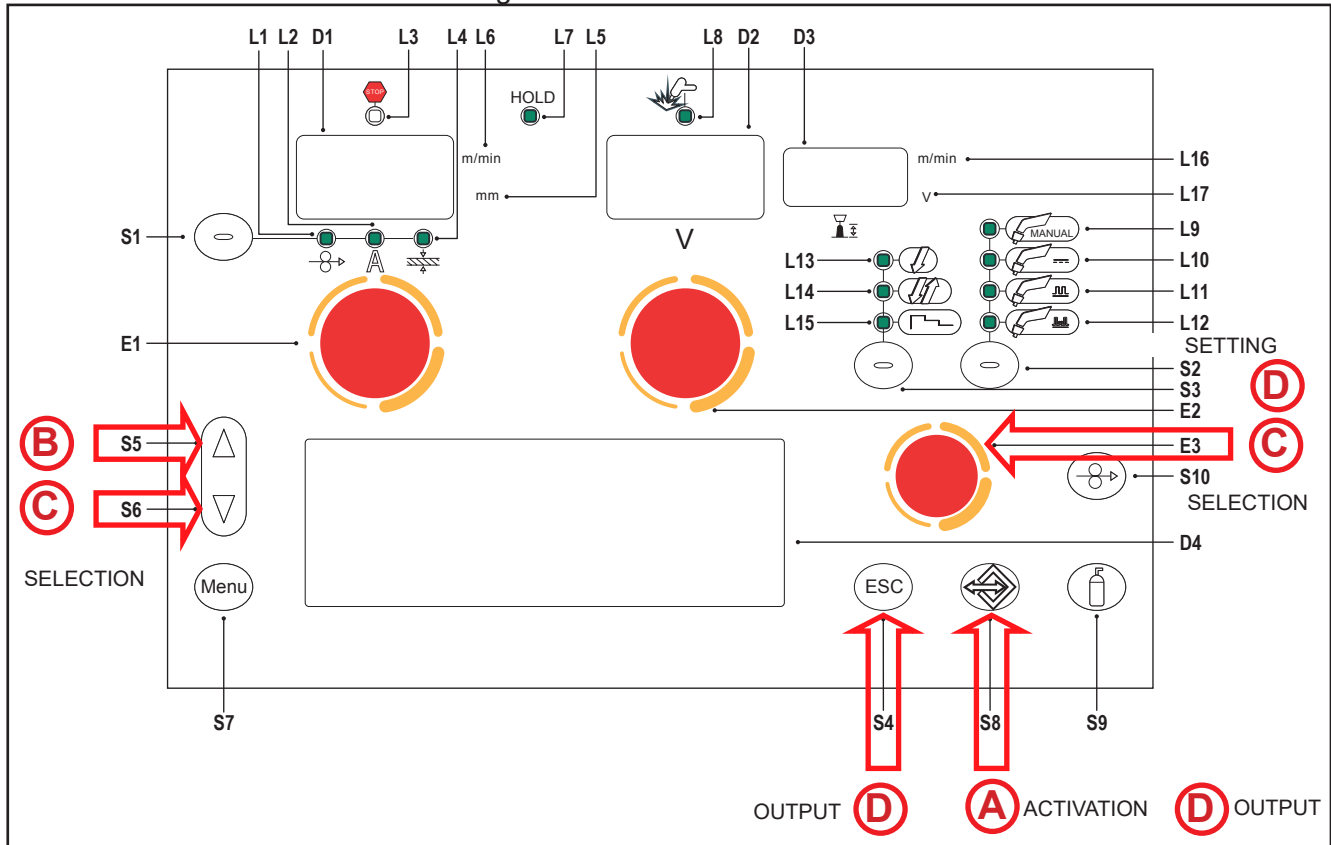
11.3 LOADING A USER JOB

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 **E1 - E2** to change the welding current or voltage.
- press the welding mode selection button (button **S2**).
- Press the following button: **(ESC)**

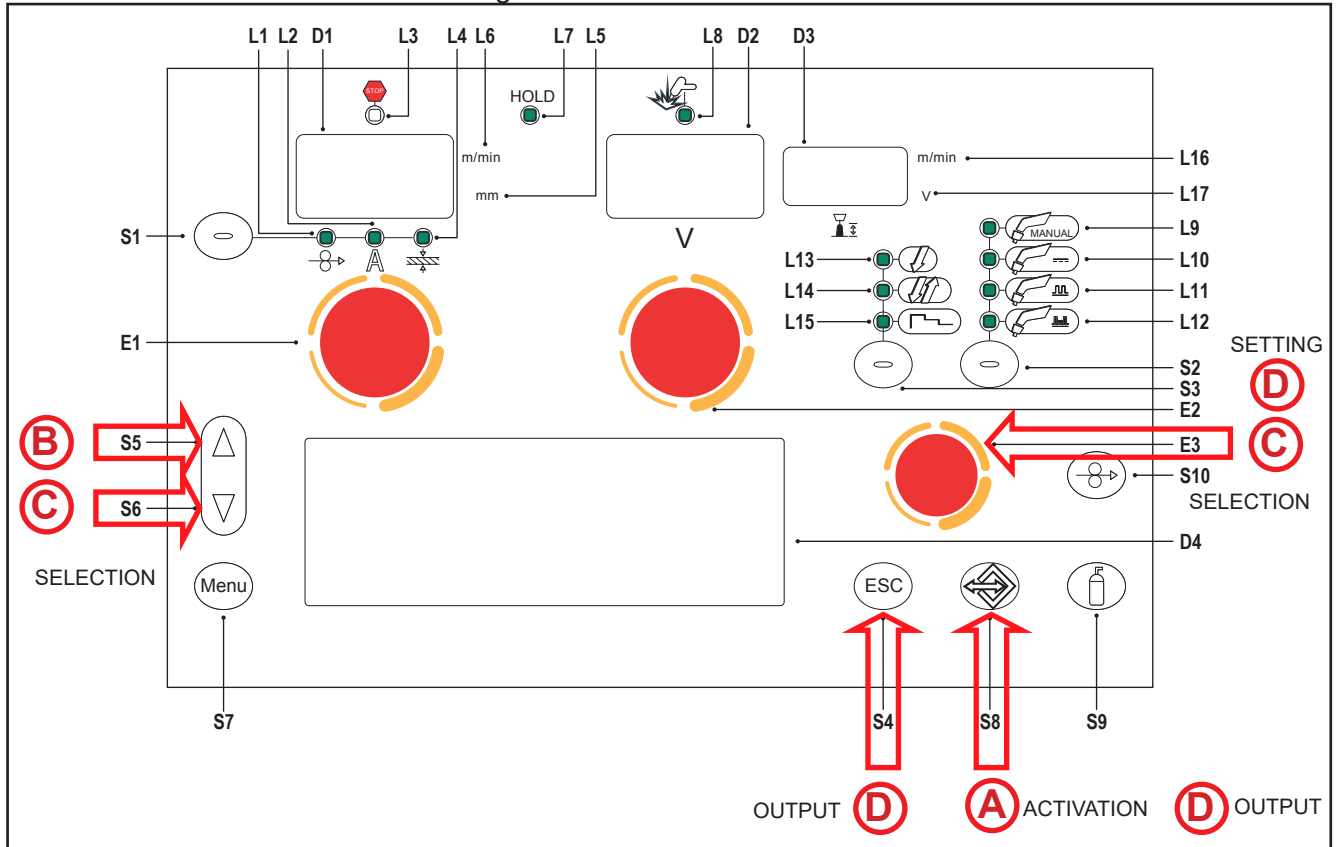
If there are no JOBS loaded, the UP/DOWN buttons on the torch serve to adjust the welding current. This function is available when welding mode is not active.



- | | |
|------------|--|
| (A) | <ul style="list-style-type: none"> ○ Hold down button S8 to activate the job menu. ➡ The job menu appears in display: D4. |
| (B) | <ul style="list-style-type: none"> ○ Press buttons S5 and S6 to select parameter OPT. ➡ The selected parameter is shown by symbol "➔". |
| (C) | <ul style="list-style-type: none"> ○ Use the encoder E3 , to select the LOAD function. ○ Press buttons S5 and S6 to select 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 ○ Using the encoder E3 , select one of the jobs displayed. |
| (D) | <p>Exit without confirmation</p> <ul style="list-style-type: none"> ○ Press the S4 (ESC) button. ➡ This action will automatically close the menu <p>Exit with confirmation</p> <ul style="list-style-type: none"> ○ Press the S8 button. ➡ This action will automatically close the menu |

11.4 DELETING A JOB

This function is available when welding mode is not active.



