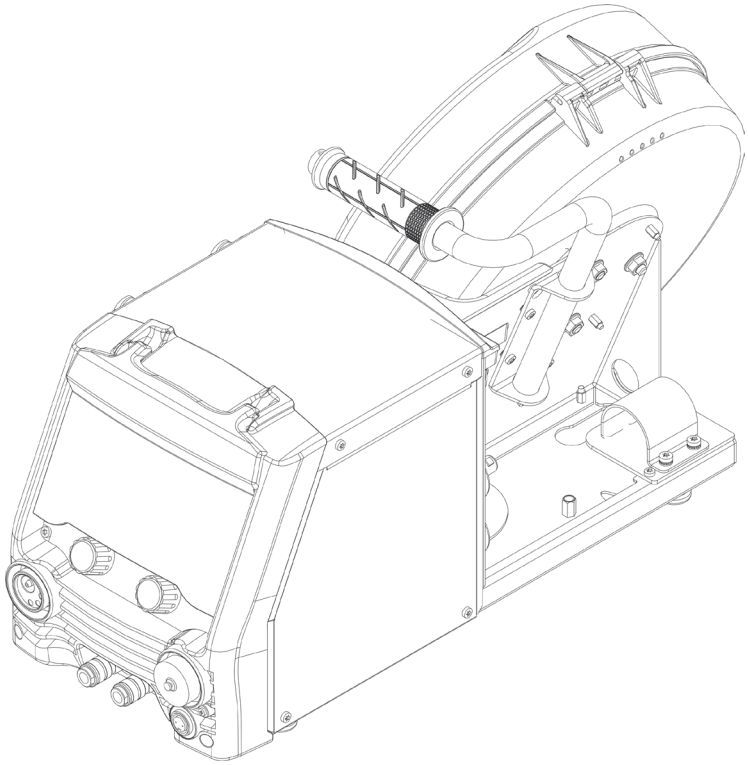
WELD THE WORLD

WF211

Instruction Manual

ENGLISH

Translation of original instructions



Cod.006.0001.2460
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MAIN TABLE OF CONTENTS

1 GENERAL INFORMATION

IMPORTANT!
For your safety

This documentation must be consigned to the user prior to installation and commissioning of the unit.
Read the manual "GENERAL INSTRUCTIONS FOR USE" provided separately from this manual before installing and commissioning the equipment.
The meaning of the symbols in this manual and the associated precautionary information are given in the "GENERAL INSTRUCTIONS FOR USE".
If the "GENERAL INSTRUCTIONS FOR USE" manual is not present, it is mandatory to request a replacement copy from the Manufacturer or from your dealer.
Retain these documents for future consultation.

Meaning of the symbols

DANGER!

This pictogram warns of danger of death or serious injury.

WARNING!

This pictogram warns of a risk of injury or damage to property.

CAUTION!

This pictogram warns of a potentially hazardous situation.

NOTICE!

This pictogram gives important information concerning the execution of the relevant operations.

Information

This pictogram indicates additional information or refers to another section of the manual with the related information.

- in the illustrations:
  -  press
  -  turn the encoder
  -  press the encoder

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

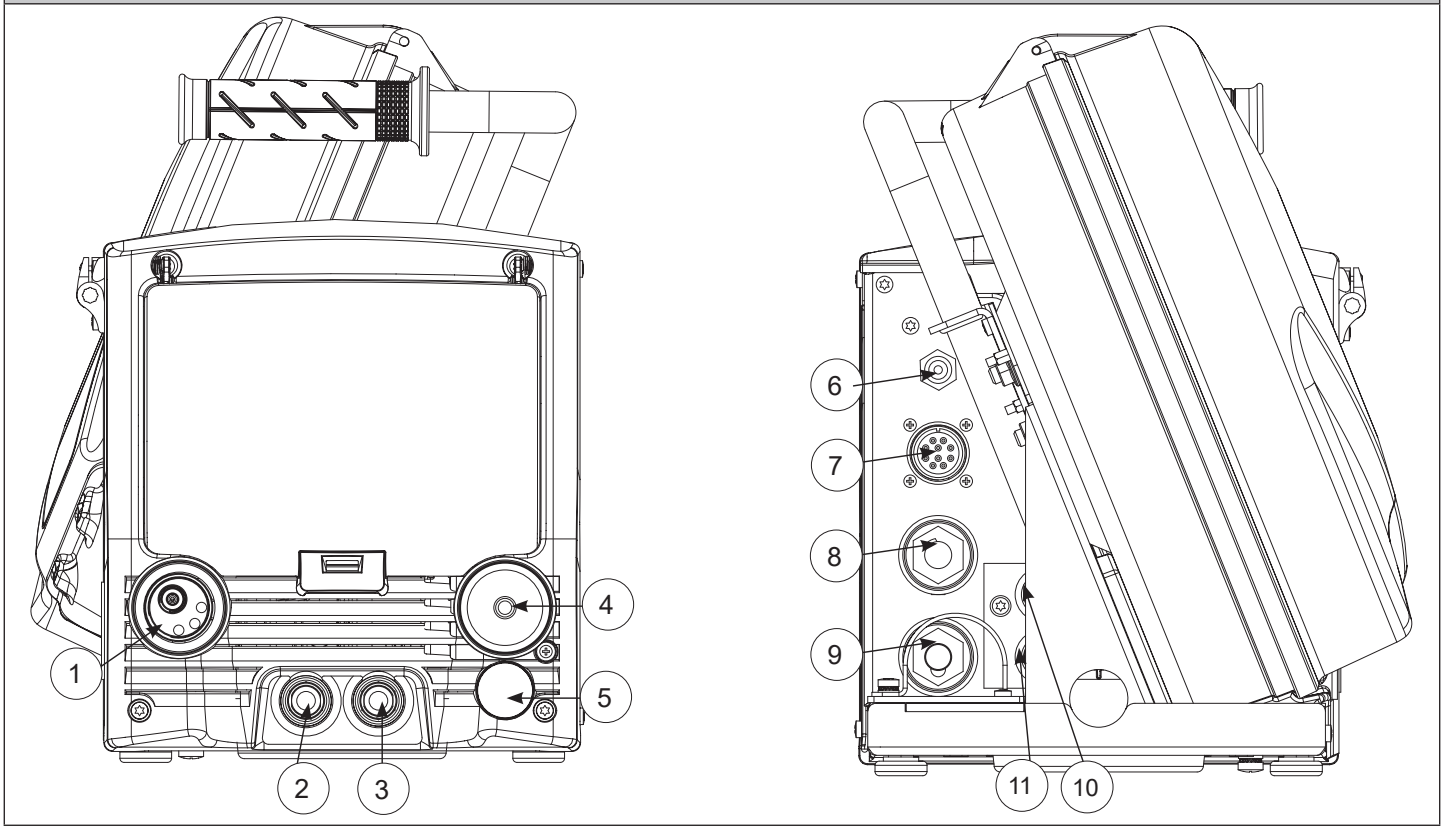
1.1 PRESENTATION

WF211 is designed to provide the welder with a lightweight tool (only 11.5 kg) that is easy to carry even in hard-to-reach places thanks to its compact size.
It is easy to carry also thanks to the convenient ergonomic handle at the top, which ensures a balanced grip.
The solid and secure cable fastening system prevents damage to the signal and power cables, increasing the service life of the extension. Communication with the power source is guaranteed up to 50 metres.
The protective screen shields against welding spatter and prevents grinding sparks from damaging the front panel. The LED lights in the wire feed compartment facilitate the wire insertion and roll change operations, even in poorly lit places.
The reel compartment features an inspection window so that the remaining wire on the reel can be kept under control
The 4-drive-roll system (optional) allows for optimal wire unwinding, especially with special wires (Aluminium, stainless steel, CuSi, ...). The four-roll wire feed motor with optical encoder allows for more effective and precise wire feeding**.**

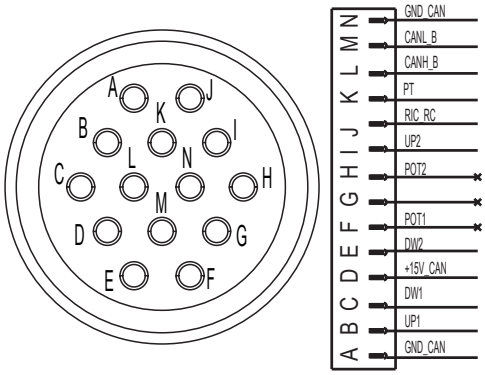
2 INSTALLATION AND ASSEMBLY

2.1 Connections and sockets

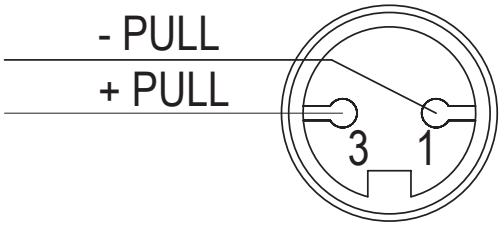
WF211



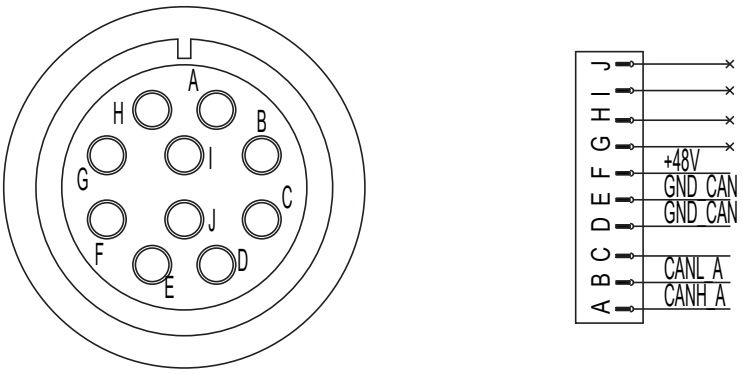
1. Socket for torch with EURO connector.
2. Connection for the torch coolant return hose (red).
3. Connection for the torch coolant supply hose (blue).
4. Connector for remote control.



5. Possibility of connecting a push-pull torch (after purchasing and installing the relative kit).



6. Rear gas connection. Used for the connection of the gas hose coming from the cable bundle.
7. Cable bundle signal connector.



8. Socket for the connection of the power cable coming from the cable bundle.
9. MMA socket for coated electrode welding directly from the wire feeder carriage.
10. Connection for the coolant supply hose from the cooling unit (blue).
11. Connection for the coolant return hose to the cooling unit (red).

2.2 MIG/MAG INSTALLATION

DANGER!

