

Lasting Connections

WF 4000 CLASSIC-SMART

INSTRUCTION MANUAL





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ENGLISH

9 Rating plate

10 Meaning rating plate

11 Diagram

12 Connettori

13 Spare parts list

14 Installation kit/accessories

CE - DECLARATION OF CONFORMITY

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hereby declares that the equipment:

WF 4000 Classic
WF 4000 Smart

conforms to the EU directives:

2014/35/EU LOW VOLTAGE DIRECTIVE
2014/30/EU EMC DIRECTIVE
2011/65/EU RoHS DIRECTIVE

and that following harmonized standards have been duly applied:

EN 60974-5:2014
EN 60974-10:2015 Class A

Any operation or modification that has not been previously authorized by **SELCO s.r.l.** will invalidate this certificate.

Onara di Tombolo (PADOVA)

Selco s.r.l.



Lino Frasson
Chief Executive

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SYMBOLS



Imminent danger of serious body harm and dangerous behaviours that may lead to serious body harm



Important advice to be followed in order to avoid minor injuries or damage to property



Technical notes to facilitate operations

1 WARNING

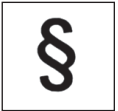


Before performing any operation on the machine, make sure that you have thoroughly read and understood the contents of this booklet. Do not perform modifications or maintenance operations which are not prescribed.

The manufacturer cannot be held responsible for damages to persons or property caused by misuse or non-application of the contents of this booklet by the user.



Please consult qualified personnel if you have any doubts or difficulties in using the equipment.



1.1 Work environment

- All equipment shall be used exclusively for the operations for which it was designed, in the ways and ranges stated on the rating plate and/or in this booklet, according to the national and international directives regarding safety. Other uses than the one expressly declared by the manufacturer shall be considered totally inappropriate and dangerous and in this case the manufacturer disclaims all responsibility.
- This equipment shall be used for professional applications only, in industrial environments. The manufacturer shall not be held responsible for any damages caused by the use of the equipment in domestic environments.
- The equipment must be used in environments with a temperature between -10°C and +40°C (between +14°F and +104°F). The equipment must be transported and stored in environments with a temperature between -25°C and +55°C (between -13°F and 131°F).
- The equipment must be used in environments free from dust, acid, gas or any other corrosive substances.
- The equipment shall not be used in environments with a relative humidity higher than 50% at 40°C (104°F). The equipment shall not be used in environments with a relative humidity higher than 90% at 20°C (68°F).
- The system must not be used at a higher altitude than 2,000 metres (6,500 feet) above sea level.



Do not use this machine to defrost pipes. Do not use this equipment to charge batteries and/or accumulators. Do not use this equipment to jump-start engines.

1.2 User's and other persons' protection



The welding process is a noxious source of radiation, noise, heat and gas emissions.



Wear protective clothing to protect your skin from the arc rays, sparks or incandescent metal. Clothes must cover the whole body and must be:

- intact and in good conditions
- fireproof
- insulating and dry
- well-fitting and without cuffs or turn-ups



Always use regulation shoes that are strong and ensure insulation from water.



Always use regulation gloves ensuring electrical and thermal insulation.



Position a fire-retardant shield to protect the surrounding area from rays, sparks and incandescent slags.

Advise any person in the area not to stare at the arc or at the incandescent metal and to get an adequate protection.



Wear masks with side face guards and a suitable protection filter (at least NR10 or above) for the eyes.



Always wear safety goggles with side guards, especially during the manual or mechanical removal of welding slag.



Do not wear contact lenses!



Use headphones if dangerous noise levels are reached during the welding. If the noise level exceeds the limits prescribed by law, delimit the work area and make sure that anyone getting near it is protected with headphones or earphones.



Avoid your hands, hair, clothes, tools ... coming into contact with moving parts such as:

- fans
- gears
- rollers and shafts
- wire reels

- Do not touch gears while the wire feed unit is working.
- The systems must not undergo any kind of modification. Bypassing the protection devices fitted on wire feed units is extremely dangerous and releases the manufacturer from any responsibility in respect of damages to either people or property.
- Always keep the side covers closed while welding.



While loading and feeding the wire, keep your head away from the MIG/MAG torch. The wire that is coming out can seriously damage your hands, face and eyes.



Avoid touching items that have just been welded: the heat could cause serious burning or scorching.

- Follow all the precautions described above also in all operations carried out after welding since slag may detach from the items while they are cooling off.
- Check that the torch is cold before working on or maintaining it.



Keep a first aid kit ready for use.
Do not underestimate any burning or injury.



Before leaving work, make the area safe, in order to avoid accidental damage to people or property.



1.3 Protection against fumes and gases

- Fumes, gases and powders produced during the welding process can be noxious for your health.
Under certain circumstances, the fumes caused by welding can cause cancer or harm the foetus of pregnant women.
- Keep your head away from any welding gas and fumes.
- Provide proper ventilation, either natural or forced, in the work area.
- In case of poor ventilation, use masks and breathing apparatus.
- In case of welding in extremely small places the work should be supervised by a colleague standing nearby outside.
- Do not use oxygen for ventilation.
- Ensure that the fumes extractor is working by regularly checking the quantity of harmful exhaust gases versus the values stated in the safety regulations.
- The quantity and the danger level of the fumes depends on the parent metal used, the filler metal and on any substances used to clean and degrease the pieces to be welded. Follow the manufacturer's instructions together with the instructions given in the technical sheets.
- Do not perform welding operations near degreasing or painting stations.
Position gas cylinders outdoors or in places with good ventilation.



1.4 Fire/explosion prevention

- The welding process may cause fires and/or explosions.
- Clear the work area and the surrounding area from any flammable or combustible materials or objects.
Flammable materials must be at least 11 metres (35 feet) from the welding area or they must be suitably protected.
Sparks and incandescent particles might easily be sprayed quite far and reach the surrounding areas even through minute openings. Pay particular attention to keep people and property safe.
- Do not perform welding operations on or near containers under pressure.
- Do not perform welding operations on closed containers or pipes.
Pay particular attention during welding operations on pipes or containers even if these are open, empty and have been cleaned thoroughly. Any residue of gas, fuel, oil or similar materials might cause an explosion.
- Do not weld in places where explosive powders, gases or vapours are present.

- When you finish welding, check that the live circuit cannot accidentally come in contact with any parts connected to the earth circuit.
- Position a fire-fighting device or material near the work area.



1.5 Prevention when using gas cylinders

- Inert gas cylinders contain pressurized gas and can explode if the minimum safe conditions for transport, storage and use are not ensured.
- Cylinders must be secured in a vertical position to a wall or other supporting structure, with suitable means so that they cannot fall or accidentally hit anything else.
- Screw the cap on to protect the valve during transport, commissioning and at the end of any welding operation.
- Do not expose cylinders to direct sunlight, sudden changes of temperature, too high or extreme temperatures. Do not expose cylinders to temperatures too low or too high.
- Keep cylinders away from naked flames, electric arcs, torches or electrode guns and incandescent material sprayed by welding.
- Keep cylinders away from welding circuits and electrical circuits in general.
- Keep your head away from the gas outlet when opening the cylinder valve.
- Always close the cylinder valve at the end of the welding operations.
- Never perform welding operations on a pressurized gas cylinder.



1.6 Protection from electrical shock

- Electric shocks can kill you.
- Avoid touching live parts both inside and outside the welding system while this is active (torches, guns, earth cables, electrodes, wires, rollers and spools are electrically connected to the welding circuit).
- Ensure the system and the welder are insulated electrically by using dry bases and floors that are sufficiently insulated from the earth.
- Ensure the system is connected correctly to a socket and a power source equipped with an earth conductor.
- Do not touch two torches or two electrode holders at the same time.
If you feel an electric shock, interrupt the welding operations immediately.



1.7 Electromagnetic fields & interferences

- The welding current passing through the internal and external system cables creates an electromagnetic field in the proximity of the welding cables and the equipment itself.
- Electromagnetic fields can affect the health of people who are exposed to them for a long time (the exact effects are still unknown).
Electromagnetic fields can interfere with some equipment like pacemakers or hearing aids.



Persons fitted with pacemakers must consult their doctor before undertaking arc welding or plasma cutting operations.

EMC equipment classification in accordance with EN/IEC 60974-10 (See rating plate or technical data)

Class B equipment complies with electromagnetic compatibility requirements in industrial and residential environments, including residential locations where the electrical power is provided by the public low-voltage supply system.

Class A equipment is not intended for use in residential locations where the electrical power is provided by the public low-voltage supply system. There may be potential difficulties in ensuring electromagnetic compatibility of class A equipment in those locations, due to conducted as well as radiated disturbances.

Installation, use and area examination

This equipment is manufactured in compliance with the requirements of the EN60974-10 harmonized standard and is identified as "CLASS A" equipment.

This unit must be used for professional applications only, in industrial environments.

The manufacturer will accept no responsibility for any damages caused by use in domestic environments.



The user must be an expert in the activity and as such is responsible for installation and use of the equipment according to the manufacturer's instructions. If any electromagnetic interference is noticed, the user must solve the problem, if necessary with the manufacturer's technical assistance.



In any case electromagnetic interference problems must be reduced until they are not a nuisance any longer.



Before installing this apparatus, the user must evaluate the potential electromagnetic problems that may arise in the surrounding area, considering in particular the health conditions of the persons in the vicinity, for example of persons fitted with pacemakers or hearing aids.

Welding cables

To minimise the effects of electromagnetic fields follow the following instructions:

- Where possible, collect and secure the earth and power cables together.
- Never coil the welding cables around your body.
- Do not place your body in between the earth and power cables (keep both on the same side).
- The cables must be kept as short as possible, positioned as close as possible to each other and laid at or approximately at ground level.
- Position the equipment at some distance from the welding area.
- The cables must be kept away from any other cables.

Earthing connection

The earth connection of all the metal components in the welding equipment and in the close area must be taken in consideration. The earthing connection must be made according to the local regulations.

Earthing the workpiece

When the workpiece is not earthed for electrical safety reasons or due to its size and position, the earthing of the workpiece may reduce the emissions. It is important to remember that the earthing of the workpiece should neither increase the risk of accidents for the user nor damage other electric equipment. The earthing must be made according to the local regulations.

Shielding

The selective shielding of other cables and equipment present in the surrounding area may reduce the problems due to electromagnetic interference. The shielding of the entire welding equipment can be taken in considered for special applications.



1.8 IP Protection rating

IP23S

- Enclosure protected against access to dangerous parts by fingers and against ingress of solid foreign bodies with diameter greater than/equal to 12.5 mm
- Enclosure protected against rain at an angle of 60°.
- Enclosure protected against harmful effects due to the ingress of water when the moving parts of the equipment are not operating.

2 INSTALLATION



Installation should be performed only by expert personnel authorised by the manufacturer.



During installation, ensure that the power source is disconnected from the mains.



2.1 Lifting, transport & unloading

- The equipment is provided with a handle for hand transportation.
- The equipment is not equipped with specific lifting elements. Use a fork lift truck paying attention during operations in order to prevent the generator from tipping over.



Do not underestimate the weight of the equipment: see technical specifications.

Do not move or position the suspended load above persons or things.



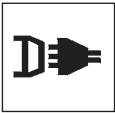
Do not drop or apply undue pressure on the equipment.



2.2 Positioning of the equipment

Keep to the following rules:

- Provide easy access to the equipment controls and connections.
- Do not position the equipment in very small spaces.
- Do not place the equipment on surfaces with inclination exceeding 10° from to the horizontal plane.
- Position the equipment in a dry, clean and suitably ventilated place.
- Protect the equipment against pouring rain and sun.



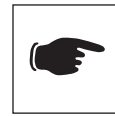
2.3 Connection

The mobile units are powered exclusively at low voltage

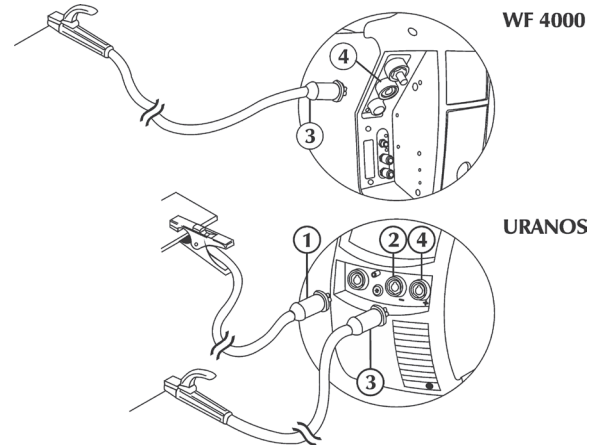


2.4 Installation

Connection for MMA welding



The connection shown in the figure produces **reverse polarity welding**. To obtain **straight polarity welding**, reverse the connection.

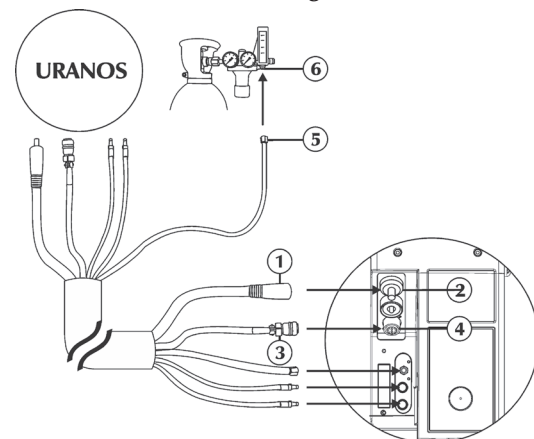




- Connect (1) the earth clamp to the negative socket (-) (2) of the power source.
- Connect (3) the electrode holder to the positive socket (+) (4) of the power source (WF).

Connection for TIG welding

Consult the "Connection for TIG welding" section (URANOS... GSM, PME, MSE - instruction manual).

Connection for MIG/MAG welding



- Disconnect the power supply from the power source.
- Connect the power cable (1) to the appropriate outlet (2). Insert the plug and turn clockwise until all parts are secured.
- Connect the signal cable (3) to the appropriate connector (4). Insert the connector and screw the ring nut clockwise until all parts are secured.
- Connect the gas hose (5) to the pressure reducing valve of the cylinder or to the gas supply connection (6).
- Connect the water pipe (blue colored ) to the outlet quick connector of the cooling unit.
- Connect the water pipe (red colored ) to the inlet quick connector of the cooling unit.

3 SYSTEM PRESENTATION

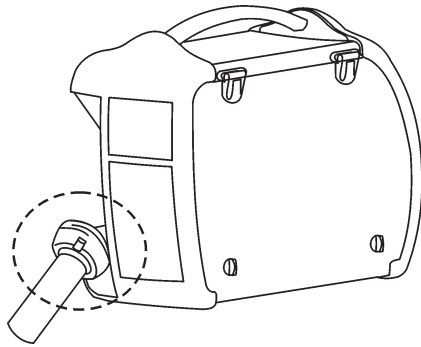
3.1 General

The wire feed unit WF 4000 is the mobile part of a complete MIG/MAG welding system which uses the URANOS 3200 GSM, PME, MSE generators.

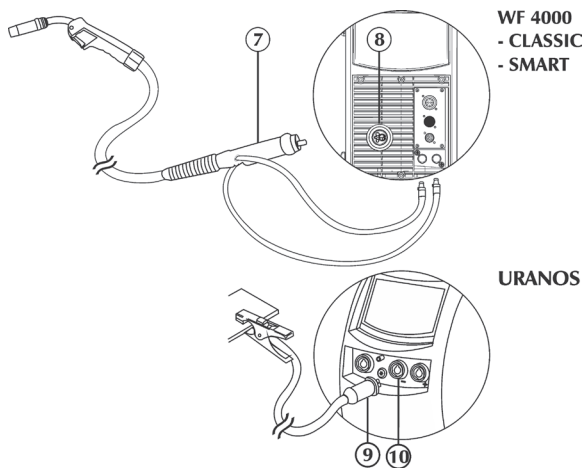
It is connected to the generator by a bundle of cables of variable length. The unit is extremely compact with the "coil" compartment fully protected from dust, chips, etc., and electrically insulated.



The wire feed is provided by a 120W robust motor with 2/4 rollers controlled by an optical encoder.

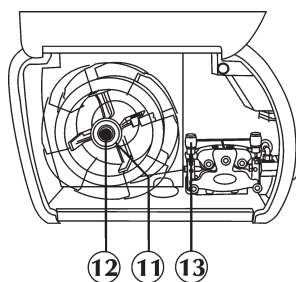
The presence of a powerful microprocessor allows full control of all the welding functions, making this system suitable for various types of welding process such as MIG/MAG, Pulsed-MIG, Double Pulsed-MIG.