- (A)**
 - Hold down button **S8** (ESC) to activate the job menu.
 - ➔ The job menu appears in display: **D4**.
- (B)**
 - Press buttons **S5** (▲) and **S6** (▼) to select parameter **OPT**.
 - ➔ The selected parameter is shown by symbol "➔".
- (C)**
 - Use the **encoder E3** (◀▶) to select the **DELETE** function.
 - Press buttons **S5** (▲) and **S6** (▼) to select 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**
 - Using the **encoder E3** (◀▶), select one of the jobs displayed.
- (D)**
 - Exit without confirmation**
 - Press the **S4** (ESC) button.
 - ➔ This action will automatically close the menu
 - Exit with confirmation**
 - Press the **S8** button. (◀▶)
 - ➔ The message "**CONFIRM JOB ERASURE**" appears on display **D4**.
 - Use the **encoder E3** (◀▶), to select the **NO** function"
 - Press the **S8** button. (◀▶)
 - ➔ This action will automatically close the menu
 - Exit with confirmation**
 - Use the **encoder E3** (◀▶), to select the **NO** function"
 - Press the **S8** button. (◀▶)
 - ➔ This action will automatically close the menu

11.5 EXPORTING/IMPORTING JOBS (through a USB memory stick)

By using a USB memory stick, the JOBS saved on the panel can be imported into another panel. When a USB memory stick is connected, the JOB MENU will display the items related to the importing and exporting procedure.

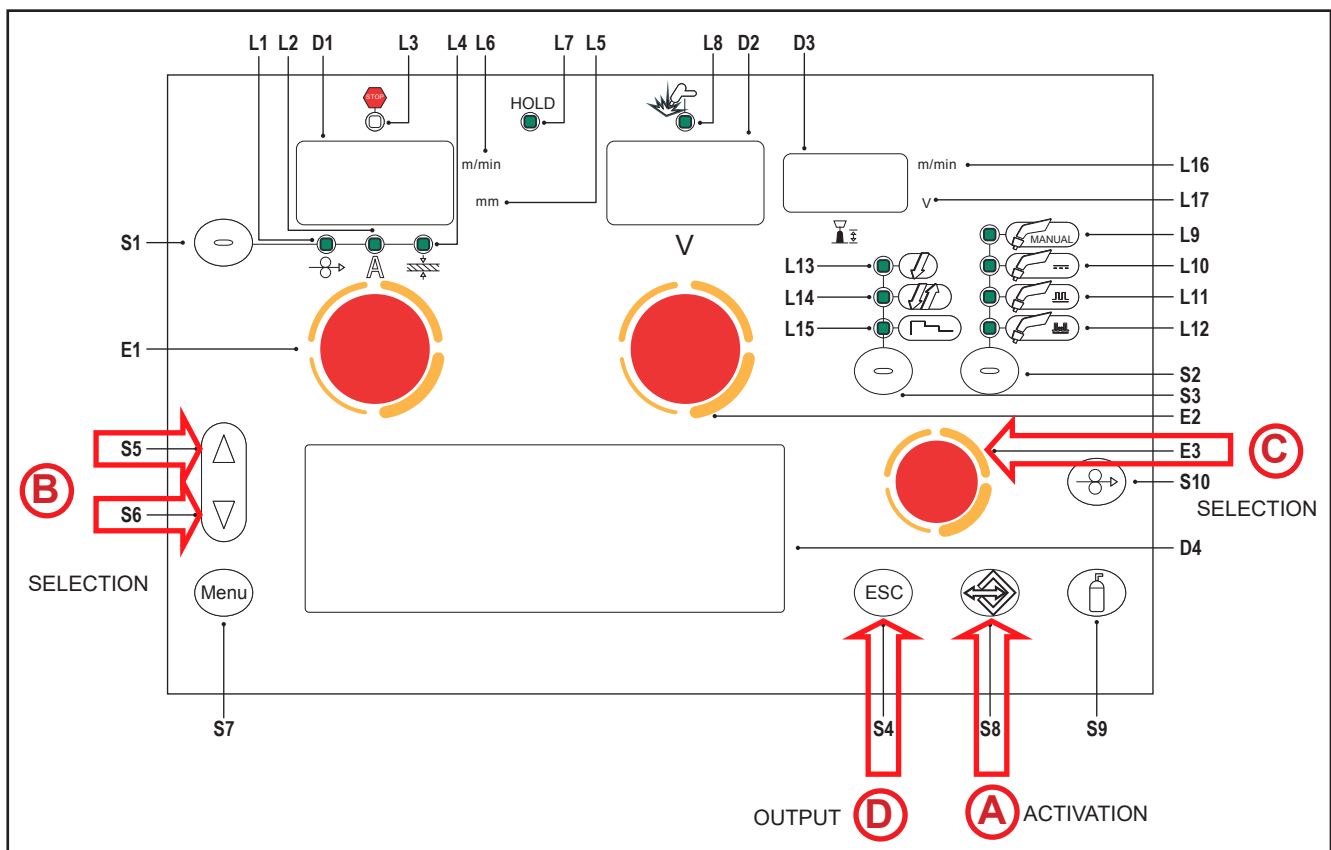
WARNING! The JOBS are exported to the USB memory stick with the name of the location where they are saved on the panel. If the file names of the JOBS saved onto the USB memory stick are changed by using a PC, after they are imported into the destination panel, they will still be saved in their original location. This means that, if the destination panel already contains JOBS saved in the same location as those exported to the memory stick, they will be overwritten.

We recommend not to change the name of the files exported to the USB memory stick. 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 memory stick.


To be usable, the memory stick must be formatted as FAT32.



11.6 EXPORTING A JOB



- (A)**
 - Insert the memory stick in the USB port.
 - Hold down button **S8** to activate the job menu.
 - The job menu appears in display: **D4**.

- (B)**
 - Press buttons **S5** and **S6** to select parameter **OPT**.
 - The selected parameter is shown by symbol " → ".

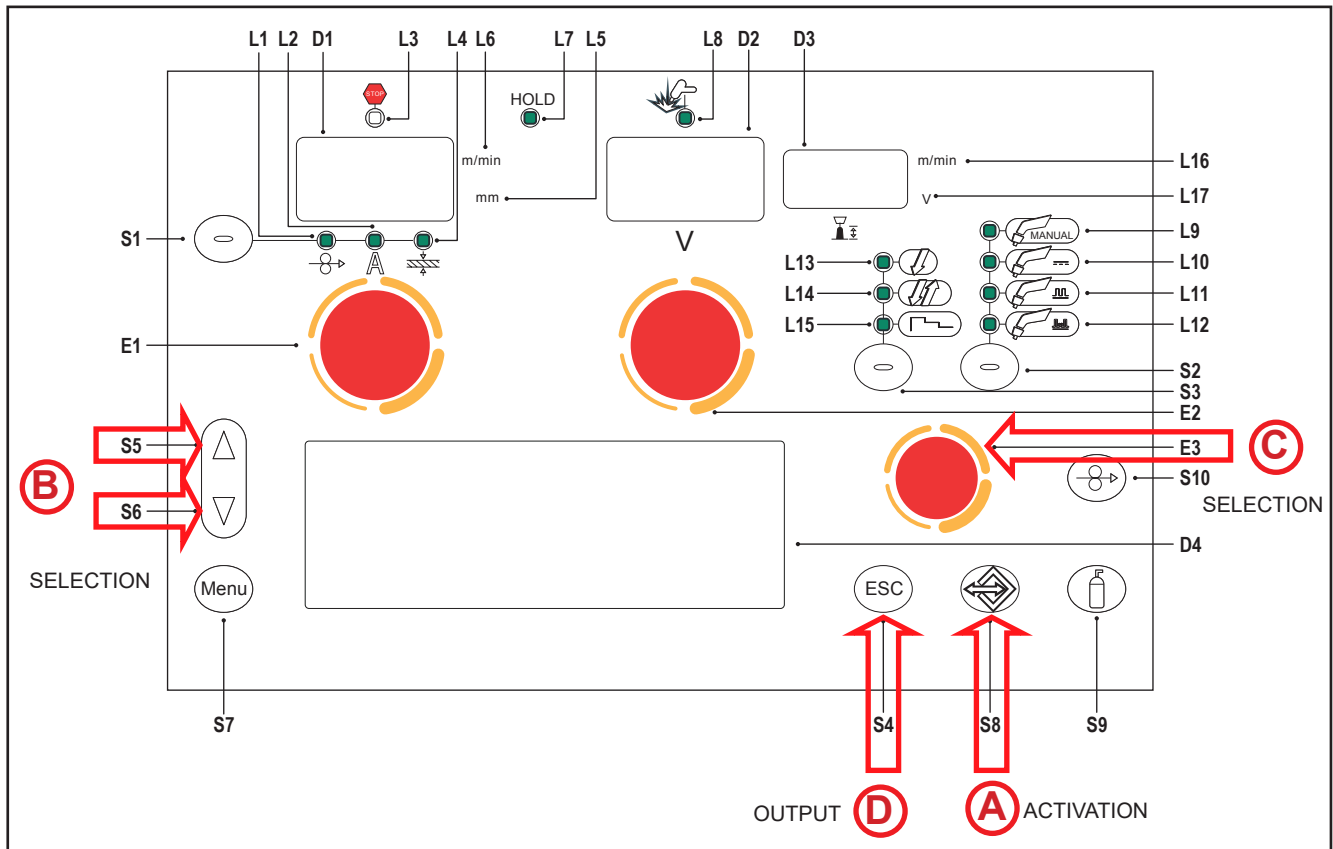
- C
 - Use the **encoder E3** , to select the **USB EXPORT** function.
 - ➔ When there are no saved jobs the following message appears on the bottom line: **NO JOB**

