# Instruction Manual


## UWW-301 TP WIRE WELDER

# TABLE OF CONTENTS

# 1 INTRODUCTION

**IMPORTANT!**

**This handbook must be consigned to the user prior to installation and commissioning of the unit.**
**Retain these documents for future consultation.**

## KEY

**DANGER!**

This pictogram warns of danger of death or serious injury.

**INFORMATION**

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

- This symbol identifies an action that occurs automatically as a result of a previous action.
- 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.

## INTRODUCTION

The UWW 301 TP is a compact and heavy-duty power source for MIG/MAG welding.
The reduced weight and compact size allow it to be carried wherever it is needed: it is designed to give you the maximum power, reliability and efficiency.
Set up the power source for MMA, MIG/MAG or TIG operation on the selector switch located on the rear of the panel in the motor compartment.
Wire reels of up to 200 mm in diameter can be mounted.

**Sound alarm.** A sound alarm has been provided to protect the power source: it blocks the primary inverter in the event that the average welding current should exceed 310 A for more than 0.6 seconds.

**Fan.** The fan is turned on only during welding, at the end of the welding process it remains on for a fixed period of time according to welding conditions. The fan is nonetheless controlled by specific thermal sensors that guarantee a correct cooling of the machine.

# 2 INSTALLATION

**DANGER!**
**Lifting and positioning**

- Use the handles and straps solely for manual lifting of the equipment.
- No specific hooking points are provided on the unit.
- Use the following for mechanical lifting:

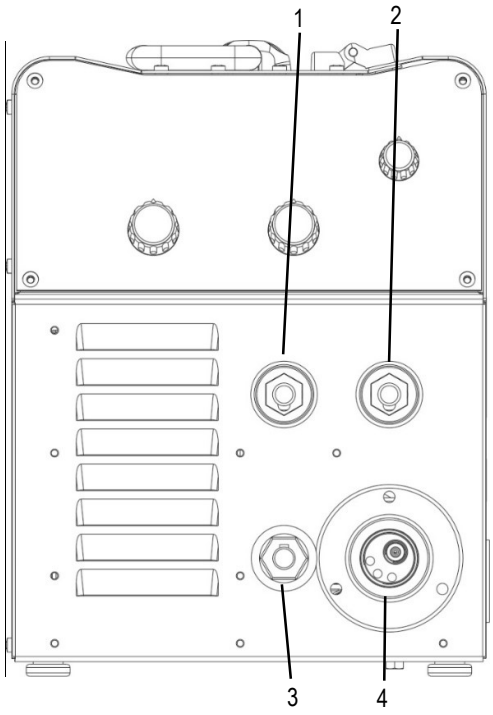
- A forklift truck
- Ropes/chains that are slung around the base of the unit to be lifted.

- Do not stand under the welding power source when it is raised or when it is standing on a raised platform.
- If the equipment is located on a raised platform, assess the risk of hazardous falls and take the appropriate preventive and safety measures.
- To avoid falls and overturning do not place the equipment on gradients steeper than 10°.

## 2.1 CONNECTIONS TO THE MAINS POWER SUPPLY

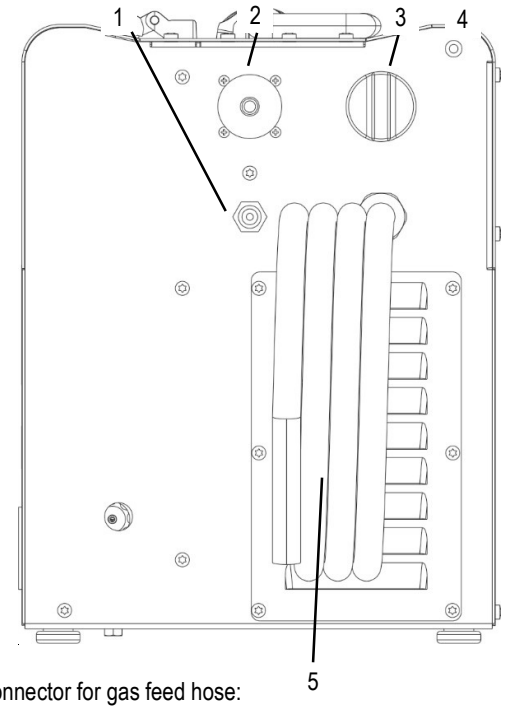
The characteristics of the mains power supply to which the equipment shall be connected are given in the section entitled “Technical data” on page 18.
The machine can be connected to motor-generators provided their voltage is stabilised.
Connect/disconnect the various devices with the machine switched off.

## 2.2 FRONT PANEL




1. Positive pole welding socket.
2. Negative pole welding socket.
3. Polarity selector cable.
4. EURO TORCH welding socket.

## 2.3 REAR PANEL

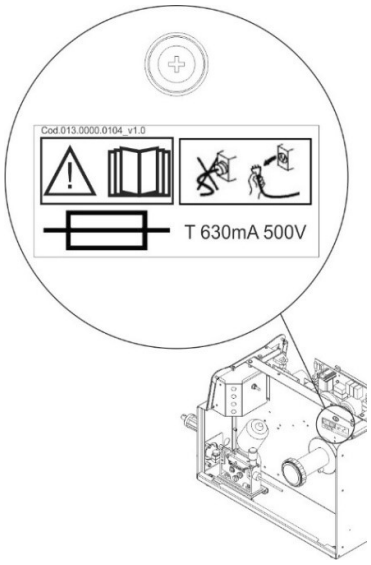



1. Connector for gas feed hose: cylinder → power source
2. Remote control connector
3. Welding power source ON/OFF switch.
4. Mains protection ON LED. This LED illuminates in case of an absence of a phase in the power supply line.
5. Power cable.

   Total length (including internal part): 3,5 m

   ⓘ Number and cross section of wires: 4 x 1,5 mm²

   Type of plug supplied: not supplied




Wire feed motor power transformer fuse.

Type: Delayed acting (T)

ⓘ Amperage: 630 mA

Voltage: 500 V

## 2.4 PREPARING FOR MMA WELDING

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 earth clamp to the workpiece being processed.

**DANGER!**
**Electric shock hazard!**

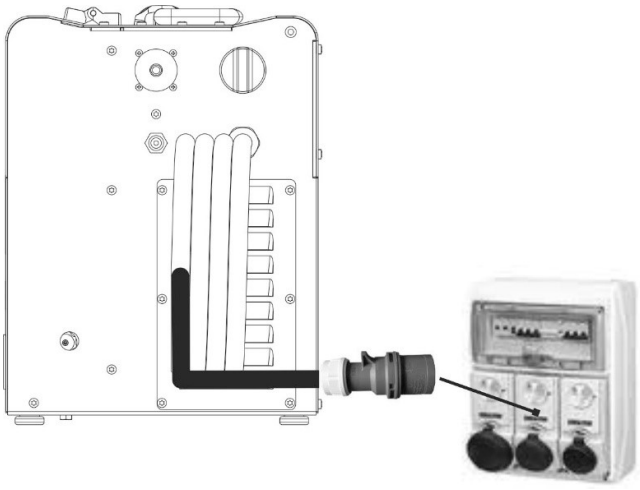
- When the machine is switched on and set to work in MMA mode, its welding sockets are live and ready to strike the welding arc.
- Do not touch the conductive part of the electrode holder and metal parts at the same time with your hands.
- Do not touch metal parts with the conductive part of the electrode holder or, with the electrode, while replacing the electrode.
- Do not touch two torches or electrode holders simultaneously.
- Do not work in humid or wet surroundings.
- Make sure the earthing system of the electrical mains is properly connected and efficient.
- Always check the condition of the power cables and connection cables between the various devices:

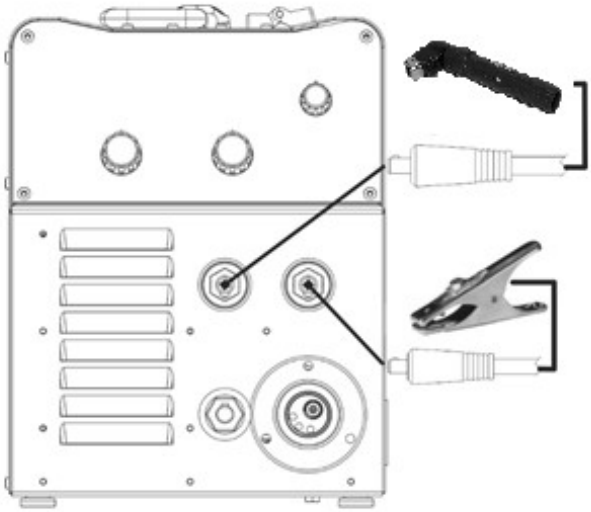
- the conductors of the power cable must not protrude from the plug body.
- the unit cables must not be damaged.

- The risk of electric shock is higher if you touch metal parts and the electrode simultaneously.
- The operator must be insulated with respect to metal components connected to earth.
- Grounding of the workpiece can increase the risk of operator injury.

8. Set the welding power source ON/OFF switch to “I” (unit switched on).
9. This button (Mode) serves to select the following welding mode: MMA
10. Set the required welding parameter values on the user interface.
    The system is ready to start welding.

**Preparing for MMA (polarity to basic electrode)**





## 2.5 PREPARING FOR TIG WELDING

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 TIG torch.
5. Connect the TIG torch plug to the negative welding socket.
6. Connect the plug of the polarity selector cable to the welding socket on the basis of the polarity required.
7. Connect the plug of the ground clamp to the welding socket on the basis of the polarity required.
8. Connect the earth clamp to the workpiece being processed.
9. Set the welding power source ON/OFF switch to “I” (unit switched on).
10. This button (Mode) serves to select the following welding mode: TIG
11. Set the required welding parameter values on the user interface. The system is ready to start welding.

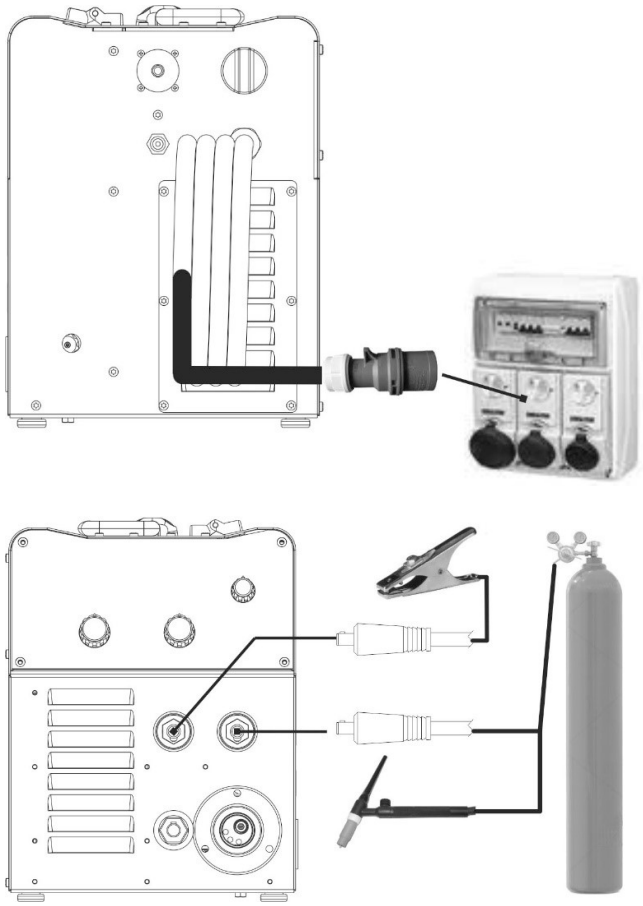
**LIFT-ARC WELDING**

1. Open the torch valve to let the gas out.
2. Touch the workpiece with the torch electrode.
3. Slowly lift the torch to strike the arc.