- "Consult the "Installation kit/accessories" section".

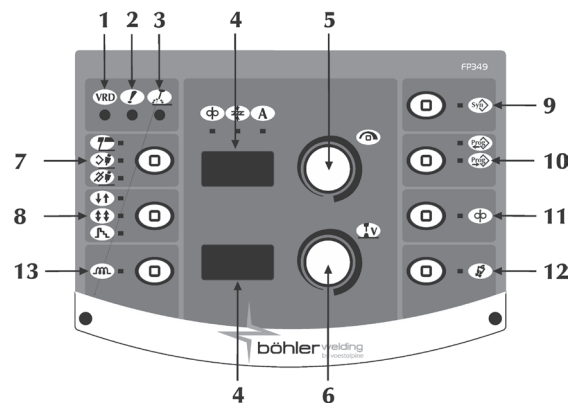









- Connect the red colored  water pipe of the torch to the inlet quick connector of the cooling unit.
- Connect the blue colored  water pipe of the torch to the outlet quick connector of the cooling unit.
- Connect the MIG torch (7) to the central adapter (8), ensuring that the fastening ring is fully tightened.
- Connect (9) the earth clamp to the negative socket (-) (10) of the power source.



- Open the right side cover.
- Check that the roller groove is consistent with the diameter of the wire you wish to use.
- Unscrew the ring nut (11) from the spindle and insert the wire spool. Insert also the spool pin, insert the spool, reposition the ring nut (11) and adjust the friction screw (12).
- Release the rolls lever of the wire feeder (13), sliding the end of the wire into the wire guide bush and, passing it over the roller, into the torch fitting. Lock the feed support in position, checking that the wire has entered the roller groove.
- To load the wire onto the torch, press the wire feed push-button.
- Adjust the gas flow from 5 to 20 l/min.

3.2 Front control panel (WF 4000 Classic)



- 1 VRD Voltage Reduction Device**
 Shows that the no-load voltage of the equipment is controlled.
- 2 General alarm**
 Indicates the possible intervention of protection devices such as the temperature protection.
- 3 Power on**
 Indicates the presence of voltage on the equipment outlet connections.
- 4 7-segment display**
Allows the general welding machine parameters to be displayed during start-up, settings, current and voltage readings, while welding, and encoding of the alarms.
- 5 Main adjustment handle**
 Allows the welding (MMA) current to be continuously adjusted.
Allows entry to set up, the selection and the setting of the welding parameters.
-  Allows continuous adjustment of the wire feed speed.
-  Allows the regulation of the welding current.
-  Allows the thickness of the part being welded to be set. Allows the setting of the system via the regulation of the part being welded.

6 Main adjustment handle



Allows the regulation of the arc voltage.
Allows regulation of the arc length during welding.
Manual MIG/MAG
High voltage = long arc
Low voltage = short arc
Minimum 5V, Maximum 55.5V
Synergic MIG/MAG
Minimum -5.0, Maximum +5.0, Default syn

7 Welding process

Allows the selection of the welding procedure.



Electrode welding (MMA)



Synergic MIG/MAG



Manual MIG/MAG

8 Welding methods

2 Step



In two step, pressing the button causes the gas to flow, feeds voltage to the wire and makes it advance; when it is released, the gas, the voltage and the wire feed are turned off.

4 Step



In four step first pressure on the button causes the gas to flow with a manual pre-gas time; releasing it activates the voltage to the wire and its feed.

The following pressure on the button stops the wire and causes the final process to start which brings the current back to zero; finally releasing the button turns off the gas flow.

Crater filler



Allows welding to be done with three different power levels able to be directly selected and controlled by the welder using the torch button.

The first pressure on the button causes the gas to flow, activates the voltage to the wire and feeds it at the speed set by the "initial increment" parameter (during set up) and with the relative synergic values of the welding parameters.

When the torch button is released, the wire speed and the relative synergic parameters change automatically to the main values set on the control panel.

The next pressure on the torch button brings the wire speed and the relative synergic parameters to the preset (during set up) crater filler parameter values.

Releasing the torch button stops the wire feed and supplies the power for the burn back and post-gas stages.

9 Synergy



Lets you select a preset welding program (synergy) by choosing a few simple settings:

- wire type
- gas type
- wire diameter

STANDARD MIG/MAG

	Ø (mm)			
	0,8	1.0	1.2	1.6
G3/4 Si1 CO ₂	S 2	S 3	S 4	S 5*
G3/4 Si1 Ar 18%CO ₂	S 7	S 8	S 9	S 10*
CrNi 19 9 Ar 2%CO ₂	S 12	S 13	S 14	S 15*
AlMg5 Ar	S 17	S 18	S 19	S 20*
AlSi5 Ar	S 22	S 23	S 24	S 25*
Al99,5 Ar	S 27	S 28	S 29	S 30*
CuAl8 Ar	S 32	S 33	S 34	S 35*
CuSi3 Ar	S 37	S 38	S 39	S 40*
Basic FCW Ar 18%CO ₂	/	/	S 42	S 44
Rutil FCW Ar 18%CO ₂	/	/	S 46	S 48
Metal FCW Ar 18%CO ₂	/	/	S 50	S 52
CrNi 19 9 FCW Ar 18%CO ₂	/	/	S 54	S 56

* URANOS 4000-5000

PULSED MIG

	Ø (mm)			
	0,8	1.0	1.2	1.6
G3/4 Si1 CO ₂	P 2	P 3	P 4	P 5*
G3/4 Si1 Ar 18%CO ₂	P 7	P 8	P 9	P 10*
CrNi 19 9 Ar 2%CO ₂	P 12	P 13	P 14	P 15*
AlMg5 Ar	P 17	P 18	P 19	P 20*
AlSi5 Ar	P 22	P 23	P 24	P 25*
Al99,5 Ar	P 27	P 28	P 29	P 30*
CuAl8 Ar	P 32	P 33	P 34	P 35*
CuSi3 Ar	P 37	P 38	P 39	P 40*
Basic FCW Ar 18%CO ₂	/	/	P 42	P 44
Rutil FCW Ar 18%CO ₂	/	/	P 46	P 48
Metal FCW Ar 18%CO ₂	/	/	P 50	P 52
CrNi 19 9 FCW Ar 18%CO ₂	/	/	P 54	P 56

* URANOS 4000-5000

10 Programs

Allows the storage and management of 64 welding programs which can be personalised by the operator.



Program storage

Enter the "program storage" menu by pressing button (10) for at least 1 second.

Select the required program (or the empty memory) by rotating the encoder.

Confirm the operation by pressing button-encoder (5).



Program retrieval

Retrieve the 1st program available by pressing button (10).

Select the required program by pressing button (10).

Select the required program by rotating the encoder.

Only the memories location occupied by a program are retrieved, while the empty ones are automatically skipped.

11 Wire feed



Allows the manual wire feed without gas flow and without the wire live.

Allows the insertion of the wire into the torch sheath during the welding preparation phases.

12 Gas test button



Allows the gas circuit to be cleansed of impurities and the carrying out of the appropriate preliminary gas pressure and flow adjustments, without power on.

13 Inductance



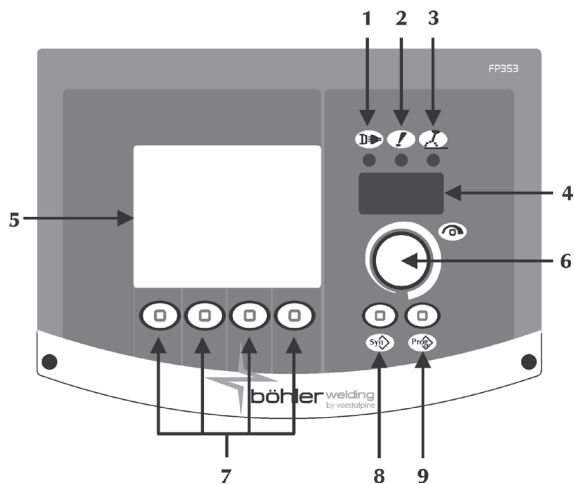
Allows electronic regulation of the series inductance of the welding circuit.







Low inductance = reactive arc (more spatter).

High inductance = less reactive arc (less spatter).

Minimum -30, Maximum +30, Default syn

3.3 Front control panel (WF 4000 Smart)



- 1 **Power supply**
 Indicates that the equipment is connected to the mains and is on.
- 2 **General alarm**
 Indicates the possible intervention of protection devices such as the temperature protection (consult the "Alarm codes" section).
- 3 **Power on**
 Indicates the presence of voltage on the equipment outlet connections.
- 4 **7-segment display**
 Allows the general welding machine parameters to be displayed during start-up, settings, current and voltage readings, while welding, and encoding of the alarms.
- 5 **LCD display (3.5")**
 Allows the general welding machine parameters to be displayed during start-up, settings, current and voltage readings, while welding, and encoding of the alarms. Allows all the operations to be displayed instantaneously.
- 6 **Main adjustment handle**
 Allows entry to set up, the selection and the setting of the welding parameters.
- 7 **Processes/functions**
 Let you select the various system functions (welding process, welding mode, current pulse, graphic mode, etc.).
- 8 **Synergy**
 Lets you select a preset welding program (synergy) by choosing a few simple settings:
 - wire type
 - gas type
 - wire diameter
- 9 **Programs**
 Allows the storage and management of 64 welding programs which can be personalised by the operator.

3.4 Starting Screen (WF 4000 Smart)

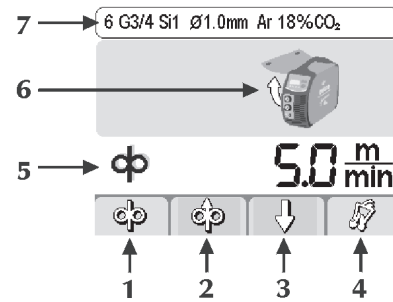
When switched on, the generator performs a succession of checks in order to guarantee the correct operation of the system and of all the devices connected to it.







At this stage the gas test is also carried out to check the proper connection to the gas supply system (system for automation and robotics).

3.5 Test screen (WF 4000 Smart)

When the side panel (coil compartment) is open, the welding operations are inhibited.

The test screen appears on the LCD display.

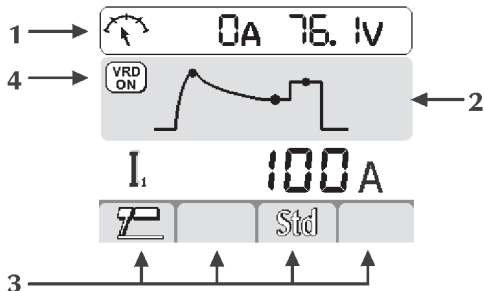


- 1  Wire feed
- 2  Wire withdrawal (automation and robotics)
- 3  Compressed air test (automation and robotics)
- 4  Gas test
- 5 **Wire speed**
 Allows the regulation of the wire feed rate.
 Minimum 1 m/min, Maximum 22 m/min, Default 1.0m/min
- 6  Side panel open
- 7 **Heading**
 Allows the display of certain pieces of important information relating to the selected process.

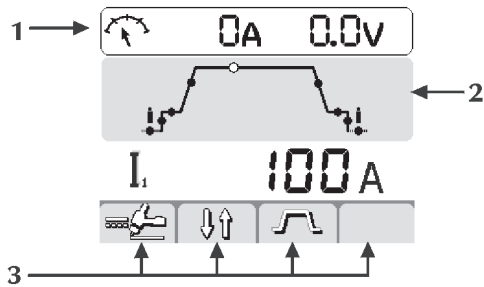
3.6 Main Screen (WF 4000 Smart)

Allows the control of the system and of the welding process, showing the main settings.

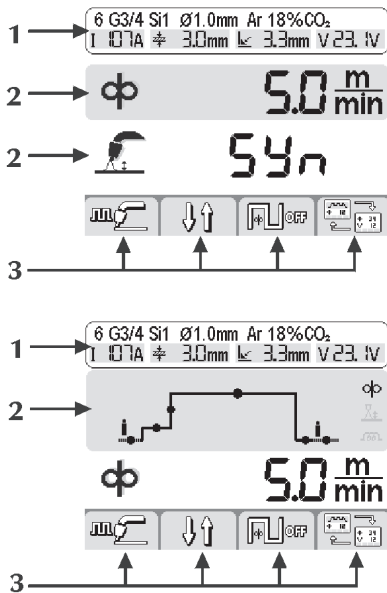
MMA



TIG DC

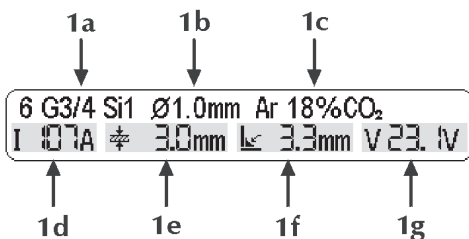


MIG/MAG



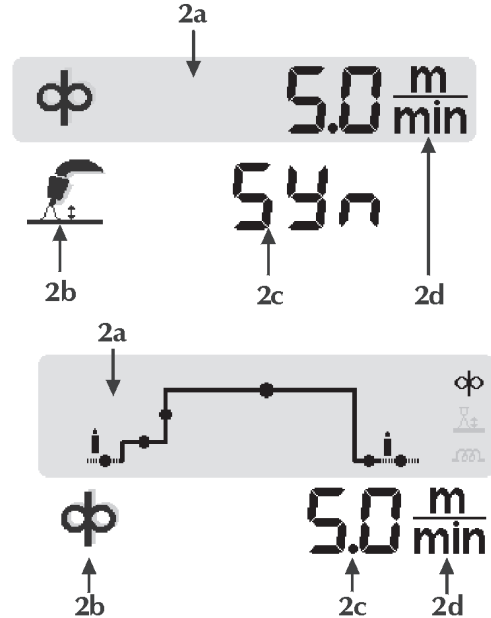
1 Heading

Allows the display of certain pieces of important information relating to the selected process:



- The synergic curve selected
 - 1a Type of filler metal
 - 1b Wire diameter
 - 1c Type of gas
- Welding parameters
 - 1d Welding current
 - 1e Part thickness
 - 1f Corner bead
 - 1g Welding voltage

2 Welding parameters



2a Welding parameters

Select the required parameter by pressing the encoder button.

Adjust the value of the selected parameter by rotating the encoder.

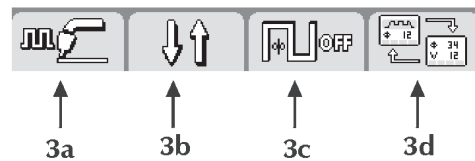
2b Parameter icon

2c Parameter value

2d Unit of measurement of the parameter





3 Functions

Allow the setting of the most important process functions and welding methods.



3a

Allows the selection of the welding process

-  MMA
-  TIG DC
-  MIG/MAG
-  Pulsed MIG

3b

TIG DC

Allows the selection of the welding method



MIG/MAG - Pulsed MIG

Allows the selection of the welding method



3c

MMA



Synergy

Allows you to set the best arc dynamics, selecting the type of electrode used:

- STD Basic/Rutile
- CLS Cellulose
- CrNi Steel
- Alu Aluminium
- Cast iron Cast iron

Selecting the correct arc dynamics enables maximum benefit to be derived from the power source to achieve the best possible welding performances.

Perfect weldability of the electrode used is not guaranteed (weldability depends on the quality of the consumables and their preservation, the operating and welding conditions, the numerous possible applications, etc.).

TIG DC Current pulsation



MIG/MAG - Pulsed MIG



3d

MIG/MAG - Pulsed MIG



4

VRD Voltage Reduction Device

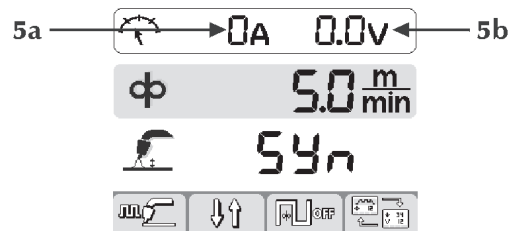


Shows that the no-load voltage of the equipment is controlled.

5

Measurements

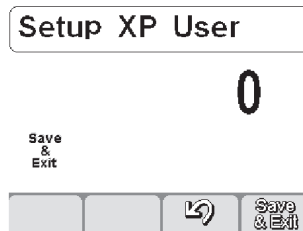
During the welding operation, the real current and voltage measurements are shown on the LCD display.



