

Lasting Connections

# WF 330 ARCDRIVE CLASSIC-SMART-RAPIDEEP STEEL

## INSTRUCTION MANUAL





**Cod. 91.08.339**  
**Data 17/06/2019**  
**Rev.**

<b>ENGLISH.....</b>	<b>25</b>
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## CE - DECLARATION OF CONFORMITY

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Company

**SELCO s.r.l. - Via Palladio, 19 - 35019 ONARA DI TOMBOLO (Padova) - ITALY**

**Tel. +39 049 9413111 - Fax +39 049 9413311 - E-mail: selco@selcoweld.com - www.selcoweld.com**

hereby declares that the equipment:

**WF 330 ArcDrive Classic  
WF 330 ArcDrive Smart  
WF 330 RapiDeep Steel**

conforms to the EU directives:

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

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

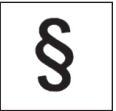


Before performing any operation on the machine, make sure that you have thoroughly read and understood the contents of this booklet. Do not perform modifications or maintenance operations which are not prescribed.

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 an 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.



Ensure the cooling unit is switched off before disconnecting the pipes of the cooling liquid. The hot liquid coming out of the pipes might cause burning or scorching.



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

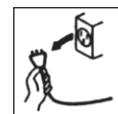
### IP23S

- 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.
- 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.**



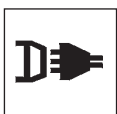
**Do not drop or apply undue pressure on the equipment.**



## 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 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.

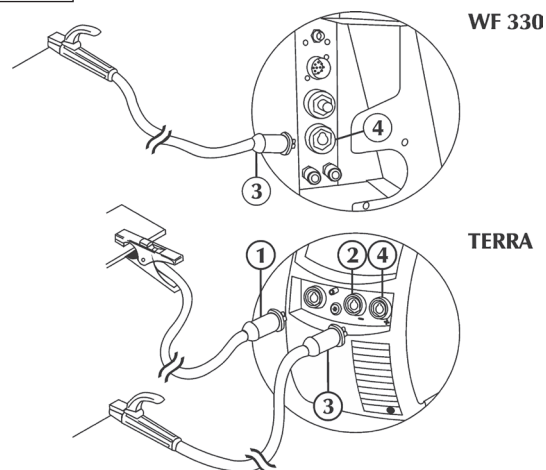


## 2.4 Installation

### Connection for MMA welding (WF 330 RapiDeep Steel)

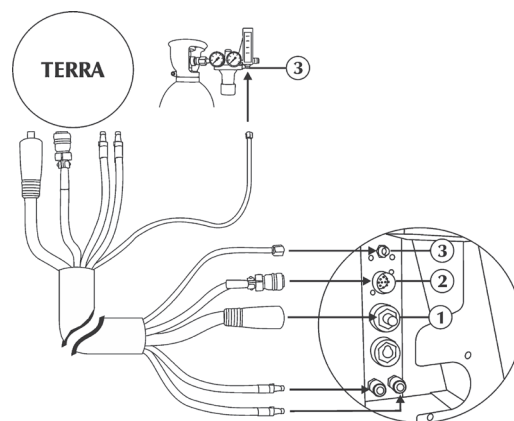


The connection shown in the figure produces reverse polarity welding. To obtain straight polarity welding, reverse the connection.



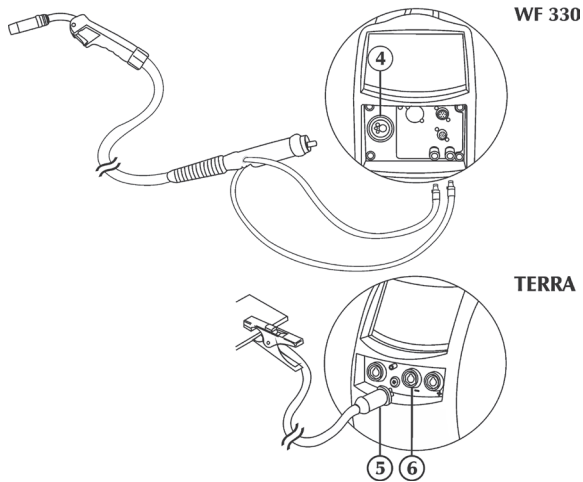
- Connect (1) the earth clamp to the negative socket (-) (2) of the power source.
- Connect (3) the electrode holder to the positive socket (+) (4) of the power source (WF 330 RapiDeep Steel).



### Connection for MIG/MAG welding

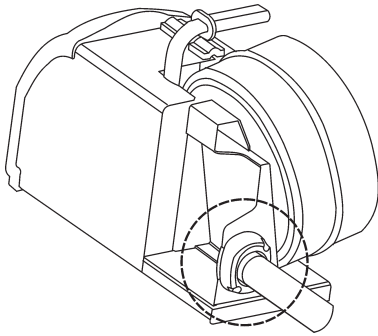


- Disconnect the power supply from the power source.
- Connect the power cable to the appropriate outlet (1). Insert the plug and turn clockwise until all parts are secured.
- Connect the signal cable to the appropriate connector (2). Insert the connector and screw the ring nut clockwise until all parts are secured.
- Connect the gas hose to the pressure reducing valve of the cylinder or to the gas supply connection (3).
- 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.

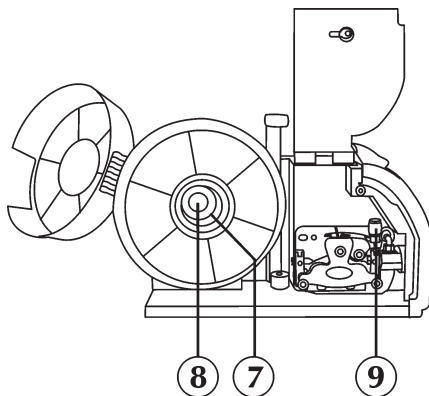




- Connect the MIG/MAG torch to the central adapter (4), ensuring that the fastening ring is fully tightened.
- Connect (5) the earth clamp to the negative socket (-) (6) of the power source.
- Connect the red colored  water pipe of the torch to the inlet quick connector of the cooling unit.
- Connect the blue colored  water pipe of the torch to the outlet quick connector of the cooling unit.