⇻ The WELDING CURRENT reaches the preset value.

4. Quickly move the torch clear of the workpiece to extinguish the welding arc.
5. Close the torch valve to interrupt the gas flow.

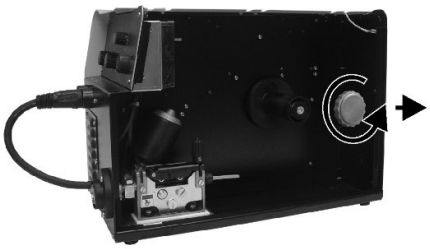
**Preparing for TIG (polarity for tungsten electrode)**



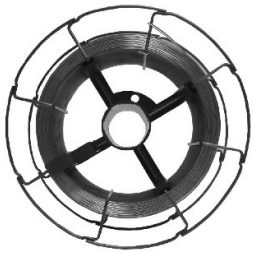
## 2.6 PREPARING FOR MIG/MAG WELDING

### 2.6.1 WIRE SPOOL POSITIONING

1. Open the unit side door to gain access to the spool compartment.
2. Unscrew the cap of the spool holder.

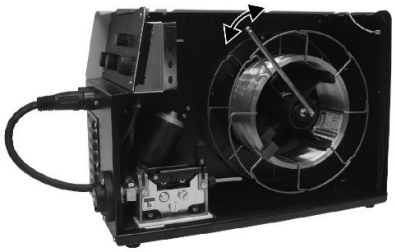


3. If necessary, fit an adapter for the wire spool.

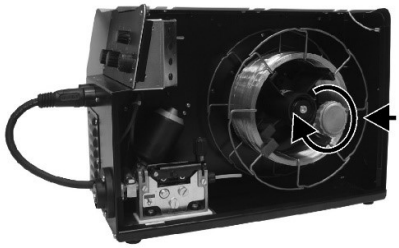


4. Choose the wire on the basis of the workpiece thickness and material type.
5. Fit the spool in the spool holder, ensuring it is located correctly.

6. 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.

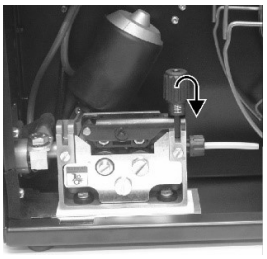


7. Refit the plug.

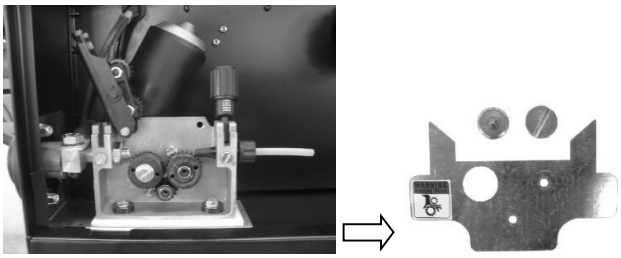


### 2.6.2 POSITIONING THE WIRE IN THE WIRE FEEDER

1. Lower the wire feeder pressure devices.



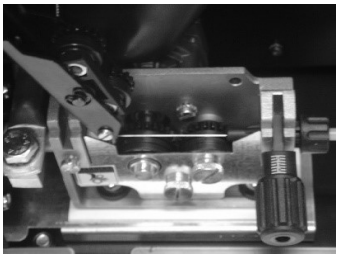
2. Raise the wire feeder pressure arms.
3. Remove the protective cover.



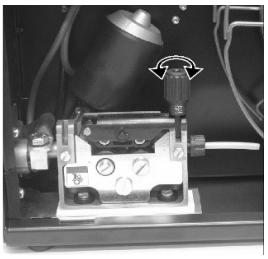
4. Check that the feed rolls are suitable for the wire gauge.

(See § 6.2 page 23.)
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.

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. 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.



9. Refit the protective cover.
10. Close the spool compartment door in the side of the unit.

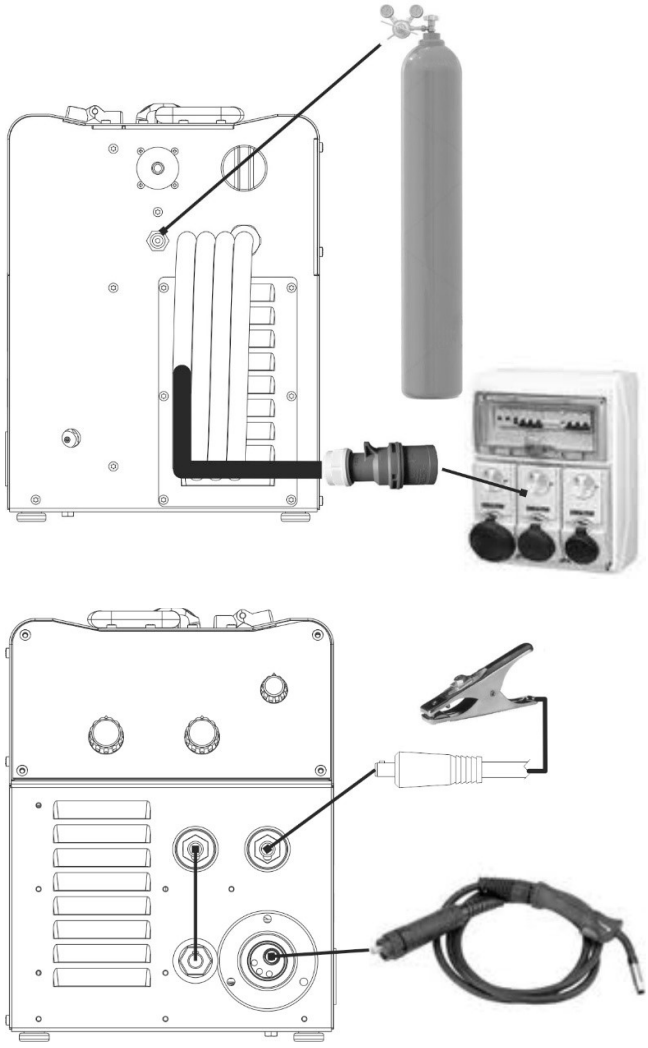
#### 2.6.3 CONNECTIONS TO SOCKETS

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. Connect the gas hose from the welding gas cylinder to the relative socket.
4. Open the cylinder gas valve.
5. Connect the MIG/MAG torch plug to the EURO TORCH welding socket.
6. Connect the plug of the ground clamp to the welding socket on the basis of the polarity required.
7. Connect the plug of the polarity selector cable to the welding socket on the basis of the polarity required.
8. Connect the earth clamp to the workpiece being processed.
9. Set the welding power source ON/OFF switch to “I” (unit switched on).
10. This button (Mode) serves to select the following welding mode: MIG/MAG
11. Feed the wire through the torch until it protrudes from the tip by lowering the selector located in the spool compartment.

ⓘ The insertion speed is 2 m/min for 3 seconds, subsequently increasing to 15 m/min. When the button is released wire, feed is interrupted.
This function produces a slower feed rate and hence greater precision when inserting the wire when it enters the torch nozzle.

12. Select the torch trigger procedure on the user interface.
13. Open the gas solenoid valve by raising the lever (SEL1) located in the spool compartment:
14. Use the flow control valve to adjust the flow of gas as required while the gas is flowing out.
15. Close the gas solenoid valve by lowering the lever (SEL1) located in the spool compartment:
16. Set the required welding parameter values on the user interface.
    The system is ready to start welding.

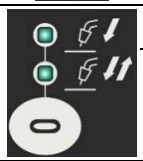
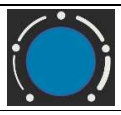
**Preparing for MIG/MAG**

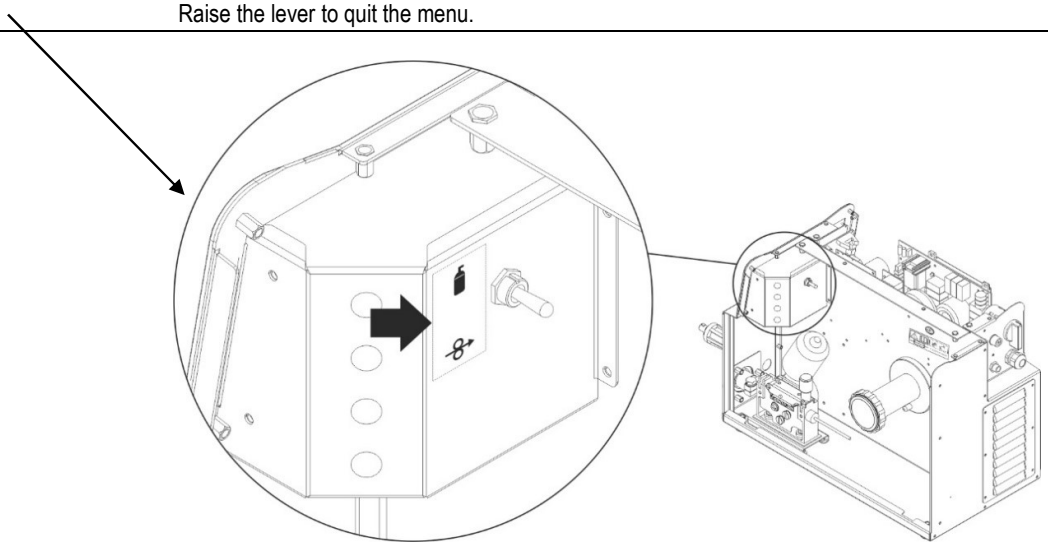


# 3 COMMISSIONING

## 3.1 USER INTERFACE


| CODE | SYMBOL | DESCRIPTION |
|---|---|---|
| L1 |  | This LED illuminates to show an anomaly in the operating conditions.<br>ⓘ See § 3.5 ALARM MANAGEMENT page 12. |
| L2 |  | Illumination of this LED indicates the display of the average voltage and current value measured during the final moments of welding.<br>The value appears on the following displays: D1-D2 |
| L3 |  | This LED illuminates to confirm the presence of power on the output sockets. |
| L4 |  | Illuminates to show a value in the following unit of measurement: VOLTS |
| L5 |  | Illumination shows that the VRD function has been activated (reduction of the output voltage) reduces the potential across the welding sockets when welding is not in progress. |
| L6 |  | Illumination shows that the remote control has been activated. |
| L10 |  | Illumination shows that the following function has been activated: 2 stroke procedure. |
| L11 |  | Illumination shows that the following function has been activated: 4 stroke procedure. |
| D1 |  | **Parameters/functions setting**<br>MIG/MAG mode: the display shows the programmed wire feed rate.<br>MMA Mode: the display shows the ampere value set for welding.<br>TIG Mode: the display shows the ampere value set for welding. |
| | | **Welding**<br>The display shows the effective amperes value during welding. |
| | | **Menu function**<br>The display shows the acronym of the parameter or function to be adjusted. |