5a Welding current

5b Welding voltage

3.7 Set up (WF 4000 Smart)



Permits set up and adjustment of a series of additional parameters for improved and more accurate control of the welding system.

The parameters present at set up are organised in relation to the welding process selected and have a numerical code.

Entry to set up: by pressing the encoder key for 5 sec.

Selection and adjustment of the required parameter: by turning the encoder until displaying the numerical code relating to that parameter. If the encoder key is pressed at this point, the value set for the parameter selected can be displayed and adjusted.

Exit from set up: to quit the "adjustment" section, press the encoder again.

To exit the set up, go to parameter "0" (save and quit) and press the encoder.

List of set up parameters (MMA)

0 Save and quit

Save & Exit Allows you to save the changes and exit the set up.

1 Reset

Res Allows you to reset all the parameters to the default values.

3 Hot start

A Allows adjustment of the hot start value in MMA. Permits an adjustable hot start in the arc striking phases, facilitating the start operations. Parameter set as a percentage (%) of the welding current. Minimum Off, Maximum 500%, Default 80%

7 Welding current

I Permits adjustment of the welding current. Parameter set in Amps (A). Minimum 3A, Maximum I_{max}, Default 100A

8 Arc force



Allows adjustment of the Arc force value in MMA. Permits an adjustable energetic dynamic response in welding, facilitating the welder's operations. Parameter set as a percentage (%) of the welding current. Minimum Off, Maximum 500%, Default 30%

204 Dynamic power control (DPC)



It enables the desired V/I characteristic to be selected.

I = C Constant current

The increase or reduction in arc length has no effect on the welding current required.



Basic, Rutile, Acid, Steel, Cast iron

1 ÷ 20* Falling characteristic with adjustable slope

The increase in arc length causes a reduction in welding current (and vice versa) according to the value imposed by 1 to 20 amps per volt.



Cellulose, Aluminium

P = C* Constant power

The increase in arc length causes a reduction in the welding current (and vice versa) according to the law: $V \cdot I = K$.



Cellulose, Aluminium

* Increasing the value of the arc force to reduce the risks of sticking of the electrode.

312 Arc detachment voltage



Allows you to set the voltage value at which the electric arc switch-off is forced.

It permits improved management of the various operating conditions that occur. In the spot welding phase, for example, a low arc detachment voltage reduces re-striking of the arc when moving the electrode away from the piece, reducing spatter, burning and oxidation of the piece.

If using electrodes that require high voltages, you are advised to set a high threshold to prevent arc extinction during welding.



Never set an arc detachment voltage higher than the no-load voltage of the power source.

Parameter set in Volts (V).

Minimum 0V, Maximum 99.9V, Default 57V

500



Allows the selection of the required graphic interface:
XE (Easy Mode)
XA (Advanced Mode)
XP (Professional Mode)

Allows access to the higher set-up levels:

USER: user
SERV: service
vaBW:vaBW

551 Lock/unlock



Allows the locking of the panel controls and the insertion of a protection code (consult the "Lock/unlock" section).

552 Buzzer tone



Permits adjustment of the buzzer tone. Minimum Off, Maximum 10, Default 10

601 Adjustment step



Permits adjustment of the variation step on the up-down keys.

Minimum Off, Maximum MAX, Default 1

602 CH1 External parameter



Allows the management of external parameter 1 (minimum value, maximum value).

(Consult the "External controls management" section).

751 Current reading



Allow the real value of the welding current to be displayed.

Allows the welding current display method to be set (consult the "Interface personalisation" section).

752 Voltage reading



Allows the real value of the welding voltage to be displayed.

Allows the welding voltage display method to be set (consult the "Interface personalisation" section).

List of set up parameters (TIG) (URANOS... PME, MSE)

0 Save and quit



Allows you to save the changes and exit the set up.

1 Reset



Allows you to reset all the parameters to the default values.

7 Welding current



Permits adjustment of the welding current.

Parameter set in Amps (A).

Minimum 3A, Maximum I_{max}, Default 100A

500



Allows the selection of the required graphic interface:

XE (Easy Mode)

XA (Advanced Mode)

XP (Professional Mode)

Allows access to the higher set-up levels:

USER: user

SERV: service

vaBW:vaBW

551 Lock/unlock



Allows the locking of the panel controls and the insertion of a protection code (consult the "Lock/unlock" section).

552 Buzzer tone



Permits adjustment of the buzzer tone.

Minimum Off, Maximum 10, Default 10

601 Adjustment step



Permits adjustment of the variation step on the up-down keys.

Minimum Off, Maximum MAX, Default 1

602 CH1, CH2, CH3, CH4 External parameter



Allows the management of external parameter 1 (minimum value, maximum value, default value, parameter selected).

(Consult the "External controls management" section).

751 Current reading



Allow the real value of the welding current to be displayed.

Allows the welding current display method to be set (consult the "Interface personalisation" section).

752 Voltage reading



Allows the real value of the welding voltage to be displayed.
Allows the welding voltage display method to be set (consult the "Interface personalisation" section).

801 Guard limits



Allows the setting of the warning limits and of the guard limits.
Allows the accurate control of the various welding phases (consult the "Guard limits" section).

List of set up parameters (TIG) (URANOS... GSM)

0 Save and quit



Allows you to save the changes and exit the set up.

1 Reset



Allows you to reset all the parameters to the default values.

2 Pre-gas



Allows you to set and adjust the gas flow prior to striking of the arc.
Permits filling of the torch with gas and preparation of the environment for welding.
Minimum 0.0sec., Maximum 99.9sec., Default 0.1sec.

3 Initial current



Allows regulation of the weld starting current.
Allows a hotter or cooler welding pool to be obtained immediately after the arc striking.
Parameter setting: Amperes (A) - Percentage (%).
Minimum 3A-1%, Maximum I_{max}-500%, Default 50%

5 Initial current time



Allows setting of the time for which the initial current is maintained.
Parameter setting: seconds (s).
Minimum off, Maximum 99.9s, Default off

6 Slope-up



Allows you to set a gradual passage between the initial current and the welding current. Parameter set in seconds (s).
Minimum off, Maximum 99.9s, Default off

7 Welding current



Permits adjustment of the welding current.
Parameter set in Amps (A).
Minimum 3A, Maximum I_{max}, Default 100A

8 Bilevel current



Permits adjustment of the secondary current in the bilevel welding mode.
On first pressing the torch button, the pre-gas starts, the arc strikes and the initial current will be used when welding.
On first releasing it, the raising ramp of the welding current "I1" occurs. If the welder now presses and releases the button quickly, "I2" can be used; by pressing and releasing it quickly again, "I1" is used again, and so on.
If you press the button for a longer time, the lowering ramp for the current starts, thus reaching the final current.
By releasing the button again, the arc goes out and the gas continues to flow for the post-gas stage.
Parameter setting: Amperes (A) - Percentage (%).
Minimum 3A-1%, Maximum I_{max}-500%, Default 50%

10 Basic current



Permits adjustment of the basic current in pulsed and fast pulse modes.
Parameter set in Amps (A).
Minimum 3A-1%, Maximum Weld current-100%, Default 50%

12 Pulsed frequency



Allows activation of the pulse mode.
Allows regulation of the pulse frequency.
Allows better results to be obtained in the welding of thin materials and better aesthetic quality of the bead.
Parameter setting: Hertz (Hz) - KiloHertz (kHz).
Minimum 0.1Hz, Maximum 250Hz, Default off

13 Pulsed duty cycle



Allows regulation of the duty cycle in pulse welding.
Allows the peak current to be maintained for a shorter or longer time.
Parameter setting: percentage (%).
Minimum 1%, Maximum 99%, Default 50%

14 Fast Pulse frequency



Allows regulation of the pulse frequency.
Allows focusing action and better stability of the electric arc to be obtained.
Parameter setting: KiloHertz (kHz).
Minimum 0.02kHz, Maximum 2.5kHz, Default off

15 Pulsed slopes



Allows setting of a slope time during the pulse operation.
Allows a smooth step to be obtained between the peak current and the basic current, having a more or less soft welding arc.
Parameter setting: percentage (%).
Minimum off, Maximum 100%, Default off

16 Slope-down



Allows you to set a gradual passage between the welding current and the final current.
Parameter set in seconds (s).
Minimum off, Maximum 99.9s, Default off

17 Final current



Permits adjustment of the final current.
Parameter set in Amps (A).
Minimum 3A-1%, Maximum I_{max}-500%, Default 10A

19 Final current time



Makes it possible to set the time for which the final current is maintained.
Parameter setting: seconds (s).
Minimum off, Maximum 99.9s, Default off

20 Post-gas



Permits setting and adjustment of the gas flow at the end of welding.
Minimum 0.0s, Maximum 99.9s, Default syn

203 Tig start (HF)



Allows selection of the required arc striking modes.
Off=LIFT START, On= HF START, Default HF START

204 Spot welding



Allows you to enable the "spot welding" process and establish the welding time.
Allows the timing of the welding process.
Parameter setting: seconds (s).
Minimum off, Maximum 99.9s, Default off

205 Restart




Allows the activation of the restart function.
Allows the immediate extinguishing of the arc during the down slope or the restarting of the welding cycle.
Default On


206 (TIG DC) Easy joining





Allows striking of the arc in pulsed current and timing of the function before the automatic reinstatement of the pre-set welding conditions.
Allows greater speed and accuracy during tack welding operations on the parts.
Parameter setting: seconds (s).
Minimum 0.1s, Maximum 25.0s, Default off


- 500**  Allows the selection of the required graphic interface:
XE (Easy Mode)
XA (Advanced Mode)
XP (Professional Mode)


Allows access to the higher set-up levels:
USER: user
SERV: service
vaBW:vaBW


- 551**  **Lock/unlock**
Allows the locking of the panel controls and the insertion of a protection code (consult the "Lock/unlock" section).


- 552**  **Buzzer tone**
Permits adjustment of the buzzer tone.
Minimum Off, Maximum 10, Default 10


- 601**  **Adjustment step**
Permits adjustment of the variation step on the up-down keys.
Minimum Off, Maximum MAX, Default 1

- 602**  **CH1, CH2, CH3, CH4 External parameter**
Allows the management of external parameter 1 (minimum value, maximum value, default value, parameter selected).
(Consult the "External controls management" section).









- 606**  **U/D torch**
Allows the management of the external parameter (CH1) (parameter selected).


- 751**  **Current reading**
Allow the real value of the welding current to be displayed.
Allows the welding current display method to be set (consult the "Interface personalisation" section).


- 752**  **Voltage reading**
Allows the real value of the welding voltage to be displayed.
Allows the welding voltage display method to be set (consult the "Interface personalisation" section).


- 801**  **Guard limits**
Allows the setting of the warning limits and of the guard limits.
Allows the accurate control of the various welding phases (consult the "Guard limits" section).


List of set up parameters (MIG/MAG-Pulsed MIG) (URANOS... GSM, PME, MSE)


- 0**  **Save and quit**
Allows you to save the changes and exit the set up.
- 1**  **Reset**
Allows you to reset all the parameters to the default values.
- 2**  **Synergy**
Allows selection of the manual MIG ( Off) or synergic MIG ( 6) process by setting the type of material to be welded.
(Consult the "Synergic curves screen" section).
- 3**  **Wire speed**
Allows the regulation of the wire feed rate.
Minimum 0.5 m/min, Maximum 22 m/min
- 4**  **Current**
Allows the regulation of the welding current.
Minimum 6A, Maximum I_{max}
- 5**  **Part thickness**
Allows the thickness of the part being welded to be set.
Allows the setting of the system via the regulation of the part being welded.


- 6**  **Corner bead**
Lets you set bead depth in a corner joint.


- 7**  **Arc length**
Allows regulation of the arc length during welding.
Minimum -5.0, Maximum +5.0, Default syn


- 10**  **Pre-gas**
Allows you to set and adjust the gas flow prior to striking of the arc.
Permits filling of the torch with gas and preparation of the environment for welding.
Minimum off, Maximum 25 sec., Default 0.1 sec.


- 11**  **Soft start**
Permits adjustment of the wire feed speed in the phases prior to arc striking.
Given as a % of the wire speed set.
Permits striking at reduced speed, therefore softer and with less spatter.
Minimum 10%, Maximum 100%, Default 50%


- 15**  **Burn back**
Permits adjustment of the wire burn time, preventing sticking at the end of welding.
Permits adjustment of the length.
Permits adjustment of the length of the piece of wire outside the torch.
Minimum -2.00, Maximum +2.00, Default syn




- 16**  **Post-gas**
Permits setting and adjustment of the gas flow at the end of welding.
Minimum off, Maximum 10 sec., Default 2 sec.


- 20**  **Double pulsed**
Allows enablement of the "Double Pulsed" function.
Allows regulation of the pulsation amplitude.
Minimum 0%, Maximum 100%, Default ±25%


- 21**  **Pulse frequency**
Allows the impulse frequency to be regulated.
Minimum 0.1Hz, Maximum 5.0Hz, Default 2.0Hz















- 22**  **Secondary voltage**
Allows regulation of the secondary pulsation level voltage.
Makes it possible to obtain greater arc stability during the various pulsation phases.
Minimum -5.0, Maximum +5.0, Default syn






- 23**  **Pulsed slopes (double pulsed)**
Allows setting of a slope time during the pulse operation.
Parameter setting: percentage (%).
Minimum 1%, Maximum 100%, Default off

- 24**  **Bilevel (4 Step - crater filler)**
Permits adjustment of the secondary wire speed in the bilevel welding mode.
If the welder now presses and releases the button quickly, " " can be used; by pressing and releasing it quickly again, " " is used again, and so on.
Parameter setting: Percentage (%).
Minimum 1%, Maximum 99%, Default off




- 25**  **Initial increment**
Allows regulation of the wire speed value during the first "crater-filler" welding phase.
Makes it possible to increase the energy supplied to the part during the phase when the material (still cold) requires more heat in order to melt evenly.
Minimum 20%, Maximum 200%, Default 120%

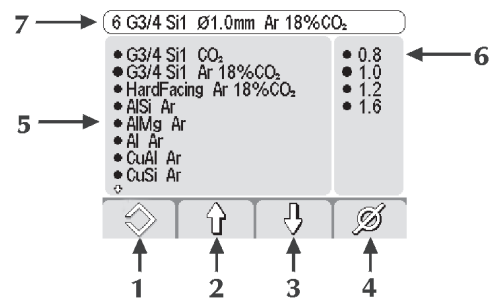
- 26**  **Crater filler**
Allows regulation of the wire speed value during the weld closing phase.
Makes it possible to reduce the energy supplied to the part during the phase when the material is already very hot, thus reducing the risk of unwanted deformations.
Minimum 20%, Maximum 200%, Default 80%



- 27 Initial increment time**
 Lets you set the initial increment time. Lets you automate the "crater filler" function.
 Minimum 0.1s, Maximum 99.9s, Default Off
- 28 Crater filler time**
 Lets you set the "crater filler" time. Lets you automate the "crater filler" function.
 Minimum 0.1s, Maximum 99.9s, Default Off
- 29 (Crater filler) slope**
 Allows you to set a gradual passage between the initial wire speed (initial increment) and the final wire speed (crater filler).
 Parameter set in seconds (s).
 Minimum 0.1s, Maximum 10.0s, Default off
- 30 Spot welding**
 Allows you to enable the "spot welding" process and establish the welding time.
 Minimum 0.1s, Maximum 25s, Default off
- 31 Pause point**
 Allows you to enable the "pause point" process and establish the pause time between one welding operation and another.
 Minimum 0.1s, Maximum 25s, Default off
- 202 Inductance**
 Allows electronic regulation of the series inductance of the welding circuit.
 Makes it possible to obtain a quicker or slower arc to compensate for the welder's movements and for the natural welding instability.
 Low inductance = reactive arc (more spatter).
 High inductance = less reactive arc (less spatter).
 Minimum -30, Maximum +30, Default syn
- 330 Voltage**
 Lets you set welding voltage.
- 399 Welding speed**
 Lets you set welding speed.
 Minimum 1cm/min, Maximum 500cm/min, Default 35cm/min (reference speed for manual welding)
- 500**
 Allows the selection of the required graphic interface:
 XE (Easy Mode)
 XA (Advanced Mode)
 XP (Professional Mode)
 Allows access to the higher set-up levels:
 USER: user
 SERV: service
 vaBW:vaBW
- 551 Lock/unlock**
 Allows the locking of the panel controls and the insertion of a protection code (consult the "Lock/unlock" section).
- 552 Buzzer tone**
 Permits adjustment of the buzzer tone.
 Minimum Off, Maximum 10, Default 10
- 601 Regulation step**
 Allows the regulation of a parameter with a step that can be personalised by the operator.
 Minimum 1, Maximum I_{max}, Default 1
- 602 External parameter CH1, CH2, CH3, CH4**
 Allows the management of external parameter (minimum value, maximum value, default value, parameter selected).
 (Consult the "External controls management" section).
- 606 U/D torch**
 Allows the management of the external parameter (CH1) (parameter selected).