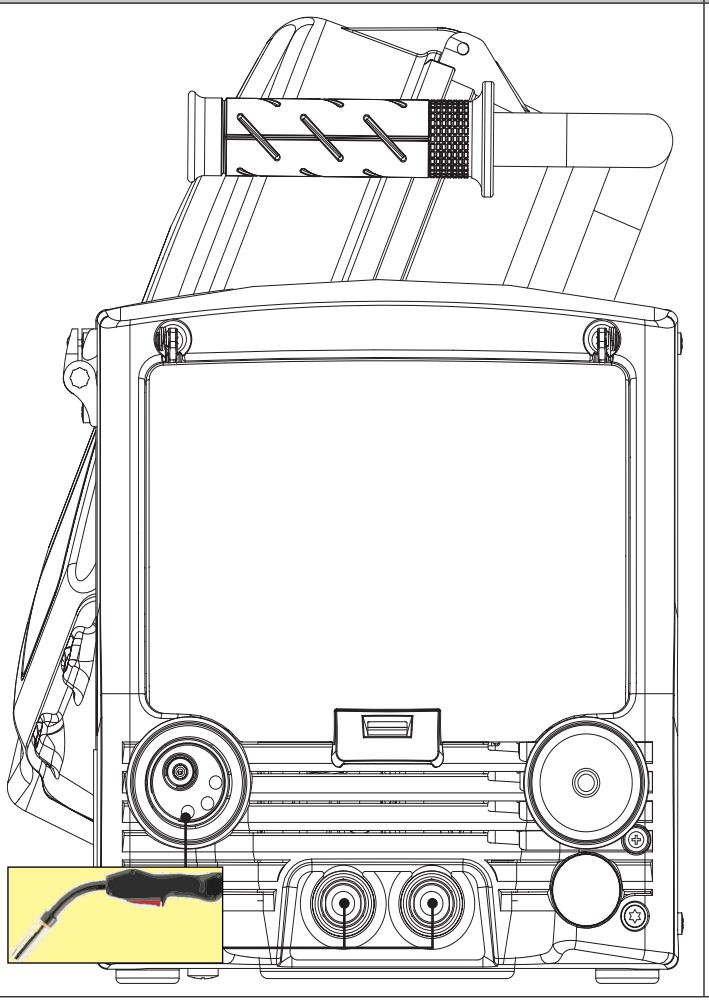
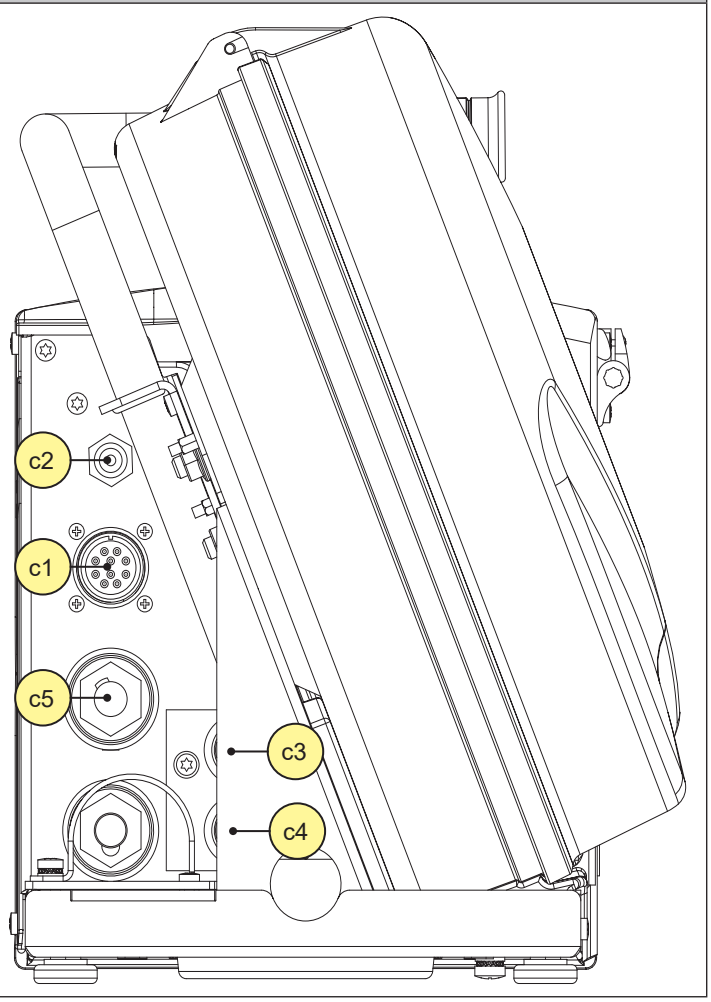
Electric shock hazard!

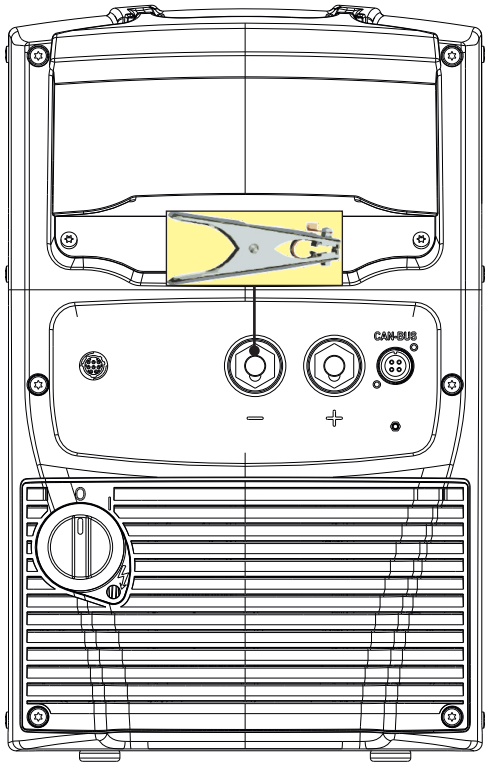
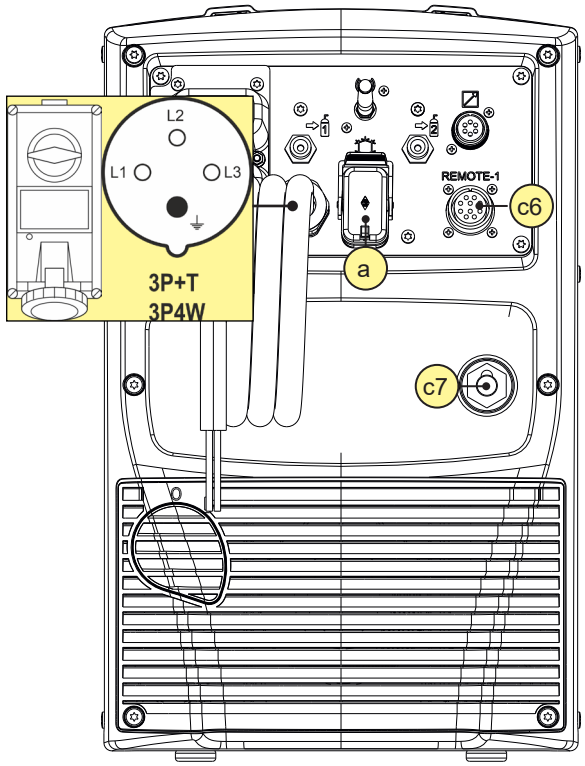
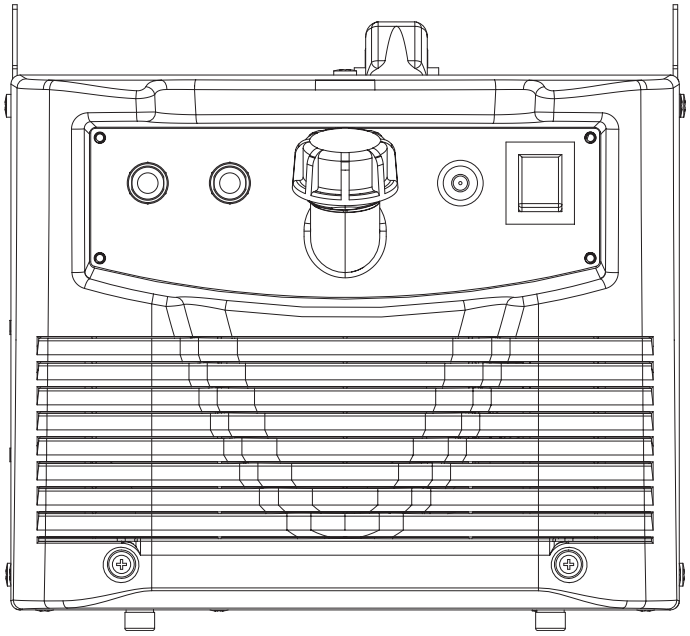
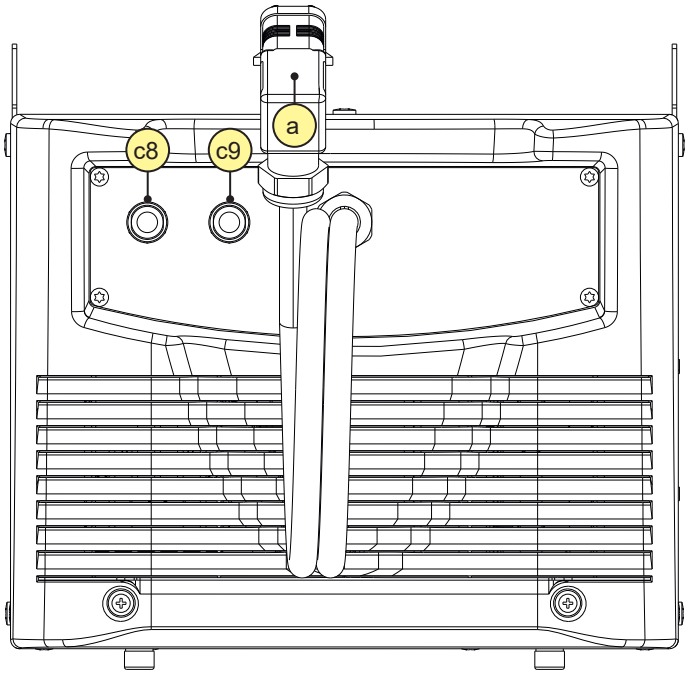
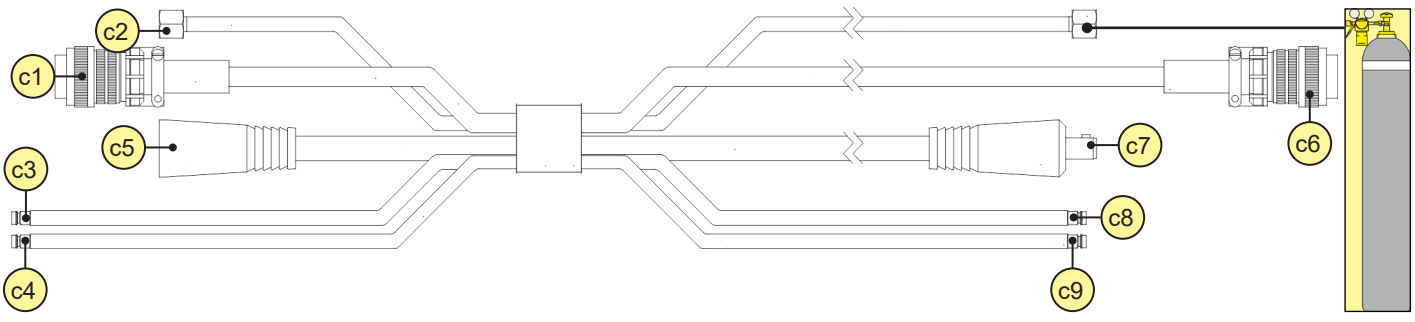
Read the warnings highlighted by the following symbols in the “General instructions for use”.