| | | |
|---|---|---|
| D2 |  | **Parameters/functions setting**<br>Manual MIG/MAG mode: the display shows the programmed voltage.<br>MIG/MAG mode: the display shows “MMA”.<br>TIG mode: the display shows “TIG”.<br>**Welding**<br>The display shows the effective voltage used when welding.<br>**Menu function**<br>The display shows the value of the parameter or function to be adjusted. |
| S1 |  | The button selects the welding mode (MIG/MAG, MMA, TIG). |
| S2 |  | The button enables the remote control |
| S3 |  | MIG/MAG mode: this button selects the torch trigger procedure.<br>**HOT-START adjustment**<br>Hold down the button for 3 seconds to open the menu. (See § 4.5.2 page 16.) |
| POT1 |  | MIG/MAG mode: the potentiometer sets the inductance value.<br>MMA Mode: the potentiometer sets the value of the following parameter: ARC FORCE |
| POT2 |  | **Parameters/functions setting**<br>MIG/MAG mode: the potentiometer sets the value of the following parameter: WIRE FEED RATE<br>MMA/TIG mode: the potentiometer sets the value of the following parameter: WELDING CURRENT |
| POT3 |  | **Parameters/functions setting**<br>MIG/MAG mode: the potentiometer sets the welding voltage.<br>**Menu function**<br>The potentiometer sets the value of the selected function or parameter. |
| SEL1 |  | MIG/MAG mode: the lever opens the gas solenoid valve to fill the circuit and calibrate the flow pressure with the regulator located on the gas cylinder. Raise the lever to let the gas out for 15 seconds. Raise it again to stop the gas flow.<br>**POST-GAS adjustment**<br>Keep the lever raised for 3 seconds to access the menu. (See § 4.7.4 page 17.) |
| |  | MIG/MAG mode: this lever activates wire feed to insert it through the MIG/MAG torch. Lower the lever to activate wire feed at a low speed (2m/min) and keep it lowered for more than 3 seconds to increase wire speed to 15m/min.<br>**SPEED LIMIT adjustment**<br>Switch the unit off, keep the lever lowered and switch the unit to access the menu. (See § 0 page 17.)<br>Raise the lever to quit the menu. |



## 3.2 UNIT POWER-UP

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

➔ AL.HEA. The message appears for a few seconds on the following displays: D1-D2

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

➔ The welding power source sets up for welding with the factory preset values.

**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.

## 3.3 RESET (LOAD FACTORY SETTINGS)

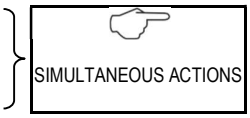
The reset procedure involves complete restoration of the default values, parameters and memory settings set in the factory.
All memory locations will be reset and hence all your personal welding settings will be lost!
The reset procedure is useful in the following cases:

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

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

S1 (Mode) S3 (⊖) Hold down both buttons simultaneously.

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




➔ FAC The message appears on the following displays: D2

Release buttons.

## 3.4 GAS FLOW ADJUSTMENT in MIG/MAG MODE

Open the gas solenoid valve by raising the lever (SEL1).
Adjust the pressure of the gas flowing from the torch by means of the flow meter connected to the gas cylinder.
Close the gas solenoid valve by raising the lever (SEL1).
The solenoid valve is automatically closed after 15 seconds.

## 3.5 ALARM MANAGEMENT

STOP This LED illuminates if an incorrect operating condition occurs.
An alarm message appears on the following display: D1-D2

***Tab. 1 - Alarm messages***

| MESSAGE | MEANING | EVENT | CHECKS |
|---|---|---|---|
| **AL. HEA.** | **Overheating alarm**<br>Indicates tripping of the welding power source thermal protection. | All functions are disabled.<br>Exceptions:<br>- cooling fan.<br><br>Leave the equipment running so that the overheated components cool as rapidly as possible.<br>When the unit has cooled, the welding power source will reset automatically. | - Make sure that the power required by the welding process is lower than the maximum rated power output.<br>- Check that the operating conditions are in compliance with the welding power source data plate specifications.<br>- Check for the presence of adequate air circulation around the welding power source. |
| **AL. Cur.** | **Overcurrent alarm**<br>Indicates that the welding power source current surge protector has tripped. | All functions are disabled.<br>Exceptions:<br>- cooling fan.<br><br>An audible signal will sound (buzzer).<br><br>Muting the audible signal:<br>- in torch trigger procedure 2T, release the torch trigger.<br>- in torch trigger procedure 4T the alarm mutes automatically after 5 seconds.<br><br>Exit the alarm state by performing one of the following actions:<br>- press any button.<br>- switch the power source off. | - Check that the programmed arc voltage value is not too high in relation to the thickness of the work to be welded. |

# 4 WELDING SETTINGS

## 4.1 TORCH TRIGGER MODES

### 2 STROKE LIFT-ARC TIG WELDING (2T)

1. Touch the workpiece with the torch electrode.
2. Slowly lift the torch to strike the arc.

➡ The welding current reaches the pre-set value, by way of an up slope time, if programmed.
➡ The current reaches the end current value in the time set in the down slope time parameter.
➡ The arc is extinguished.
➡ Gas delivery continues for the time set in the post gas parameter.

### 4 STROKE LIFT-ARC TIG WELDING (4T)

1. Touch the workpiece with the torch electrode.
2. Slowly lift the torch to strike the arc.

➡ The welding current reaches the preset value, by way of an up slope time, if programmed.
➡ The current reaches the end current value in the time set in the down slope time parameter.
➡ The arc continues and the current output will be the value set in the end current parameter.
ⓘ In these conditions the weld pool can be closed (crater filler current).
➡ Gas delivery continues for the time set in the post gas parameter.

### 2 STROKE MIG/MAG WELDING (2T)

1. Bring the torch up to the workpiece to be welded.
2. Press (1T) and keep the torch trigger pressed.

➡ The wire advances at the approach speed until making contact with the workpiece.
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).

### 4 STROKE MIG/MAG WELDING (4T)

1. Bring the torch up to the workpiece to be welded.
2. Press (1T) and release (2T) the torch trigger.

➡ The wire advances at the approach speed until making contact with the work.
The arc strikes and the wire feeder accelerates to the set feed rate value.

3. Press (3T) the trigger to start the weld completion procedure.

➡ Gas flow continues until the torch trigger is released.

4. Release (4T) the torch trigger to start the post gas procedure (adjustable time).

## 4.2 SELECTION OF THE WELDING MODE AND TORCH TRIGGER PROCEDURE

S1 (Mode) Use this button to select one of the following welding modes.

S3 Use this button to select one of the following torch trigger procedures.

| MODE | | PROCEDURE: 2 STROKE | PROCEDURE: 4 STROKE |
|---|---|---|---|
| MMA | | | |
| CONTINUOUS DC TIG | | ✓ | ✓ |
| MIG/MAG | | ✓ | ✓ |

## 4.3 PARAMETERS ACTIVATION

The welding parameters are available in accordance with the selected welding mode and procedure.
The table shows the settings required to enable each parameter.

| MODE → | | | | | |
|---|---|---|---|---|---|
| PROCEDURE → | | | | | |
| PARAMETER ↓ | | | | | |
| WELDING CURRENT | ✓ | ✓ | ✓ | ✓ | ✓ |
| HOT-START | ✓ | | | | |
| ARC-FORCE | ✓ | | | | |
| POST GAS TIME | | ✓ | ✓ | ✓ | ✓ |
| MIG/MAG WELDING VOLTAGE | | | | ✓ | ✓ |
| WIRE FEED RATE | | | | ✓ | ✓ |
| SPEED LIMIT | | | | | |
| INDUCTANCE | | | | ✓ | ✓ |

## 4.4 WELDING PARAMETERS

### WELDING CURRENT

Output current value during welding.

### HOT-START

This parameter aids electrode melting at the time of arc striking.
Consequences of a higher value:
- Easier arc strike.
- Increased spatter at welding start.
- Increase of strike area.

Consequences of a lower value:
- More difficult arc strike.
- Less spatter at welding start.
- Smaller strike area.

### ARC-FORCE

This parameter helps to avoid electrode sticking during welding. During electrode fusion low conductivity parts of the coating become detached and tend to become interposed between the electrode tip as it is fusing and the workpiece. This condition results in an interruption of the arc. In addition, it may occur that the electrode comes into contact with the workpiece creating a short circuit and consequent quenching of the arc. To avoid arc quenching the power source therefore delivers instantaneous peak currents in correspondence with preset arc voltage thresholds.
Consequences of a higher value:
- Fluidity during welding.
- Welding arc stability.
- Greater electrode fusion in workpiece.
- More welding spatter.

Consequences of a lower value:
- The arc is extinguished more easily.
- Less welding spatter.

### POST GAS TIME

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).

### MIG/MAG WELDING VOLTAGE

The parameter sets the welding voltage in MIG/MAG mode.

### WIRE FEED RATE

The parameter sets the output wire feed rate.
The maximum speed setting can be limited by adjusting the "speed limit" parameter.

### SPEED LIMIT

The parameter limits maximum motor speed, which is adjustable by means of the potentiometer.

### INDUCTANCE

Consequences of a higher value:
- "Softer welding".
- Less spatter.
- Less positive starting.

Consequences of a lower value:
- "Harder welding".
- More spatter.
- More reliable starting.

## 4.5 ELECTRODE WELDING (MMA)

S1 (Mode) This button serves to select the following welding mode: MMA
→ MMA The message appears on the following displays: D2

### 4.5.1 PARAMETERS SETTING: WELDING CURRENT

POT2 Using the potentiometer, edit the value of the parameter.
→ The value appears on the following display: D1

| PARAMETER | MIN | DEFAULT | MAX |
|---|---|---|---|
| WELDING CURRENT | 10 A | 80 A | 250 A |

### 4.5.2 PARAMETERS SETTING: HOT-START

S3 Hold down the button for 3 seconds to open the menu.
→ The acronym relative to the setting to be edited appears on the following displays: D1
→ The value relative to the selected setting appears on the following displays: D2
POT3 Using the potentiometer, edit the value of the selected setting.
Press any button to save the setting and quit the menu.

| ACRONYM | PARAMETER | MIN | DEFAULT | MAX |
|---|---|---|---|---|
| H.S. | HOT-START | 0 % | 50 % | 100 % |

### 4.5.3 PARAMETERS SETTING: ARC-FORCE

POT1 Using the potentiometer, edit the value of the setting.

| PARAMETER | MIN | DEFAULT | MAX |
|---|---|---|---|
| ARC-FORCE | 0 % | - % | 200 % |

## 4.6 DC TIG WELDING

S1 (Mode) This button serves to select the following welding mode: DC TIG
→ tIG The message appears on the following displays: D2

### 4.6.1 PARAMETERS SETTING: WELDING CURRENT

POT2 Using the potentiometer, edit the value of the parameter.
→ The value appears on the following display: D1

| PARAMETER | MIN | DEFAULT | MAX |
|---|---|---|---|
| WELDING CURRENT | 10 A | 80 A | 250 A |

## 4.7 MIG/MAG WELDING

S1 (Mode) This button serves to select the following welding mode: MIG/MAG

### 4.7.1 PARAMETERS SETTING: MIG/MAG WELDING VOLTAGE

POT3 Using the potentiometer, edit the value of the parameter.
The value is saved automatically.

| PARAMETER | MIN | DEFAULT | MAX |
|---|---|---|---|
| MIG/MAG WELDING VOLTAGE | 10.0 V | - | 40.0 V |

### 4.7.2 PARAMETERS SETTING: WIRE FEED RATE

POT2 Using the potentiometer, edit the value of the parameter.
The value is saved automatically.

| PARAMETER | MIN | DEFAULT | MAX |
|---|---|---|---|
| WIRE FEED RATE | 1.0 m/min | | 20.0 m/min |

### 4.7.3 PARAMETERS SETTING: INDUCTANCE SETTING

POT1 Using the potentiometer, edit the value of the parameter.