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



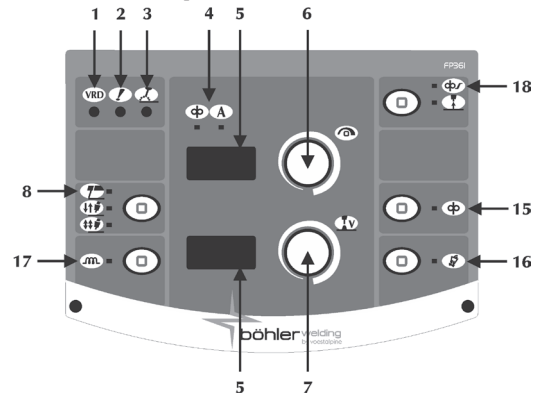
- Open the right side cover.
- Check that the roller groove is consistent with the diameter of the wire you wish to use.
- Unscrew the ring nut (7) from the spindle and insert the wire spool. Insert also the spool pin, insert the spool, reposition the ring nut (7) and adjust the friction screw (8).
- Release the rolls lever of the wire feeder (9), 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 SYSTEM PRESENTATION

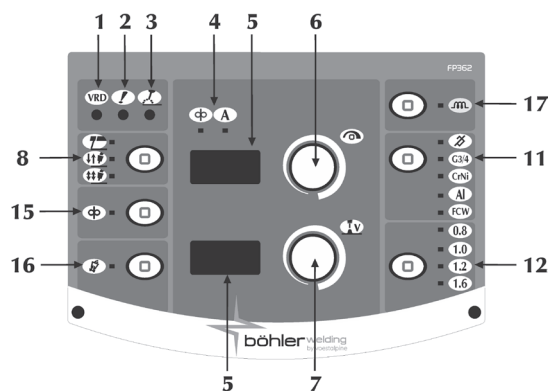
### 3.1 General

The wire feed unit WF 330 is the mobile part of a complete MIG/MAG welding system which uses the TERRA... 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.

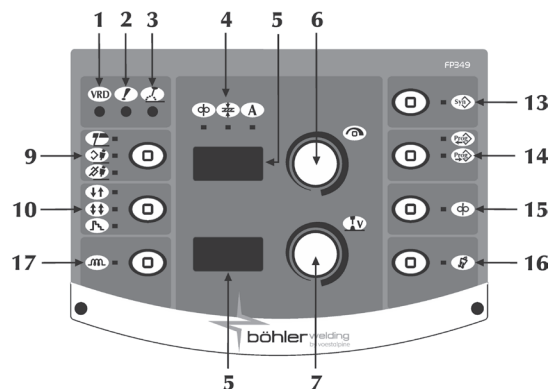
### 3.2 Front control panel






WF 330 ArcDrive Classic



WF 330 ArcDrive Smart



WF 330 RapiDeep Steel

- 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 Welding parameters



Wire speed



Current



Part thickness

#### 5 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.

#### 6 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.

#### 7 Main adjustment handle



Allows the regulation of the arc voltage.

Allows regulation of the arc length during welding.

High voltage = long arc

Low voltage = short arc

Manual MIG/MAG

Minimum 5V, Maximum 55.5V

Synergic MIG/MAG

Minimum -5.0, Maximum +5.0, Default syn

#### 8 Welding process

Allows the selection of the welding procedure.



Electrode welding (MMA)



##### 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.

#### 9 Welding process

Allows the selection of the welding procedure.



Electrode welding (MMA)



Synergic MIG/MAG



Manual MIG/MAG

#### 10 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 pre-set (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.

#### 11 Synergy (WF...Smart)

Allows selection of the manual MIG  or synergic MIG  process by setting the type of material to be welded.



Manual MIG/MAG process.



Synergic MIG/MAG process, welding of carbon steel.



Synergic MIG/MAG process, welding of stainless steel.



Synergic MIG/MAG process, welding of aluminium.



Synergic MIG/MAG process, welding of flux-core wire.

#### 12 Wire diameter (WF...Smart)



In synergy, allows selection of the wire diameter used (mm).



#### 13 Synergy



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

- wire type
- gas type
- wire diameter

## WF...RapiDeep Steel

Terra 320 MSE						
ArcDrive	Ø mm					
	0,8	0,9	1,0	1,2	1,6	
G3/4 Si1 CO2	S 2	/	S 3	S 4	/	
G3/4 Si1 Ar 18%CO2	S 7	/	S 8	S 9	/	
G3/4 Si1 Ar 8%CO2	S 57	/	S 58	S 59	/	
Hardfacing Ar 18%CO2	/	/	S 61	S 62	/	
CrNi 19 9 Ar 2%CO2	S 12	/	S 13	S 14	/	
Basic FCW Ar 18%CO2	/	/	/	S 42	S 44	
Rutil FCW Ar 18%CO2	/	/	/	S 46	S 48	
Rutil FCW CO2	/	/	/	S 64	/	
Metal CW Ar 18%CO2	/	/	S 49	S 50	S 52	
Metal CW CO2	/	/	/	S 65	/	
Metal CW NO-GAS	/	S 66	/	S 67	/	
Hardfacing FCW Ar 18%CO2	/	/	/	S 68	S 69	
RapiDeep	Ø mm					
	0,8	0,9	1,0	1,2	1,6	
G3/4 Si1 Ar 18%CO2	H 7	/	H 8	H 9	/	
G3/4 Si1 Ar 8%CO2	H 57	/	H 58	H 59	/	

Terra 400 MSE - Terra 500 MSE						
ArcDrive	Ø mm					
	0,8	0,9	1,0	1,2	1,6	
G3/4 Si1 CO2	S 2	/	S 3	S 4	S 5	
G3/4 Si1 Ar 18%CO2	S 7	/	S 8	S 9	S 10	
G3/4 Si1 Ar 8%CO2	S 57	/	S 58	S 59	S 60	
Hardfacing Ar 18%CO2	/	/	S 61	S 62	S 63	
CrNi19 9 Ar 2%CO2	S 12	/	S 13	S 14	S 15	
Basic FCW Ar 18%CO2	/	/	/	S 42	S 44	
Rutil FCW Ar 18%CO2	/	/	/	S 46	S 48	
Rutil FCW CO2	/	/	/	S 64	/	
Metal CW Ar 18%CO2	/	/	S 49	S 50	S 52	
Metal CW Co2	/	/	/	S 65	/	
Metal CW NO-GAS	/	S 66	/	S 67	/	
Hardfacing FCW Ar 18%CO2	/	/	/	S 68	S 69	
RapiDeep	Ø mm					
	0,8	0,9	1,0	1,2	1,6	
G3/4 Si1 Ar 18%CO2	H 7	/	H 8	H 9	H 10	
G3/4 Si1 Ar 8%CO2	H 57	/	H 58	H 59	H 60	

### 14 Programs (WF...RapiDeep Steel)

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 (14) for at least 1 second.

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

Confirm the operation by pressing button-encoder (6).



#### Program retrieval

Retrieve the 1st program available by pressing button (14).

Select the required program by pressing button (14).

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.

### 15 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.

### 16 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.

### 17 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

### 18 Soft start (WF...Classic)



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%

#### Burn back (WF...Classic)



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

## 3.3 Set up

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 "O" (save and quit) and press the encoder.

### 3.3.1 List of set up parameters (MMA)

#### 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.

#### 3 Hot start

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

Permits adjustment of the welding current.

Parameter set in Amps (A).

Minimum 3A, Maximum I<sub>max</sub>, 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.

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

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:  $V.I = K$ .



Cellulose, Aluminium

## 205 MMA Synergy

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

- 1 Standard (Basic/Rutile)
- 2 Cellulose
- 3 Steel
- 4 Aluminium
- 5 Cast iron

Default standard (1)

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.).