DANGER!

Lifting and positioning

Read the warnings highlighted by the following symbols in the “General instructions for use”

FRONT VIEW	REAR VIEW
	

FRONT VIEW	REAR VIEW
	
	
	

1. Assemble the various units as described in the instruction manual of the power source trolley.
2. Place the current generator switch in position “O” (equipment off).
3. Connect the power source mains supply cable to the mains socket outlet.
4. Secure to cable bundle connectors to the wire feeder carriage.
5. Secure to cable bundle connectors to the power source.
6. Connect the power supply cable of the cooling unit to the auxiliary power socket on the power source.
7. Connect the delivery and return hoses for the cooling liquid of the MIG/MAG torch to the connections for the cooling liquid in the wire feeder carriage.
8. Connect the delivery and return hoses for the cooling liquid of the cable bundle to the connections on the cooling unit and in the wire feeder carriage.
9. Secure the cable bundle by means of the locking device.
10. Connect the ground clamp plug to the negative polarity socket of the power source.
11. Connect the ground clamp to the workpiece.
12. Connect the MIG/MAG torch plug to the EURO TORCH welding socket.

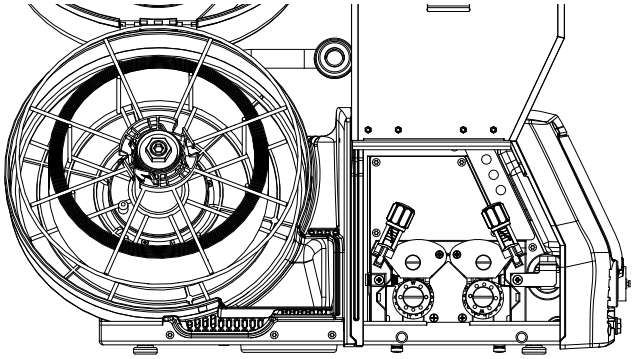
2.3 POSITIONING THE WIRE SPOOL AND THE WIRE IN THE WIRE FEEDER

WARNING!

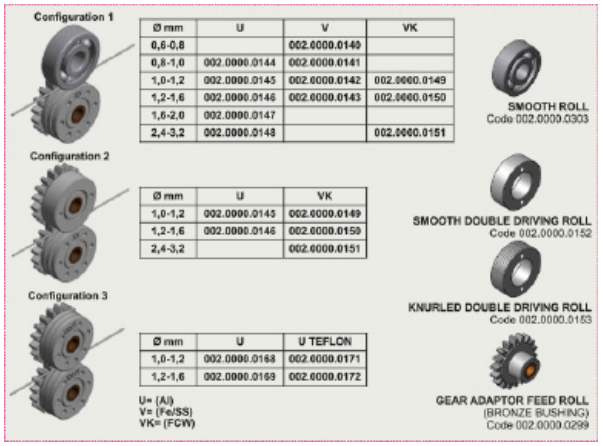
Mechanical risks

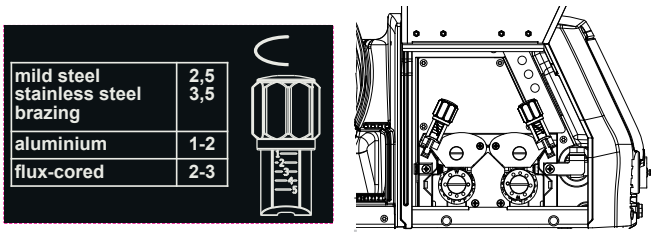
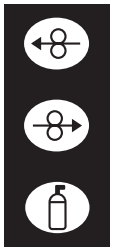
Read the warnings highlighted by the following symbols in the “General instructions for use”.

1. Fit the spool in the spool holder, ensuring it is located correctly.
2. Lock the coil with the ring nut.
3. 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.

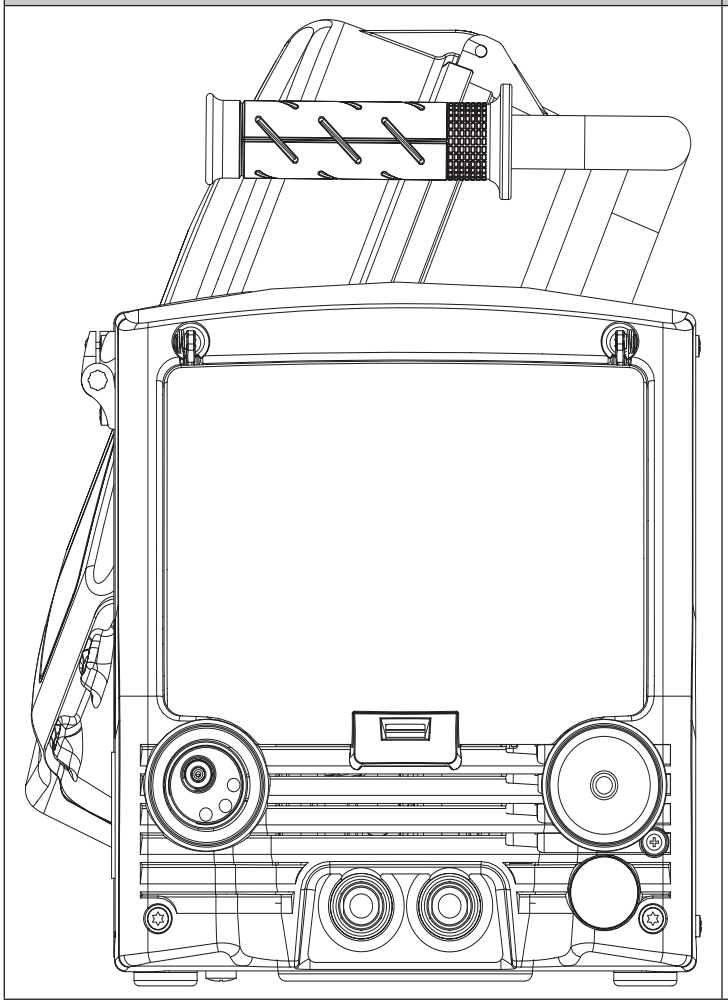
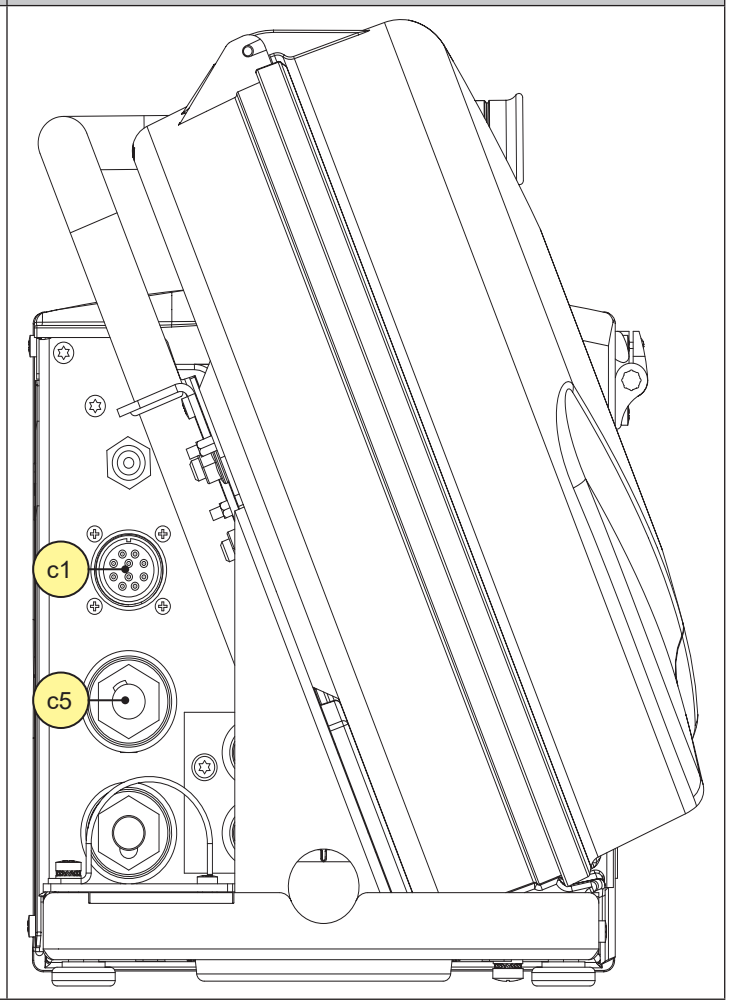