### 4.7.4 PARAMETERS SETTING: POST GAS TIME

Keep the lever raised (SEL1) for 3 seconds to access the menu.

| ACRONYM | PARAMETER | MIN | DEFAULT | MAX |
|---|---|---|---|---|
| Po.G. | POST GAS TIME | 0.0 s | 3.0 s | 10.0 s |

### 4.7.5 PARAMETERS SETTING: SPEED LIMIT

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

Keep the lever lowered (SEL1).

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

SIMULTANEOUS ACTIONS

The acronym relative to the setting to be edited appears on the following displays: D1
The value relative to the selected setting appears on the following displays: D2
POT3 Using the potentiometer, edit the value of the selected setting.
Hold down the lever (SEL1) to save the setting and quit the menu.

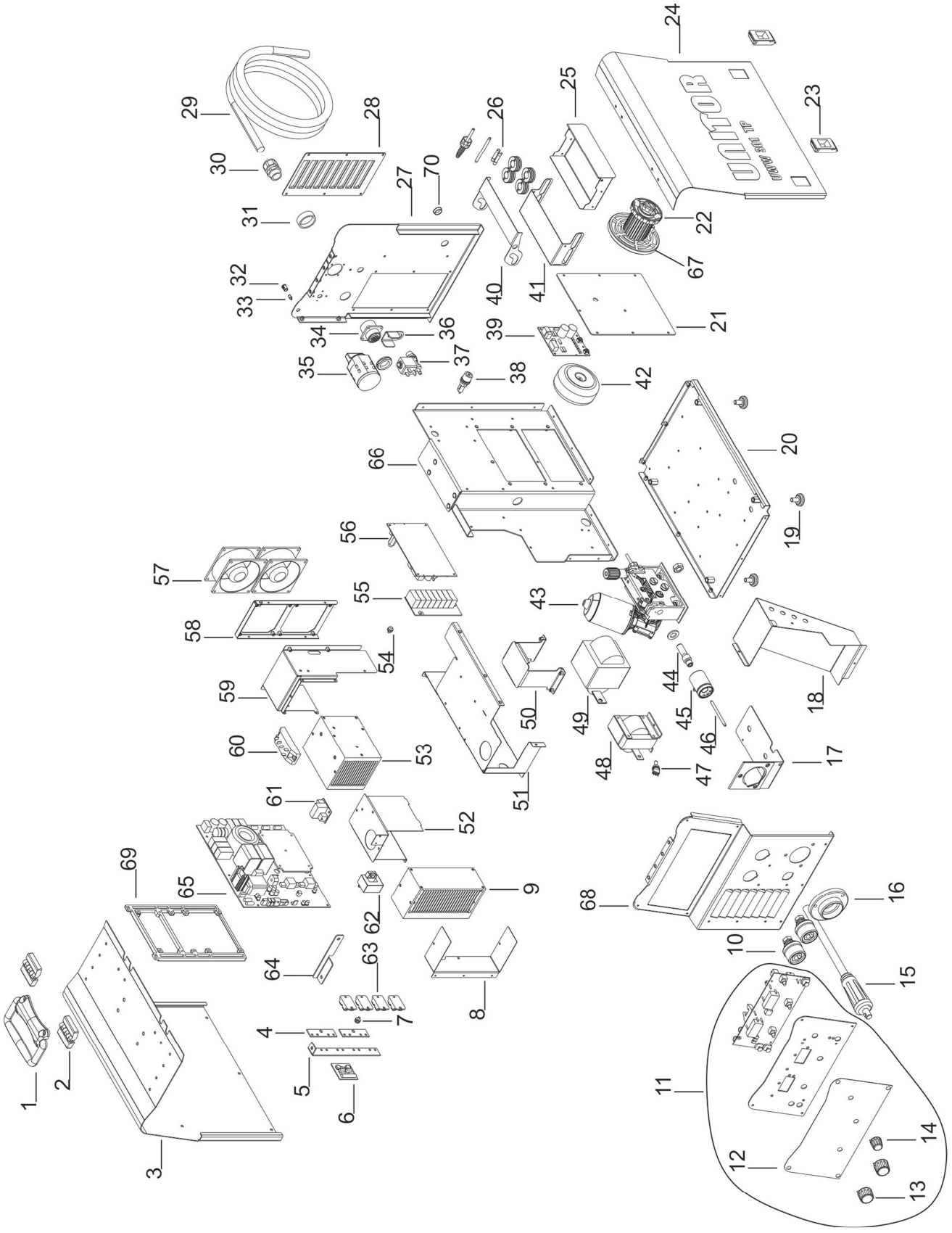
| ACRONYM | PARAMETER | MIN | DEFAULT | MAX |
|---|---|---|---|---|
| SP.L. | SPEED LIMIT | 1.0 m/min | 20.0 m/min | 20.0 m/min |

# 5 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) | | |
| **Construction standards** | EN 60974-1; EN 60974-5; EN 60974-10 Class A | | |
| **Conformity markings** | CE Equipment compliant with European directives in force | | |
| | S Equipment suitable in an environment with increased hazard of electric shock | | |
| | Equipment compliant with WEEE directive | | |
| | RoHS Equipment compliant with RoHS directive | | |
| **Supply voltage** | 3 x 400 Va.c. ± 15 % / 50-60 Hz | | |
| **Mains protection** | 16 A Delayed | | |
| **$Z_{max}$** | This equipment complies with IEC 61000-3-12 provided that the maximum permissible system impedance is less than or equal to 153 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 153 mΩ. | | |
| **Dimensions ( D x W x H )** | 410 x 270 x 355 mm | | |
| **Weight** | 19.0 kg | | |
| **Insulation class** | H | | |
| **Protection rating** | IP23S | | |
| **Cooling** | AF: Air-over cooling (fan assisted) | | |
| **Maximum gas pressure** | 0,5 MPa (5 bar) | | |
| **Motor speed** | 1.0 - 20.0 m/min | | |
| **Wire spool: (dimensions/weight)** | 200 mm / 5 kg | | |
| **Static characteristic** | MMA |  | Drooping characteristic |
| | TIG |  | Drooping characteristic |
| | MIG/MAG |  | Flat characteristic |
| **Current and voltage adjustment range** | MMA | 10 A / 20.4V - 250 A / 30.0 V | |
| | TIG | 10 A / 10.4 V - 250 A / 20.0 V | |
| | MIG/MAG | 5 A / 14.2 V - 300 A / 29.0 V | |
| **Welding current / Working voltage** | MMA | 40 % (40° C) | 250 A - 30.0 V |
| | | 60 % (40° C) | 220 A - 28.8 V |
| | | 100 % (40° C) | 190 A - 27.6 V |
| | TIG | 50 % (40° C) | 250 A - 20.0 V |
| | | 60 % (40° C) | 240 A - 19.6 V |
| | | 100 % (40° C) | 210 A - 18.4 V |
| | MIG/MAG | 35 % (40° C) | 300 A - 29.0 V |
| | | 60 % (40° C) | 230 A - 25.5 V |
| | | 100 % (40° C) | 200 A - 24.0 V |
| **Maximum input power** | MMA | 40 % (40° C) | 8.7 kVA – 8.4 kW |
| | | 60 % (40° C) | 7.3 kVA – 7.0 kW |
| | | 100 % (40° C) | 6.1 kVA – 5.8 kW |
| | TIG | 50 % (40° C) | 6.1 kVA – 5.8 kW |
| | | 60 % (40° C) | 5.8 kVA – 5.5 kW |
| | | 100 % (40° C) | 4.8 kVA – 4.5 kW |
| | MIG/MAG | 35 % (40° C) | 10.3 kVA – 9.7 kW |
| | | 60 % (40° C) | 6.9 kVA – 6.5 kW |
| | | 100 % (40° C) | 5.8 kVA – 5.5 kW |
| **Maximum input current** | MMA | 40 % (40° C) | 12.7 A |
| | | 60 % (40° C) | 10.6 A |
| | | 100 % (40° C) | 8.8 A |
| | TIG | 50 % (40° C) | 8.8 A |
| | | 60 % (40° C) | 8.3 A |
| | | 100 % (40° C) | 6.8 A |
| | MIG/MAG | 35 % (40° C) | 15.0 A |
| | | 60 % (40° C) | 10.0 A |
| | | 100 % (40° C) | 8.4 A |