## 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:

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).

## 601 Regulation step (WF...RapiDeep Steel)

Allows the regulation of a parameter with a step that can be personalised by the operator.

Minimum 1, Maximum I<sub>max</sub>, Default 1

## 602 External parameter CH1

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

## 603 External parameter CH1

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

## 751 Current reading

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

Allows the welding current display method to be set.

## 752 Voltage reading

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

Allows the welding voltage display method to be set.

## 851 ARC-AIR enabling

On=ARC-AIR, Off=MMA

## 852 TIG DC LIFT START enabling

On=Active, Off=No active



## 903 Program cancellation (WF...RapiDeep Steel)

Select the required program by rotating the encoder 1. Delete the selected program by pressing button-encoder 2.

## 3.3.2 List of set up parameters (MIG/MAG) (WF...Classic)

### 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.

### 3 Wire speed

Allows the regulation of the wire feed rate.

Minimum 0.5 m/min, Maximum 22 m/min, Default 1.0m/min

### 7 Voltage

Allows the regulation of the arc voltage.

Allows regulation of the arc length during welding.

High voltage = long arc

Low voltage = short arc

Minimum 5V, Maximum 55.5V

### 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% (syn)

### 12 Motor slope

Allows you to set a gradual transition between the sparking wire speed and the welding wire speed.

Minimum off, Maximum 1.0 sec., Default off

### 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.
- 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
- 500 Reset XE (Easy Mode)**  
Not used
- Reset XA (Advanced Mode)**  
Manual welding method.  
Allows the manual setting and regulation of each individual welding parameter.
- Reset XP (Professional Mode)**  
Allows the manual setting and regulation of each individual welding parameter.  
Makes it possible to use a series of pre-settings available in the memory of the system.
- 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).
- 602 External parameter CH1**  
Allows the management of external parameter 1 (minimum value).
- 603 External parameter CH1**  
Allows the management of external parameter 1 (maximum value).
- 653 Wire speed**  
It allow wire speed regulation (during wire loading phase).  
Minimum 0.5 m/min, Maximum 22 m/min, Default 3 m/min
- 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.
- 707 Motor calibration**  
Consult the "Motor calibration" section.
- 751 Current reading**  
Allow the real value of the welding current to be displayed.  
Allows the welding current display method to be set.

- 752 Voltage reading**  
Allows the real value of the welding voltage to be displayed.  
Allows the welding voltage display method to be set.
- 760 (Motor) Current reading**  
Allow the real value of the (motor) current to be displayed.
- 852 TIG DC LIFT START enabling**  
On=Active, Off=No active



### 3.3.3 List of set up parameters (MIG/MAG) (WF...Smart)

- 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.
- 3 Wire speed**  
Allows the regulation of the wire feed rate.  
Minimum 0.5 m/min, Maximum 22 m/min, Default 1.0m/min
- 4 Current**  
Allows the regulation of the welding current.  
Minimum 6A, Maximum Imax
- 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 Voltage**  
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 5V, Maximum 55.5V, 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% (syn)
- 12 Motor slope**  
Allows you to set a gradual transition between the sparking wire speed and the welding wire speed.  
Minimum off, Maximum 1.0 sec., Default off
- 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.
- 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
- 207 (G3/4 Si1 - 100% CO<sub>2</sub>) Synergy enabling**  
Off= (G3/4 Si1 - 100% CO<sub>2</sub>) Synergy disabled  
1= (G3/4 Si1 - 100% CO<sub>2</sub>) Synergy enabled (instead of G3/4 Si1 - Ar18% CO<sub>2</sub>)
- 331 Voltage (Synergic MIG/MAG)**  
Lets you set welding voltage.
- 500 XE (Easy Mode)**  
It allows manual MIG welding with the adjustment of the motor slope.  
**XM (Medium Mode)**  
Allows selection of the manual MIG process by setting the type of material to be welded.  
The settings are maintained during the different welding stages.  
(Consult the 14-15 "Front control panel" section).  
**XA (Advanced Mode)**  
It allows manual MIG and synergic MIG welding.  
The settings are maintained during the different welding stages.  
**XP (Professional Mode)**  
It allows manual MIG and synergic MIG welding.  
Synergic control stays active during the different welding stages. The welding parameters are constantly monitored and, if necessary, corrected according to precise analysis of the electric arc!  
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).
- 602 External parameter CH1**  
Allows the management of external parameter 1 (minimum value).
- 603 External parameter CH1**  
Allows the management of external parameter 1 (maximum value).
- 653 Wire speed**  
It allow wire speed regulation (during wire loading phase).  
Minimum 0.5 m/min, Maximum 22 m/min, Default 3 m/min
- 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.
- 707 Motor calibration**  
Consult the "Motor calibration" section.
- 751 Current reading**  
Allow the real value of the welding current to be displayed.  
Allows the welding current display method to be set.
- 752 Voltage reading**  
Allows the real value of the welding voltage to be displayed.  
Allows the welding voltage display method to be set.
- 760 (Motor) Current reading**  
Allow the real value of the (motor) current to be displayed.
- 3.3.4 List of set up parameters (MIG/MAG) (WE..RapiDeep Steel)**
- 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/MAG.  
Lets you select a preset welding program (synergy) by choosing a few simple settings:  
- wire type  
- gas type  
- wire diameter
- 3 Wire speed**  
Allows the regulation of the wire feed rate.  
Minimum 0.5 m/min, Maximum 22 m/min, Default 1.0m/min
- 4 Current**  
Allows the regulation of the welding current.  
Minimum 6A, Maximum I<sub>max</sub>
- 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 Voltage**  
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
- 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% (syn)
- 12 Motor slope**  
Allows you to set a gradual transition between the sparking wire speed and the welding wire speed.  
Minimum off, Maximum 1.0 sec., Default off
- 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.
- 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, "Φ<sub>2</sub>" can be used; by pressing and releasing it quickly again, "Φ" is used again, and so on.  
Parameter setting: Percentage (%).  
Minimum 1%, Maximum 500%, 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, MIG Bilevel) slope**  
Crater filler:  
Allows you to set a gradual passage between the initial wire speed (initial increment) and the welding wire speed.  
Allows you to set a gradual passage between the welding wire speed and the final wire speed (crater filler).  
MIG Bilevel:  
Allows a smooth step to be obtained between the peak wire speed and the basic wire speed, having a more or less soft welding arc.  
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
- 32 Secondary voltage (MIG Bilevel)**  
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
- 33 Secondary inductance (MIG Bilevel)**  
Allows regulation of the secondary pulsation level inductance.  
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
- 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
- 331 Voltage (Synergic MIG/MAG)**  
Lets you set welding voltage.
- 500**  
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).
- 601 Regulation step**  
Allows the regulation of a parameter with a step that can be personalised by the operator.  
Minimum 1, Maximum I<sub>max</sub>, Default 1
- 602 External parameter CH1**  
Allows the management of external parameter 1 (minimum value).
- 603 External parameter CH1**  
Allows the management of external parameter 1 (maximum value).
- 606 U/D torch**  
Allows the management of the external parameter (U/D).  
O=off, I=current, 2=program retrieval
- 653 Wire speed**  
It allow wire speed regulation (during wire loading phase).  
Minimum 0.5 m/min, Maximum 22 m/min, Default 3 m/min
- 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.