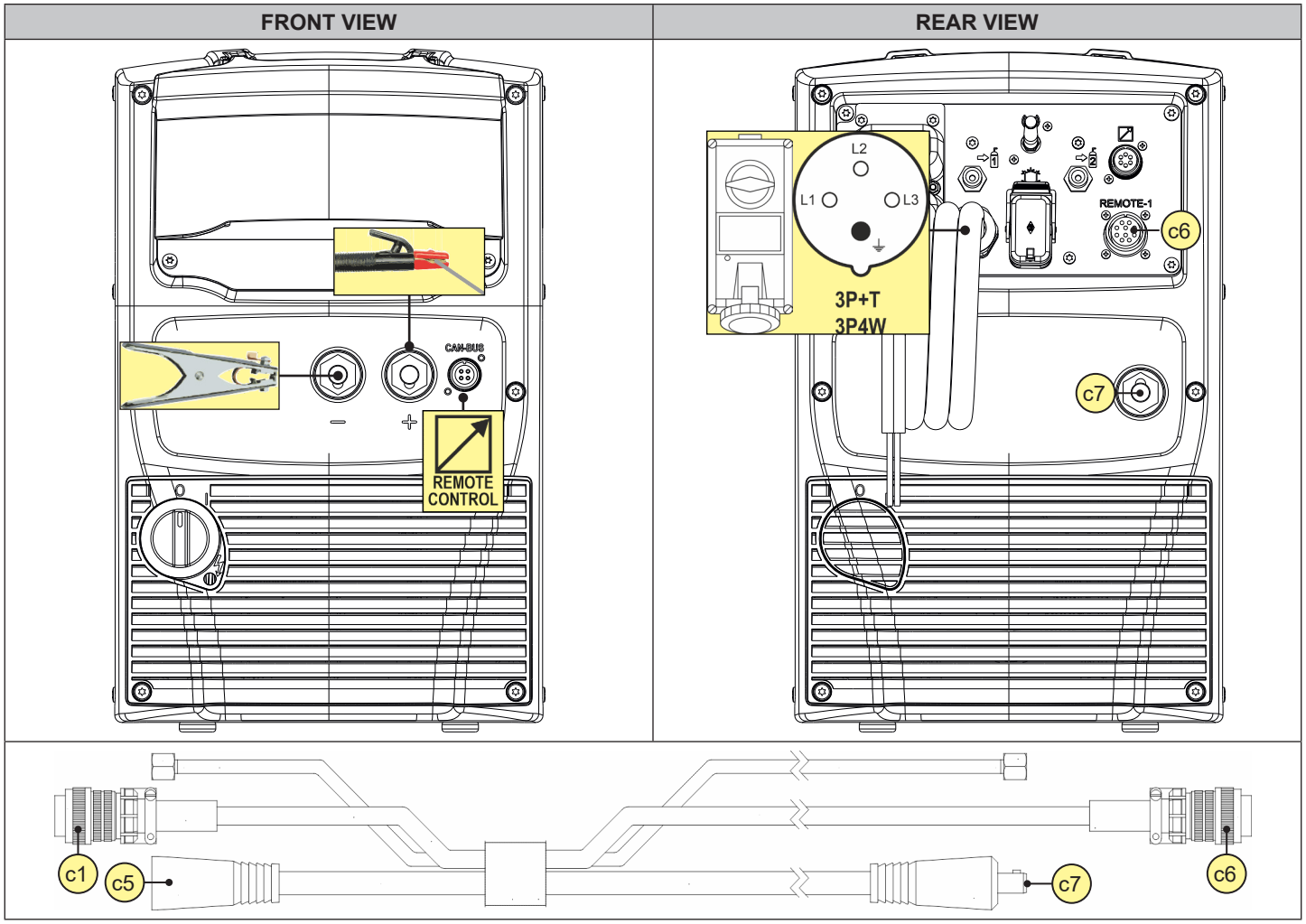
4. Check that the feed rolls are suitable for the wire gauge.
   - The diameter of the roll groove must be compatible with the diameter of the welding wire.
   - The roll must be of suitable shape in relation to the composition of the wire material.
5. Feed the wire between the wire feeder rolls and insert it into the MIG/MAG TORCH connector plug.
6. Make sure the wire is located correctly in the roll grooves.



7. 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.	
8. Press the key  to feed the wire until it comes out of the torch tip.	
It is also possible to activate the wire feed via the torch trigger in this way: ○ press in sequence  and the torch trigger; ○ release the key  while still keeping the torch trigger pressed down. The wire will continue to run; ○ releasing the torch trigger stops the wire from running.	

2.4 Preparing for MMA welding

FRONT VIEW	REAR VIEW
	



1. Set the welding power source ON/OFF switch to “O” (unit switched off).
2. Plug the power cable plug into a mains socket outlet.
3. Choose the electrode based on the type of material and thickness of the workpiece to be welded.
4. Insert the electrode in the electrode holder.
5. Connect the electrode holder cable to the welding socket based on the polarity requested by the type of electrode used.
6. Connect the plug of the ground clamp to the welding socket on the basis of the polarity required.
7. Connect the ground clamp to the workpiece.

DANGER!

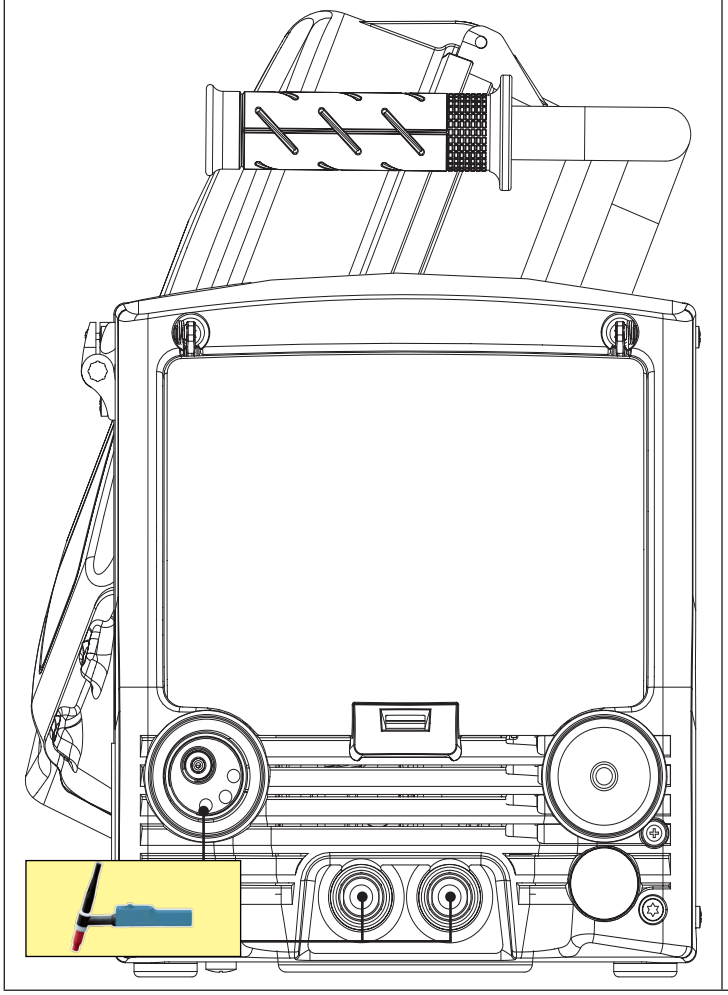
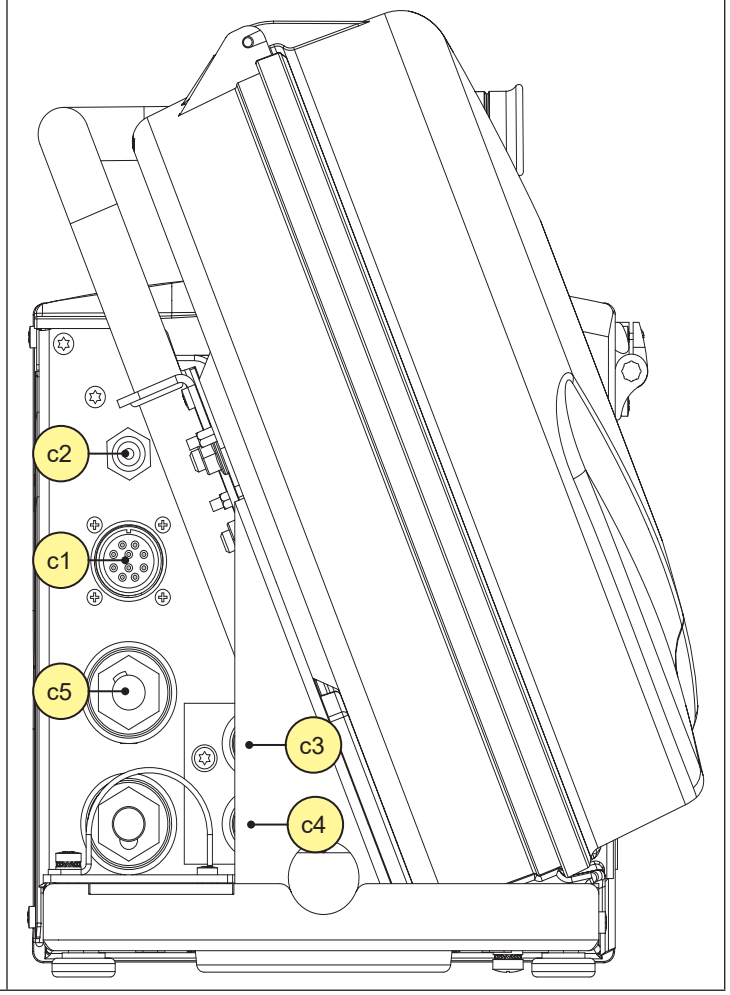
Electric shock hazard!