- D
 - Exit without confirmation**
 - Press the **S4**  button.
 - ➔ This action will automatically close the menu
 - Exit with confirmation**
 - Press the **S8** button. 

Tab. 13 - JOB exporting operation messages

MESSAGE	MEANING	CHECKS
USB DEVICE NOT FOUND	USB device not found	- incorrectly inserted memory stick - memory stick removed before completing the operation.
EXPORT FAILED	- memory stick removed before completing the operation.	- USB not formatted as FAT32. - unidentifiable generic error: re-insert the memory stick and retry. - the connected USB drive is damaged.
EXPORT IN PROGRESS	The JOBS saved on the panel are being exported	
EXPORT COMPLETE	Exporting procedure completed	

11.7 IMPORTING A JOB



- (A)**
 - o Insert the memory stick in the USB port.
 - o Hold down button **S8** to activate the job menu.
 - ➔ The job menu appears in display: **D4**.
- (B)**
 - o Press buttons **S5** and **S6** to select parameter **OPT**.
 - ➔ The selected parameter is shown by symbol "➔".
- (C)**
 - o Use the **encoder E3** , to select the **USB IMPORT** function.
- (D)**
 - Exit without confirmation**
 - o Press the **S4** button.
 - ➔ This action will automatically close the menu
 - Exit with confirmation**
 - o Press the **S8** button.

Tab. 14 - JOB importing operation messages

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

11.8 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).

12 TORCH TRIGGER MODES

12.1 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 material. If the arc does not strike after 10 cm wire protrusion, wire feeding is locked and the welding unit outputs are de-energized.
The arc strikes and the wire feeder accelerates to the set feed rate value.
3. Release (2T) trigger to start the weld completion procedure.
 - Gas flow continues for the time set in the post gas parameter (adjustable time).

12.2 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 material. If the arc does not strike after 10 cm wire protrusion, wire feeding is locked and the welding unit outputs are de-energized.
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).

12.3 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 material. If the arc does not strike after 10 cm wire protrusion, wire feeding is locked and the welding unit outputs are de-energized.
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).

12.4 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 material. If the arc does not strike after 10 cm wire protrusion, wire feeding is locked and the welding unit outputs are de-energized.
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) trigger and keep it pressed to start the weld completion procedure.
 - Gas flow continues until the torch trigger is released.
4. Release (4T) torch trigger to start the post gas procedure (adjustable time).

12.5 2T - 3 LEVEL MIG/MAG WELDING

1. Bring the torch up to the workpiece.
2. Press (1T) torch trigger.
 - The wire advances at the approach speed until making contact with the material. 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.
The hot start level continues for the start time, which is settable in seconds; then switch to normal welding speed is performed in accordance with the start slope, which can be set in seconds.
3. Release (2 T) 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 slope, 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.
4. 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.

12.6 2T SPOT - 3 LEVEL 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 2T - 3 LEVELS process.

12.7 4T - 3 LEVEL MIG/MAG WELDING


1. Bring the torch up to the workpiece.
2. Press (1T) torch trigger.
 - ④ The wire advances at the approach speed until making contact with the material. 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.
 - ① This first level is used to create the weld pool: for example, when welding aluminium a value of 130 % is recommended.
3. Release (2T) trigger to switch to normal welding speed; then 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.
 - ① The switch of welding current level in terms of crater filling is performed in accordance with the crater slope, 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.

12.8 4T B-LEVEL - 3 LEVEL MIG/MAG WELDING

- ① 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) 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.