### 752 Voltage reading

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

Allows the welding voltage display method to be set.

### 757 Wire speed reading

Allow the value of the motor encoder 1 to be displayed.

### 760 (Motor) Current reading

Allow the real value of the (motor) current to be displayed.

### 852 TIG DC LIFT START enabling

On=Active, Off=No active



### 903 Program cancellation

Select the required program by rotating the encoder 1.

Delete the selected program by pressing button-encoder 2.

## 3.4 Lock/unlock

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

### "LOCK"

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.

### "UNLOCK"

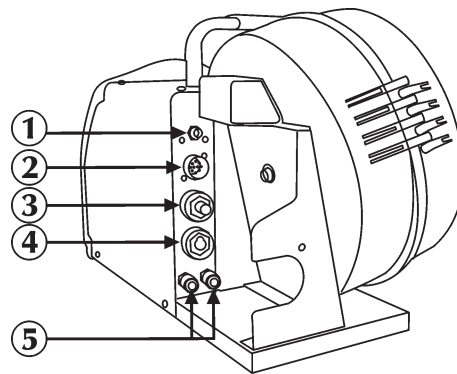
The carrying out of any operation on a locked control panel causes a special screen to appear.

Access the panel functionalities by rotating the encoder and entering the correct password.

## 3.5 Alarm codes

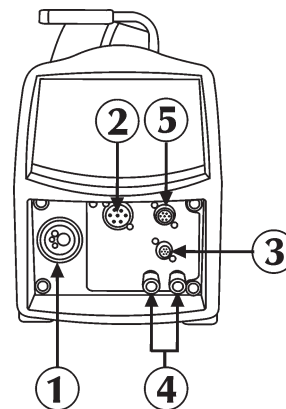
E01, E02	Temperature alarm
	It is advisable not to switch off the equipment while the alarm is on; the internal fan will thus keep operating and will help to cool the overheated parts.
E08	Blocked motor alarm
E10	Power module alarm
E13	Communication alarm
E19	System configuration alarm
E20	Memory fault alarm
E21	Data loss alarm
E40	System power supply alarm
E43	Coolant shortage alarm
E48	Wire out alarm




## 3.6 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

## 3.7 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) (WE...RapiDeep Steel - optional)**  


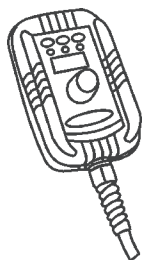
## 4 ACCESSORIES

### 4.1 General (RC) (WE...RapiDeep Steel)

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.

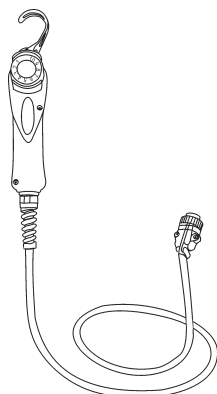
#### 4.2 RC 100 remote control



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".

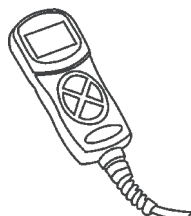
#### 4.3 RC 180 remote control



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

"Consult the instruction manual".

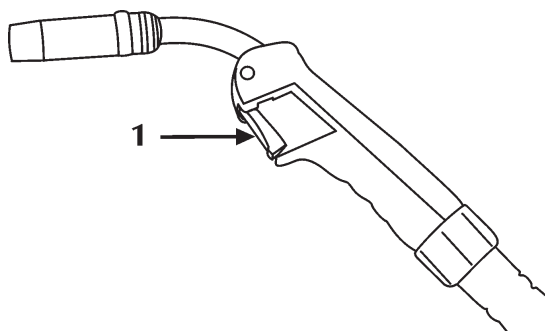
#### 4.4 RC 200 remote control



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".

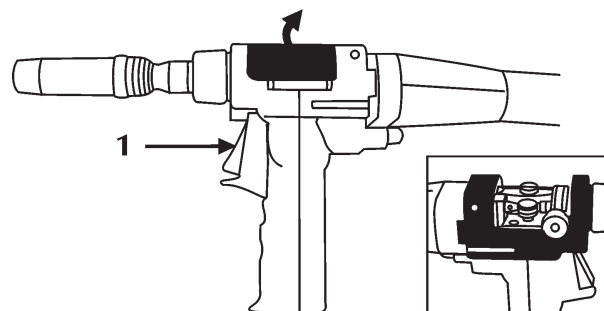
#### 4.5 MIG/MAG series torches



1 Torch button

"Consult the instruction manual".

#### 4.6 Push-Pull series torches



1 Torch button

"Consult the instruction manual".

#### 4.7 RC kit (WE...RapiDeep Steel) (73.11.015)

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

#### 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".

### 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	Connection between wire feed carriage and generator incorrect or faulty.
Solution	Check that the various parts of the system are properly connected.
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	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.

#### 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.

#### 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.

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

## 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.

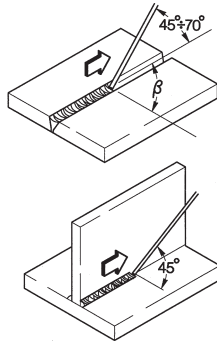
The external coating of the electrode is being consumed and this supplies the shielding gas for the weld pool, ensuring the good quality of the weld.

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.



## Removing the slag

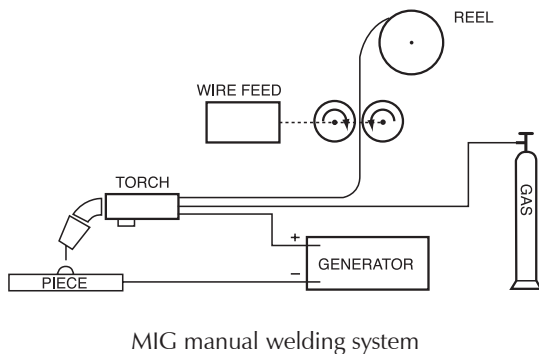
Welding using covered electrodes requires the removal of the slag after each run.

The slag is removed by a small hammer or is brushed away if friable.

## 7.2 Continuous wire welding (MIG/MAG)

### Introduction

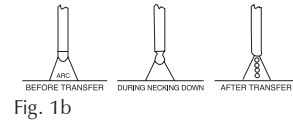
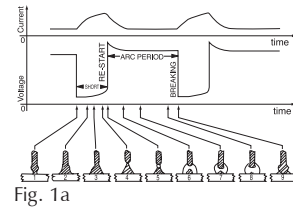
A MIG system consists of a direct current power source, wire feeder, wire spool, torch and gas.



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).



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.