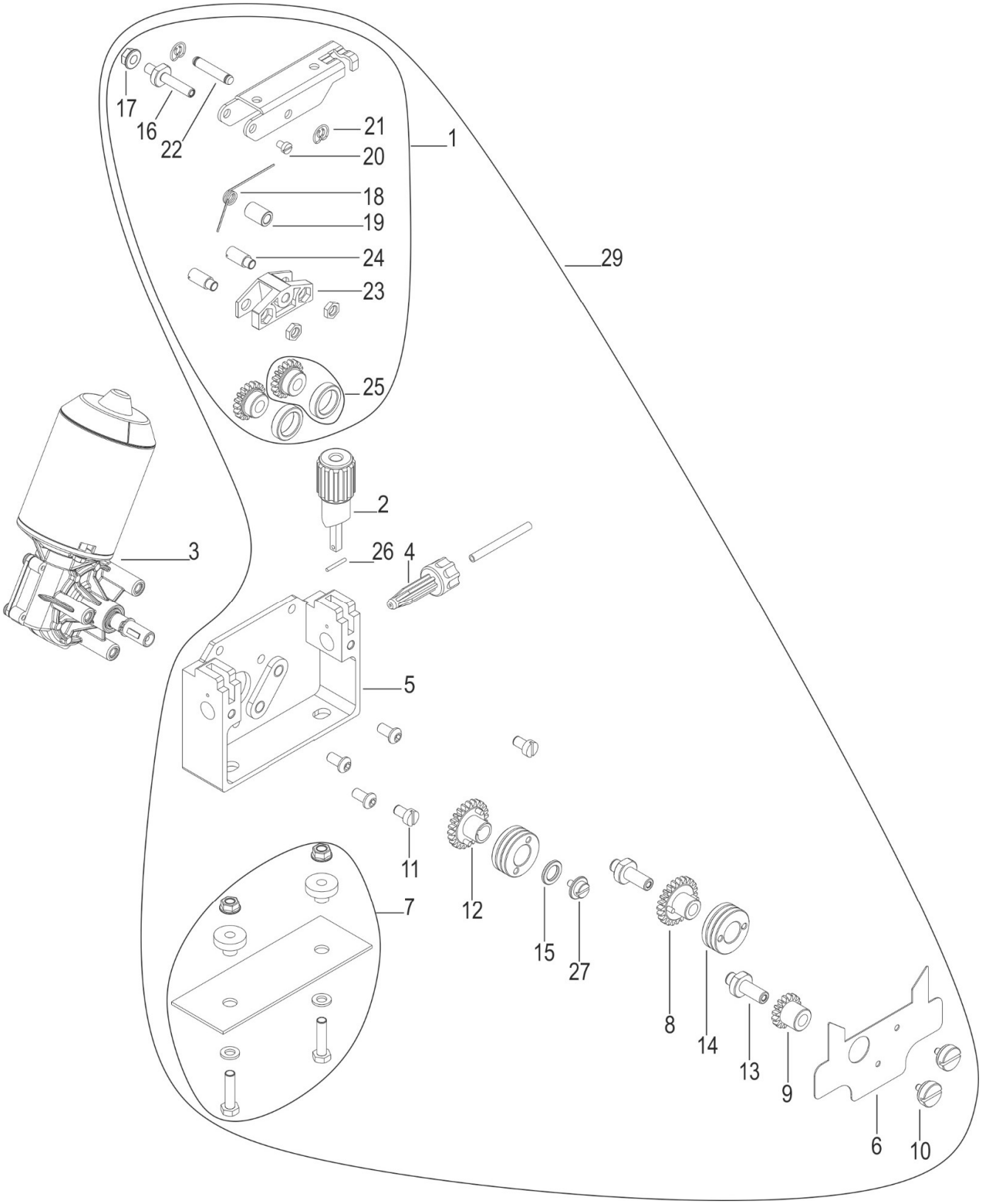
| | | | |
|---|---|---|---|
| **Maximum effective supply current** | MMA | 40 % (40° C) | 8.0 A |
| | | 60 % (40° C) | 8.2 A |
| | | 100 % (40° C) | 8.8 A |
| | TIG | 50 % (40° C) | 6.2 A |
| | | 60 % (40° C) | 6.4 A |
| | | 100 % (40° C) | 6.8 A |
| | MIG/MAG | 35 % (40° C) | 8.8 A |
| | | 60 % (40° C) | 7.7 A |
| | | 100 % (40° C) | 8.4 A |
| **No-load voltage ($U_0$)** | MMA | 53 V | |
| | TIG | 53 V | |
| | MIG/MAG | 53 V | |
| **Reduced voltage ($U_r$)** | MMA | 11 V | |
| | TIG | 11 V | |
| | MIG/MAG | 11 V | |

# 6 SPARE PARTS



| N° | CODICE | DESCRIZIONE |
|---|---|---|
| 1 | 011.0006.0031 | HANDLE |
| 2 | 011.0006.0006 | PLASTIC HINGE |
| 3 | 011.0001.0681 | UPPER COVER |
| 4 | 045.0006.0053 | COPPER BRACKET (POSITIVE POLE) |
| 5 | 045.0006.0052 | COPPER BRACKET (NEGATIVE POLE) |
| 6 | 050.0003.0044 | SNUBBER BOARD |
| 7 | 040.0003.1007 | TERMAL SWITCH |
| 8 | 011.0009.0109 | FRONTAL CONVEYOR |
| 9 | 015.0001.0013 | SECONDARY HEAT SINK |
| 10 | 021.0001.0259 | FIXED SOCKET |
| 11 | 050.5065.0000 | LOGIC FRONT PANEL |
| 12 | 013.0007.0704 | FRONT PANEL LABEL |
| 13 | 014.0002.0005 | KNOB WITH POINTER |
| 14 | 014.0002.0009 | KNOB WITH POINTER |
| 15 | 022.0002.0341 | MOVABLE PLUG |
| 16 | 021.0001.2005 | PLASTIC HOUSING |
| 17 | 011.0009.0120 | MOTOR SUPPORT |
| 18 | 011.0009.0105 | LOGIC PROTECTION PLATE |
| 19 | 016.0009.0003 | RUBBER FOOT |
| 20 | 011.0009.0100 | LOWER COVER |
| 21 | 011.0009.0127 | INTERNAL PLATE |
| 22 | 002.0000.0284 | SCREW CAP FOR SPOOL HOLDER |
| 23 | 011.0006.0002 | SLIDE CLOSURE |
| 24 | 011.0001.0691 | DOOR |
| 25 | 011.0009.0130 | DRAWER PLATE |
| 26 | 040.0007.0400 | DELAYED FUSE 5X20 4A 250V |
| 27 | 011.0009.0119 | POSTERIOR PLATE |
| 28 | 011.0009.0119 | FAN COVER REAR PLATE |
| 29 | 045.0002.0005 | SUPPLY CABLE |
| 30 | 045.0000.0007 | CABLE CLAMP |
| 31 | 021.0004.2994 | 14 PINS REMOTE CONNECTOR CAP |
| 32 | 016.4107.0001 | LED HOLDER |
| 33 | 022.0002.0190 | LED WIRING |
| 34 | 022.0002.0381 | REMOTE CONTROL WIRING |
| 35 | 040.0001.0015 | THREE-POLE SWITCH |
| 36 | 011.0002.0018 | SOLENOID VALVE PLATE |
| 37 | 017.0001.5542 | SOLENOID VALVE |
| 38 | 040.0006.1880 | FUSE CARRIER |
| 39 | 050.0002.0057 | SCHEDA CONTROLLO ALIMENTAZIONE ELETTRICA |
| 40 | 011.0009.0131 | DRAWER CLOSURE PLATE |
| 41 | 011.0009.0129 | DRAWER SUPPORT PLATE |
| 42 | 041.0006.0014 | TOROIDAL TRANSFORMER |
| 43 | 010.0008.0002 | WIRE FEED MOTOR |
| 44 | 021.0001.2011 | STING |
| 45 | 021.0001.2001 | COUPLING EURO |
| 46 | 021.0001.2021 | CAPILLARY TUBE |
| 47 | 022.0002.0384 | SWITCH + CABLE |
| 48 | 044.0004.0013 | OUTPUT INDUCTANCE |
| 49 | 042.0003.0003 | POWER TRANSFORMER |
| 50 | 011.0009.0121 | TRANSFORMER SUPPORT |
| 51 | 011.0009.0107 | INTERNAL SUPPORT |
| 52 | 011.0009.0108 | INTERNAL CONVEYOR |
| 53 | 015.0001.0014 | HEAT SINK |
| 54 | 040.0003.1003 | TERMAL SWITCH |
| 55 | 050.0002.0119 | CAPACITORS BOARD |
| 56 | 050.0001.0041 | MOTOR BOARD |
| 57 | 003.0002.0015 | FAN |
| 58 | 011.0009.0102 | FAN SUPPORT |
| 59 | 011.0009.0110 | INTERNAL FAN SUPPORT |
| 60 | 032.0001.8215 | PRIMARY RECTIFIER |
| 61 | 050.0001.0084 | FAN CONTROL BOARD |
| 62 | 041.0004.0301 | HALL SENSOR |
| 63 | 032.0002.2403 | DIODE |
| 64 | 045.0006.0080 | FRONT FIXING PLATE |
| 65 | 050.0013.0091 | POWER BOARD |
| 66 | 011.0009.0104 | INTERNAL PLATE |
| 67 | 011.0006.0050 | SPOOL SUPPORT |
| 68 | 011.0009.0106 | FRONT PLATE |
| 69 | 012.0003.0000 | INTERNAL FRAMEWORKS |
| 70 | 016.0011.0009 | PLASTIC CAP Ø=16 |

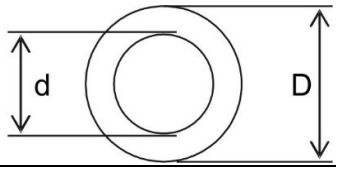
## 6.1 WIRE FEED MOTOR

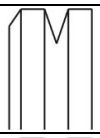
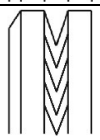
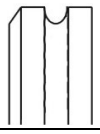


| N° | CODICE | DESCRIZIONE |
|---|---|---|
| 1 | 002.0000.0205 | COMPLETE PRESSURE ARM |
| 2 | 002.0000.0203 | COMPLETE PRESSURE DEVICE |
| 3 | 002.0000.0201 | MOTOR COIL |
| 4 | 002.0000.0259 | INLET GUIDE WITH SOFT LINER |
| 5 | 002.0000.0202 | FEED PLATE |
| 6 | 002.0000.0266 | GUARD SAFETY KIT |
| 7 | 002.0000.0212 | INSULATION MOUNTING KIT |
| 8 | 002.0000.0209 | GEAR ADAPTOR FEED ROLL |
| 9 | 002.0000.0210 | MAIN GEAR DRIVE |
| 10 | 002.0000.0207 | SCREW |
| 11 | 002.0000.0208 | SCREW |
| 12 | 002.0000.0211 | GEAR ADAPTOR FEED ROLL |
| 13 | 002.0000.0255 | SHAFT |
| 14 | 002.0000.0121 | FEED ROLL |
| 15 | 002.0000.0270 | WASHER |
| 16 | 002.0000.0269 | PRESSURE ARM HOLDER AXIS |
| 17 | 002.0000.0271 | SCREW |
| 18 | 002.0000.0272 | SPRING PRESSURE ARM AUTO LIFT |
| 19 | 002.0000.0273 | SPACE TUBE PRESSURE ARM AUTO-LIFT |
| 20 | 002.0000.0274 | SCREW |
| 21 | 002.0000.0275 | CIRCLIP |
| 22 | 002.0000.0276 | LOCATING PIN PRESSURE ARM |
| 23 | 002.0000.0277 | HOLDER |
| 24 | 002.0000.0278 | AXLE GAUGE |
| 25 | 002.0000.0279 | PRESSURE ROLL |
| 26 | 002.0000.0280 | LOCATING PIN PRESSURE DEVICE |
| 27 | 002.0000.0281 | GEAR ADAPTOR |
| 28 | 002.0000.0282 | DRIVING ROOL SCREW |
| 29 | 002.0000.0065 | COMPLETE WIRE FEEDER |