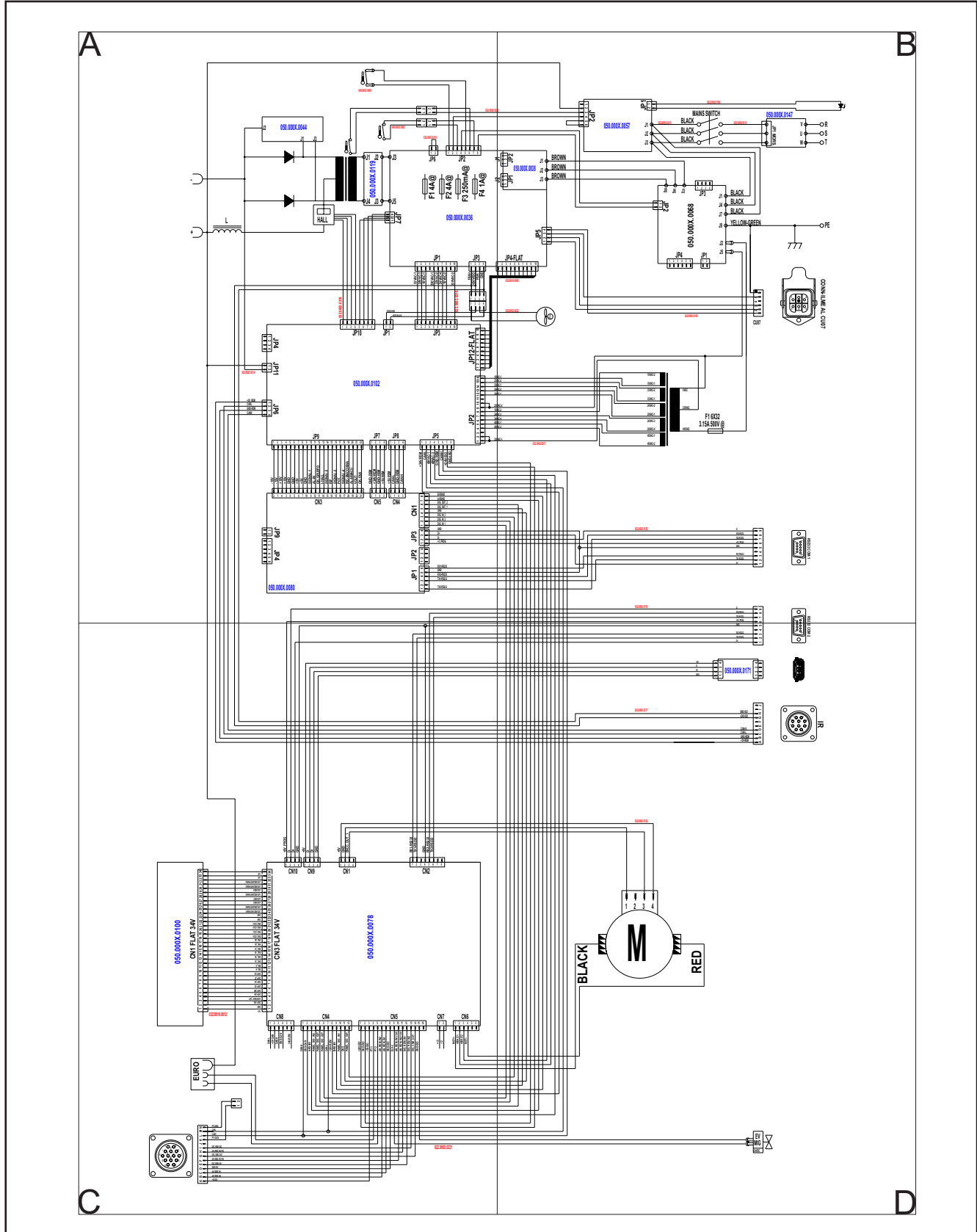
13 TECHNICAL DATA

13.1 Pioneer Pulse 321MKS TECHNICAL DATA

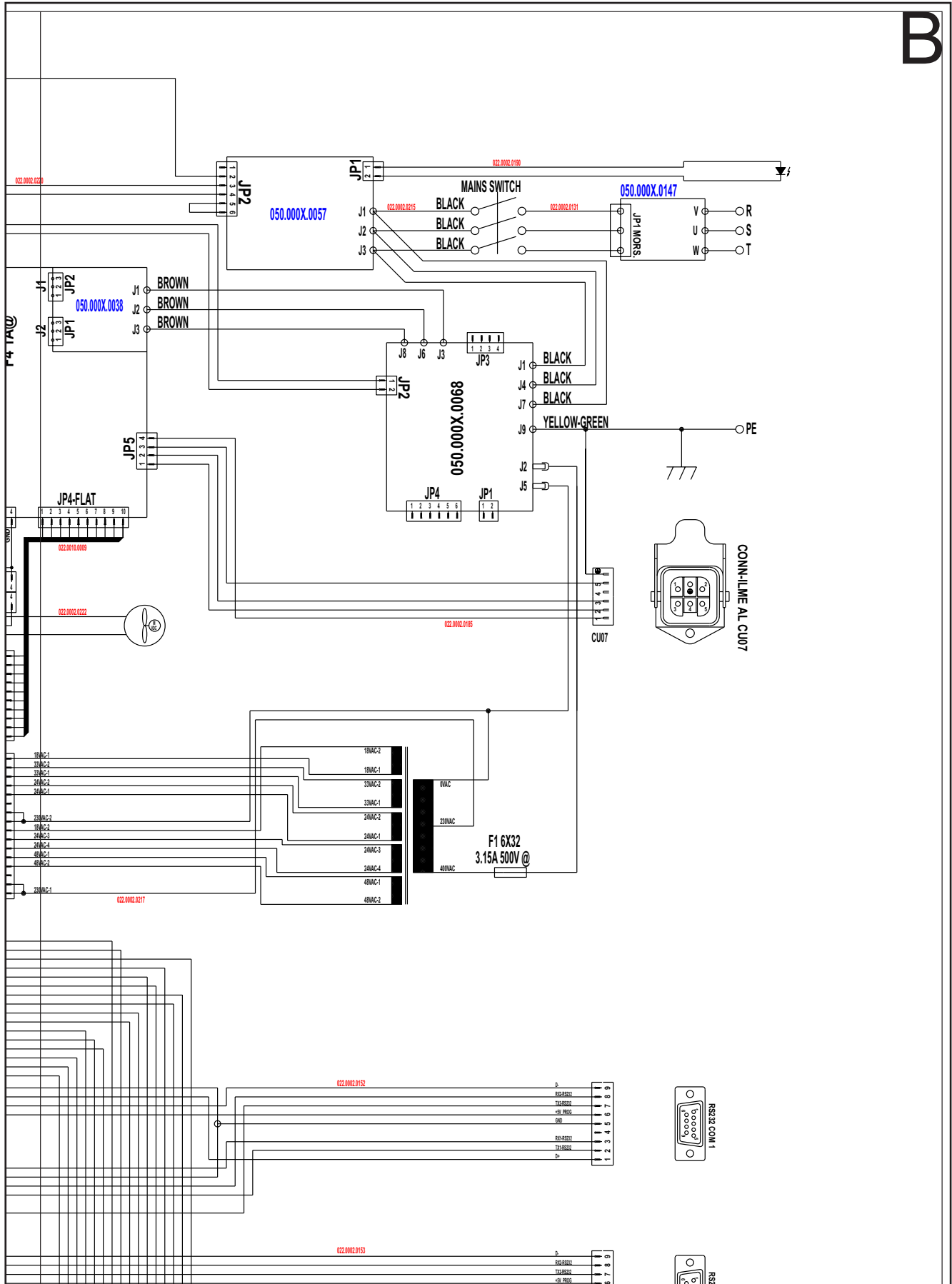
Model	Pioneer Pulse 321MKS		
Construction standards	EN 60974-1 EN 60974-5 EN 60974-10 Class A		
Supply voltage	3 x 400 V~± 15 %/ 50-60 Hz		
Zmax	This equipment complies with IEC 61000-3-12 provided that the maximum permissible system impedance is less than or equal to 33 mΩ at the interface point between the user's supply and the public system. It is the responsibility of the installer or user of the equipment to ensure, by consultation with the distribution network operator if necessary, that the equipment is connected only to a supply with maximum permissible system impedance less than or equal to 33 mΩ.		
Mains protection	25 A Delayed		
Dimensions (L x D x H)	550 x 1110 x 805 mm		
Weight	77 kg		
Insulation class	H		
Protection rating	IP23		
Cooling	AF		
Maximum gas pressure	0.5 MPa (5 bar)		
MIG/MAG welding voltage	14.2 V - 30.0 V		
Motor speed	1.0 - 24.0 m/min.		
Wire spool: (dimensions/weight)	300 mm / 15 kg		
Temperature of the environment	40°C		
Welding mode	MIG/MAG		
Static characteristic			
Work cycle	45 %	60 %	100 %
Welding current	320 A	280 A	230 A
Working voltage	30.0 V	28.0 V	25.5 V
Maximum input power	14.6 KVA	12.3 KVA	9.5 KVA
	10.9 kW	8.9 kW	6.7 kW
Maximum supply current	21.0 A	17.7 A	13.7 A
Maximum Effective Supply Current	14.1 A	13.7 A	13.7 A
Open-circuit voltage (U0)	71 V		
Reduced no-load voltage (Ur)	11 V		
Power source efficiency	Efficiency (320A / 30,0V): 85,9%		
	No-Load condition power consumption (U1= 400 Va.c.): 31 W		
Essential raw materials	According to the information provided by our suppliers, this product does not contain essential raw materials in quantities greater than 1g per component.		