- 705 Circuit resistance calibration**
 Lets you calibrate the system.
 Press the encoder knob to access parameter 705.
 Place the tip of the wire guide in electrical contact with the work piece.
 Press and hold the torch trigger for at least 1 s.
- 751 Current reading**
 Allow the real value of the welding current to be displayed.
 Allows the welding current display method to be set (consult the "Interface personalisation" section).
- 752 Voltage reading**
 Allows the real value of the welding voltage to be displayed.
 Allows the welding voltage display method to be set (consult the "Interface personalisation" section).
- 760 (Motor) Current reading**
 Allow the real value of the (motor) current to be displayed.
- 801 Guard limits**
 Allows the setting of the warning limits and of the guard limits.
 Allows the accurate control of the various welding phases (consult the "Guard limits" section).

3.8 Synergic curves screen (WF 4000 Smart)

- 1 General**
 Allows the selection of the required welding method.
- Manual welding method**
 Off Allows the manual setting and regulation of each individual welding parameter (MIG/MAG).
- Synergic welding method**
 1÷60 Makes it possible to use a series of pre-settings (synergic curves) available in the memory system.
 The changing and correction of the initial settings proposed by the system is allowed.



- 1**
 It allows the selection of:
 synergic MIG
 manual MIG



Select however one of suggested synergies (5-6) in order to take advantage of ignition potentiality, closing arc features....

2/3

Lets you select:

- type of filler material
- gas type

4

Lets you select:

- wire diameter

5

- Type of filler material

- Gas type

6 Wire diameter

7 Header

(See the "Main screen" section).

NO PROGRAM

Indicates that the selected synergic program is not available or is not consistent with the other system settings.

2 Synergic curves

STANDARD MIG/MAG

	Ø (mm)			
	0,8	1.0	1.2	1.6
G3/4 Si1 CO ₂	S 2	S 3	S 4	S 5*
G3/4 Si1 Ar 18%CO ₂	S 7	S 8	S 9	S 10*
CrNi 19 9 Ar 2%CO ₂	S 12	S 13	S 14	S 15*
AlMg5 Ar	S 17	S 18	S 19	S 20*
AlSi5 Ar	S 22	S 23	S 24	S 25*
Al99,5 Ar	S 27	S 28	S 29	S 30*
CuAl8 Ar	S 32	S 33	S 34	S 35*
CuSi3 Ar	S 37	S 38	S 39	S 40*
Basic FCW Ar 18%CO ₂	/	/	S 42	S 44
Rutil FCW Ar 18%CO ₂	/	/	S 46	S 48
Metal FCW Ar 18%CO ₂	/	/	S 50	S 52
CrNi 19 9 FCW Ar 18%CO ₂	/	/	S 54	S 56

* URANOS 4000-5000

PULSED MIG

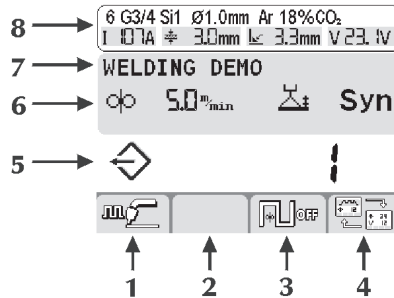
	Ø (mm)			
	0,8	1.0	1.2	1.6
G3/4 Si1 CO ₂	P 2	P 3	P 4	P 5*
G3/4 Si1 Ar 18%CO ₂	P 7	P 8	P 9	P 10*
CrNi 19 9 Ar 2%CO ₂	P 12	P 13	P 14	P 15*
AlMg5 Ar	P 17	P 18	P 19	P 20*
AlSi5 Ar	P 22	P 23	P 24	P 25*
Al99,5 Ar	P 27	P 28	P 29	P 30*
CuAl8 Ar	P 32	P 33	P 34	P 35*
CuSi3 Ar	P 37	P 38	P 39	P 40*
Basic FCW Ar 18%CO ₂	/	/	P 42	P 44
Rutil FCW Ar 18%CO ₂	/	/	P 46	P 48
Metal FCW Ar 18%CO ₂	/	/	P 50	P 52
CrNi 19 9 FCW Ar 18%CO ₂	/	/	P 54	P 56

* URANOS 4000-5000

3.9 Programs screen

1 General

Allows the storage and management of 64 welding programs which can be personalised by the operator.



1/2/3/4 Functions

5 Number of the selected program

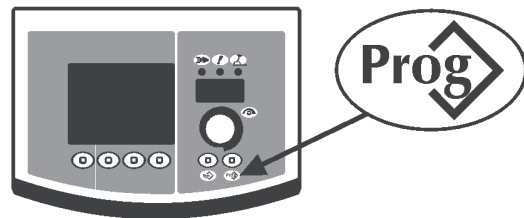
6 Main parameters of the selected program

7 Description of the selected program

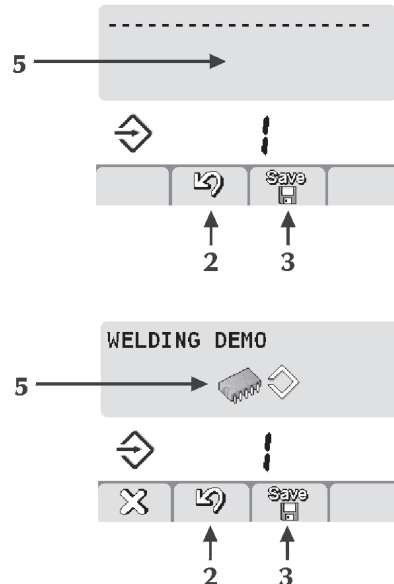
8 Heading

(consult the "Main screen" section).

2 Program storage



Enter the "program storage" menu by pressing button **Prog** for at least 1 second.




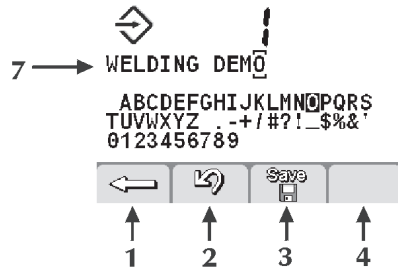
Select the required program (or the empty memory) (5) by rotating the encoder.


 Program stored


 Memory empty

Cancel the operation by pressing button (2) .

Save all the current settings on the selected program by pressing button (3) .

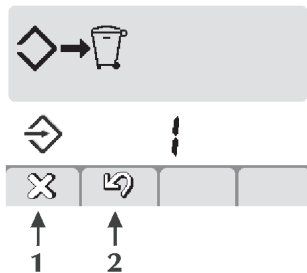



Introduce a description of the program (7).
 - Select the required letter by rotating the encoder.
 - Store the selected letter by pressing the encoder.
 - Cancel the last letter by pressing button (1) .


Cancel the operation by pressing button (2) .

Confirm the operation by pressing button (3) .

The storage of a new program on an already occupied memory location requires cancellation of the memory location by an obligatory procedure.

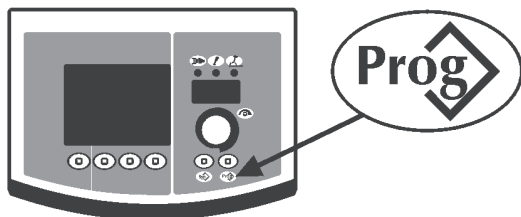



Cancel the operation by pressing button (2) .

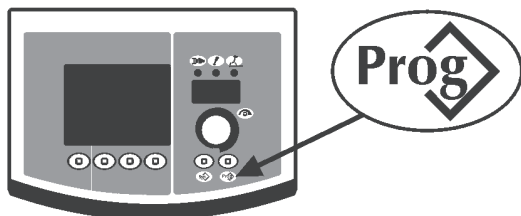
Remove the selected program by pressing button (1) .


Resume the storage procedure.

3 Program retrieval



Retrieve the 1st program available by pressing button .

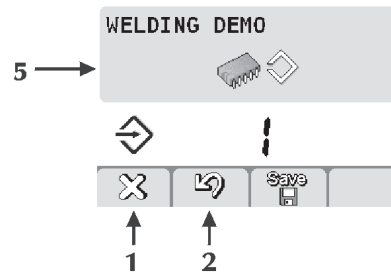



Select the required program by pressing button .


Select the required program by rotating the encoder.

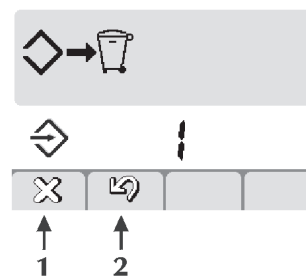
Only the memories location occupied by a program are retrieved, while the empty ones are automatically skipped.


4 Program cancellation




Select the required program by rotating the encoder.
 Delete the selected program by pressing button (1) .

Confirm the operation by pressing button (2) .









































Confirm the operation by pressing button (1) .

Cancel the operation by pressing button (2) .

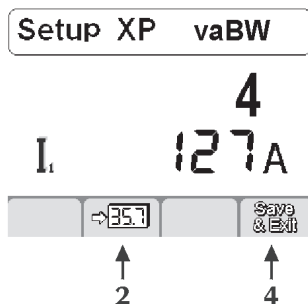
3.10 Interface personalisation (WF 4000 Smart)

Allows the parameters to be customized on the main menu.


- 500** Allows the selection of the required graphic interface:
 XE (Easy Mode)
 XA (Advanced Mode)
 XP (Professional Mode)

	PROCESS	PARAMETER
XE	MMA	I ₁
	TIG DC (URANOS... PME- MSE)	I ₁
	TIG DC (URANOS...GSM)	I ₁ I ₂  
	MIG/MAG Pulsed MIG (URANOS... GSM-PME)	     
XA	MMA	I ₁   Sy 
	TIG DC (URANOS... PME- MSE)	I ₁
	TIG DC (URANOS...GSM)	I ₁ I ₂     
	MIG/MAG Pulsed MIG (URANOS... GSM-PME)	     
XP	MMA	I ₁   Sy 
	TIG DC (URANOS... PME- MSE)	I ₁
	TIG DC (URANOS...GSM)	    I ₁ I ₂   
	MIG/MAG Pulsed MIG (URANOS... GSM-PME)	     

1 7 segment display personalisation



Enter set-up by pressing the encoder button for at least 5 seconds.

Select the required parameter by rotating the encoder. Store the selected parameter in the 7 segment display by pressing button (2) .

Save and exit the current screen by pressing button (4) .



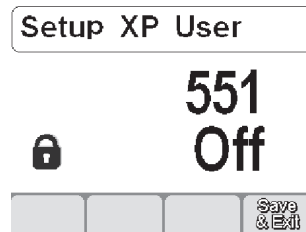
Default I1

3.11 Lock/unlock (WF 4000 Smart)

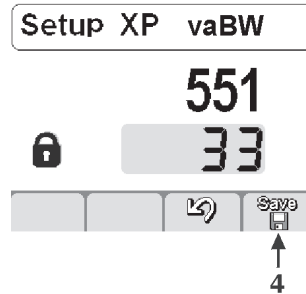
Allows all the settings to be locked from the control panel with a security password.

Enter set-up by pressing the encoder key for at least 5 seconds.

Select the required parameter (551).




Activate the regulation of the selected parameter by pressing the encoder button.

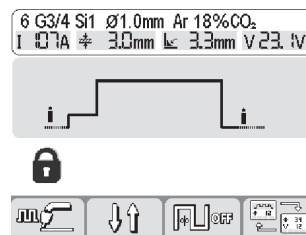


Set a numerical code (password) by rotating the encoder.

Confirm the change made by pressing the encoder button.

Save and exit the current screen by pressing button (4) .

The carrying out of any operation on a locked control panel causes a special screen to appear.



- Access the panel functionalities temporarily (5 minutes) by rotating the encoder and entering the correct password. Confirm the change made by pressing button/encoder.

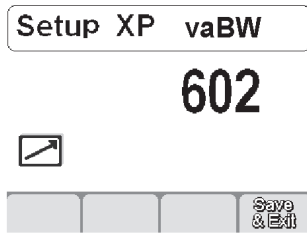
- Unlock the control panel definitively by entering set-up (follow the instructions given above) and bring back parameter 551 to "off".

Confirm the changes made by pressing button (4) .

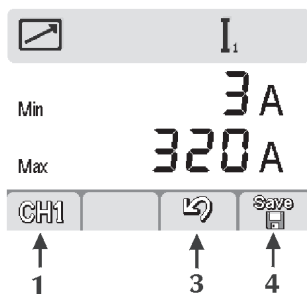
Confirm the change made by pressing the encoder.

3.12 External controls management (WF 4000 Smart)

Allows the setting of the welding parameters management method by the external devices (RC, torch...).



Enter set-up by pressing the encoder key for at least 5 seconds. Select the required parameter (602).



Enter the "External controls management" screen by pressing the encoder button.

Select the required RC remote control output (CH1, CH2, CH3, CH4) by pressing button (1).

Select the required parameter (Min-Max-parameter) by pressing the encoder button.

Adjust the required parameter (Min-Max-parameter) by rotating the encoder.

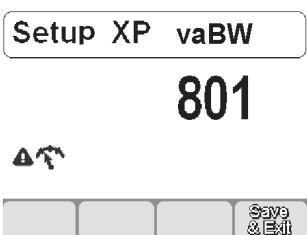
Save and exit the current screen by pressing button (4)

Cancel the operation by pressing button (3)

3.13 Guard limits (WF 4000 Smart)

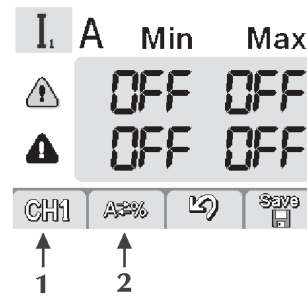
Allows the welding process to be controlled by setting warning limits MIN MAX and guard limits MIN MAX for the main measurable parameters :

- Welding current
- Welding voltage
- Automation movement



Enter set-up by pressing the encoder button for at least 5 seconds.

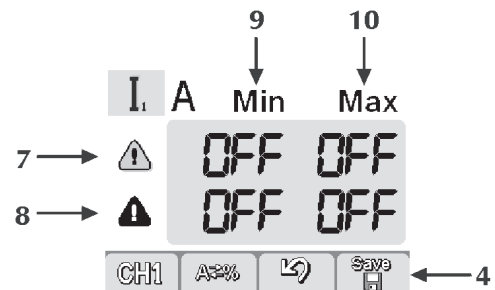
Select the required parameter (801).



Enter the "Guard limits" screen by pressing the encoder button. Select the required parameter by pressing button (1) . Select the method of setting the guard limits by pressing button (2) .

A / V Absolute value

% Percentage value



7 Warning limits line

8 Alarm limits line

9 Minimum levels column

10 Maximum levels column

Select the required box by pressing the encoder key (the selected box is displayed with reverse contrast).

Adjust the level of the selected limit by rotating the encoder.

Save and exit the current screen by pressing button (4)

E 05 A↑



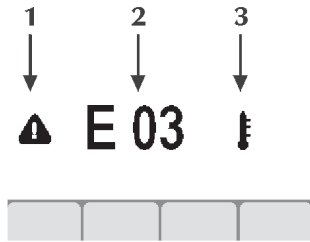
Passing one of the warning limits causes a visual signal to appear on the control panel.

Passing one of the alarm limits causes a visual signal to appear on the control panel and the immediate blockage of the welding operations.

It is possible to set start and end of welding filters to prevent error signals during the striking and extinction of the arc (consult the "Set up" section - Parameters 802-803-804).

3.14 Alarms screen

Allows the intervention of an alarm to be indicated and provides the most important indications for the solution of any problem encountered.