## 6.2 WIRE FEEDER ROLLS

D = 30 mm
d = 14 mm

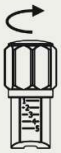



| N° | CODE | WIRE DIAMETER | GROOVE TYPE | |
|---|---|---|---|---|
| 14 | 0.6 - 0.8 | 002.0000.0119 | V groove<br>Solid wire |  |
| | 0.8 - 1.0 | 002.0000.0120 | | |
| | 1.0 - 1.2 | 002.0000.0121 | | |
| | 1.2 - 1.6 | 002.0000.0125 | | |
| | 1.0 - 1.2 | 002.0000.0124 | VK shape<br>Flux-cored wire |  |
| | 1.2 - 1.6 | 002.0000.0127 | | |
| | 0.8 - 1.0 | 002.0000.0122 | U shape<br>Aluminium wire |  |
| | 1.0 - 1.2 | 002.0000.0123 | | |
| | 1.2 - 1.6 | 002.0000.0126 | | |

# WELDING SETTINGS GUIDE

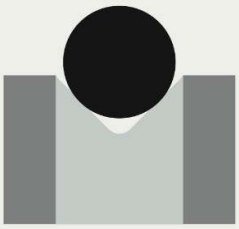
Wilhelmsen Ships Service UNITOR by Wilhelmsen


| | |
|---|---|
| mild steel<br>stainless steel<br>brazing | 2,5<br>3,5 |
| aluminium | 1-2 |
| flux-cored | 2-3 |



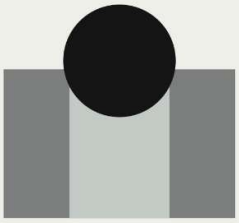
V groove
for solid wires
except aluminium

GPS-W-200
S 316 M-GF 221
S 309 M-GF 222



U groove
for aluminium wires

Alumag-W-235

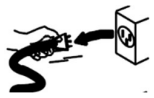
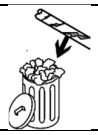
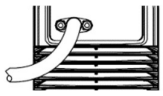
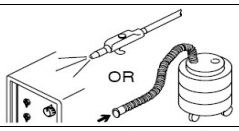
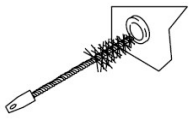
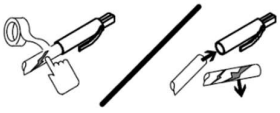
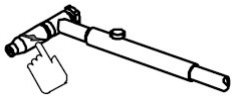
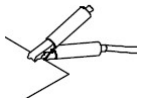


Knurled V groove
for flux cored wires

Metal Cored Wire
MS-W-203 Selfshield
Tensile-W-228 Selfshield

| Unitor Wire Type | Groove Type | Wire Diameter mm | Metal Thickness (mm / in) | | | | Wire Polarity | Shielding Gas | Gas Flow |
|---|---|---|---|---|---|---|---|---|---|
| | | | 2 / .078 | 3 / .118 | 5 / .196 | 8 / .314 | | | |
| | | | V | V | V | V | | | |
| Carbon Steel Solid Wire GPS-W-200 | V | 0,8 | 7,2 / 20,3 | 10,8 / 25,0 | 16,7 / 30,3 | | + | UNIMIX 20 M-50 | 10-15 l/min |
| | | 1,0 | 4,4 / 19,0 | 6,1 / 21,3 | 10,6 / 28,9 | 13,6 / 32,5 | | | |
| Metal Cored Wire | VK | 1,2 | 3,4 / 16,8 | 4,6 / 18,6 | 7,2 / 25,1 | 8,8 / 28,0 | + | UNIMIX 20 M-50 | 10-15 l/min |
| Flux Cored Self Shield Wire MS-W-203 Selfshield Tensile-W-228 Selfshield | VK | 1,2 | 2,5 / 16,0 | 4,0 / 22,0 | 6,5 / 23,5 | 10,0 / 31,5 | - | NO GAS | NO GAS |
| Stainless Steel Solid Wire S 316 M-GF 221 S 309 M-GF 222 | V | 0,9 | 4,8 / 15,0 | 7,2 / 17,0 | 11,3 / 26,0 | | + | UNIMIX 20 M-50 | 22-25 l/min |
| | | 1,0 | 5,0 / 18,0 | 7,5 / 19,8 | 12,0 / 28,5 | 14,5 / 30,0 | | | |
| Aluminium Solid Wire Alumag-W-235 | U | 1,0 | 8,5 / 15,7 | 10,0 / 17,6 | 13,3 / 21,3 | 16,2 / 24,1 | + | ARGON E-50 | 15-20 l/min |
| | | 1,2 | 6,0 / 15,4 | 7,5 / 17,2 | 11,5 / 23,5 | 14,0 / 26,2 | | | |

# 7 ROUTINE MAINTENANCE

| Checkpoint | | Action | Interval |
|---|---|---|---|
| Primary plug and socket |  | Check connections and stretch relief | 3 months or more often if needed |
| Primary cable |  | Check for damage and replace if necessary | 3 months or more often if needed |
| Primary cable stretch relief and connection |  | Check for damage and tightness | 3 months or more often if needed |
| Labels |  | Replace damaged or unreadable labels | 3 months or more often if needed |
| Internal dust and dirt |   | Blow out or vacuum inside | 6 months or more often if needed |
| Welding current sockets |  | Check and clean | 3 months or more often if needed |
| Cable connectors |  | Check, clean if needed and tighten | Prior to use / every 3 months |
| Welding cables |  | Repair or replace if damaged | Prior to use / every 3 months |
| Electrode holders and torches |  | Check, clean and replace if damaged | Prior to use / every 3 months |
| Ground clamps |  | Check tightness and clean contact points | Prior to use / every 3 months |
| Remote controls, if relevant. |  | Check function and condition of cables | 3 months or more often if needed |

POWER SOURCE COMPARTMENT
In extremely dusty locations, dirt may clog the air passages causing the welder to run hot. Blow dirt out of the welder with low pressure dry, oil-free air at regular intervals to eliminate excessive dirt and dust build-up on interval parts.

WIRE FEED COMPARTMENT
1. When necessary, vacuum accumulated dirt from gearbox and wire feed section.
2. Occasionally inspect the incoming guide tube and clean inside diameter if necessary.
3. Motor and gearbox have lifetime lubrication and require no maintenance.

FAN MOTOR AND WIRE REEL SPINDLE
Requires no maintenance. Do not lubricate shaft.

TORCH
1. Check wire feed liner for damage or wear at regular intervals. This is especially important for the non-iron liner which may wear quickly if used for extensive shelf-shield welding.
2. Replace worn contact tips as required. A variable arc is a typical symptom of a worn contact tip.
3. Remove spatter from inside of gas nozzle and from tip after each 10 minutes of arc time or as required.

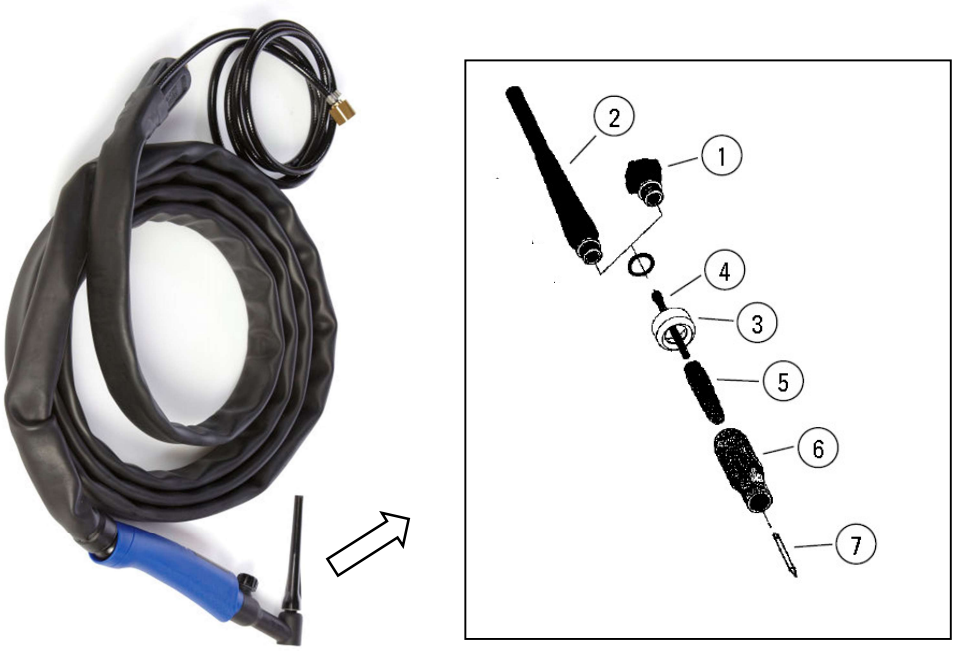
# 8 ORDERING INFORMATION BASIC ACCESSORIES

| Product Number | Product Name |
|---|---|
| **Power Source** | |
| 301301 | UWW-301 TP WIRE WELDER |
| | |
| **Accessories for Selfshield Wire Welding and Stick Welding** | |
| 670410 | ACCESSORIES KIT F/UWW-301 TP WIRE WELDER |
| | |
| **Consumables for Selfshield Wire Welding - Carbon Steel** | |
| 722228 | MS-W-203 SELFSHIELD |
| **Consumables for Selfshield Wire Welding - Stainless Steel** | |
| 699492 | TENSILE-W-228 SELFSHIELD |
| | |
| **Accessories for Gas Wire Welding (MIG/MAG)** | |
| 607451 | WIRE TORCH T-400GS W/3M CABLE |
| | |
| **Accessories for TIG Welding** | |
| 200000 | TIG TORCH T-200 W.DIX 70 CONNECTOR |
| 607810 | TIG TORCH ACCESSORIES KIT |
| 510010 | REGULATOR 510 AR/CO2 FLOW 0-35L/MIN |
| 670414 | REMOTE CONTROL F/UWI-320/500 & UWW-301 |
| 670422 | REMOTE CONTROL CABLE FOR UWI-320/500 |
| 597328 | FLOWCONTROL METER, ARGON |
| | |
| **Welding Safety PPE** | |
| 779032 | AUTODARK 300 WELDING SHIELD |
| 632786 | WELDERS GLOVES. 6 PAIRS |
| 632794 | TIG GLOVES. 6 PAIRS |
| **Other Accessories** | |
| 632976 | WIRE BRUSH STEEL. 6PCS |
| 633008 | CHIPPING HAMMER STEEL. 2PCS |
| 632984 | WIRE BRUSH STAINLESS. 6PCS |
| 632992 | CHIPPING HAMMER STAINLESS |
| 633149 | ANTI SPATTER SPRAY. 6PCS |
| 661778 | PICKLING GEL 2L F/STAINLESS STEEL |
| | |
| **Spares** | |
| 750194 | CONTACT TIPS 1.2MM 10 PCS T-350 TORCH |
| 230237 | SPARE PART KIT F/UWW-301 TP |
| 609716 | SPARE ROLLER & WIRE GUIDE F/UWW-301 TP |