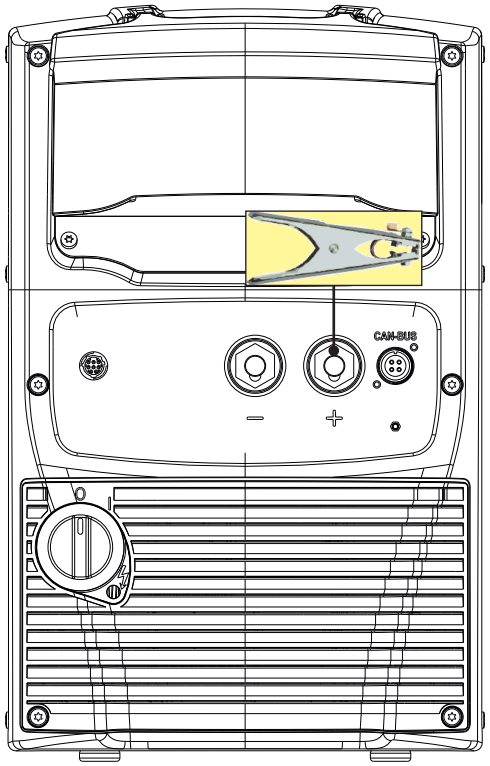
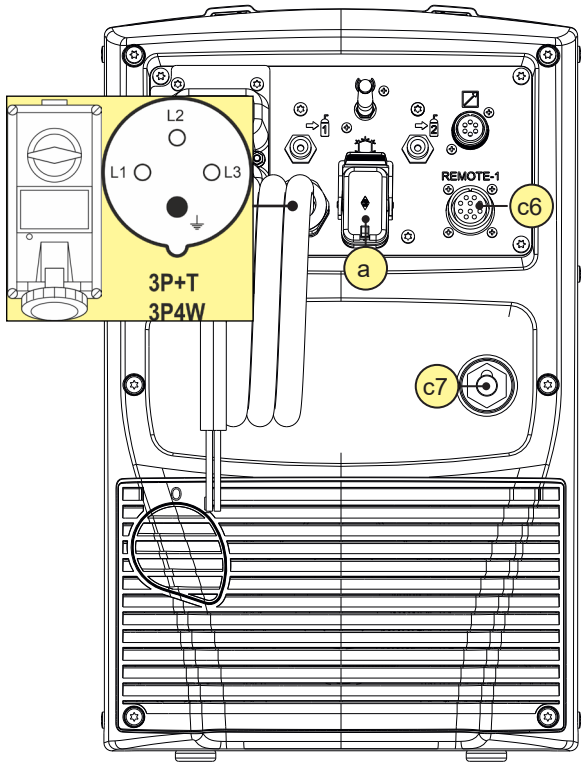
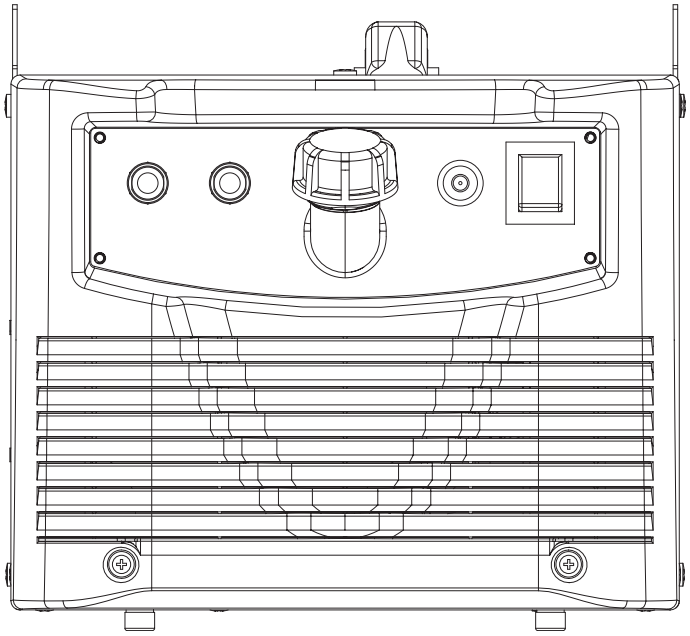
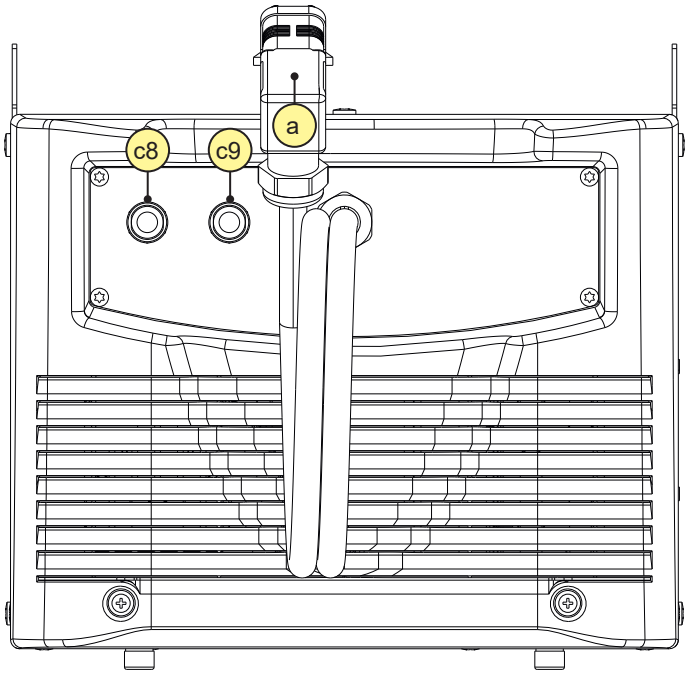
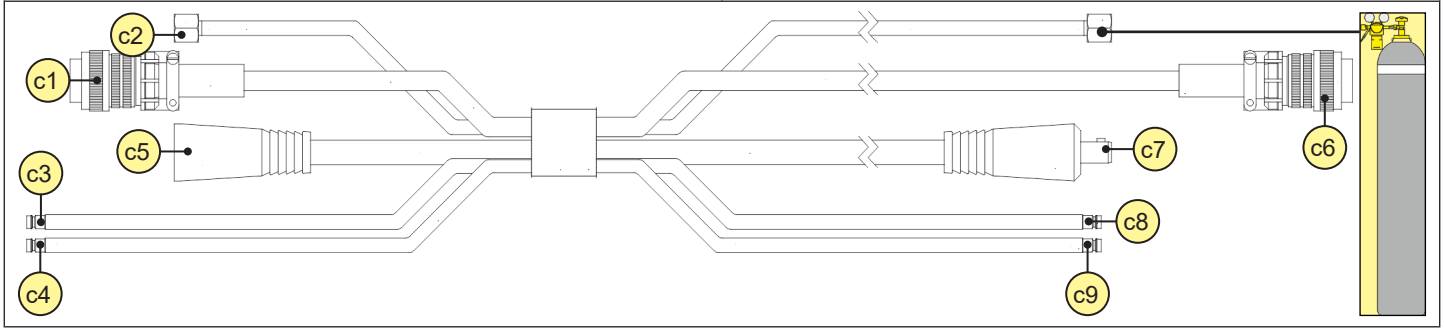
Read the warnings highlighted by the following symbols in the “General instructions for use”.

8. Set the welding power source ON/OFF switch to “I” (unit powered).
9. Select the following welding mode on the user interface: MMA
10. Set the required welding parameter values on the user interface.

By connecting and activating the remote control [RC] the current value will be adjusted through it.
The system is ready to start welding.

2.5 Preparing for TIG welding

FRONT VIEW	REAR VIEW
	

FRONT VIEW	REAR VIEW
	
	
	

Information

For the cooler to power source assembly procedure refer to the cooler instruction manual.

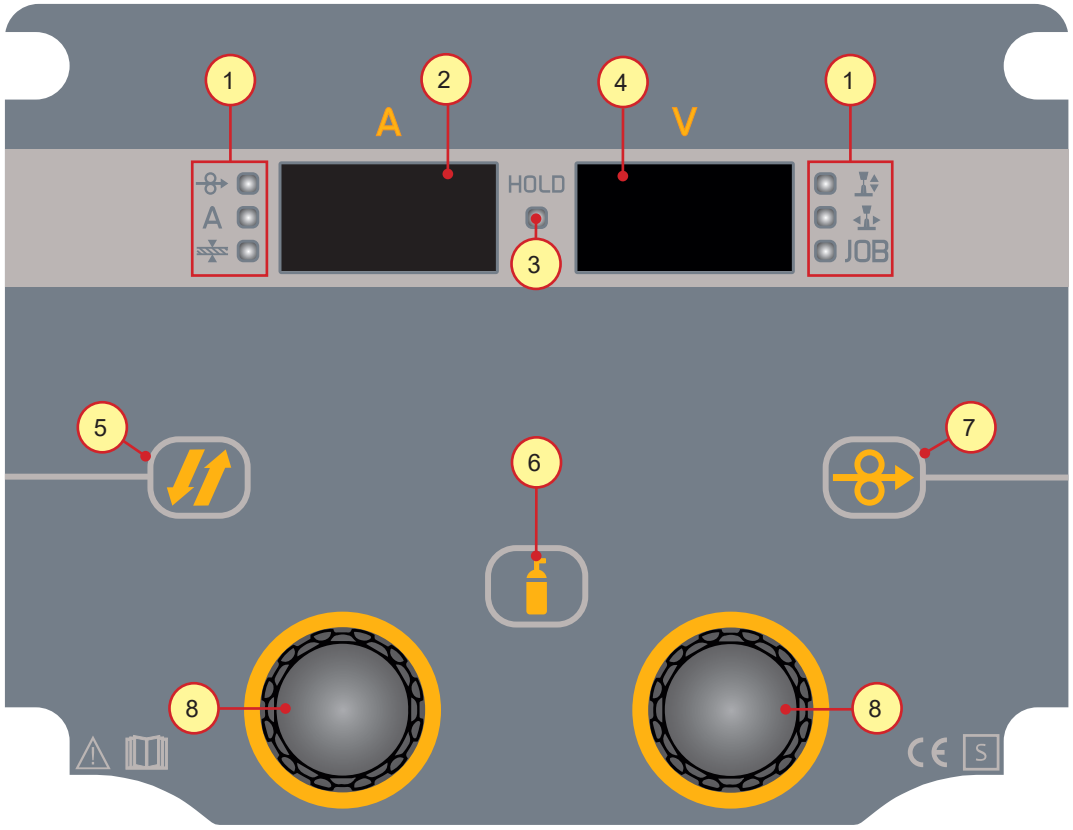
1. Place the power source switch in position “O” (equipment off).
2. Plug the power cable plug into a mains socket outlet.
3. Connect the gas hose from the welding gas cylinder to the rear gas socket.
4. Open the cylinder gas valve.
5. Choose the electrode based on the type of material and thickness of the workpiece to be welded.
6. Insert the electrode in the TIG torch.
7. Connect the torch plug to the welding socket on the basis of the polarity required by the type of electrode in question.
8. Connect the plug of the ground clamp to the welding socket on the basis of the polarity required.
9. Connect the ground clamp to the workpiece.
10. Set the welding power source ON/OFF switch to “I” (unit powered).
11. Select the following welding mode on the user interface: DC TIG
12. Press the torch trigger, keeping the torch away from metal parts, to make the gas solenoid valve open without striking the welding arc.
13. Use the flow control valve to adjust the flow of gas as required while the gas is flowing out.
14. Set the welding parameter values on the user interface.

By connecting and activating the remote control pedal, the current value will be adjusted based on how much the pedal is pressed.
The system is ready to start welding.

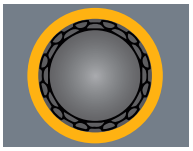
3 USER INTERFACE

WF211

User Interface

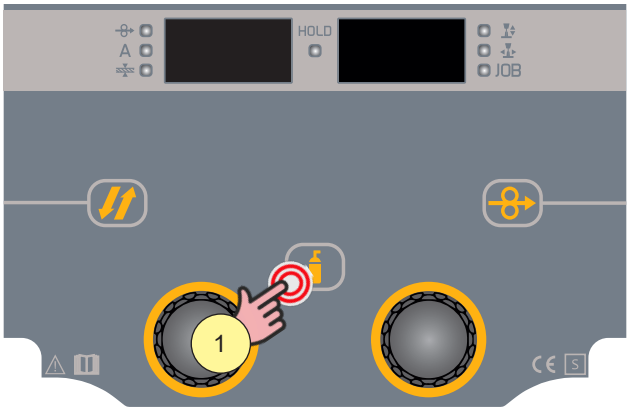


ELEMENT	FUNCTION
1 a b c d e f	The lighting of the LED indicates that the following parameters are being displayed and can be varied: a) wire speed b) welding current c) thickness of the material to be welded d) arc height correction e) arc dynamic f) retrieving a saved job
2 A	► **During welding:** The display shows the actual Amps. ► **With LED HOLD access:** The display shows the last measured current value.
3 HOLD	When it lights up, it indicates the display of the latest voltage and current value measured during welding. The LED switches off when a new welding procedure is started, or when any of the welding settings is modified.