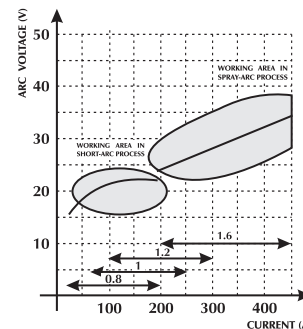


Fig. 2 Diagram for selection the of best working characteristic.

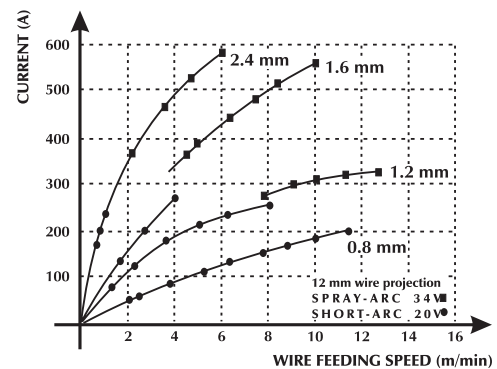
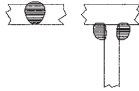
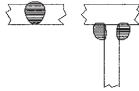


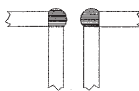
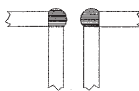
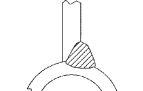

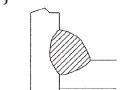
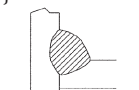





Fig. 3 Relationship between wire feeding speed and current amperage (melting characteristic) according to wire diameter.



## 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
<b>16 - 22</b> 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
<b>24 - 28</b> 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
<b>30 - 45</b> 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 (CO<sub>2</sub>)

Using CO<sub>2</sub> 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 CO<sub>2</sub> 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 CO<sub>2</sub> 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-CO<sub>2</sub> and Argon-CO<sub>2</sub>-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 CO<sub>2</sub> ranging from 8% to 20% and O<sub>2</sub> around 5%.







## 8 TECHNICAL SPECIFICATIONS

	WF 330 ArcDrive Classic	WF 330 ArcDrive Smart	WF 330 RapiDeep Steel
Wire feeder	SL4R-1T(v.2R)	SL4R-1T(v.2R)	SL4R-2T(v.2R)
Wire feeder rated power	90W	90W	120W
No rolls	2 (4)	2 (4)	2 (4)
Wire diameter / Standard roller	1.0-1.2 mm	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	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	yes
Wire feed button	yes	yes	yes
Wire backward push button	no	no	no
Wire feed speed	0.5-22 m/min	0.5-22 m/min	0.5-22 m/min (25 m/min RapiDeep Ø 0.8-1.0)
Synergic programs	no	yes	yes
Power supply voltage U1	48Vdc	48Vdc	48Vdc
Max. input current I1max	4.5A	4.5A	4.5A
Duty factor (40°C)			
(x=50%)	500A	500A	500A
(x=60%)	470A	470A	470A
(x=100%)	420A	420A	420A
Duty factor (25°C)			
(x=80%)	500A	500A	500A
(x=100%)	470A	470A	470A
External devices (RC)	no	no	yes (optional)
Connector for Push-Pull torch	yes (optional)	yes (optional)	yes (optional)
Communication bus	DIGITAL	DIGITAL	DIGITAL
Coil	Ø 200/300mm	Ø 200/300mm	Ø 200/300mm
Front wheels Ø	63/125mm (optional)	63/125mm (optional)	63/125mm (optional)
Rear wheels Ø	63/125mm (optional)	63/125mm (optional)	63/125mm (optional)
IP Protection rating	IP23S	IP23S	IP23S
Dimensions (lxdxh)	660x280x390mm	660x280x390mm	660x280x390mm
Weight	13.0kg	13.0kg	13.0kg
Manufacturing Standards	EN 60974-5/ EN 60974-10	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, Märklätt, Dataskilt, Identifikasjonsplate, Arvokilpi, πινακίδα χαρακτηριστικών

		SELCO S.R.L. Via Palladio, 19 - ONARA (PADOVA) - ITALY			
Type WF 330		N°			
		EN 60974-5 EN 60974-10 Class A			
		X(40 °C)	60%	100%	
		I <sub>2</sub>	500A	400A	
		U <sub>1</sub>	V <sub>max</sub>	I <sub>1max</sub>	A
		48		4.5	
IP 23 S					






Prodotto europeo  
European product  
Erzeugt in Europa  
Produit d'Europe  
Producto Europeo



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 Significato targa dati, Meaning rating plate, Bedeutung der Angaben auf dem Leistungsschild, Signification de la plaque des données, Significado de la etiqueta de los datos, Significado da placa de dados, Betekenis gegevensplaatje, Märkplåt, Betydning af oplysningerne dataskilt, Beskrivelse informasjonsskilt, Kilven sisältö, Σημασία πινακίδας χαρ ακτηριότικων

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



#### ENGLISH

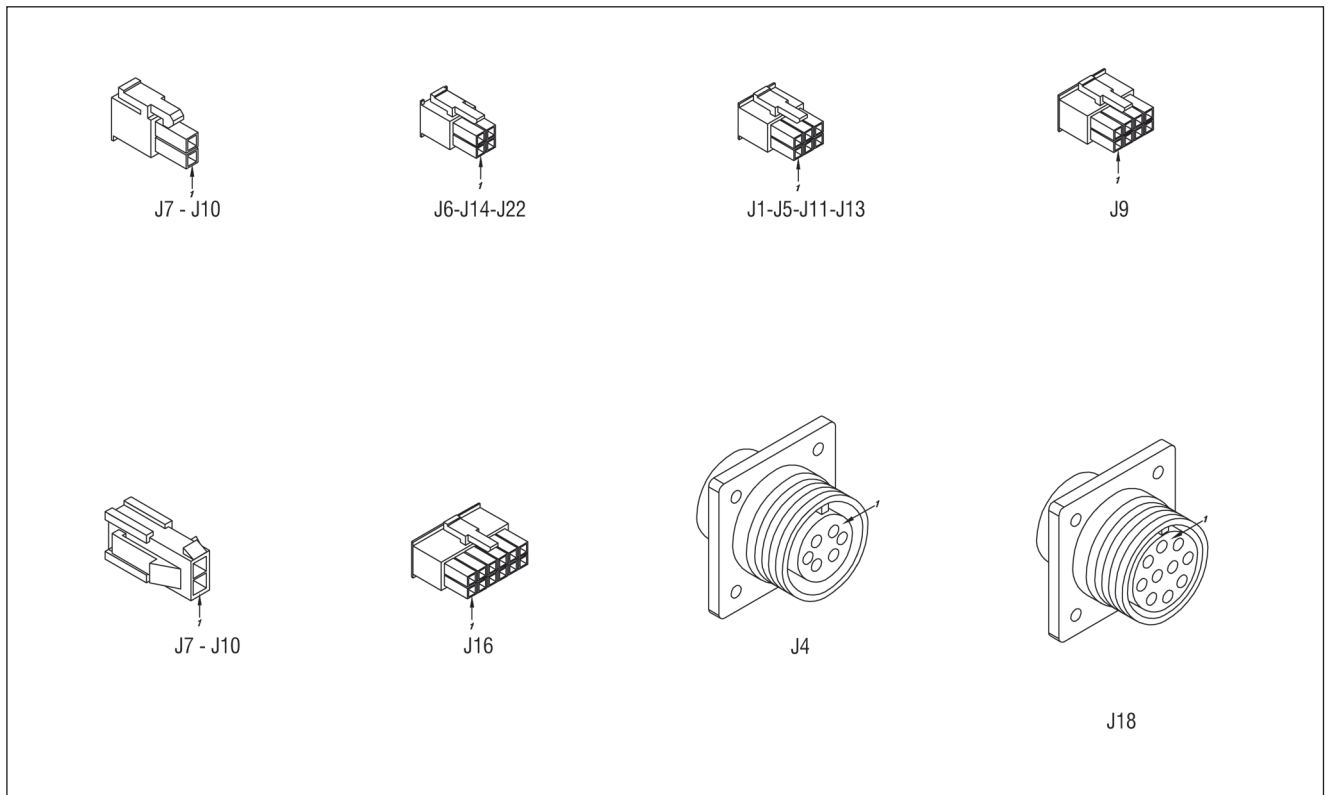
1. Trademark
2. Name and address of manufacturer
3. Machine model
4. Serial no.
5. Reference to construction standards
6. Intermittent cycle symbol
7. Rated welding current symbol
- 6A/6B Intermittent cycle values
- 7A/7B Rated welding current values
8. Power supply symbol
9. Rated power supply voltage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