# 9 TIG AND WIRE TORCHES WITH SPARES

## TIG WELDING

**TIG torch T-200 complete with long back-cap, 2,4mm electrode, collet and nozzle**
**Order number 197-200000**




| Pos. | Order number | Unit | Product description |
|---|---|---|---|
| 1 | **197-551192** | pcs | Short back-cap |
| 2 | **197-551200** | pcs | Long back-cap |
| 3 | **197-613767** | pcs | Heat shield |
| 4 | **197-551168** | pcs | Collet 1.6mm |
| 4 | **197-551150** | pcs | Collet 2.4mm |
| 5 | **197-551184** | pcs | Collet body 1.6 mm |
| 5 | **197-551176** | pcs | Collet body 2.4 mm |
| 6 | **197-551135** | pcs | Alumina nozzle 6 |
| 6 | **197-551127** | pcs | Alumina nozzle 7 |
| 7 | **197-674710** | pck | Tungsten electrode (10 pcs) 1.6 mm alloyed for DC welding |
| 7 | **197-674736** | pck | Tungsten electrode (10 pcs) 2.4 mm alloyed for DC welding |

# GAS SHIELDED WIRE WELDING

**T-400 torch for gas shielded wire welding, complete with contact tip 1,0-1,2mm and Teflon liner. Order number 193-607451**


| Pos. | Order number | Unit | Product description |
|---|---|---|---|
| 1 | **193-551192** | pcs | Gas nozzle for torch |
| 2 | **193-613766** | set | Nozzle insulator 5 pcs |
| 3 | **193-594622** | set | Contact tips 0.8 mm 10 pcs |
| 3 | **193-594630** | set | Contact tips 1.0 – 1.2 mm 10 pcs |
| 3 | **193-607455** | set | Contact tips 1.4 mm 10 pcs |
| 3 | **193-607456** | set | Contact tips 1.6 mm 10 pcs |
| 4 | **193-613763** | set | Gas diffusor 5 pcs |
| 5 | **193-613764** | set | Neck insulation 5 pcs |
| 6 | **193-594606** | pcs | Torch liner, Teflon for 0.6-1.2 mm wire 4.5 m long |
| 6 | **193-594614** | pcs | Torch liner, Steel for 0.6-1.0 mm wire (blue) 3.0 m long |
| 6 | **193-607457** | pcs | Torch liner, Steel for 1.0-1,4 mm wire (red) 3.0 m long |
| 6 | **193-777846** | pcs | Torch liner, Steel for 1,4-1,6 mm wire (yellow) 3.0 m long |

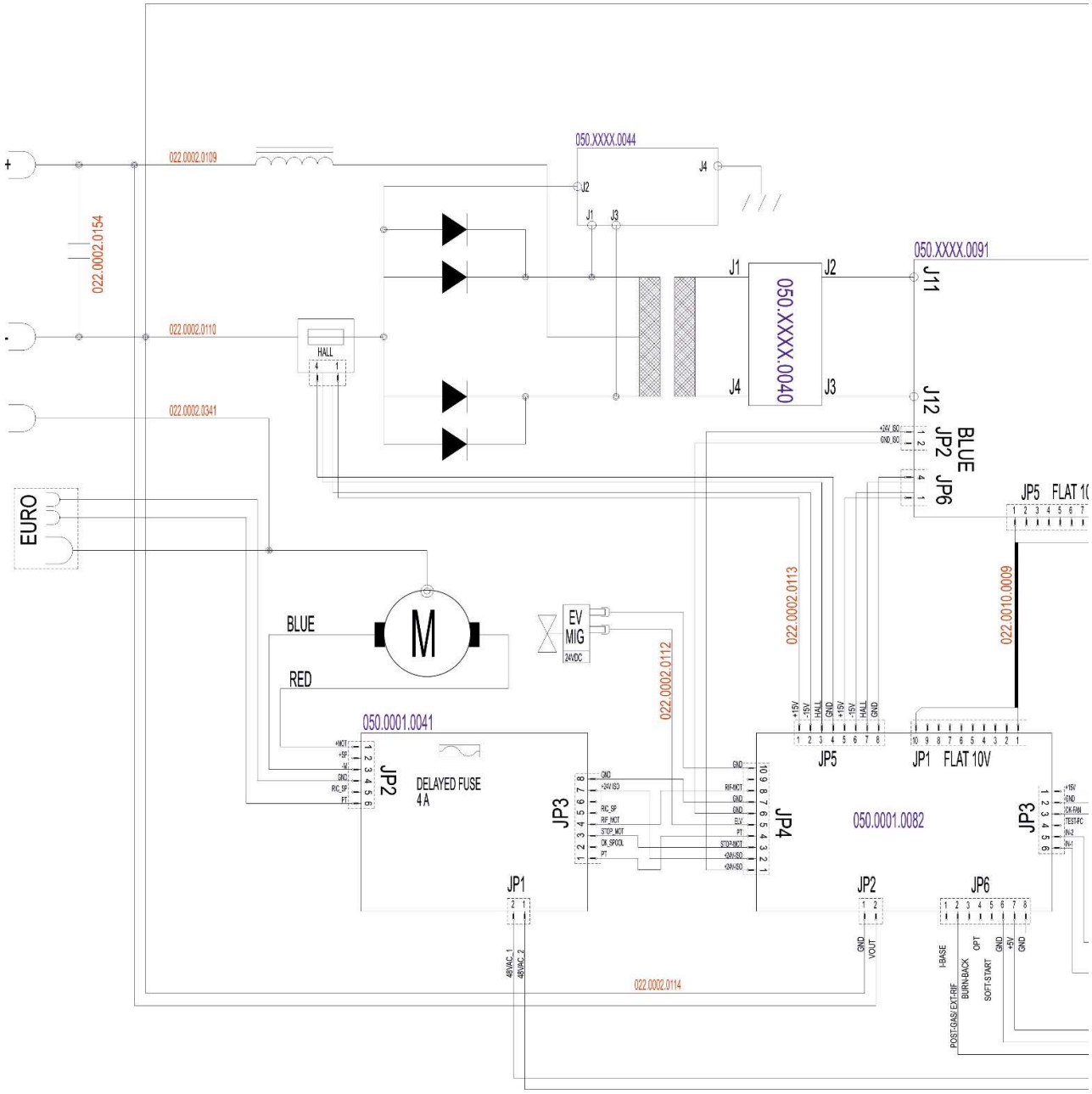
# SELFSHIELD WIRE WELDING

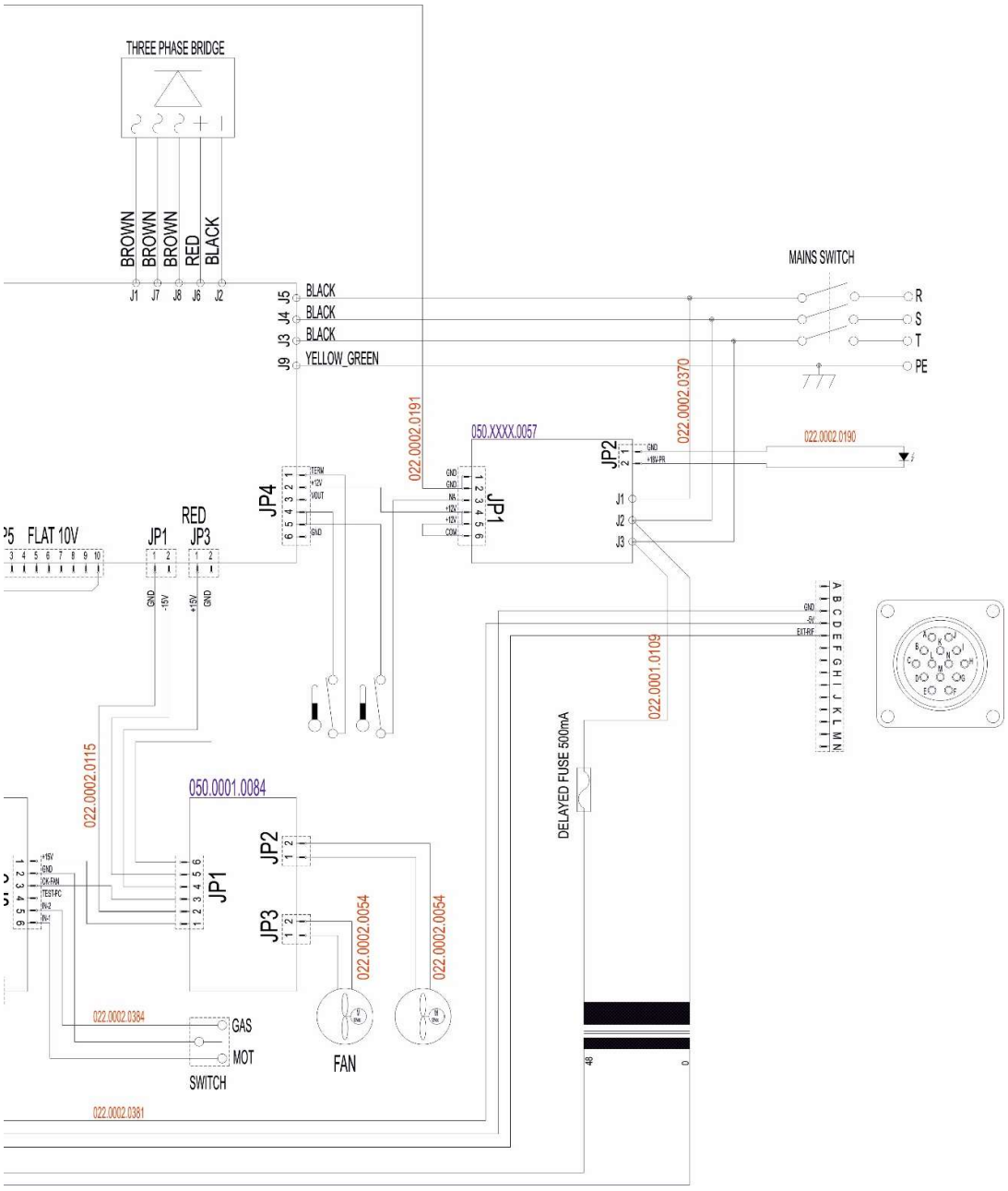
**T-350 torch for gasless welding with self-shielded wire, complete with 1,2mm contact tip and 1,0-1,4mm red coated steel liner. Order number 193-750179**


| Pos. | Order number | Unit | Product description |
|---|---|---|---|
| 1 | n.a. | n.a | End of swan neck on torch |
| 2 | **193-594614** | pcs | Torch liner, Steel for 0.6-1.0 mm wire (blue) 3.0 m long |
| 2 | **193-607457** | pcs | Torch liner, Steel for 1.0-1,4 mm wire (red) 3.0 m long |
| 2 | **193-777846** | pcs | Torch liner, Steel for 1,4-1,6 mm wire (yellow) 3.0 m long |
| 3 | **193-750185** | pcs | Tip adaptor for torch |
| 4 | **193-750181** | set | Contact tips 1,0 mm 10 pcs |
| 4 | **193-750194** | set | Contact tips 1,2 mm 10 pcs |
| 4 | **193-750182** | set | Contact tips 1,6 mm 10 pcs |
| 5 | **193-750184** | pcs | Ceramic nozzle for torch |

# 10 ELECTRICAL DIAGRAM

## 10.1 UWW 301 TP




THREE PHASE BRIDGE
BROWN
BROWN
BROWN
RED
BLACK
J1
J7
J8
J6
J2
J5
J4
J3
J9
BLACK
BLACK
BLACK
YELLOW_GREEN
MAINS SWITCH
R
S
T
PE
022.0002.0191
050.XXXX.0057
022.0002.0370
022.0002.0190
JP2
JP4
JP1
J1
J2
J3
FLAT 10V
JP1
RED
JP3
GND
-15V
+15V
GND
022.0002.0115
050.0001.0084
022.0001.0109
DELAYED FUSE 500mA
JP2
JP1
JP3
022.0002.0054
022.0002.0054
022.0002.0384
GAS
MOT
SWITCH
FAN
022.0002.0381
48
0

# 11 SAFETY INSTRUCTIONS

**Arc Welding Hazards**

The safety information given below is only a summary of the more complete safety information found in the Safety Standards listed in Section 1-5. Read and follow all Safety Standards.
Only qualified persons should install, operate, maintain, and repair this unit. During operation, keep everybody, especially children, away.