1 Alarm icon



2 Alarm code

E01

3 Alarm type



Alarm codes

E01, E02, E03 Temperature alarm



E07 Wire feed motor supply alarm



E08 Blocked motor alarm



E10 Power module alarm



E11, E19 System configuration alarm



E12 Communication alarm (WF - DSP)



E13 Communication alarm (FP)



E14, E15, E18 Program not valid alarm



E16 Communication alarm (RI)



E17 Communication alarm (μ P-DSP)



E20 Memory fault alarm



E21, E32 Data loss alarm



E22 LCD display alarm



E29 Incompatible measurements alarm



E30 Communication alarm (HF)



E38 Undervoltage alarm



E39, E40 System power supply alarm



E43 Coolant shortage alarm



E48 Wire out alarm



E49 Emergency switch alarm



E50 Wire stuck alarm



E51 Unsupported settings alarm



E52 Anti-collision alarm



E53 External flow switch alarm



E99 General alarm



Guard limits code

E54 Current level exceeded (Alarm)



E62 Current level exceeded (Warning)



E55 Current level exceeded (Alarm)



E63 Current level exceeded (Warning)



E56 Voltage level exceeded (Alarm)



E64 Voltage level exceeded (Warning)



E57 Voltage level exceeded (Alarm)








E65 Voltage level exceeded (Warning)

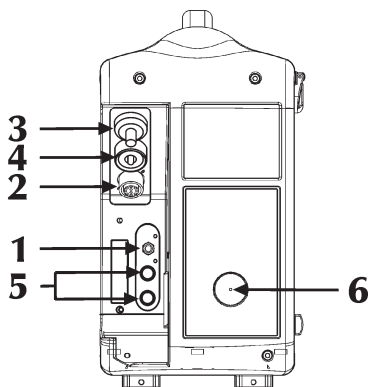


E60 Speed limit exceeded \downarrow (Alarm)



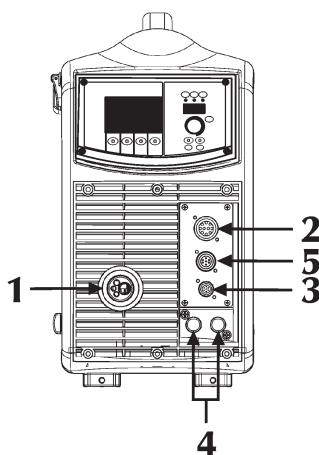
- E68 Speed limit exceeded ↓ (Warning)

- E61 Speed limit exceeded ↑ (Alarm)

- E69 Speed limit exceeded ↑ (Warning)

- E70 Incompatible "WARNING" alarm

- E71 Liquid coolant overtemperature alarm




3.15 Rear panel



- 1 Gas fitting
- 2 Signal cable input (cable bundle)
- 3 Power cable input (cable bundle)
- 4 Positive power socket (MMA)
- 5 Cooling liquid inlet/outlet
- 6 Attachment for wire holder tube

.16 Sockets panel



- 1 Torch fitting
Permits connection of the MIG torch.
- 2 External devices (Push/Pull)

- 3 Torch button connection
- 4 Cooling liquid connection
- 5 External devices (RC)


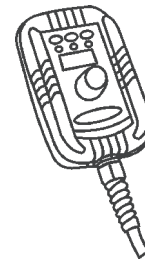
4 ACCESSORIES

4.1 General

Operation of the remote control is activated when connected to the power sources. This connection can be made also with the system power on.

With the RC control connected, the power source control panel stays enabled to perform any modification. The modifications on the power source control panel are also shown on the RC control and vice versa.

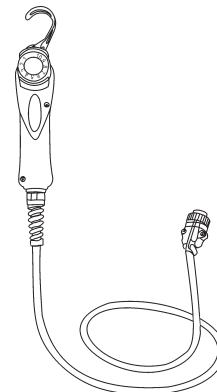
4.2 RC 100 remote control



The RC 100 is a remote control unit designed to manage the display and the adjustment of the welding current and voltage.

“Consult the instruction manual”.

4.3 RC 180 remote control



This remote control unit makes it possible to change the output current without interrupting the welding process.

“Consult the instruction manual”.

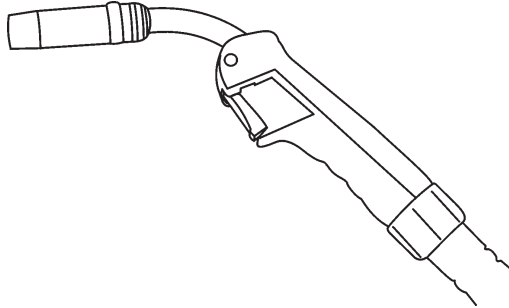
4.4 RC 200 remote control



The RC 200 is a remote control unit designed to manage the display and the adjustment of all available parameters of the power source to which it is connected.

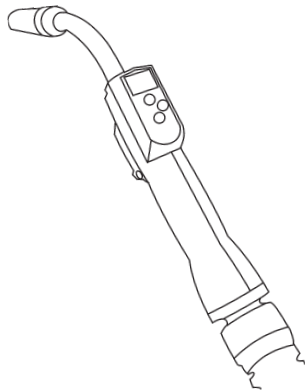
“Consult the instruction manual”.

4.5 MIG/MAG series torches



"Consult the instruction manual".

4.6 DIGIMIG - MIG/MAG series torches



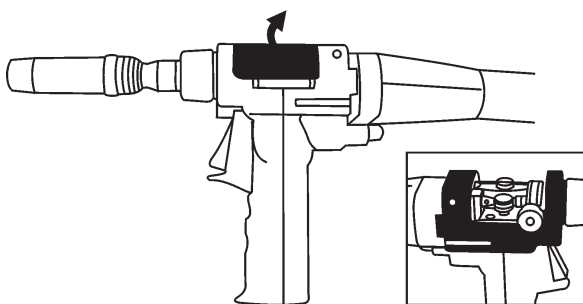
The MB501D PLUS series torches are digital MIG/MAG torches allowing the main welding parameters to be controlled:

- welding current (Synergic MIG/MAG process)
- arc length (Synergic MIG/MAG process)
- wire speed (Manual MIG/MAG process)
- welding voltage (Manual MIG/MAG process)
- program recall

and the real values to be displayed for:

- welding current
- welding voltage

4.7 Push-Pull series torches



"Consult the instruction manual".

4.8 Push-Pull kit (73.11.012)

"Consult the "Installation kit/accessories" section".

4.9 Feed unit wheels - upgrade kit (73.10.073)

"Consult the "Installation kit/accessories" section".

4.10 Feed unit wheels - upgrade kit (73.10.074)

"Consult the "Installation kit/accessories" section".

4.11 Wire feeder holder kit (73.10.075)

"Consult the "Installation kit/accessories" section".

5 MAINTENANCE



Routine maintenance must be carried out on the system according to the manufacturer's instructions.

Any maintenance operation must be performed by qualified personnel only.

When the equipment is working, all the access and operating doors and covers must be closed and locked.

Unauthorized changes to the system are strictly forbidden.

Prevent conductive dust from accumulating near the louvers and over them.



Disconnect the power supply before every operation!



Carry out the following periodic checks on the power source:

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

For the maintenance or replacement of torch components, electrode holders and/or earth cables:



Check the temperature of the component and make sure that they are not overheated.



Always use gloves in compliance with the safety standards.



Use suitable wrenches and tools.

Failure to carry out the above maintenance will invalidate all warranties and exempt the manufacturer from any liability.

6 TROUBLESHOOTING



The repair or replacement of any parts in the system must be carried out only by qualified personnel.

The repair or replacement of any parts in the system by unauthorised personnel will invalidate the product warranty. The system must not be modified in any way.

The manufacturer disclaims any responsibility if the user fails to follow these instructions.

The system fails to come on (green LED off)

- Cause No mains voltage at the socket.
 Solution Check and repair the electrical system as needed. Use qualified personnel only.
- Cause Faulty plug or cable.
 Solution Replace the faulty component. Contact the nearest service centre to have the system repaired.
- Cause Line fuse blown.
 Solution Replace the faulty component.
- Cause Faulty on/off switch.
 Solution Replace the faulty component. Contact the nearest service centre to have the system repaired.
- Cause Faulty electronics.
 Solution Contact the nearest service centre to have the system repaired.

No output power (the system does not weld)

- Cause Faulty torch trigger button.
 Solution Replace the faulty component. Contact the nearest service centre to have the system repaired.
- Cause The system has overheated (temperature alarm - yellow LED on).
 Solution Wait for the system to cool down without switching it off.
- Cause Side cover open or faulty door switch.
 Solution In order to ensure safe operation the side cover must be closed while welding. Replace the faulty component. Contact the nearest service centre to have the torch repaired.
- Cause Incorrect earth connection.
 Solution Earth the system correctly. Read the paragraph "Installation".
- Cause Mains voltage out of range (yellow LED on).
 Solution Bring the mains voltage within the power source admissible range. Connect the system correctly. Read the paragraph "Connections".
- Cause Faulty electronics.
 Solution Contact the nearest service centre to have the system repaired.

Incorrect output power

- Cause Incorrect selection in the welding process or faulty selector switch.
 Solution Select the welding process correctly.
- Cause System parameters or functions set incorrectly.
 Solution Reset the system and the welding parameters.
- Cause Faulty potentiometer/encoder for the adjustment of the welding current.
 Solution Replace the faulty component. Contact the nearest service centre to have the system repaired.

- Cause Mains voltage out of range
 Solution Connect the system correctly. Read the paragraph "Connections".
- Cause Input mains phase missing.
 Solution Connect the system correctly. Read the paragraph "Connections".
- Cause Faulty electronics.
 Solution Contact the nearest service centre to have the system repaired.

Wire feeder fails

- Cause Faulty torch trigger button.
 Solution Replace the faulty component. Contact the nearest service centre to have the system repaired.
- Cause Incorrect or worn rollers
 Solution Replace the rollers.
- Cause Faulty wire feeder.
 Solution Replace the faulty component. Contact the nearest service centre to have the system repaired.
- Cause Damaged torch liner.
 Solution Replace the faulty component. Contact the nearest service centre to have the system repaired.
- Cause No power supply to the wire feeder.
 Solution Check the connection to the power source. Read the paragraph "Connections". Contact the nearest service centre to have the system repaired.
- Cause Tangled wire on the spool.
 Solution Untangle the wire or replace the wire spool.
- Cause Melted torch nozzle (wire stuck)
 Solution Replace the faulty component.

Irregular wire feeding

- Cause Faulty torch trigger button.
 Solution Replace the faulty component. Contact the nearest service centre to have the system repaired.
- Cause Incorrect or worn rolls.
 Solution Replace the rolls.
- Cause Faulty wire feeder.
 Solution Replace the faulty component. Contact the nearest service centre to have the system repaired.
- Cause Damaged torch liner.
 Solution Replace the faulty component. Contact the nearest service centre to have the system repaired.
- Cause Incorrect spindle clutch or misadjusted rolls locking devices.
 Solution Release the clutch. Increase the rolls locking pressure.

Arc instability

Cause	Insufficient shielding gas.
Solution	Adjust the gas flow. Check that the diffuser and the gas nozzle of the torch are in good condition.
Cause	Humidity in the welding gas.
Solution	Always use quality materials and products. Ensure the gas supply system is always in perfect condition.
Cause	Incorrect welding parameters.
Solution	Check the welding system carefully. Contact the nearest service centre to have the system repaired.

Excessive spatter

Cause	Incorrect arc length.
Solution	Decrease the distance between the electrode and the piece. Decrease the welding voltage.
Cause	Incorrect welding parameters.
Solution	Decrease the welding voltage.
Cause	Incorrect arc regulation
Solution	Increase the equivalent circuit inductive value setting.
Cause	Insufficient shielding gas.
Solution	Adjust the gas flow. Check that the diffuser and the gas nozzle of the torch are in good conditions.
Cause	Incorrect welding mode.
Solution	Decrease the torch angle.

Insufficient penetration

Cause	Incorrect welding mode.
Solution	Decrease the welding travel speed.
Cause	Incorrect welding parameters.
Solution	Increase the welding current.
Cause	Incorrect electrode.
Solution	Use a smaller diameter electrode.
Cause	Incorrect edge preparation.
Solution	Increase the chamfering.
Cause	Incorrect earth connection.
Solution	Earth the system correctly Read the paragraph "Installation".
Cause	Pieces to be welded too big.
Solution	Increase the welding current.

Slag inclusions

Cause	Poor cleanliness.
Solution	Clean the pieces accurately before welding.
Cause	Electrode diameter too big.
Solution	Use a smaller diameter electrode.
Cause	Incorrect edge preparation.
Solution	Increase the chamfering.

Cause	Incorrect welding mode.
Solution	Decrease the distance between the electrode and the piece. Move regularly during all the welding operations.

Tungsten inclusions

Cause	Incorrect welding parameters.
Solution	Decrease the welding voltage. Use a bigger diameter electrode.
Cause	Incorrect electrode.
Solution	Always use quality materials and products. Sharpen the electrode carefully.
Cause	Incorrect welding mode.
Solution	Avoid contact between the electrode and the weld pool.

Blowholes

Cause	Insufficient shielding gas.
Solution	Adjust the gas flow. Check that the diffuser and the gas nozzle of the torch are in good condition.

Sticking

Cause	Incorrect arc length.
Solution	Increase the distance between the electrode and the piece. Increase the welding voltage.
Cause	Incorrect welding parameters.
Solution	Increase the welding current.
Cause	Incorrect welding mode.
Solution	Angle the torch more.
Cause	Pieces to be welded too big.
Solution	Increase the welding current. Increase the welding voltage.
Cause	Incorrect arc regulation.
Solution	Increase the equivalent circuit inductive value setting.

Undercuts

Cause	Incorrect welding parameters.
Solution	Decrease the welding voltage. Use a smaller diameter electrode.
Cause	Incorrect arc length.
Solution	Increase the distance between the electrode and the piece. Increase the welding voltage.
Cause	Incorrect welding mode.
Solution	Decrease the side oscillation speed while filling. Decrease the travel speed while welding.

Cause	Insufficient shielding gas.
Solution	Use gases suitable for the materials to be welded.

Oxidations

Cause	Insufficient gas protection.
Solution	Adjust the gas flow. Check that the diffuser and the gas nozzle of the torch are in good condition.

Porosity

Cause Grease, varnish, rust or dirt on the workpieces to be welded.
Solution Clean the workpieces carefully before welding.

Cause Grease, varnish, rust or dirt on the filler material.
Solution Always use quality materials and products.
Keep the filler metal always in perfect condition.

Cause Humidity in the filler metal.
Solution Always use quality materials and products.
Keep the filler metal always in perfect condition.

Cause Incorrect arc length.
Solution Decrease the distance between the electrode and the piece.
Decrease the welding voltage.

Cause Humidity in the welding gas.
Solution Always use quality materials and products.
Ensure the gas supply system is always in perfect condition.

Cause Insufficient shielding gas.
Solution Adjust the gas flow.
Check that the diffuser and the gas nozzle of the torch are in good condition.

Cause The weld pool solidifies too quickly.
Solution Decrease the travel speed while welding .
Pre-heat the workpieces to be welded.
Increase the welding current.

Hot cracks

Cause Incorrect welding parameters.
Solution Decrease the welding voltage.
Use a smaller diameter electrode.

Cause Grease, varnish, rust or dirt on the workpieces to be welded.
Solution Clean the workpieces carefully before welding.

Cause Grease, varnish, rust or dirt on the filler metal.
Solution Always use quality materials and products.
Keep the filler metal always in perfect condition.

Cause Incorrect welding mode.
Solution Carry out the correct sequence of operations for the type of joint to be welded.

Cause Pieces to be welded have different characteristics.
Solution Carry out buttering before welding.

Cold cracks

Cause Humidity in the filler metal.
Solution Always use quality materials and products.
Keep the filler metal always in perfect condition.

Cause Particular geometry of the joint to be welded.
Solution Pre-heat the pieces to be welded.
Carry out post-heating.
Carry out the correct sequence of operations for the type of joint to be welded.

7 WELDING THEORY

7.1 Manual Metal Arc welding (MMA)

Preparing the edges

To obtain good welding joints it is advisable to work on clean parts, free from oxidations, rust or other contaminating agents.

Choosing the electrode

The diameter of the electrode to be used depends on the thickness of the material, the position, the type of joint and the type of preparation of the piece to be welded.

Electrodes of large diameter obviously require very high currents with consequent high heat supply during the welding.

Type of coating	Property	Use
Rutile	Easy to use	All positions
Acid	High melting speed	Flat
Basic	High quality of joint	All positions

Choosing the welding current

The range of welding current related to the type of electrode used is specified by the manufacturer usually on the electrode packaging.

Striking and maintaining the arc

The electric arc is produced by scratching the electrode tip on the workpiece connected to the earth cable and, once the arc has been struck, by rapidly withdrawing the electrode to the normal welding distance.

Generally, to improve the arc striking behaviour a higher initial current is given in order to heat suddenly the tip of the electrode and so aid the arc establishing (Hot Start).