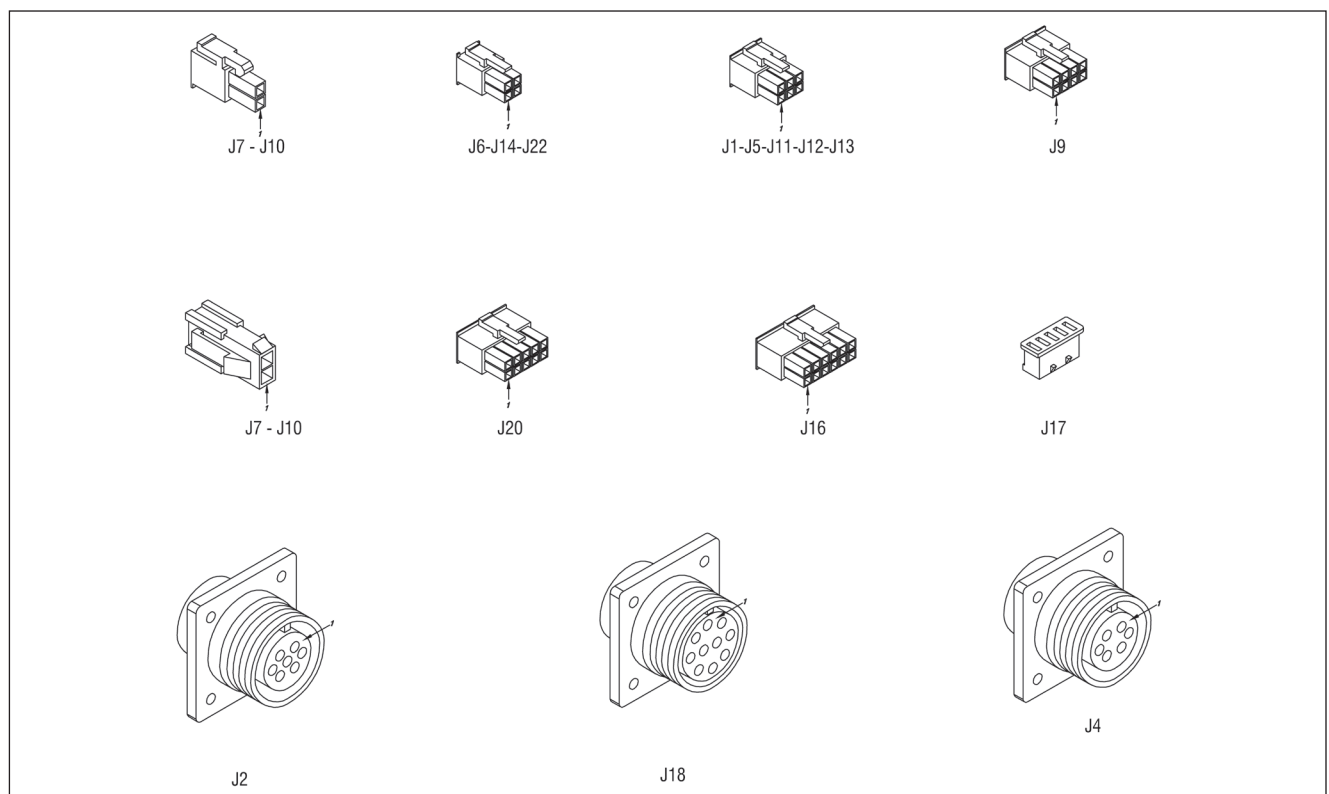


**12 Connettori, Connectors, Verbinder, Connecteurs, Conectores, Conectores, Verbindungen, Kontaktdon, Konnektorer, Skjøtemunnstykker, Liittimet, Συνδετήρες**

**WF 330 ArcDrive Classic - WF 330 ArcDrive Smart**

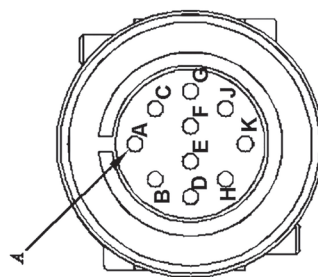
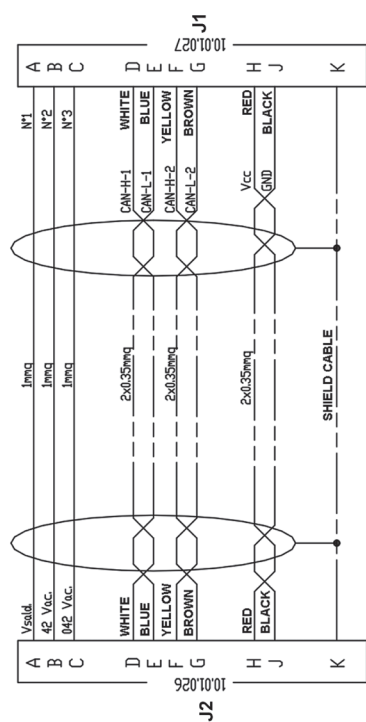


**WF 330 RadiDeep Steel**

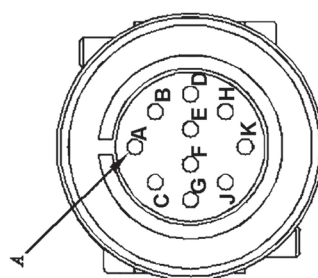
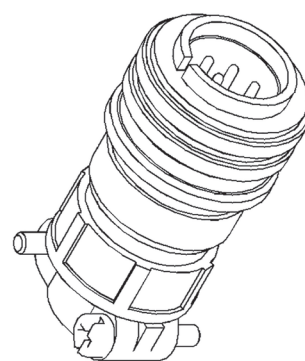