**ELECTRIC SHOCK can kill**.
Touching live electrical parts can cause fatal shocks or severe burns. The electrode and work circuit is electrically live whenever the output is on. The input power circuit and machine internal circuits are also live when power is on. In semiautomatic or automatic wire welding, the wire, wire reel, drive roll housing, and all metal parts touching the welding wire are electrically live. Incorrectly installed or improperly grounded equipment is a hazard.

Do not touch live electrical parts. Wear dry, hole-free insulating gloves and body protection. Insulate yourself from work and ground using dry insulating mats or covers big enough to prevent any physical contact with the work or ground. Do not use AC output in damp areas, if movement is confined, or if there is a danger of falling. Use AC output ONLY if required for the welding process. If AC output is required, use remote output control if present on unit.

Disconnect input power before installing or servicing this equipment. Always verify the supply ground − check and be sure that input power cord ground wire is properly connected to ground terminal in the cord plug and that the plug is connected to a properly grounded receptacle outlet. When making input connections, attach proper grounding conductor first − double-check connections. Frequently inspect input power cord for damage or bare wiring −replace cord immediately if damaged − bare wiring can kill. Turn off all equipment when not in use.

Do not use worn, damaged, undersized, or poorly spliced cables. Do not drape cables over your body. If earth grounding of the work-piece is required, ground it directly with a separate cable. Do not touch electrode if you are in contact with the work, ground, or another electrode from a different machine.

Use only well-maintained equipment. Repair or replace damaged parts at once. Maintain unit according to manual. Wear a safety harness if working above floor level. Keep all panels and covers securely in place. Clamp work cable with good metal-to-metal contact to work-piece or worktable as near the weld as practical. Insulate work clamp when not connected to work-piece to prevent contact with any metal object. Do not connect more than one electrode or work cable to any single weld output terminal.

SIGNIFICANT DC VOLTAGE exists after removal of input power on inverters. Turn off inverter, disconnect input power, and discharge input capacitors before touching any parts.

**ARC RAYS can burn eyes and skin.**
Arc rays from the welding process produce intense visible and invisible (ultraviolet and infrared) rays that can burn eyes and skin. Sparks fly off from the weld. Wear a welding helmet fitted with a proper shade of filter to protect your face and eyes when welding or watching. Wear approved safety glasses with side shields under your helmet. Use protective screens or barriers to protect others from flash and glare; warn others not to watch the arc. Wear protective clothing made from durable, flame-resistant material (leather and wool) and foot protection.

**FUMES AND GASES can be hazardous.**
Welding produces fumes and gases. Breathing these fumes and gases can be hazardous to your health. Keep your head out of the fumes. Do not breathe the fumes. If inside, ventilate the area and/or use exhaust at the arc to remove welding fumes and gases. If ventilation is poor, use an approved air-supplied respirator. Read the Material Safety Data Sheets (MSDSs) and the manufacturer's instructions for metals, consumables, coatings, cleaners, and degreasers.
Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator. Always have a trained watchperson nearby. Welding fumes and gases can displace air and lower the oxygen level causing injury or death. Be sure the breathing air is safe.
Do not weld in locations near degreasing, cleaning, or spraying operations. The heat and rays of the arc can react with vapors to form highly toxic and irritating gases.
Do not weld on coated metals, such as galvanized, lead, or cadmium plated steel, unless the coating is removed from the weld area, the area is well ventilated, and if necessary, while wearing an air-supplied respirator. The coatings and any metals containing these elements can give off toxic fumes if welded.

**WELDING can cause fire or explosion.**
Welding on closed containers, such as tanks, drums, or pipes, can cause them to blow up. Sparks can fly off from the welding arc. The flying sparks, hot workpiece, and hot equipment can cause fires and burns. Accidental contact of electrode to metal objects can cause sparks, explosion, overheating, or fire. Check and be sure the area is safe before doing any welding. Protect yourself and others from flying sparks and hot metal. Do not weld where flying sparks can strike flammable material. Remove all flammables within 35 ft (10.7 m) of the welding arc. If this is not possible, tightly cover them with approved covers. Be alert that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas. Watch for fire, and keep a fire extinguisher nearby. Be aware that welding on a ceiling, floor, bulkhead, or partition can cause fire on the hidden side. Do not weld on closed containers such as tanks, drums, or pipes, unless they are properly prepared Connect work cable to the work as close to the welding area as practical to prevent welding current from travelling long, possibly unknown paths and causing electric shock and fire hazards. Do not use welder to thaw frozen pipes. Remove stick electrode from holder or cut off welding wire at contact tip when not in use. Wear oil-free protective garments such as leather gloves, heavy shirt, cuff-less trousers, high shoes, and a cap. Remove any combustibles, such as a butane lighter or matches, from your person before doing any welding.

**FLYING METAL can injure eyes.**
Welding, chipping, wire brushing, and grinding cause sparks and flying metal. As welds cool, they can throw off slag. Wear approved safety glasses with side shields even under your welding helmet.

**BUILDUP OF GAS can injure or kill.**
Shut off shielding gas supply when not in use. Always ventilate confined spaces or use approved air-supplied respirator.

**HOT PARTS can cause severe burns.**
Do not touch hot parts bare handed. Allow cooling period before working on gun or torch.

**MAGNETIC FIELDS can affect pacemakers.**
Pacemaker wearers keep away. Wearers should consult their doctor before going near arc welding, gouging, or spot welding operations.

**NOISE can damage hearing.**
Noise from some processes or equipment can damage hearing. Wear approved ear protection if noise level is high.

**CYLINDERS can explode if damaged.**
Shielding gas cylinders contain gas under high pressure. If damaged, a cylinder can explode. Since gas cylinders are normally part of the welding process, be sure to treat them carefully. Protect compressed gas cylinders from excessive heat, mechanical shocks, slag, open flames, sparks, and arcs. Install cylinders in an upright position by securing to a stationary support or cylinder rack to prevent falling or tipping. Keep cylinders away from any welding or other electrical circuits. Never drape a welding torch over a gas cylinder. Never allow a welding electrode to touch any cylinder. Never weld on a pressurized cylinder − explosion will result. Use only correct shielding gas cylinders, regulators, hoses, and fittings designed for the specific application; maintain them and associated parts in good condition. Turn face away from valve outlet when opening cylinder valve. Keep protective cap in place over valve except when cylinder is in use or connected for use. Read and follow instructions on compressed gas cylinders, associated equipment, and CGA publication P-1 listed in Safety Standards.

**Additional precautions for installation, operation, and maintenance**

Do not install or place unit on, over, or near combustible surfaces. Do not install unit near flammables. Do not overload building wiring − be sure power supply system is properly sized, rated, and protected to handle this unit.

**FALLING UNIT can cause injury**.
Use lifting eye to lift unit only, NOT running gear, gas cylinders, or any other accessories. Use equipment of adequate capacity to lift and support unit. If using lift forks to move unit, be sure forks are long enough to extend beyond opposite side of unit.

**OVERUSE can cause OVERHEATING**
Allow cooling period; follow rated duty cycle. Reduce current or reduce duty cycle before starting to weld again. Do not block or filter airflow to unit.

**STATIC (ESD) can damage PC boards**.
Put on grounded wrist strap BEFORE handling boards or parts. Use proper static-proof bags and boxes to store, move, or ship PC boards.

**MOVING PARTS can cause injury.**
Keep away from moving parts. Keep away from pinch points such as drive rolls.

**WELDING WIRE can cause injury.**
Do not press gun trigger until instructed to do so. Do not point gun toward any part of the body, other people, or any metal when threading welding wire.

**ARC WELDING can cause interference**.
Electromagnetic energy can interfere with sensitive electronic equipment such as computers and computer-driven equipment such as robots.
Be sure all equipment in the welding area is electromagnetically compatible.
To reduce possible interference, keep weld cables as short as possible, close together, and down low, such as on the floor.
Locate welding operation 100 meters from any sensitive electronic equipment.
Be sure this welding machine is installed and grounded according to this manual.
If interference still occurs, the user must take extra measures such as moving the welding machine, using shielded cables, using line filters, or shielding the work area.

**EMF Information**

Considerations about welding and the effects of low frequency electric and magnetic fields.
Welding current, as it flows through welding cables, will cause electromagnetic fields.
There has been and still is some concern about such fields.
However, after examining more than 500 studies spanning 17 years of research, a special blue ribbon committee of the National Research Council concluded that: “The body of evidence, in the committee’s judgment, has not demonstrated that exposure to power-frequency electric and magnetic fields is a human-health hazard.”
However, studies are still going forth and evidence continues to be examined. Until the final conclusions of the research are reached, you may wish to minimize your exposure to electromagnetic fields when welding or cutting.

**To reduce magnetic fields in the workplace, use the following procedures:**
1. Keep cables close together by twisting or taping them.
2. Arrange cables to one side and away from the operator.
3. Do not coil or drape cables around your body.
4. Keep welding power source and cables as far away from operator as practical.
5. Connect work clamp to workpiece as close to the weld as possible.

**About Pacemakers:**
Pacemaker wearers consult your doctor first. If cleared by your doctor, then following the above procedures is recommended.

| | |
|---|---|
| **DECLARATION OF CONFORMITY** | CE |
| We hereby state that the machine type: | **UWW 301TP** |
| is in compliance with the directives: | 2014/30/UE (EMC)<br>2014/35/UE (LVD)<br>2011/65/UE (RoHS2) |
| and that the following standards apply: | EN IEC 60974-1:2018+A1:2019<br>EN IEC 60974-5:2019<br>IEC 60974-10:2014+A1:2015 EN 60974-10:2014+A1:2015 |
| WECO srl<br>Via S. Antonio, 22 - BELVEDERE<br>36056 TEZZE SUL BRENTA (VICENZA) ITALY<br>Tel. +39 0424 561943 - Fax +39 0424 561944<br>E-mail info@weco.it - www.weco.it | Belvedere, 20/07/2019<br><br>Amm. Giorgio Toniolo |

**Attention**

**Please use these Unitor products exclusively for the purpose indicated by WSS and only if the operator fully understands current practices and procedures. If any further information or assistance is required please contact your local WSS specialist.**