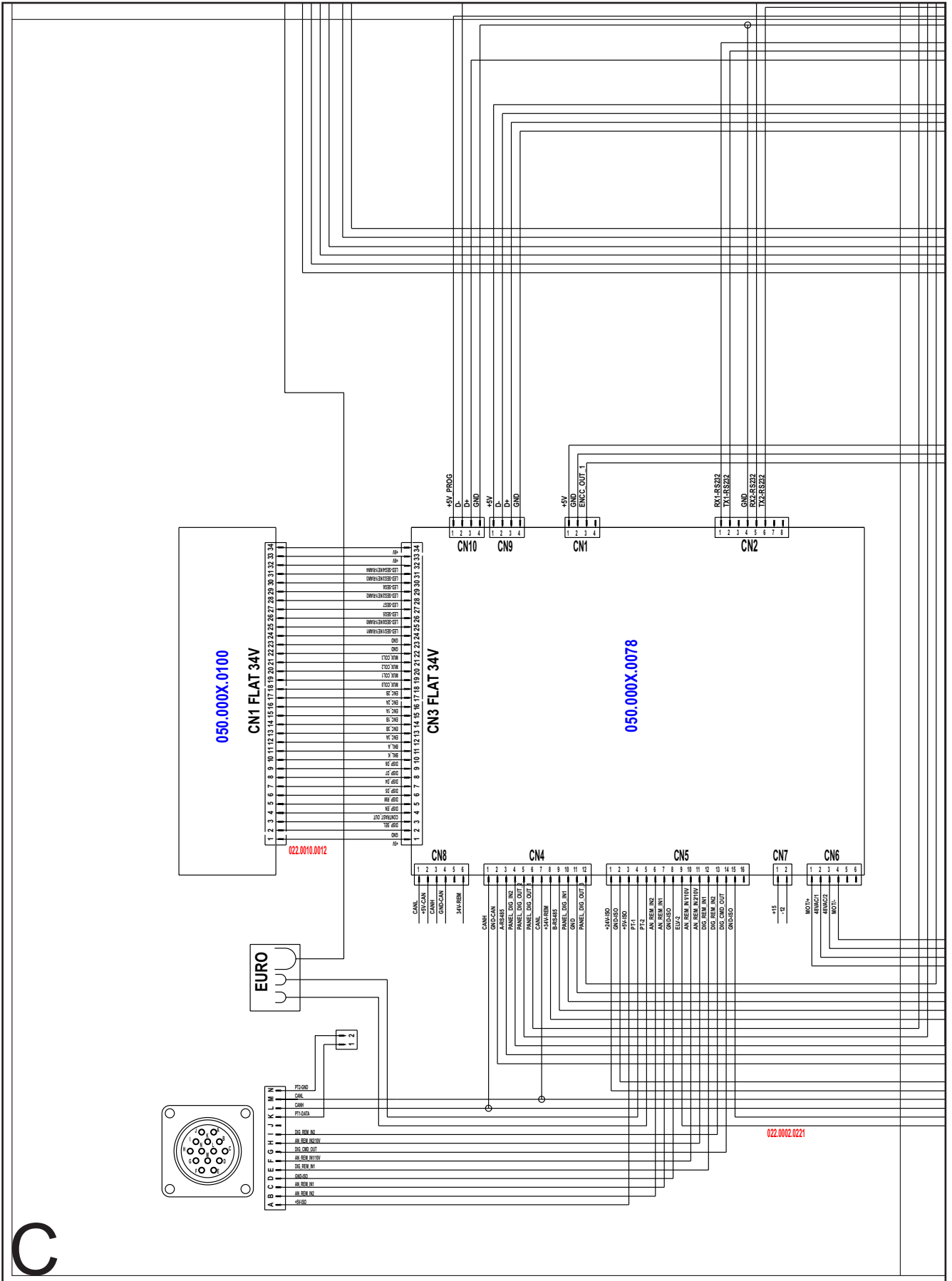
14 WIRING DIAGRAM

14.1 WIRING DIAGRAM



B





C

14.2 REMOTE CONTROL CONNECTOR (front panel)

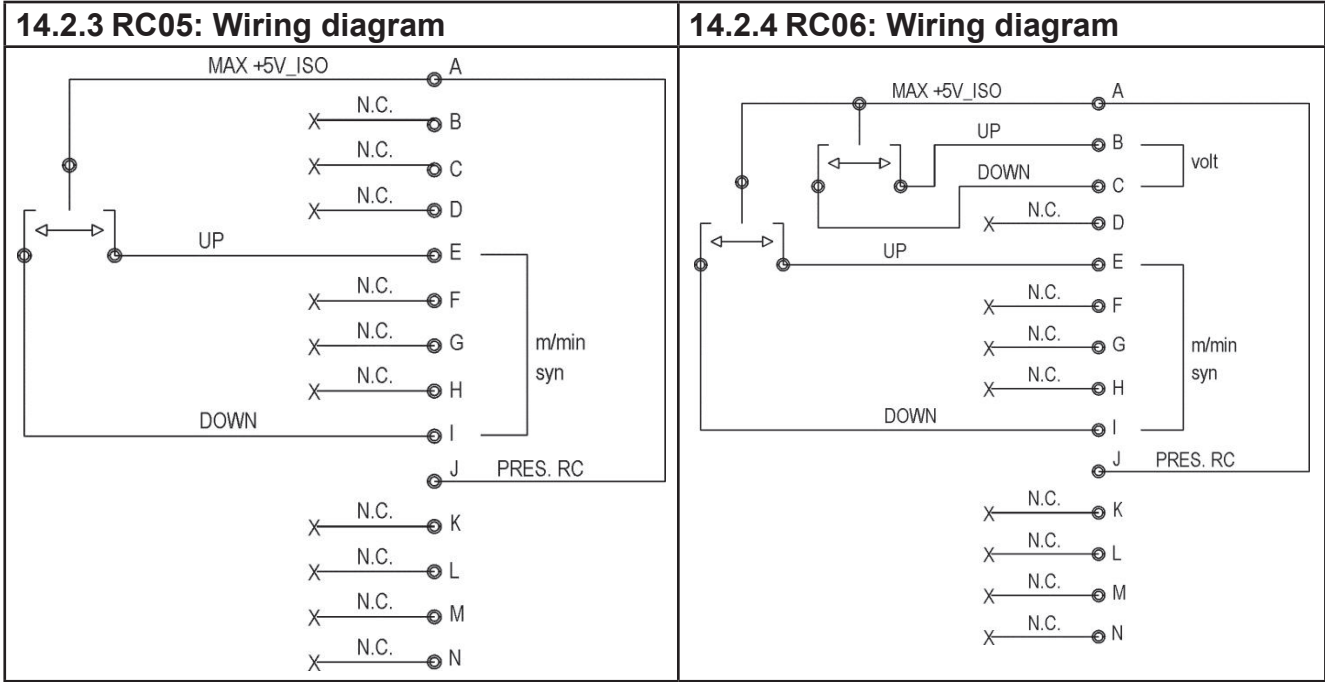
Pin	Name	Voltage	Input/Output
A	+5 V	5 V d.c.	Out
B	AN2 (5 V)	0-5 V	In
C	AN1 (5 V)	0-5 V	In
D	GND	GND	Out
E	D1-IN	0-5 V	In
F	AN2 (10 V)	0-10 V	In
G	D3-OUT	0-5 V	Out
H	AN1 (10 V)	0-10 V	In
I	D2-IN	0-5 V	In
J	RC	-	Not used
K	-	-	Not used
L	-	-	Not used
M	-	-	Not used
N	-	-	Not used