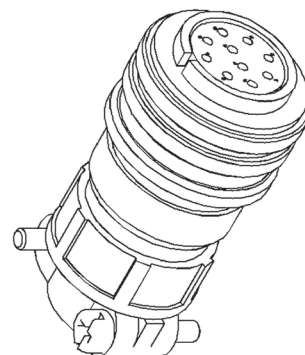
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J2



J1







# ENGLISH

## POS. CODE

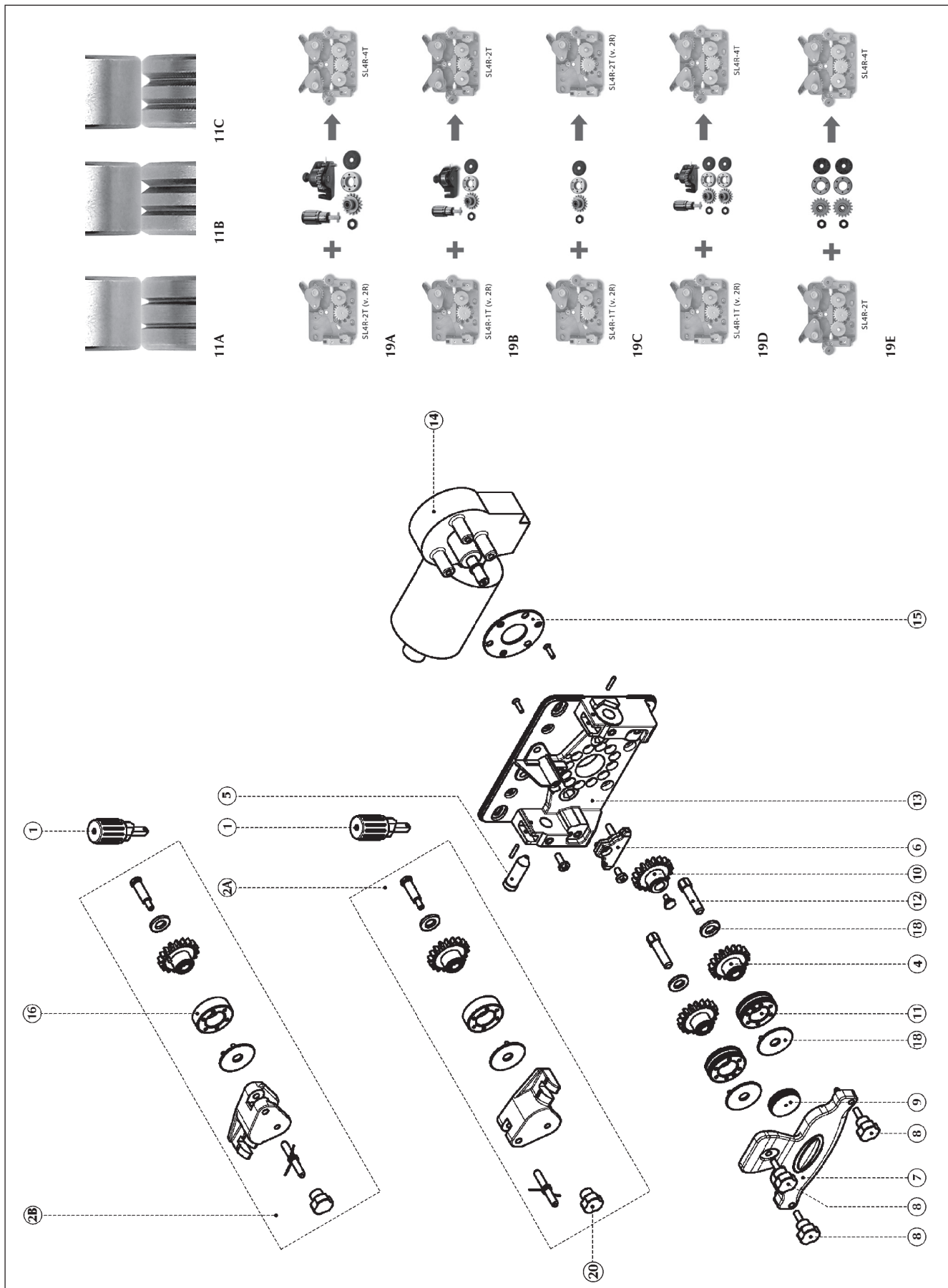
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	03.07.382	WF 330 AD CL	Side panel - L
	03.07.363	WF 330 RD ST	Side panel - L
2	02.04.03603		Side panel - R
3	01.04.022		Front frame (plastic)
4	20.04.102		Cover
5	15.22.361	WF 330 AD CL	Control panel FP361
	15.22.362	WF 330 AD SM	Control panel FP362
	15.22.349	WF 330 AD EX	Control panel FP349
6	19.01.028		Insulated liner L.79mm
7	19.06.008		Central adaptor system
8	19.50.058		Nut-1/8" 1/8" gas fitting
9	24.01.005		Fitting 6 - 1/8" 90°
10	19.50.044		Gas hose holder 1/8"
11	09.04.402		Push button
12	20.07.093		Gas-power insulating
13	07.01.340	WF 330 AD CL-AD SM	SL 4R-1T (v.2R)
	07.01.339	WF 330 RD ST	SL 4R-2T (v.2R)
14	20.04.103		Plastic bushing
15	07.01.313		Wire guide nut
16	20.04.079		Hinge
17	20.02.003		Wire spool spindle (15kg)
18	01.15.041		Handle
19	10.13.054		Current plug (panel) 70mm <sup>2</sup>
20	10.13.003		Current socket (panel) 70-95mm <sup>2</sup>
21	19.50.054		Quick connector H2O (red) - 1/8"
22	19.50.053		Quick connector H2O (blue) - 1/8"
23	24.01.190		Fitting 1/8" - 1/4"
24	09.05.001		Solenoid valve
25	15.14.482		PC. board
26	73.10.073		Feed unit wheels - upgrade kit
27	73.10.074		Feed unit wheels - upgrade kit
28	73.11.012		Push pull - upgrade kit
29	21.03.001		Knob
30	08.20.00501		Passthrough gasket
31	20.04.021		Cap
32	73.12.019	WF 330 RD ST	Torch connection kit
*	21.04.002		Braided pvc hose - 6x12
*	49.07.491		(RC) wiring
*	49.07.492		(U/D) wiring
*	49.07.520		Power cable
*	73.11.015	WF 330 RD ST	(RC) wiring kit**
*	91.08.339		"A" instruction manual
*	91.08.367		"B" instruction manual

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

**AD CL** =ArcDrive Classic, **AD SM** = ArcDrive Smart, **RD ST** =RapiDeep Steel

\*\* Consultare la sezione "Installazione Kit/Accessori", Consult the "Installation kit/accessories" section, Siehe Abschnitt "Installation kits/zubehör", Consulter le paragraphe "Installation kit/accessoires", Consultez la sección "Instalación kit/accesorios".