ELEMENT	FUNCTION
4 	► **During welding:** The display shows the actual volts. ► **With LED HOLD access:** The display shows the latest measured voltage value.
5 	**TORCH TRIGGER MODE key:** Active only in MIG/MAG and TIG welding mode. When pressed, it allows access to the menu through which the torch trigger mode is selected.
6 	**GAS Key:** Active only in MIG/MAG and TIG welding mode. Pressing the key activates the gas solenoid valve to calibrate the flow pressure with the regulator mounted in the gas cylinder or centralised system.
7 	**WIRE FEED Key:** Active only in MIG/MAG welding mode. When pressed, it controls the wire feed.
8 	**ENCODER WITH BUILT-IN KEY** ► **In the menu screens:** Press the encoder (ENCODER KEY) to select the setting to be changed. Turn the encoder to set the value of the selected parameter. ► **During welding:** the encoder changes the value of the active parameter.

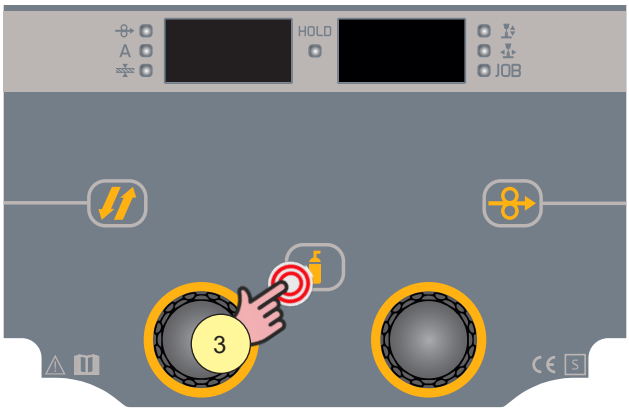
GAS FLOW ADJUSTMENT

When the unit is powered on, straight after program update, the solenoid valve opens for 1 second.
This serves to fill the gas circuit.



1. Open the gas solenoid valve by pressing and releasing the  [GAS] key.

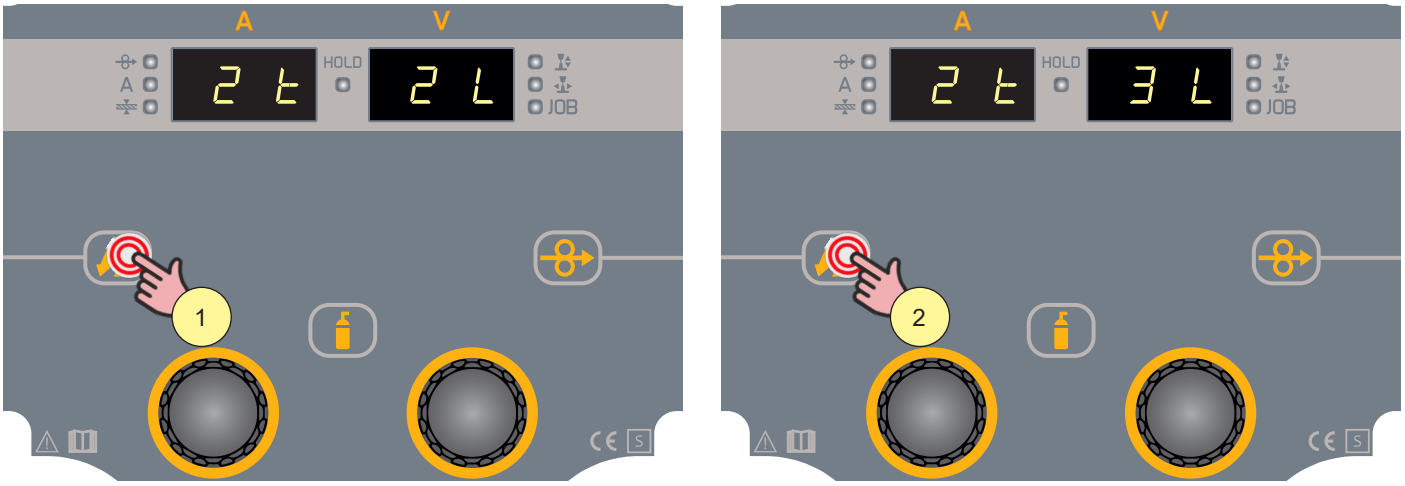
2. Adjust the pressure of gas flowing from the torch by means of the flow meter connected to the gas cylinder.



3. Close the gas solenoid valve by pressing and releasing the  [GAS] key.

Information The solenoid valve closes automatically after 30 seconds.

3.1 MIG/MAG TORCH TRIGGER MODE SETTING



1. Press the [TORCH TRIGGER MODE] key.
2. Select the setting by pressing the key.

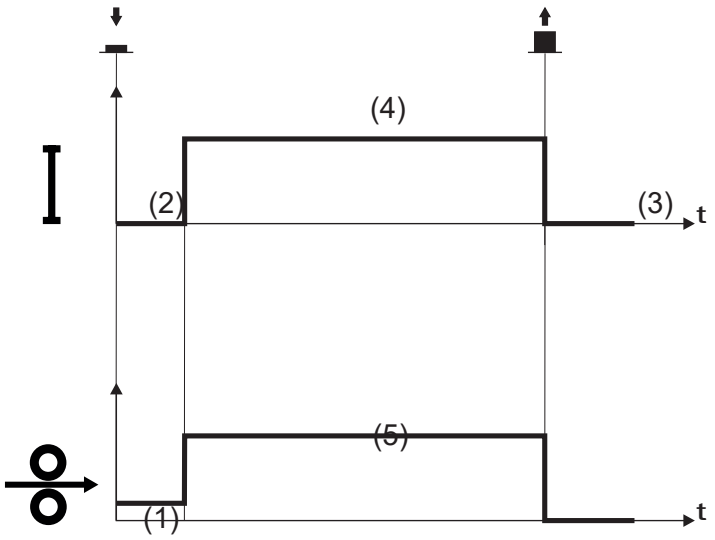
○ (2 STROKES 2 LEVELS (2t 2L), 4 STROKES 2 LEVELS (4t 2L), 2 STROKES 3 LEVELS (2t 3L), 4 STROKES 3 LEVELS (4t 3L)).

MIG/MAG 2T OPERATION

: press the torch trigger

: release the torch trigger

: press and release the torch trigger



1. matching speed
2. pre gas
3. post gas
4. welding current
5. wire speed

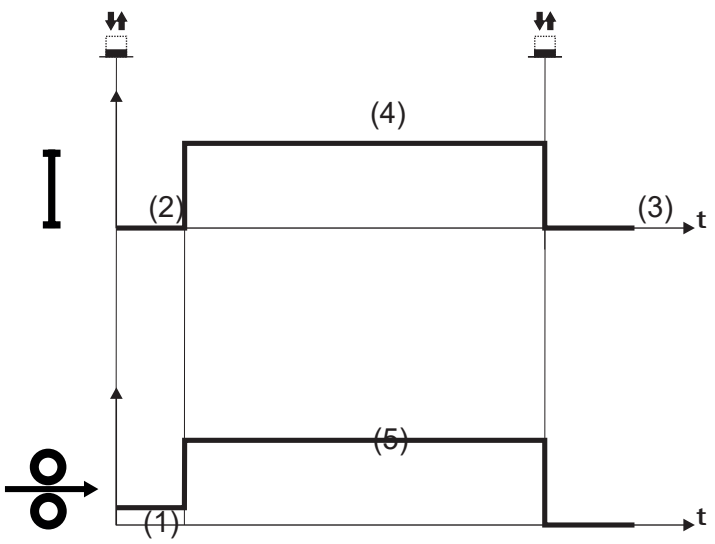
○ Bring the torch up to the workpiece.
○ Press (1T) and keep the torch trigger pressed.
- The wire advances at the approach speed until it makes contact with the material. If the arc does not strike after 10 cm wire protrusion, wire feeding is locked and the welding unit outputs are de-energized.
- The arc strikes and the wire feeder accelerates to the set feed rate value.
○ Release (2T) the button to finish welding.
- Gas flow continues for the time set in the post gas parameter (adjustable time).

MIG/MAG 4T OPERATION

: press the torch trigger

: release the torch trigger

: press and release the torch trigger



1. matching speed
2. pre gas
3. post gas
4. welding current
5. wire speed

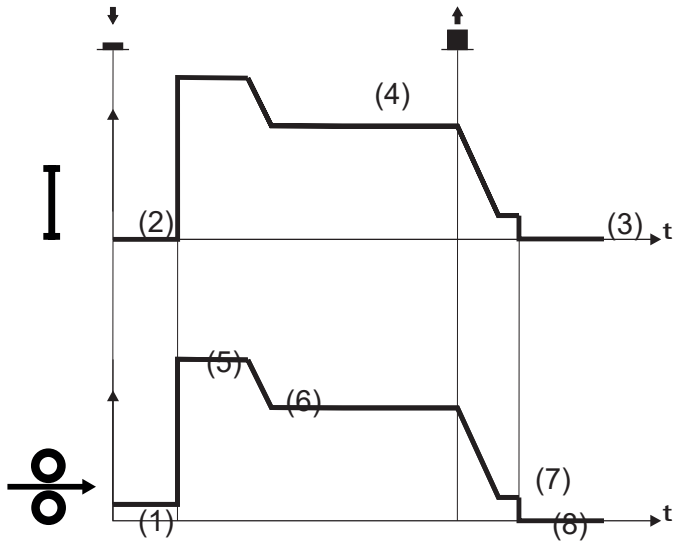
○ Bring the torch up to the workpiece.
○ Press (1T) and release (2T) the torch trigger.
- The wire advances at the approach speed until it makes contact with the material. If the arc does not strike after 10 cm wire protrusion, wire feeding is locked and the welding unit outputs are de-energized.
- The arc strikes and the wire feeder accelerates to the set feed rate value.
○ Press (3T) the trigger to start the weld completion procedure.
- Gas flow continues until the torch trigger is released.
○ Release (4T) the torch trigger to start the post gas procedure (adjustable time).