14.2.1 RC03: Wiring diagram

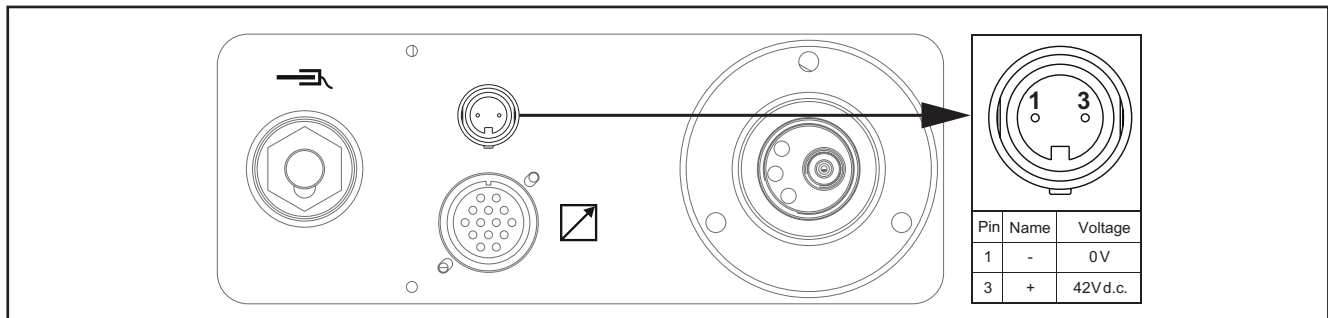
10 kOhm - 100 kOhm potentiometer

14.2.2 RC04: Wiring diagram

10 kOhm - 100 kOhm potentiometer

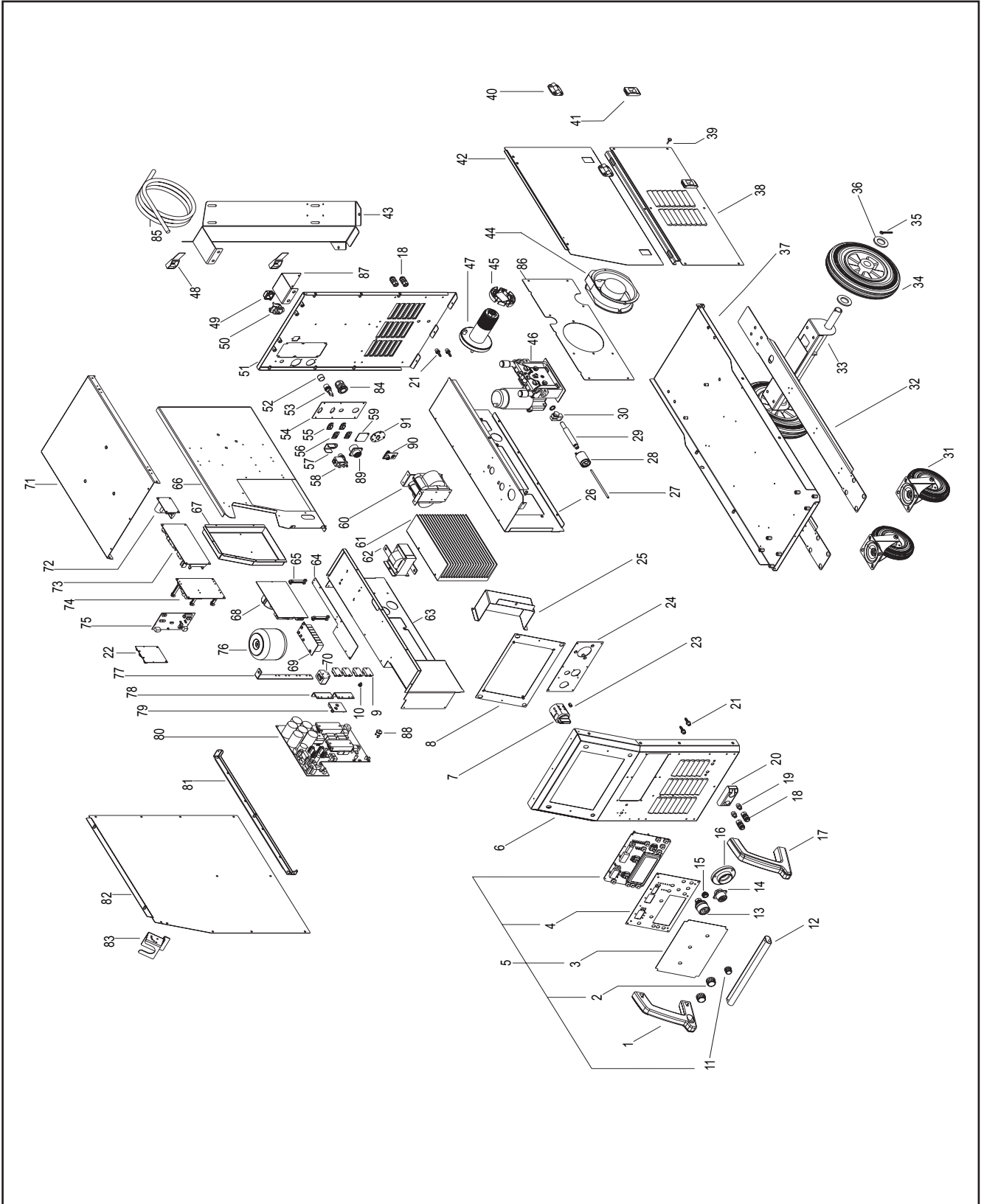


14.3 PUSH-PULL (OPTIONAL)



15 SPARES

15.1 Pioneer Pulse 321MKS

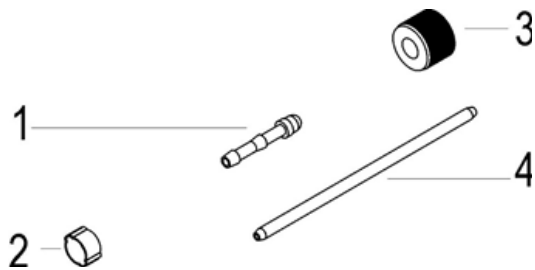


ENGLISH

N°	CODE	DESCRIPTION
1	011.0006.0030	RIGHT HANDLE
2	014.0002.0010	KNOB WITHOUT INDEX
3	013.0021.0901	FRONT PANEL LABEL
4	013.0000.8032	LOGIC BOARD PLATE
5	050.5070.0000	COMPLETE FRONT LOGIC PANEL
6	011.0016.0134	FRONT PLATE (1)
7	040.0001.0017	THREE-POLE SWITCH
8	011.0016.0109	PANEL SUPPORT PLATE
9	032.0002.2403	ISOTOP DIODE
10	040.0003.1002	THERMAL CUT-OUT75°C
11	014.0002.0002	KNOB WITHOUT INDEX
12	011.0016.0128	FRONT HANDLE
13	021.0001.0259	FIXED SOCKET 400 A
14	022.0002.0221	REMOTE LOGIC BOARD WIRING
15	016.0011.0011	CAP Ø=18
16	021.0001.2005	EURO CONNECTOR HOUSING
17	011.0006.0029	LEFT HANDLE
18	018.0002.0004	QUICK CLUTCH
19	017.0003.0055	NIPPLE CONNECTOR
20	011.0016.0156	QUICK CLUTCH COVER PLATE
21	016.5001.3040	SLEEVE HOSE ADAPTER FOR RUBBER HOSE Ø= 10 mm F= 1/8 M
22	050.0002.0057	POWER SUPPLY CONTROL BOARD
23	022.0002.0190	LED WIRING
24	011.0016.0144	FRONT PLATE (2)
25	011.0016.0151	FRONT LOGIC BOARD COVER PLATE
26	011.0016.0147	MOTOR SUPPORT PLATE
27	021.0001.2027	CAPILLARY TUBE FOR EURO CONNECTOR
28	021.0001.2000	AXIAL EURO BODY
29	021.0001.2014	BRASS GUIDE FOR EURO CONNECTOR
30	021.0001.2010	CURRENT CLAMP FOR BRASS GUIDE
31	004.0001.0013	CASTOR
32	011.0016.0138	BASE SLIDE METAL PLATE
33	011.0016.0129	WHEEL SECURING PLATE
34	004.0001.0014	FIXED WHEEL
35	016.0002.0005	SPLIT PIN
36	016.1000.1002	WASHER M27
37	011.0016.0136	BASE PLATE
38	011.0000.0961	RIGHT COVER PANEL