Once the arc has been struck, the central part of the electrode starts melting forming tiny globules which are transferred into the molten weld pool on the workpiece surface through the arc stream.

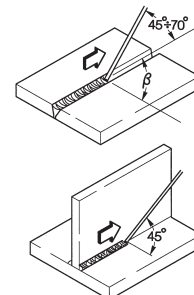
The external coating of the electrode is being consumed and this supplies the shielding gas for the weld pool, ensuring the good quality of the weld.

To prevent the molten material globules cause the extinguishing of the arc by short-circuiting and sticking the electrode to the weld pool, due to their proximity, a temporary increase of the welding current is given in order to melt the forming short-circuit (Arc Force).

If the electrode sticks to the workpiece, the short circuit current should be reduced to the minimum (antisticking).

Carrying out the welding

The welding position varies depending on the number of runs; the electrode movement is normally carried out with oscillations and stops at the sides of the bead, in such a way as to avoid an excessive accumulation of filler metal at the centre.



For any doubts and/or problems do not hesitate to contact your nearest customer service centre.

Removing the slag

Welding using covered electrodes requires the removal of the slag after each run. The slag is removed by a small hammer or is brushed away if friable.

7.2 TIG welding (continuous arc)

The TIG (Tungsten Inert Gas) welding process is based on the presence of an electric arc struck between a non-consumable electrode (pure or alloyed tungsten with an approximate melting temperature of 3370°C) and the work-piece; an inert gas (argon) atmosphere protects the weld pool.

To avoid dangerous inclusions of tungsten in the joint, the electrode must never come in contact with the workpiece; for this reason the welding power source is usually equipped with an arc striking device that generates a high frequency, high voltage discharge between the tip of the electrode and the workpiece. Thus, thanks to the electric spark, ionizing the gas atmosphere, the welding arc is struck without any contact between electrode and workpiece.

Another type of start is also possible, with reduced tungsten inclusions: the lift start, which does not require high frequency, but only an initial short-circuit at low current between the electrode and the workpiece; when the electrode is lifted, the arc is established and the current increases until reaching the set welding value.

To improve the quality of the filling at the end of the welding bead it is important to control carefully the down slope of the current and it is necessary that the gas still flows in the welding pool for some seconds after the arc is extinguished.

Under many operating conditions, it is useful to be able to use two preset welding currents and to be able to switch easily from one to the other (BILEVEL).

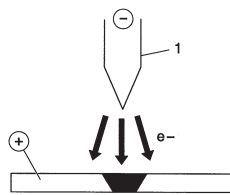
Welding polarity

D.C.S.P. (Direct Current Straight Polarity)

This is the most used polarity and ensures limited wear of the electrode (1), since 70% of the heat is concentrated in the anode (piece).

Narrow and deep weld pools are obtained, with high travel speeds and low heat supply.

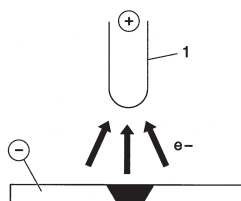
Most materials, except for aluminium (and its alloys) and magnesium, are welded with this polarity.



D.C.R.P. (Direct Current Reverse Polarity)

The reverse polarity is used for welding alloys covered with a layer of refractory oxide with higher melting temperature compared with metals.

High currents cannot be used, since they would cause excessive wear on the electrode.

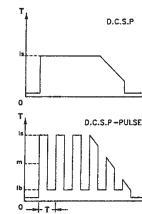


D.C.S.P.-Pulsed (Direct Current Straight Polarity Pulsed)

The use of pulsed direct current allows better control, in particular operating conditions, of the welding pool width and depth. The welding pool is formed by the peak pulses (I_p), while the basic current (I_b) keeps the arc ignited.

This operating mode helps to weld thinner metal sheets with less deformations, a better form factor and consequently a lower danger of hot cracks and gas penetration.

Increasing the frequency (MF) the arc becomes narrower, more concentrated, more stable and the quality of welding on thin sheets is further increased.



7.2.1 Steel TIG welding

The TIG procedure is very effective for welding both carbon and alloyed steel, for first runs on pipes and for welding where good appearance is important.

Straight polarity is required (D.C.S.P.).

Preparing the edges

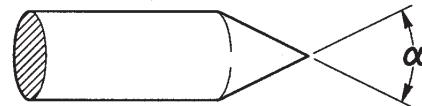
Careful cleaning and preparation of the edges are required.

Choosing and preparing the electrode

You are advised to use thorium tungsten electrodes (2% thorium-red coloured) or alternatively cerium or lanthanum electrodes with the following diameters:

Ø electrode (mm)	current range (A)
1.0	15 ÷ 75
1.6	60 ÷ 150
2.4	130 ÷ 240

The electrode must be sharpened as shown in the figure.



α (°)	current range (A)
30	0 ÷ 30
60 ÷ 90	30 ÷ 120
90 ÷ 120	120 ÷ 250

Filler metal

The filler rods must have mechanical characteristics comparable to those of the parent metal.

Do not use strips obtained from the parent metal, since they may contain working impurities that can negatively affect the quality of the welds.

Shielding gas

Typically, pure argon (99.99%) is used.

Welding current (A)	Ø Electrode (mm)	Gas nozzle n° Ø (mm)	Argon flow (l/min)
6-70	1.0	4/5 6/8.0	5-6
60-140	1.6	4/5/6 6.5/8.0/9.5	6-7
120-240	2.4	6/7 9.5/11.0	7-8

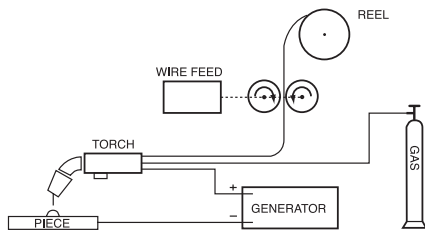
7.2.2 Copper TIG welding

Since TIG welding is a process characterized by high heat concentration, it is particularly suitable for welding materials with high thermal conductivity, like copper. For TIG welding of copper, follow the same directions as for TIG welding of steel or special instructions.

7.3 Continuous wire welding (MIG/MAG)

Introduction

A MIG system consists of a direct current power source, wire feeder, wire spool, torch and gas.



MIG manual welding system

The current is transferred to the arc through the fusible electrode (wire connected to positive pole); in this procedure the melted metal is transferred onto the workpiece through the arc stream. The automatic feeding of the continuous filler material electrode (wire) is necessary to refill the wire that has melted during welding.

Methods

In MIG welding, two main metal transfer mechanisms are present and they can be classified according to the means by which metal is transferred from the electrode to the workpiece. The first one, defined "SHORT-ARC", produces a small, fast-solidifying weld pool where metal is transferred from the electrode to the workpiece only for a short period when the electrode is in contact with the weld pool. In this timeframe, the electrode comes into direct contact with the weld pool generating a short circuit that melts the wire which is therefore interrupted. The arc then turn on again and the cycle is repeated (Fig. 1a).

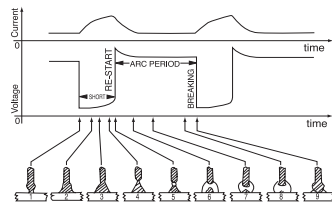


Fig. 1a

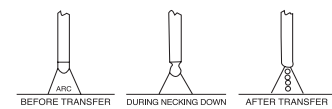


Fig. 1b

SHORT cycle (a) and SPRAY ARC welding (b)

Another mechanism for metal transfer is called the "SPRAY-ARC" method, where the metal transfer occurs in the form of very small drops that are formed and detached from the tip of the wire and transferred to the weld pool through the arc stream (Fig. 1b).

Welding parameters

The visibility of the arc reduces the need for the user to strictly observe the adjustment tables as he can directly monitor the weld pool.

- The voltage directly affects the appearance of the bead, but the dimensions of the weld bead can be varied according to requirements by manually moving the torch to obtain variable deposits with constant voltage.
- The wire feeding speed is proportional to the welding current.

Fig. 2 and 3 show the relationships between the various welding parameters.

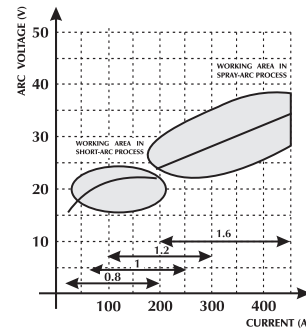


Fig. 2 Diagram for selection the of best working characteristic.

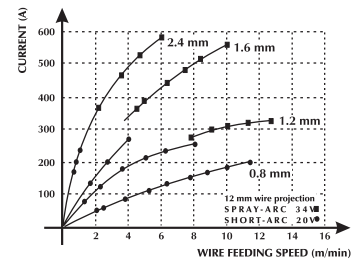
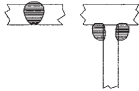


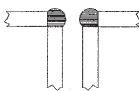

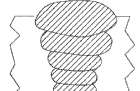
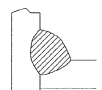
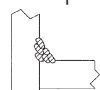




Fig. 3 Relationship between wire feeding speed and current amperage (melting characteristic) according to wire diameter.

SELECTION GUIDE OF WELDING PARAMETERS WITH REFERENCE TO THE MOST TYPICAL APPLICATIONS AND MOST COMMONLY USED WIRES

Wire diameter - weight per metre				
Voltage arc (v)	0,8 mm	1,0-1,2 mm	1,6 mm	2,4 mm
16 - 22 SHORT - ARC	Low penetration for thin materials  60 - 160 A	Good penetration and melting control  100 - 175 A	Good flat and vertical melting  120 - 180 A	Not used 150 - 200 A
24 - 28 GLOBULAR-ARC (transition area)	Automatic fillet welding  150 - 250 A	Automatic welding with high voltage  200 - 300 A	Automatic welding downwards  250 - 350 A	Not used 300 - 400 A
30 - 45 SPRAY - ARC	Low penetration with adjustment to 200 A  150 - 250 A	Automatic welding with multiple runs  200 - 350 A	Good penetration downwards  300 - 500 A	Good penetration, high deposit on thick materials  500 - 750 A

Gases

MIG-MAG welding is defined mainly by the type of gas used: inert for MIG welding (Metal Inert Gas), active for MAG welding (Metal Active Gas).

- Carbon dioxide (CO₂)

Using CO₂ as a shielding gas, high penetrations and low operating cost are obtained with high feeding speed and good mechanical properties. On the other hand, the use of this gas creates considerable problems with the final chemical composition of the joints as there is a loss of easily oxidisable elements with simultaneous enrichment of carbon in the weld pool.

Welding with pure CO₂ also creates other types of problems such as excessive spatter and the formation of carbon monoxide porosity.

- Argon

This inert gas is used pure in the welding of light alloys whereas, in chrome-nickel stainless steel welding, it is preferable using argon with the addition of oxygen and CO₂ in a percentage of 2% as this contributes to the stability of the arc and improves the form of the bead.

- Helium

This gas is used as an alternative to argon and permits greater penetration (on thick material) and faster wire feeding.

- Argon-Helium mixture

Provides a more stable arc than pure helium, and greater penetration and travel speed than argon.





Argon-CO₂ and Argon-CO₂-Oxygen mixture

- These mixtures are used in the welding of ferrous materials especially in SHORT-ARC operating mode as they improve the specific heat contribution. They can also be used in SPRAY-ARC. Normally the mixture contains a percentage of CO₂ ranging from 8% to 20% and O₂ around 5%.

8 TECHNICAL SPECIFICATIONS

	WF 4000 Classic	WF 4000 Smart
Wire feeder	SL4R-2T(v.2R)	SL4R-2T(v.2R)
Wire feeder rated power	120W	120W
No rolls	2 (4)	2 (4)
Wire diameter / Standard roller	1.0-1.2 mm	1.0-1.2 mm
Wire diameters / Tractable rollers	0.6-1.6 mm solid wire 0.8-1.6 mm aluminium wire 1.2-2.4 mm flux-core wire	0.6-1.6 mm solid wire 0.8-1.6 mm aluminium wire 1.2-2.4 mm flux-core wire
Gas test button	yes	yes
Wire feed button	yes	yes
Wire backward push button	no	no
Wire feed speed	0.5-22 m/min	0.5-22 m/min
Synergic programs	yes	yes
Power supply voltage U1	48Vdc	48Vdc
Max. input current I1max	4.5A	4.5A
Duty factor (40°C)		
(x=50%)	500A	500A
(x=60%)	470A	470A
(x=100%)	420A	420A
Duty factor (25°C)		
(x=80%)	500A	500A
(x=100%)	470A	470A
External devices (RC)	yes	yes
Connector for Push-Pull torch	yes (optional)	yes (optional)
Communication bus	DIGITAL	DIGITAL
Coil	Ø 200/300mm	Ø 200/300mm
Front wheels Ø	63/125mm (optional)	63/125mm (optional)
Rear wheels Ø	63/125mm (optional)	63/125mm (optional)
IP Protection rating	IP23S	IP23S
Dimensions (lxdxh)	640x250x460mm	640x250x460mm
Weight	19.0kg.	19.0kg.
Manufacturing Standards	EN 60974-5/ EN 60974-10	EN 60974-5/ EN 60974-10

9 Targa dati, Rating plate, Leistungsschilder, Plaque données, Placa de características, Placa de dados, Technische gegevens, Märklät, Dataskilt, Identifikasjonsplate, Arvokilpi, πινακίδα χαρακτηριστικων

		SELCO S.R.L. Via Palladio,19 - ONARA (PADOVA) - ITALY	
Type WF 4000		N°	
		EN 60974-5 EN 60974-10 Class A	
	X(40°C)	60%	100%
	I ₂	500A	400A
	U ₁	V _{max}	I _{1max} A
	48		4.5
IP 23 S			
			


 European product



Do not dispose of electrical equipment together with normal waste!
In observance of European Directive 2002/96/EC on Waste Electrical and Electronic Equipment and its implementation in accordance with national law, electrical equipment that has reached the end of its life must be collected separately and returned to an environmentally compatible recycling facility. As the owner of the equipment, you should get information on approved collection systems from our local representative.
By applying this European Directive you will improve the environment and human health!

10 Meaning rating plate

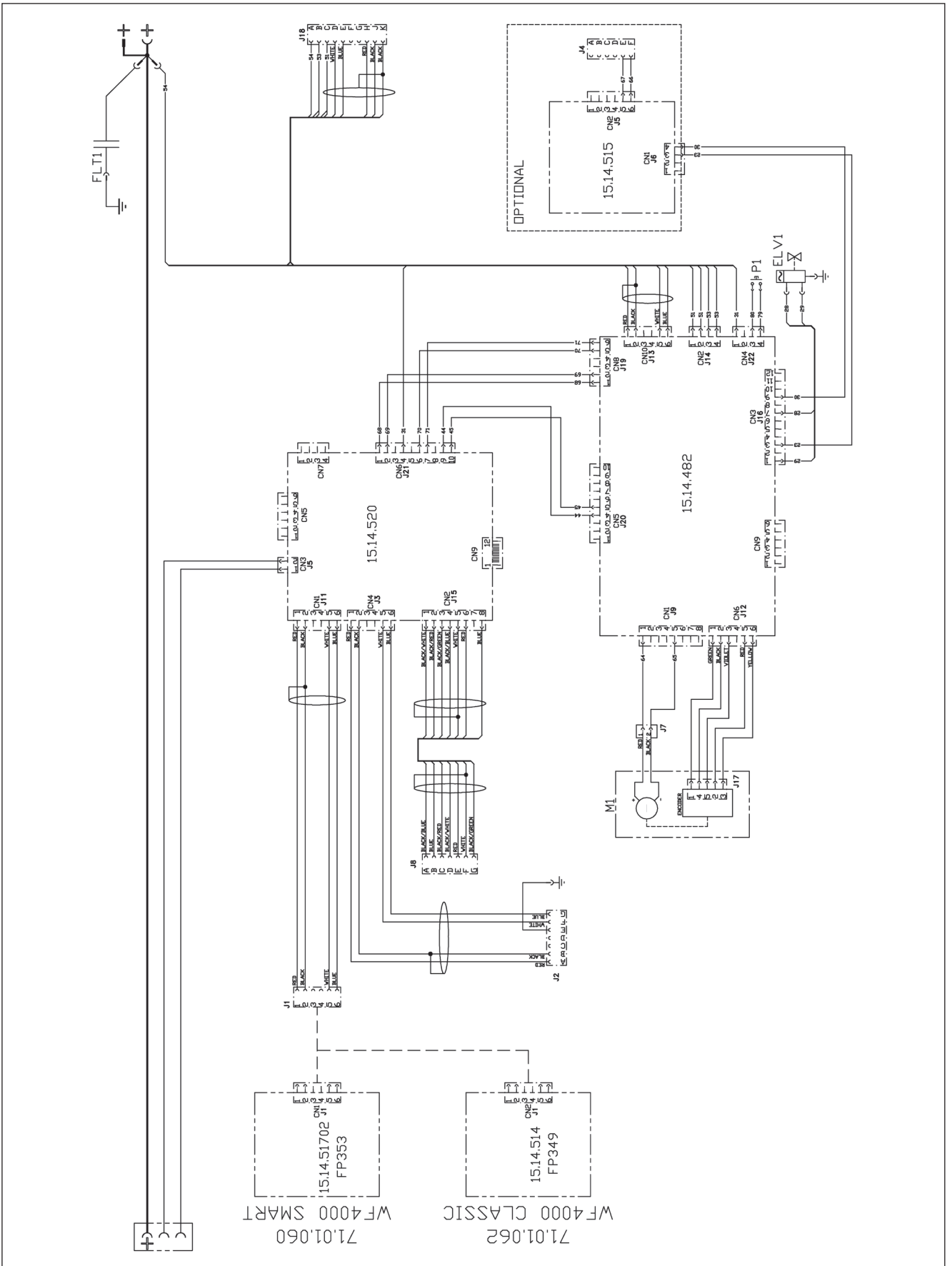
1	2	
3	4	
	5	
6	6A	6B
7	7A	7B
8	9	10
11		CE