MIG/MAG 2T - 3 LEVELS OPERATION

: press the torch trigger

: release the torch trigger

: press and release the torch trigger



1. matching speed
2. pre gas
3. post gas
4. welding current
5. hot start
6. start slope
7. crater slope
8. crater time

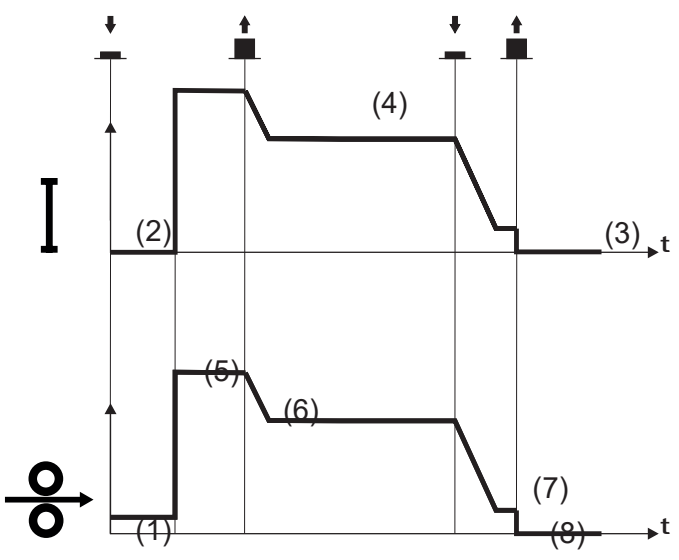
○ Bring the torch up to the workpiece.
○ Press (1T) torch trigger.
- The wire advances at the approach speed until it makes contact with the material. If the arc does not strike after 10 cm wire protrusion, wire feeding is locked and the welding unit outputs are de-energized.
- The welding arc strikes 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.
○ Release (2T) the torch trigger to switch to the third welding level (crater filler), which is set as a percentage of the normal welding feed rate.
- The switch of welding current level in terms of crater filling is performed in accordance with the crater 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.
- 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.

MIG/MAG 4T - 3 LEVELS OPERATION

: press the torch trigger

: release the torch trigger

: press and release the torch trigger

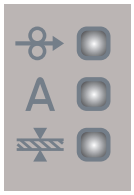


1. matching speed
2. pre gas
3. post gas
4. welding current
5. hot start
6. start slope
7. crater slope
8. crater time

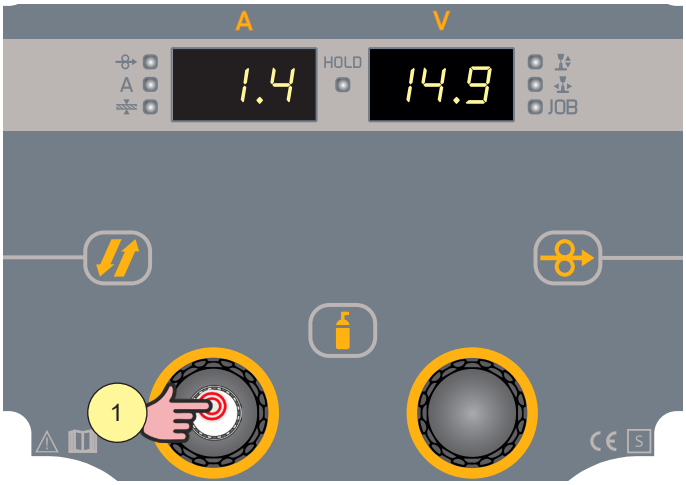
- ○ Bring the torch up to the workpiece.
- ○ Press (1T) torch trigger.
- - The wire advances at the approach speed until it makes contact with the material. If the arc does not strike after 10 cm wire protrusion, wire feeding is locked and the welding unit outputs are de-energized.
- - The welding arc 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.
- ○ Release (2T) trigger to switch to normal welding speed; then switch to normal welding speed is performed in accordance with the start slope, which can be set in seconds.
- ○ Press the torch trigger again (Level 3) to switch to the third welding level (crater filler), which is set as a percentage of the normal welding feed rate.
- - The switch of welding current level in terms of crater filling is performed in accordance with the crater 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.
- ○ Release the torch trigger a second time (4T) to close the weld and run the post gas procedure.

4 PARAMETERS SETTING

The right encoder is used to select and set the value of the following parameters.
The lighting of the LED indicates that the following parameters are being displayed and can be varied:
a) wire speed
b) welding current
c) thickness of the material to be welded

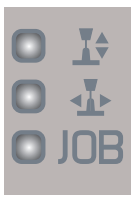


a
b
c

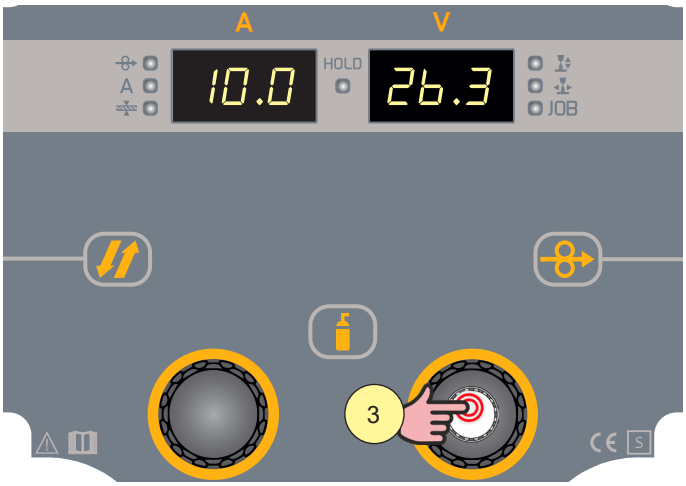


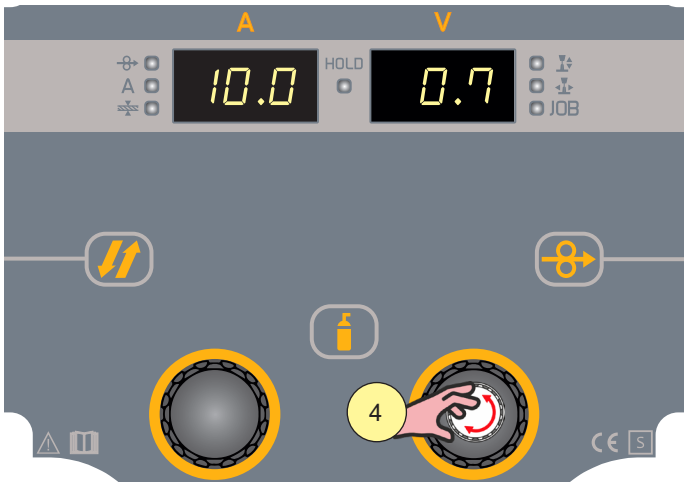
1. Press the encoder key to activate parameter change.
2. Turn the encoder to set the desired value.
   Press the encoder key again to select the following parameter

The left encoder is used to select and set the value of the following parameter:
The lighting of the LED indicates that the following parameters are being displayed and can be varied:
d) arc height correction
e) arc dynamic
f) retrieving a saved job



d
e
f

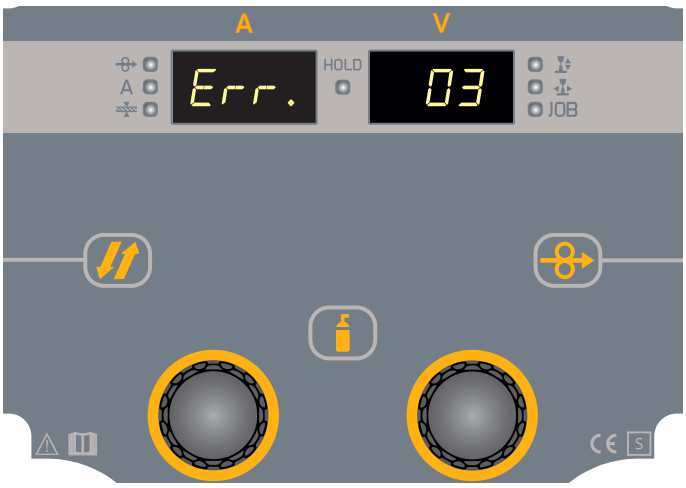




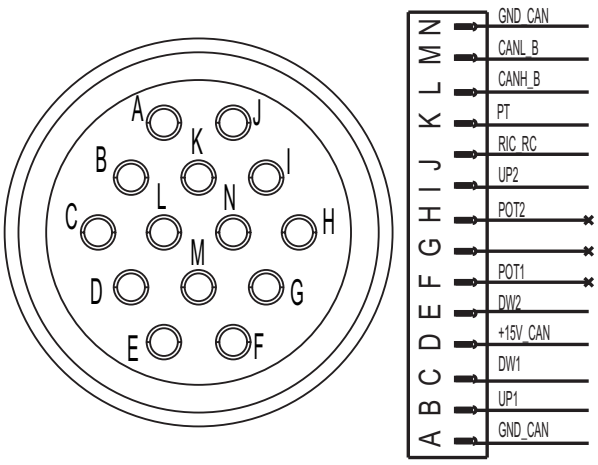
3. Press the encoder key to activate parameter change.
4. Turn the encoder to set the desired value.
   Press the encoder key again to select the following parameter

5 ALARM MANAGEMENT

The alarm code shown on the display is managed by the welding power source.
To understand the meaning of these error codes, refer to the alarms list in the welding power source manual.

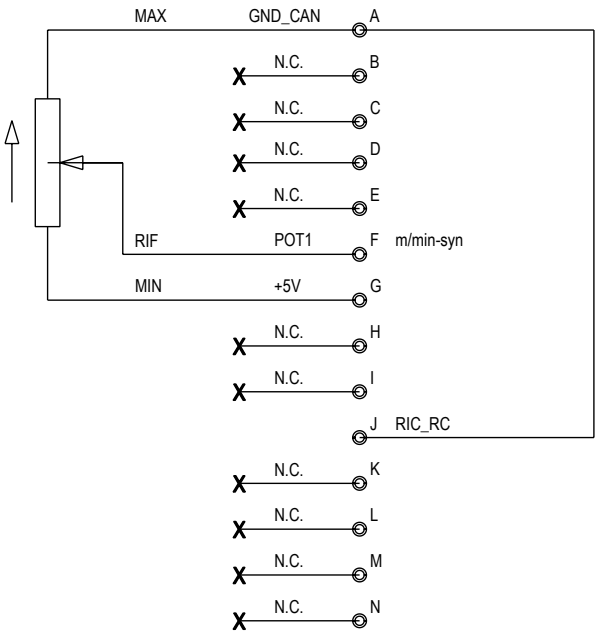


6 REMOTE CONTROL CONNECTOR

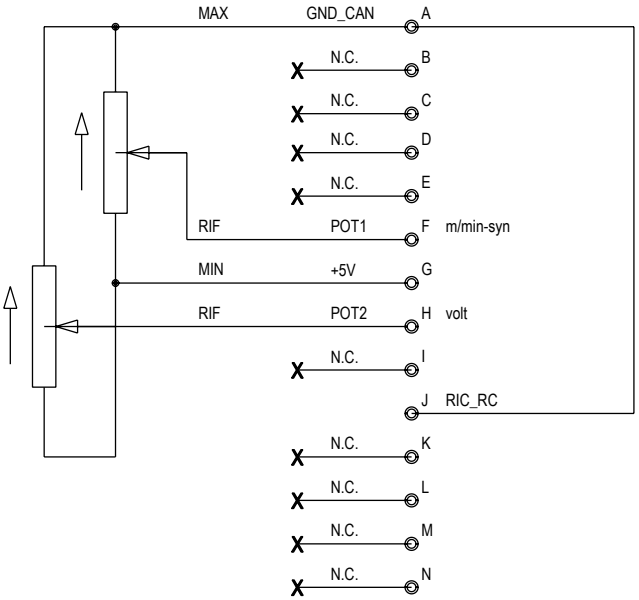


PIN	NAME	SIGNAL DESCRIPTION
A	GND_CAN	COMMON FOR POT/UP-DW/PT/CAN…
B	UP2	UP SIGNAL (Volt)
C	DW2	DOWN SIGNAL (Volt)
D	+15V_CAN	COMMON FOR POWERING DIGIM. or RC08 TORCH
E	UP1	UP SIGNAL (m/min)
F	POT1	SIGNAL FOR POTENTIOMETER (m/min)
G	+5 V	COMMON FOR POT1 AND 2 (min)
H	POT2	SIGNAL FOR POTENTIOMETER (Volt)
I	DW1	DOWN SIGNAL (m/min)
J	RIC_RC	REMOTE RECOGNITION (in bridge with GND_can)
K	PT	TORCH TRIGGER (in common with GND_can)
L	CANH_B	WECO OPTIONS
M	CANL_B	WECO OPTIONS
N	GND_CAN	COMMON (SUCH AS PIN A)