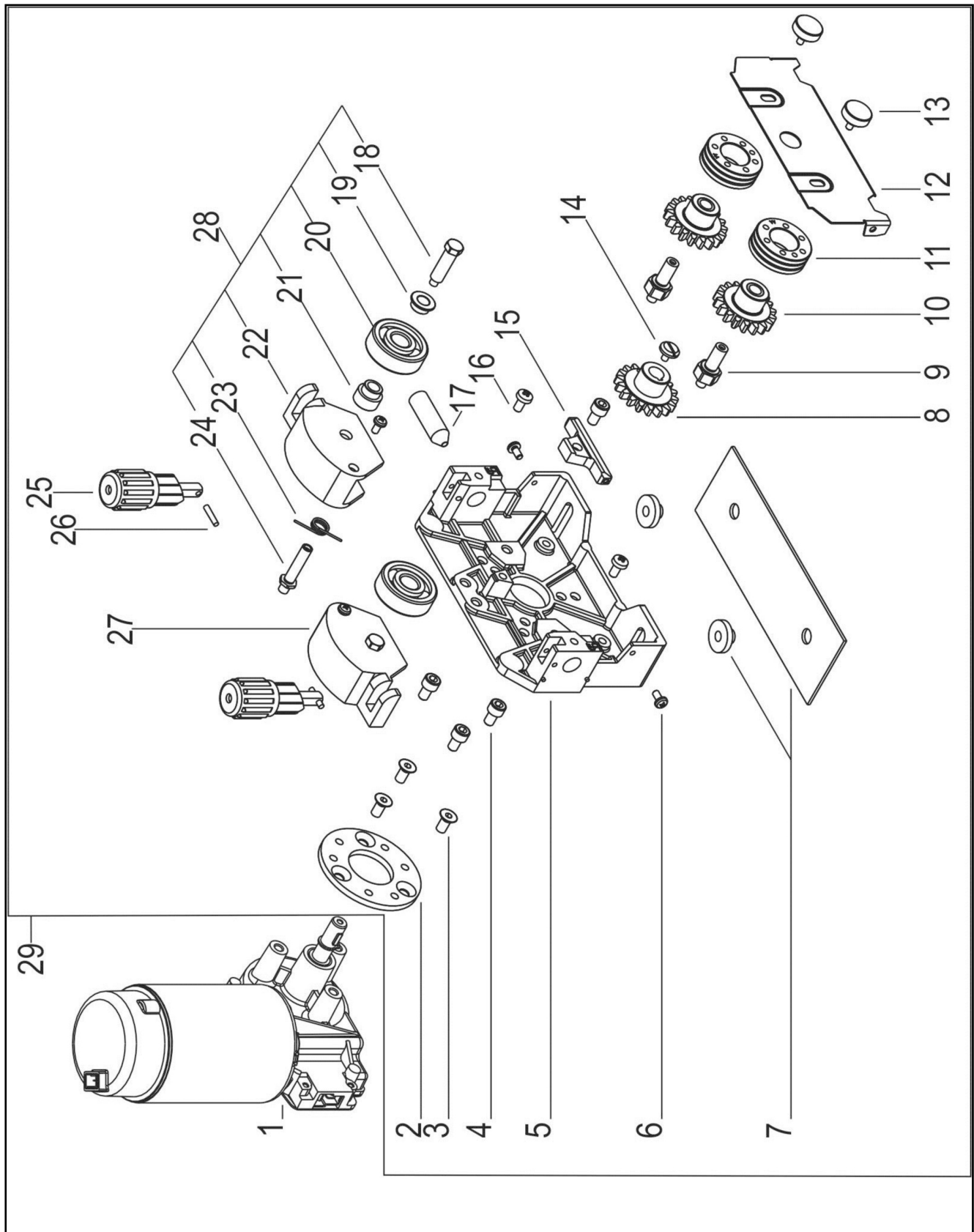
N°	CODE	DESCRIPTION
39	016.0009.0005	PVC FOOT
40	011.0006.0007	PLASTIC HINGE
41	011.0006.0002	PLATE SLIDE CLOSURE
42	011.0000.0971	DOOR COVER PANEL
43	011.0016.0139	GAS BOTTLE SUPPORT PLATE
44	003.0002.0003	FAN
45	002.0000.0287	SCREW CAP FOR SPOOL HOLDER
46	010.0008.0003	WIRE FEEDER MOTOR
47	011.0006.0062	SPOOL HOLDER
48	005.0001.0012	BELT FOR GAS BOTTLE
49	021.0013.0007	C.U. POWER CONNECTOR CAP
50	022.0002.0185	C.U. POWER SUPPLY WIRING
51	011.0016.0135	REAR PLATE (1)
52	016.0011.0004	FUSE HOLDER CAP
53	040.0006.1880	FUSE HOLDER
54	013.0000.7004	REAR PLATE (2)
55	021.0014.0302	RS232 CONNECTOR CAP
56	022.0002.0152	RS232 CABLE
57	011.0002.0018	SOLENOID VALVE PLATE
58	017.0001.5542	SOLENOID VALVE
59	011.0014.0070	CONNECTOR COVER PLATE
60	042.0003.0041	POWER TRANSFORMER
61	015.0001.0019	HEAT SINK
62	044.0004.0020	OUTPUT INDUCTOR
63	011.0016.0146	TUNNEL HOUSING
64	011.0016.0152	BOARDS SUPPORT
65	016.0010.0001	BOARDS SUPPORT GUIDE
66	011.0016.0148	INTERNAL PLATE
67	011.0016.0149	COVER MOTOR PLATE
68	050.0002.0068	MAINS FILTER BOARD
69	050.0002.0119	PRIMARY CAPACITOR BOARD
70	041.0004.0502	HALL EFFECT SENSOR
71	011.0016.0140	TOP COVER PANEL
72	050.0002.0024	PUSH-PULL BOARD
73	050.0026.0078	MOTOR BOARD
74	050.0002.0102	BUS BOARD
75	050.0025.0080	PULSE BOARD
76	041.0006.0006	AUXILIARY TRANSFORMER
77	045.0006.0082	DIODES-SOCKET COPPER BRACKET
78	045.0006.0081	DIODE-DIODE BRACKET
79	050.0003.0044	SNUBBER BOARD
80	050.0003.0036	POWER BOARD

N°	CODE	DESCRIPTION
81	011.0016.0143	COVER PANEL SUPPORT PLATE
82	011.0000.0931	LEFT COVER PANEL
83	011.0015.0029	TORCH HOLDER
84	045.0000.0017	CABLE CLAMP
85	045.0002.0014	NEOPRENE CABLE
86	011.0016.0153	FANS SUPPORT
87	011.0012.0058	COOLING UNIT SUPPORT PLATE
88	040.0003.0061	THERMAL CUT-OUT 60°C
89	022.0002.0377	REMOTE CONNECTOR CABLE
90	050.0001.0171	USB(A) BOARD
91	011.0014.0076	USB COVER PLATE



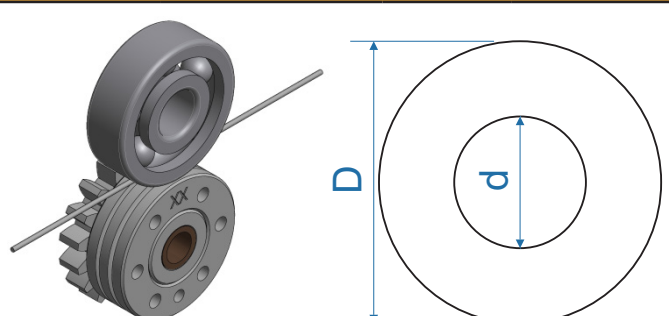
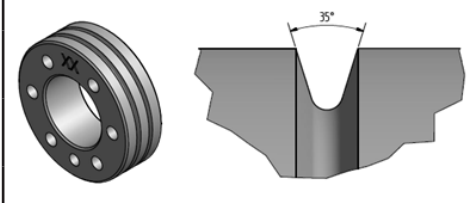
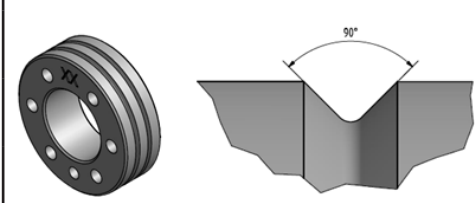
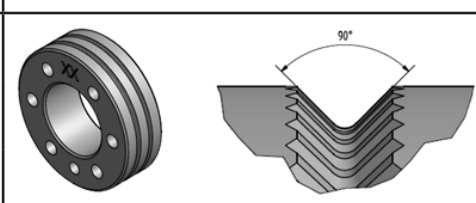
N°	CODE	DESCRIPTION
1	016.5001.0822	SLEEVE HOSE ADAPTER FOR RUBBER HOSE
2	016.0007.0001	HOSE CLAMP Ø=11-13
3	016.5001.0823	NUT 1/4
4	021.0001.2027	CAPILLARY TUBE

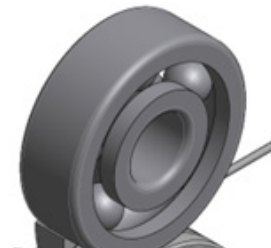
15.2 WIRE FEEDER MOTOR



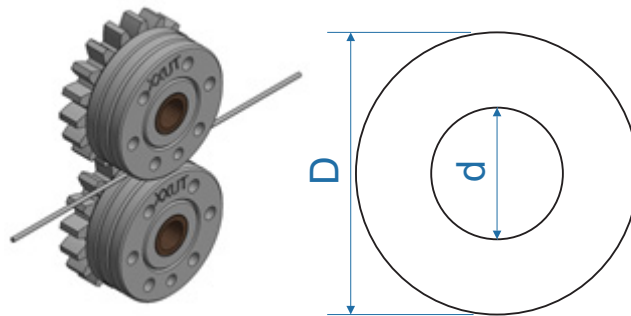
No.	CODE	DESCRIPTION
1	002.0000.0254	MOTOR COIL
2	002.0000.0308	DISTANCE RING
3	002.0000.0306	COUNTERSUNK SCREW M6x12
4	002.0000.0307	SCREW M6x20
5	002.0000.0295	WIRE FEEDER SUPPORT
6	002.0000.0318	SCREW M4x8
7	002.0000.0291	INSULATIONMOTOR KIT
8	002.0000.0300	MAIN GEAR DRIVE
9	002.0000.0298	SHAFT
10	002.0000.0299	GEAR ADAPTOR FEED ROLL (BRONZE BUSHING)
	002.0000.0309	GEAR ADAPTOR FEED ROLL (BALL BEARING)
11	002.0000.0142	FEED ROLL
12	002.0000.0322	INTERNAL PROTECTION PLATE
13	002.0000.0305	RETAINING SCREW M4
14	002.0000.0304	SCREW M4x10
15	002.0000.0294	INTERMEDIATE GUIDE
16	002.0000.0324	SCREW M5x10
17	002.0000.0297	INLET GUIDE
18	002.0000.0316	PRESSURE ROLL AXLE
19	002.0000.0315	DISTANCE RING 1
20	002.0000.0303	KNURLED DRIVE ROLL
21	002.0000.0314	DISTANCE RING 2
22	002.0000.0313	RIGHT PRESSURE ARM
23	002.0000.0317	SPRING
24	002.0000.0311	JOINT AXLE
25	002.0000.0290	COMPLETE PRESSURE DEVICE
26	002.0000.0319	PIN
27	002.0000.0301	COMPLETE LEFT PRESSURE ARM
28	002.0000.0302	COMPLETE RIGHT PRESSURE ARM
29	002.0000.0057	WIRE FEEDER BODY COMPLETE