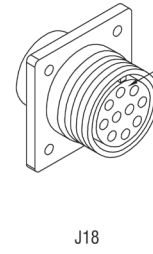
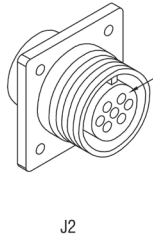
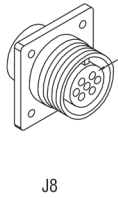
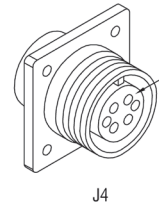
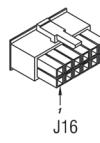
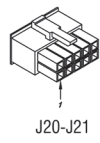
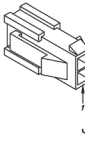
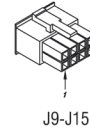
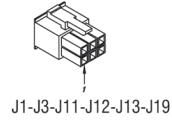
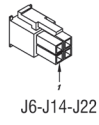
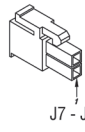
ENGLISH

1. Trademark
2. Name and address of manufacturer
3. Machine model
4. Serial no.
5. Reference to construction standards
6. Intermittent cycle symbol
7. Rated welding current symbol
- 6A/6B Intermittent cycle values
- 7A/7B Rated welding current values
8. Power supply symbol
9. Rated power supply voltage
10. Maximum rated power supply current
11. Protection rating

11 Diagram

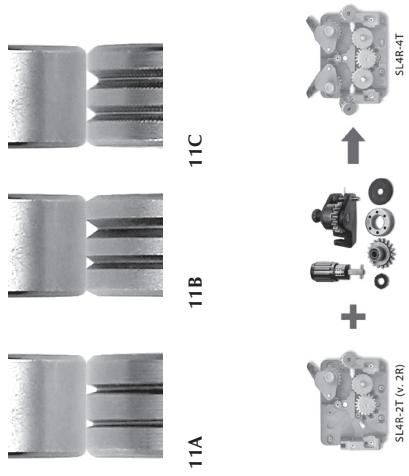


12 Connectors

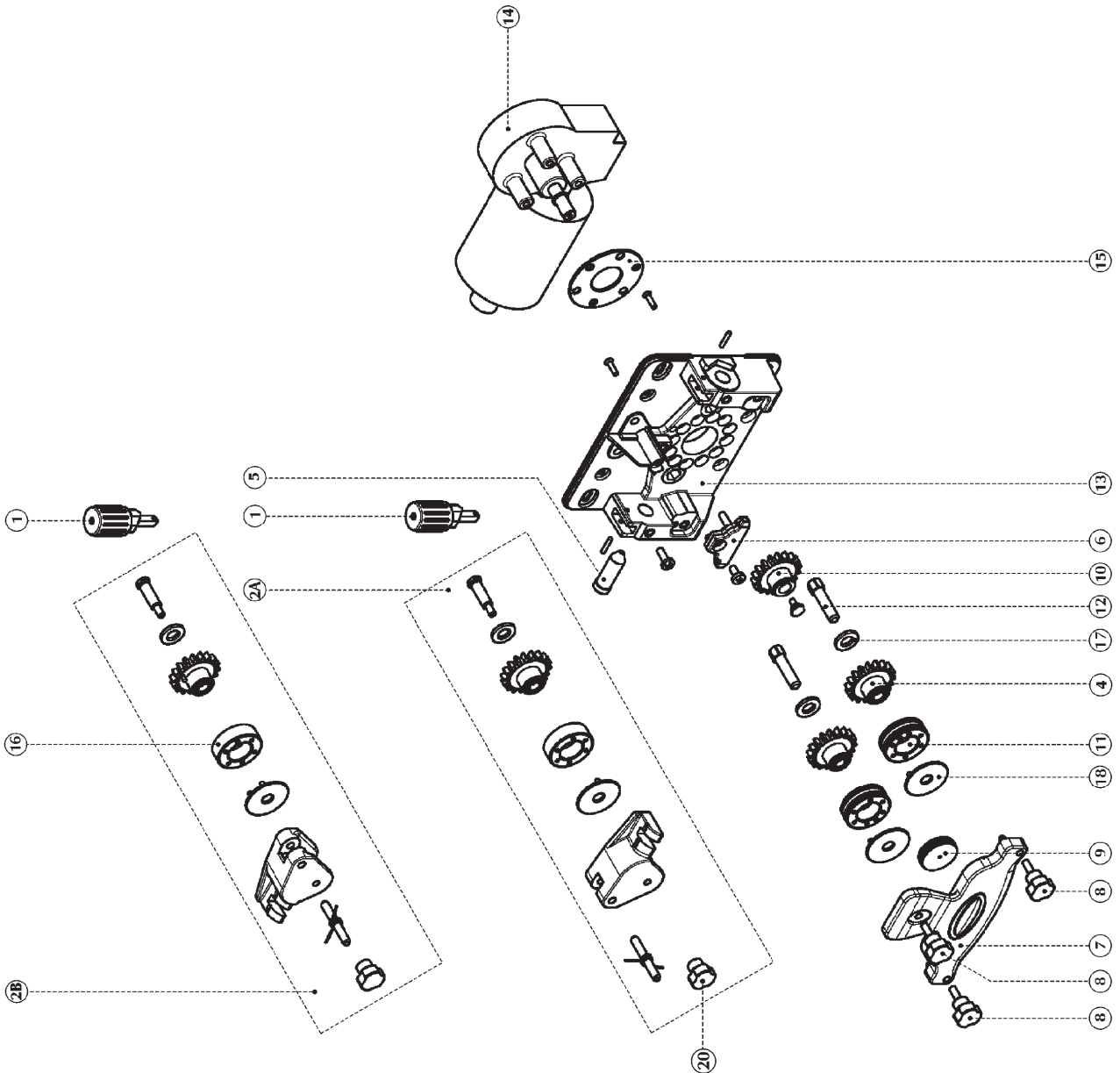


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2	02.04.03902	
3	03.07.379	WF 4000 CLASSIC
	03.07.380	WF 4000 SMART
4	01.04.02301	
5	01.04.02401	
6	01.05.02701	
7	74.90.074	
8	19.50.053	
9	19.50.054	
10	19.06.008	
11	19.01.028	
12	19.50.058	
13	24.01.005	
14	19.50.044	
15	20.07.093	
16	07.01.099	
17	07.01.339	
18	20.07.165	
19	20.04.157	
20	20.04.080	
21	07.01.313	
22	24.01.001	
23	24.01.190	
24	09.05.001	
25	01.14.053	
26	09.04.402	
27	15.14.482	
28	15.22.349	
	15.22.353	WF 4000 CLASSIC
29	03.05.04801	WF 4000 SMART
30	10.13.054	
31	10.13.003	
32	10.01.024	
33	73.10.073	
34	73.10.074	
35	73.11.012	
36	20.02.003	
37	15.14.520	
38	01.14.052	
39	08.20.00501	
40	20.04.021	
41	73.12.019	
*	21.04.002	
*	49.07.489	
*	49.07.491	
*	49.07.492	
*	91.08.343	
*	91.08.371	

"A" = IT-CB-DE-FR-ES-NL-DK-FI-SE-NO-GR-PT, "B" = CZ-PL-RU-TR-RO-BG-SK



19

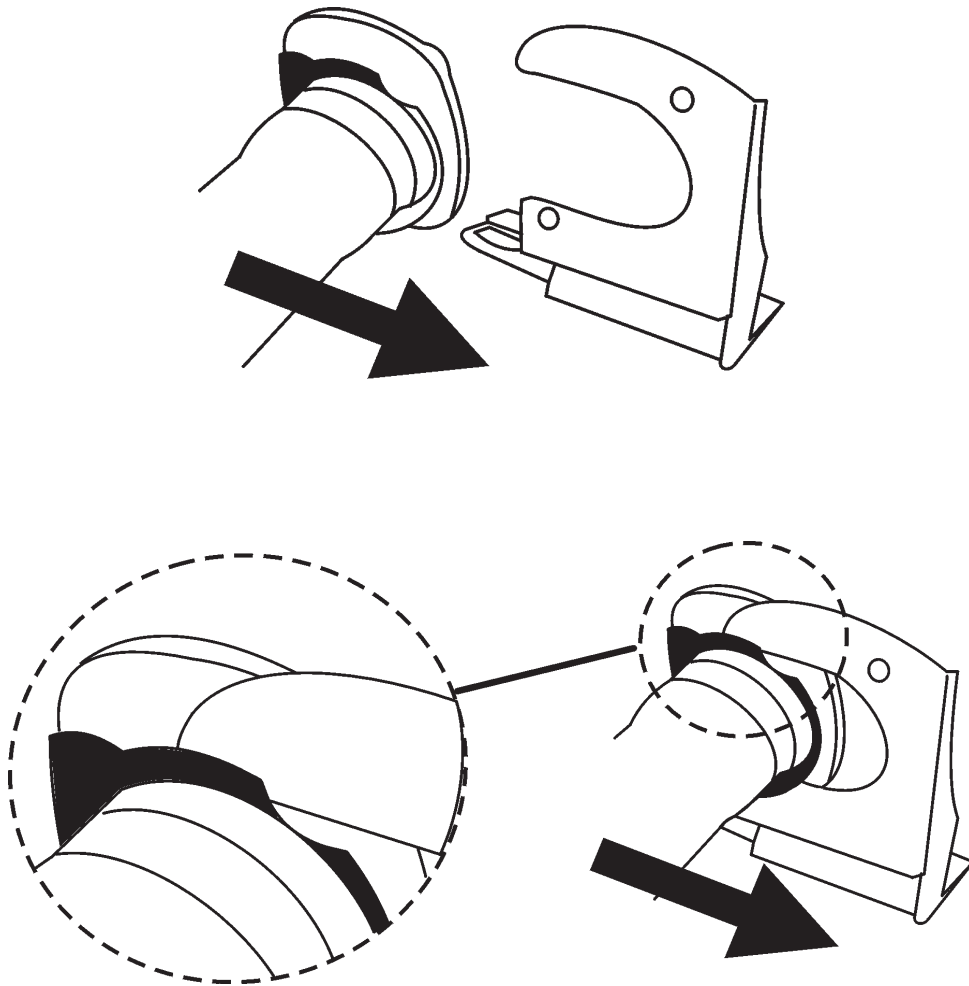


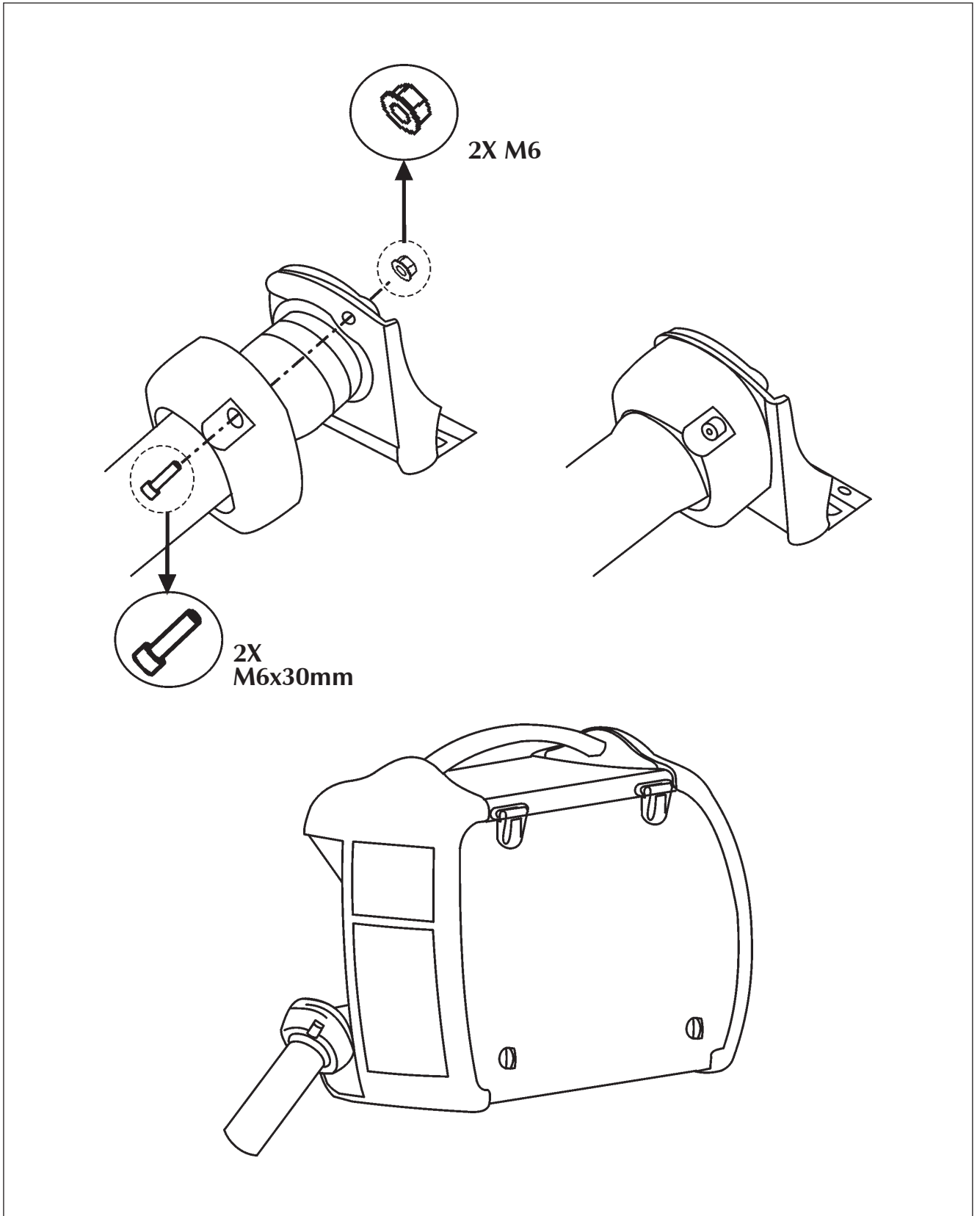
POS. CODE	ENGLISH
1	Pressure regulator knob
2A	Split wire guide - R
2B	Split wire guide - L
4	Gear wheel
5	Wire-guide bush
6	Central wire-guide bush 4 rollers
7	Top guide 4 rollers
8	Knob
9	Motor gear Knob
10	Gear wheel
11A	Roller for wire 0.6-0.8
	Roller for wire 0.8-1.0
	Roller for wire 1.0-1.2
	Roller for wire 1.2-1.6
11B	Roller for aluminium wire 0.8-1.0
	Roller for aluminium wire 1.0-1.2
	Roller for aluminium wire 1.2-1.6
	Roller for flux cored wire 1.2-1.4-1.6
11C	Roller for flux cored wire 1.6-2.0-2.4
12	Pin
13	Wirefeeder body 4 rollers
14	Gear motor (120W)
15	Motor flange
16	Drive roll - without groove - aluminium wire
17	Plain washer (plastic) - internal
18	Plain washer (plastic) - external
19	Upgrade kit
20	Knob (female) - M5

(SL 4R-2T v.2R)