RC03: Wiring diagram

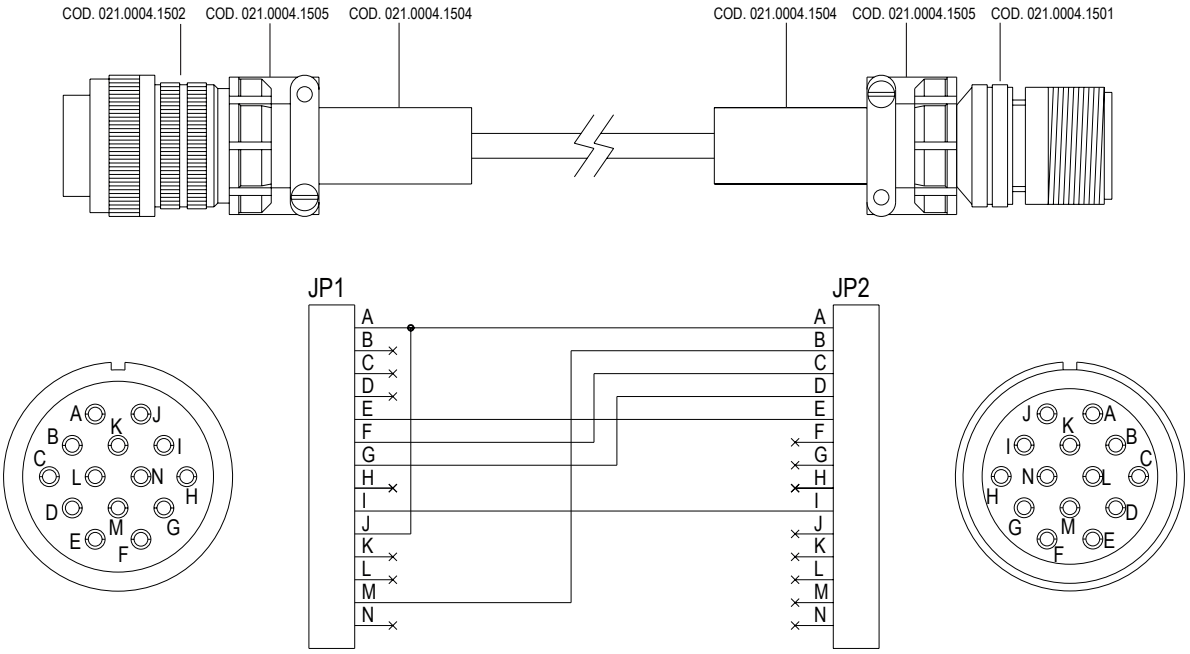


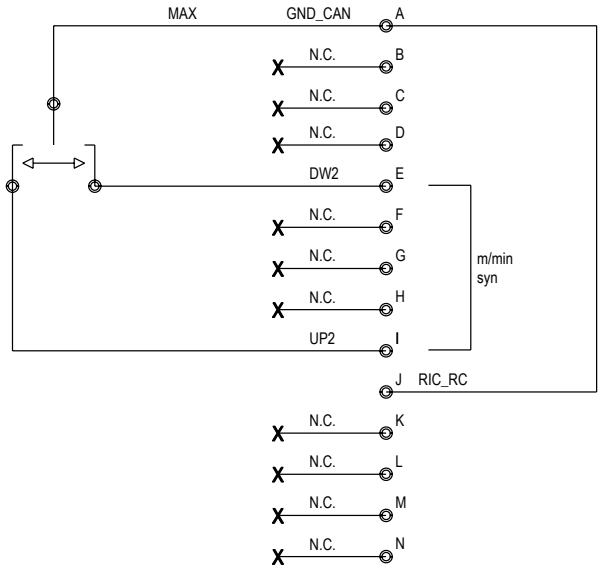
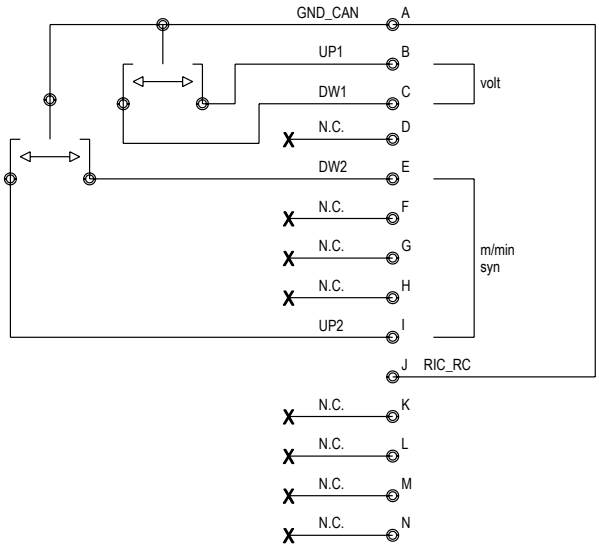
RC04: Wiring diagram



10 kOhm - 100 kOhm potentiometer	10 kOhm - 100 kOhm potentiometer

To connect the remote control (RC03, RC04) to the equipment, the adapter wiring code 022.0002.0383.



RC05: Wiring diagram	RC06: Wiring diagram
	

7 TECHNICAL DATA

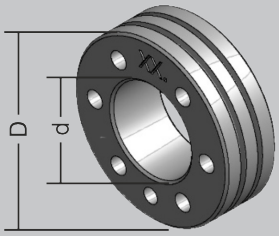
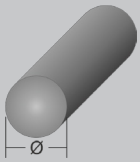
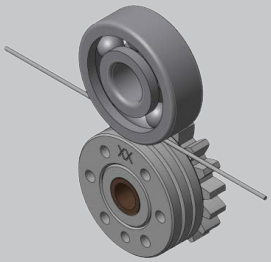
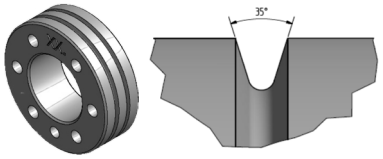
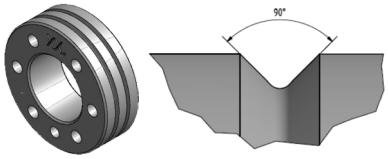
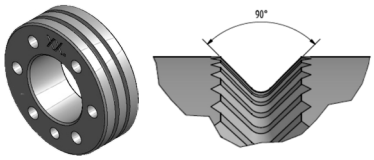
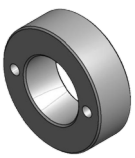
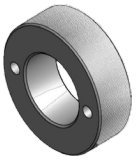
Directives applied	Waste electrical and electronic equipment (WEEE)
	Electromagnetic compatibility (EMC)
	Low voltage (LVD)
	Restriction of the use of certain hazardous substances (RoHS)
Conformity markings	CE Equipment compliant with European directives in force
	S Equipment suitable in an environment with increased risk of electric shock
	Equipment compliant with WEEE directive
	RoHS Equipment compliant with RoHS directive
Construction standards	EN 60974-5 EN 60974-10 Class A

7.1 WF211 TECHNICAL DATA

Supply voltage	48 V a.c.	
Dimensions (L x D x H)	265 x 665 x 360 mm	
Weight	11.5 kg	
Protection rating	IP23	
Maximum gas pressure	0,5 MPa (5 bar)	
MIG/MAG operating voltage	14.5 V - 39.0 V	
Motor speed	1.4-25.0 m/min	
Wire spool: (dimensions/weight)	200 mm / 5 kg – 300 mm / 15 kg	
Ambient temperature	40°C	
Welding mode	MIG/MAG	
Static characteristic	⊢	
Work cycle	60%	100%
Welding current	450 A	400 A
Operating voltage	36.5 V	34.0 V

8 SPARE PARTS

8.1 WIRE FEEDER ROLLS

			
CODE	**DESCRIPTION**	**Ø WIRE**	**TYPE**
002.0000.0140	ROLLER 0.6/0.8 D=37x12/D=19 V	0.6/0.8	 35° V-shaped groove for solid wires (steel, stainless steel)
002.0000.0141	ROLLER 0.8/1.0 D=37x12/D=19 V	0.8/1.0	
002.0000.0142	ROLLER 1.0/1.2 D=37x12/D=19 V	1.0/1.2	
002.0000.0143	ROLLER 1.2/1.6 D=37x12/D=19 V	1.2/1.6	
002.0000.0144	ROLLER 0.8/1.0 D=37x12/D=19 U	0.8/1.0	 90° V-shaped groove for aluminium wires
002.0000.0145	ROLLER 1.0/1.2 D=37x12/D=19 U	1.0/1.2	
002.0000.0146	ROLLER 1.2/1.6 D=37x12/D=19 U	1.2/1.6	
002.0000.0147	ROLLER 1.6/2.0 D=37x12/D=19 U	1.6/2.0	
002.0000.0148	ROLLER 2.4/3.2 D=37x12/D=19 U	2.4/3.2	 90° knurled VK-groove for tubular wires
002.0000.0149	ROLLER 1.0/1.2 D=37x12/D=19 VK	1.0/1.2	
002.0000.0150	ROLLER 1.2/1.6 D=37x12/D=19 VK	1.6/2.0	
002.0000.0151	ROLLER 2.4/3.2 D=37x12/D=19 VK	2.4/3.2	
002.0000.0303	SMOOTH ROLLER WITH BEARINGS		
002.0000.0152	ROLLER D=37x12/D=19 SMOOTH		
002.0000.0153	ROLLER D=37x12/D=19 KNURLED		

► 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 be “V 90°” for soft materials (Aluminium and its alloys, CuSi3).
- The groove must be "V 35°" for harder materials (SG2-SG3, stainless steels).
- The groove must be "VK 90°" knurled for flux-cored wire.

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