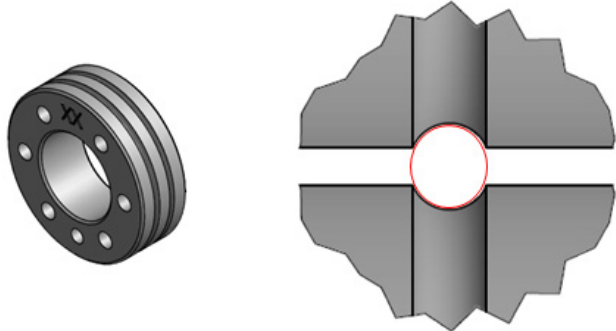
15.3 WIRE FEEDER ROLLS

Standard					
CODE	Ø WIRE	TYPE	Ø ROLL	GROOVE	
					
002.0000.0140	0.6-0.8	V groove Solid wire	D=37x12/d=19 V	35° V	
002.0000.0141	0.8-1.0				
002.0000.0142	1.0-1.2				
002.0000.0143	1.2-1.6				
002.0000.0144	0.8-1.0	U shape Aluminium wire	D=37x12/d=19 U	90° V	
002.0000.0145	1.0-1.2				
002.0000.0146	1.2-1.6				
002.0000.0147	1.6-2.0				
002.0000.0148	2.4-3.2				
002.0000.0149	1.0-1.2	VK shape	D=37x12/d=19 VK	90° V	
002.0000.0150	1.2-1.6				
002.0000.0151	2.4-3.2				

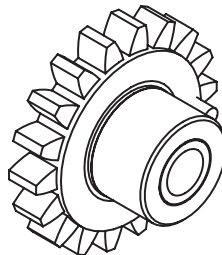
Arm with standard roll	
Smooth	
CODE	Ø ROLL
002.0000.0303	D=37x12/d=12 Smooth standard
	

Double driving roll (4 roll with groove) - RECOMMENDED CONFIGURATION



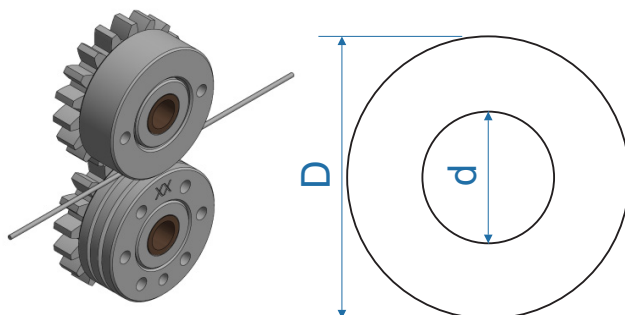
CODE	Ø WIRE	Ø ROLL	
002.0000.0168	1.0-1.2	D=37x12/d=19 U DOUBLE D.	
002.0000.0169	1.2-1.6	D=37x12/d=19 U DOUBLE D.	
002.0000.0171	1.0-1.2	D=37x12/d=19 UT TEFLON.	
002.0000.0172	1.2-1.6	D=37x12/d=19 UT TEFLON	

GEAR ADAPTOR FEED ROLL



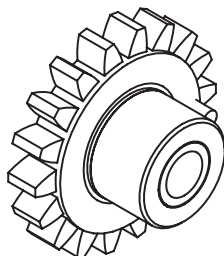
002.0000.0299	GEAR ADAPTOR FEED ROLL (BRONZE BUSHING)
002.0000.0309	GEAR ADAPTOR FEED ROLL (BALL BEARING)

Double driving roll (2 roll with groove + 2 flat roll)



CODE	Ø WIRE	Ø ROLL
002.0000.0145	1.0-1.2	D=37x12/d=19 U
002.0000.0146	1.2-1.6	D=37x12/d=19 U
002.0000.0149	1.0-1.2	D=37x12/d=19 VK
002.0000.0150	1.2-1.6	D=37x12/d=19 VK
002.0000.0151	2.4-3.2	D=37x12/d=19 VK

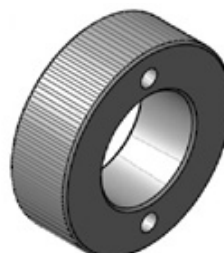
GEAR ADAPTOR FEED ROLL



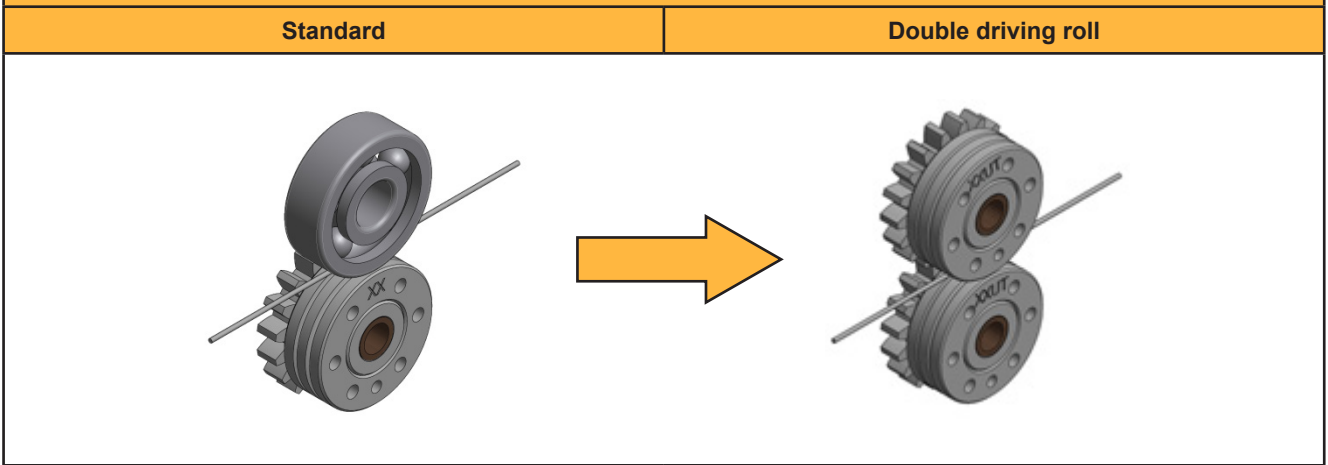
002.0000.0299	GEAR ADAPTOR FEED ROLL (BRONZE BUSHING)
002.0000.0309	GEAR ADAPTOR FEED ROLL (BALL BEARING)

Arm with double driving roll

Smooth		Knurled	
CODE	Ø ROLL	CODE	Ø ROLL
002.0000.0152	D=37x12/d=19 SMOOTH double driving	002.0000.0153	D=37x12/d=19 KNURLED double driving



Transformation KIT from STANDARD wire feeder to Double driving roll wire feeder



If you want to change the configuration of the STANDARD wire feeder to DOUBLE DRIVE ROLL configuration, you need to order the following items:

N° 4 Special rolls "U DOUBLE D" (see Part. A)

N° 2 Gear adaptor feed rolls (see Part. B) [it is recommended with bronze bushing]

CODE	Ø WIRE	Ø ROLL	
002.0000.0168	1.0-1.2	D=37x12/d=19 U DOUBLE D.	<div style="display: flex; align-items: center;"> <div style="margin-right: 20px;"> <p>A</p> </div> <div> </div> </div> <p style="text-align: center; margin-top: 10px;">x 4</p>
002.0000.0169	1.2-1.6	D=37x12/d=19 U DOUBLE D.	

GEAR ADAPTOR FEED ROLL for Double driving roll

002.0000.0299	GEAR ADAPTOR FEED ROLL (BRONZE BUSHING)	<div style="display: flex; align-items: center;"> <div style="margin-right: 20px;"> <p>B</p> </div> </div> <p style="text-align: center; margin-top: 10px;">x 2</p>
002.0000.0309	GEAR ADAPTOR FEED ROLL (BALL BEARING)	



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