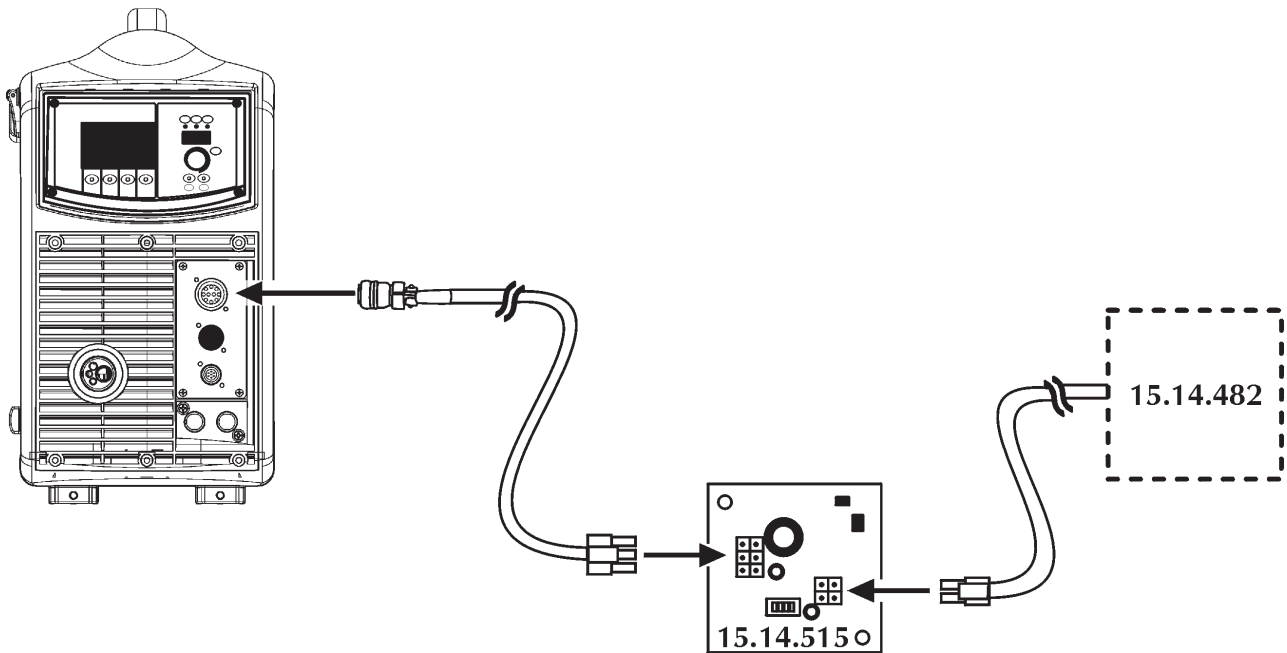
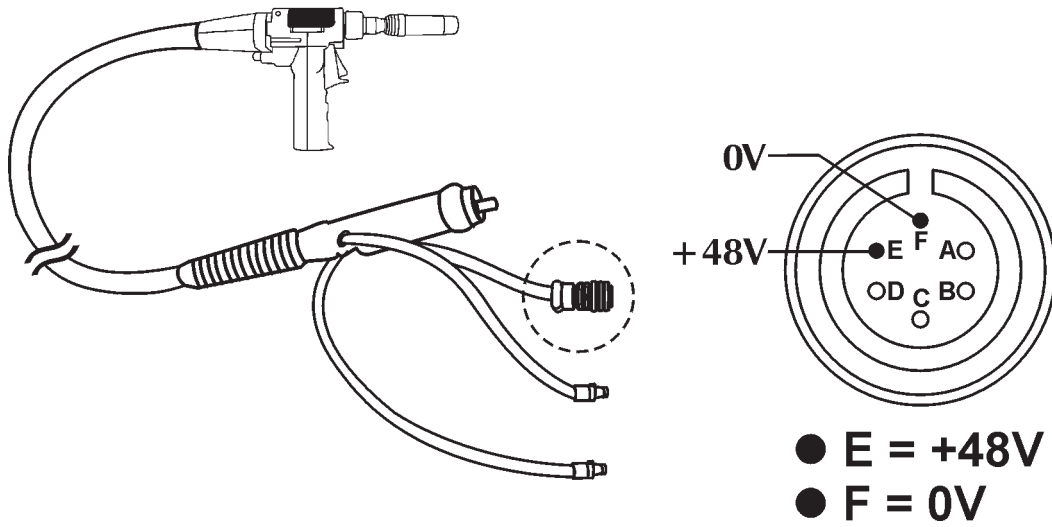
14 Installation kit/accessories

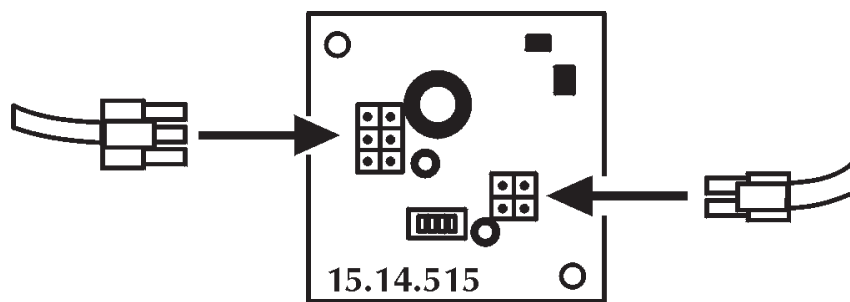
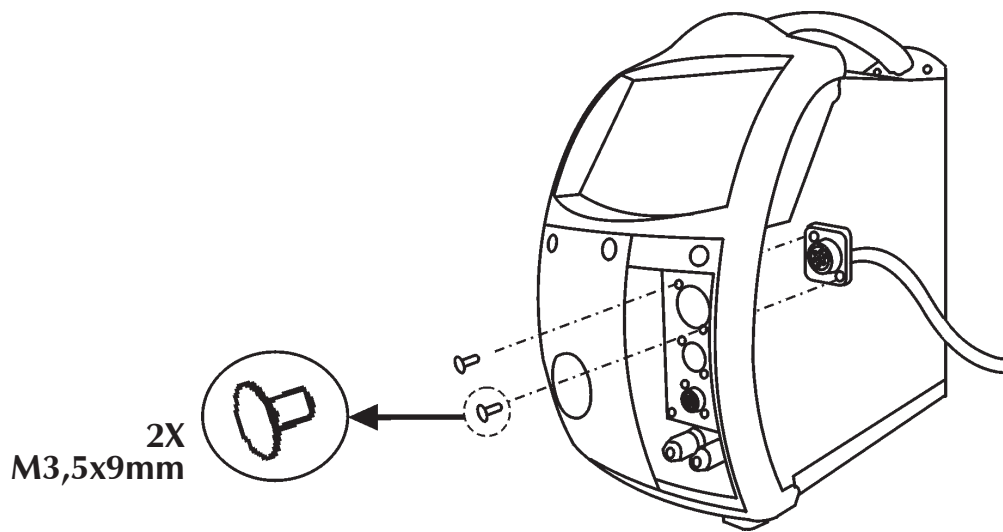
Cable bundle



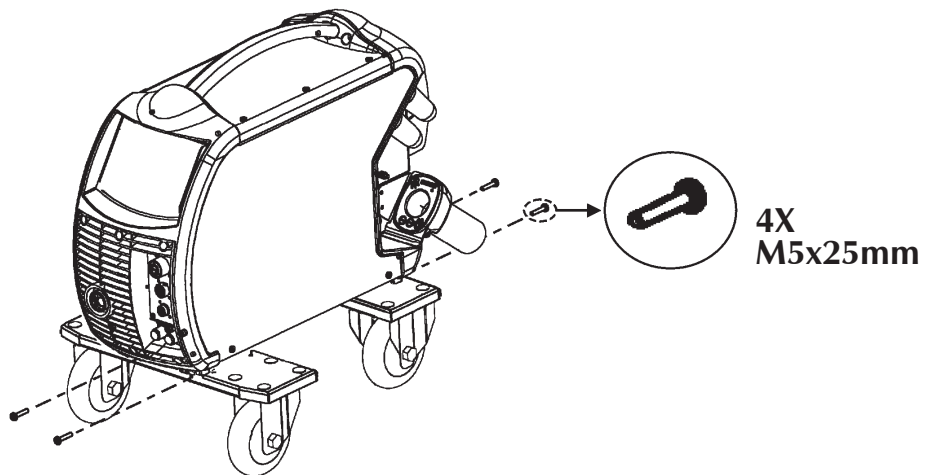
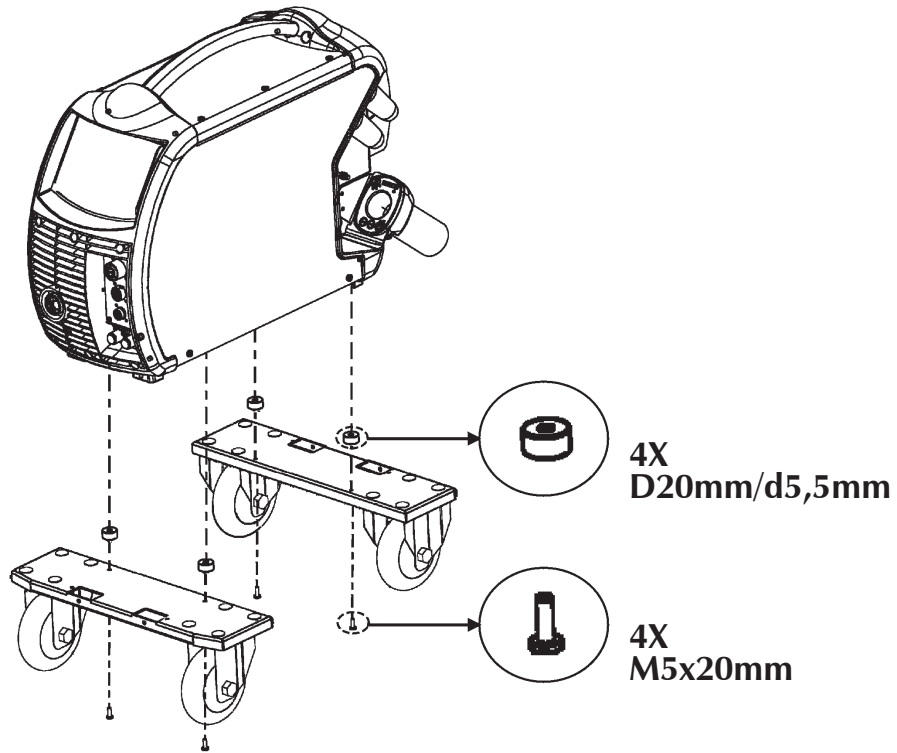
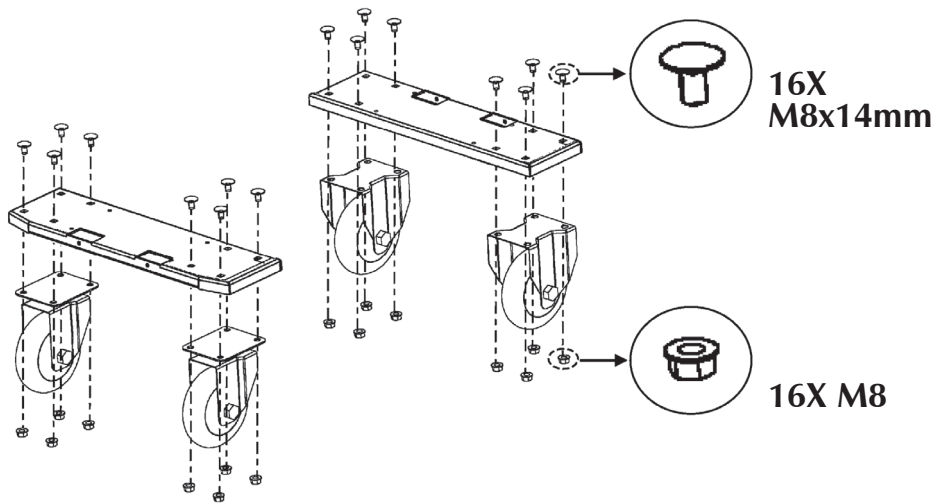


73.11.012 Kit Push-Pull

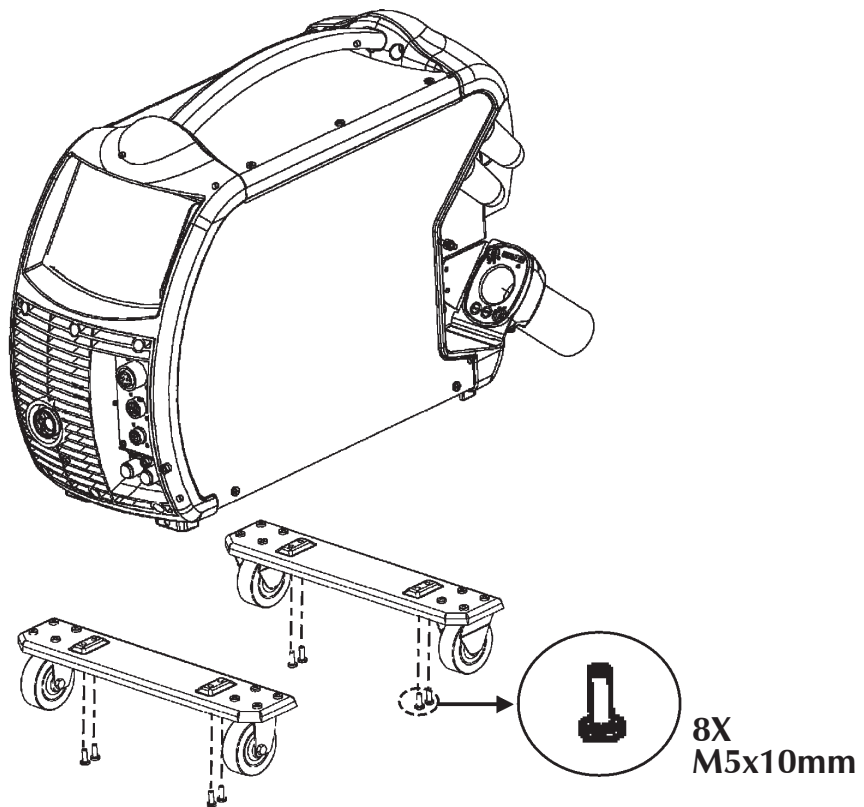
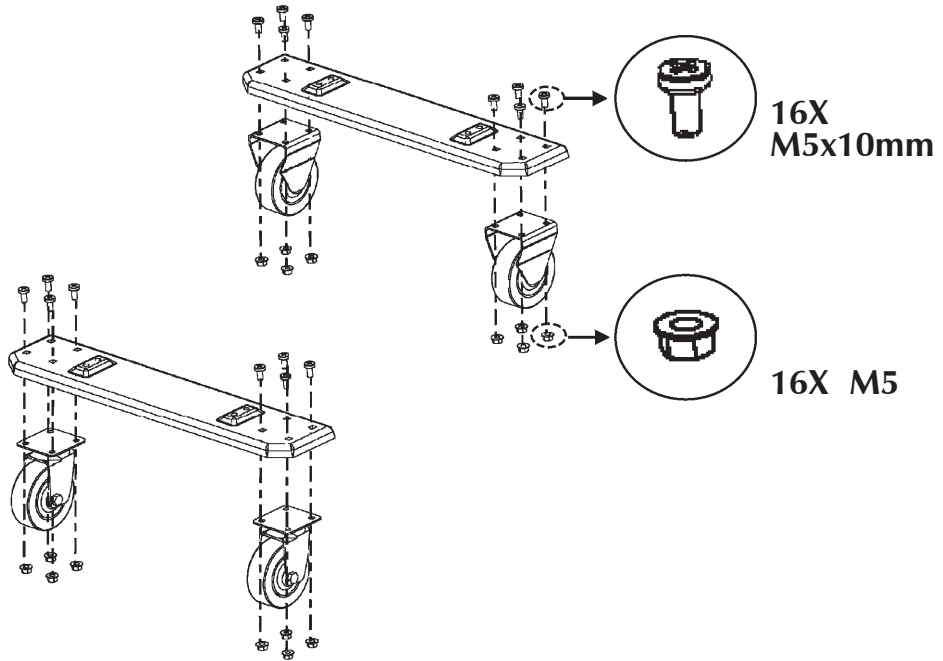




73.10.073 Feed unit wheels - upgrade kit



73.10.074 Feed unit wheels - upgrade kit



73.10.075 Wire feeder holder kit