07.01.340 SL 4R-1T (v.2R) (WF 330 ARCDRIVE CLASSIC - ARCDRIVE SMART)  
07.01.339 SL 4R-2T (v.2R) (WF 330 RAPIDEEP STEEL)

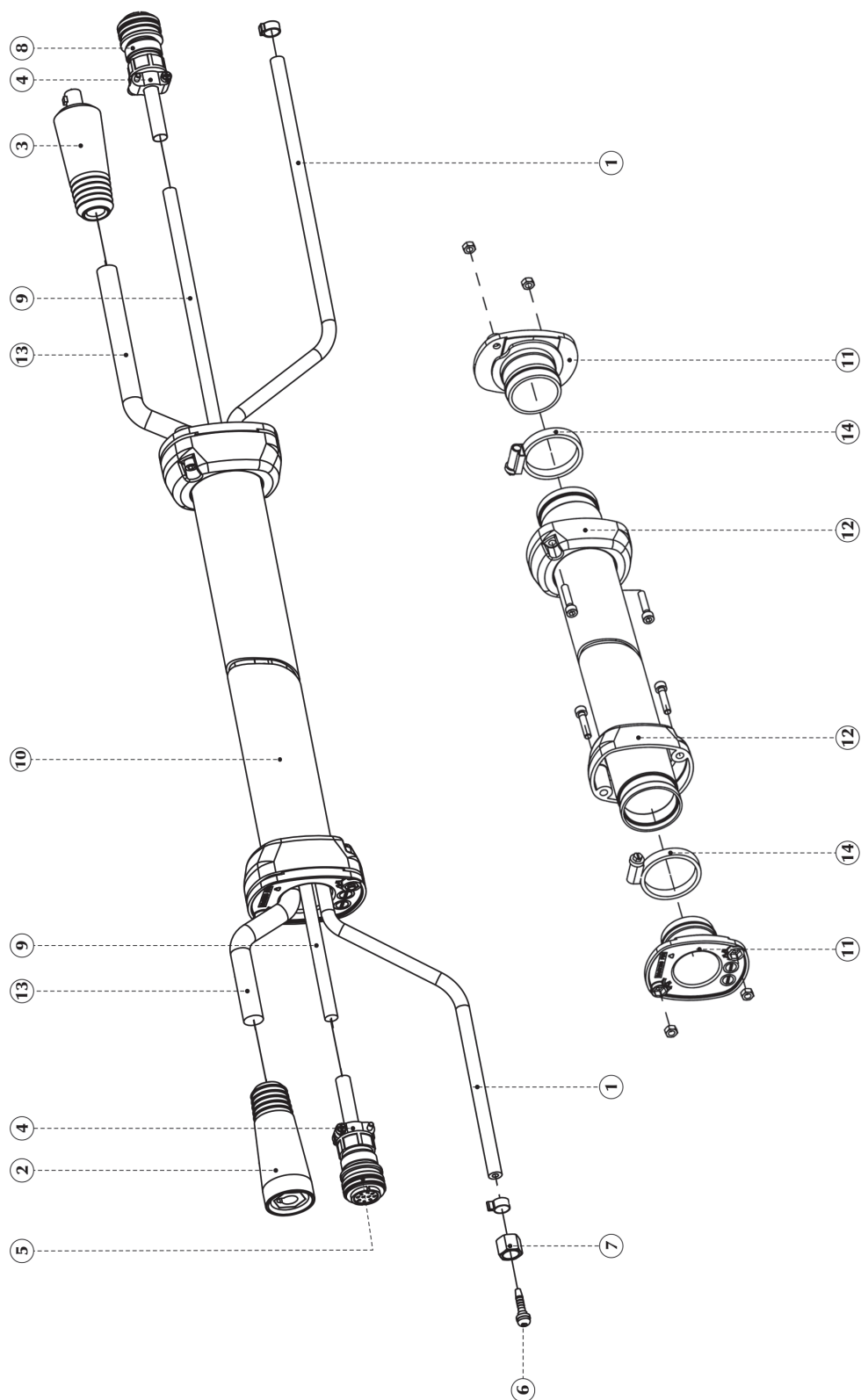


POS. CODE	ENGLISH
1 09.11.215	Pressure regulator knob
2A 07.01.500	Split wire guide - R (SL 4R-2T v.2R)
07.01.505	Split wire guide - R (SL 4R-1T v.2R)
2B 07.01.501	Split wire guide - L (SL 4R-2T v.2R)
07.01.503	Split wire guide - L (SL 4R-1T v.2R)
4 07.01.312	Gear wheel
5 19.50.057	Wire-guide bush
6 20.07.053	Central wire-guide bush 4 rollers
7 20.07.047	Top guide 4 rollers
8 20.04.058	Knob
9 20.07.079	Motor gear Knob
10 07.01.309	Gear wheel
11A 07.01.298	Roller for wire 0.6-0.8
07.01.291	Roller for wire 0.8-1.0
07.01.292	Roller for wire 1.0-1.2
07.01.293	Roller for wire 1.2-1.6
11B 07.01.295	Roller for aluminium wire 0.8-1.0
07.01.296	Roller for aluminium wire 1.0-1.2
07.01.297	Roller for aluminium wire 1.2-1.6
11C 07.01.300	Roller for flux cored wire 1.2-1.4-1.6
07.01.321	Roller for flux cored wire 1.6-2.0-2.4
12 18.76.012	Pin
13 20.07.046	Wirefeeder body 4 rollers
14 07.01.095	Gear motor (90W) WF 330 AD CL - AD SM
07.01.099	Gear motor (120W) WF 330 RD ST
15 20.07.052	Motor flange
16 07.01.307	Drive roll - without groove - aluminium wire
18 20.07.085	Feed unit washer - spare kit
19A 07.01.502	Upgrade kit WF 330 RD ST
19B 07.01.507	Upgrade kit WF 330 AD CL - AD SM
19C 07.01.510	Upgrade kit WF 330 AD CL - AD SM
19D 07.01.511	Upgrade kit WF 330 AD CL - AD SM
19E 07.01.512	Upgrade kit WF 330 AD CL - AD SM
20 20.04.059	Knob (female) - M5

**AD CL** = ArcDrive Classic, **AD SM** = ArcDrive Smart, **RD ST** = RapiDeep Steel

Fascio cavi aria, Air cable bundle, Verkabelung Luft, Câblage faisceau air, Grupo de cables de aire, Ar feixe de cabos, Slangenpakket lucht, Kablage luft, Kabelbündels luft, Kabelfestes luft, Johdinsarjan ilma, Καλωδίωσης καλωδίωσης αέρας

71.06.331 70 mm<sup>2</sup> 4 m

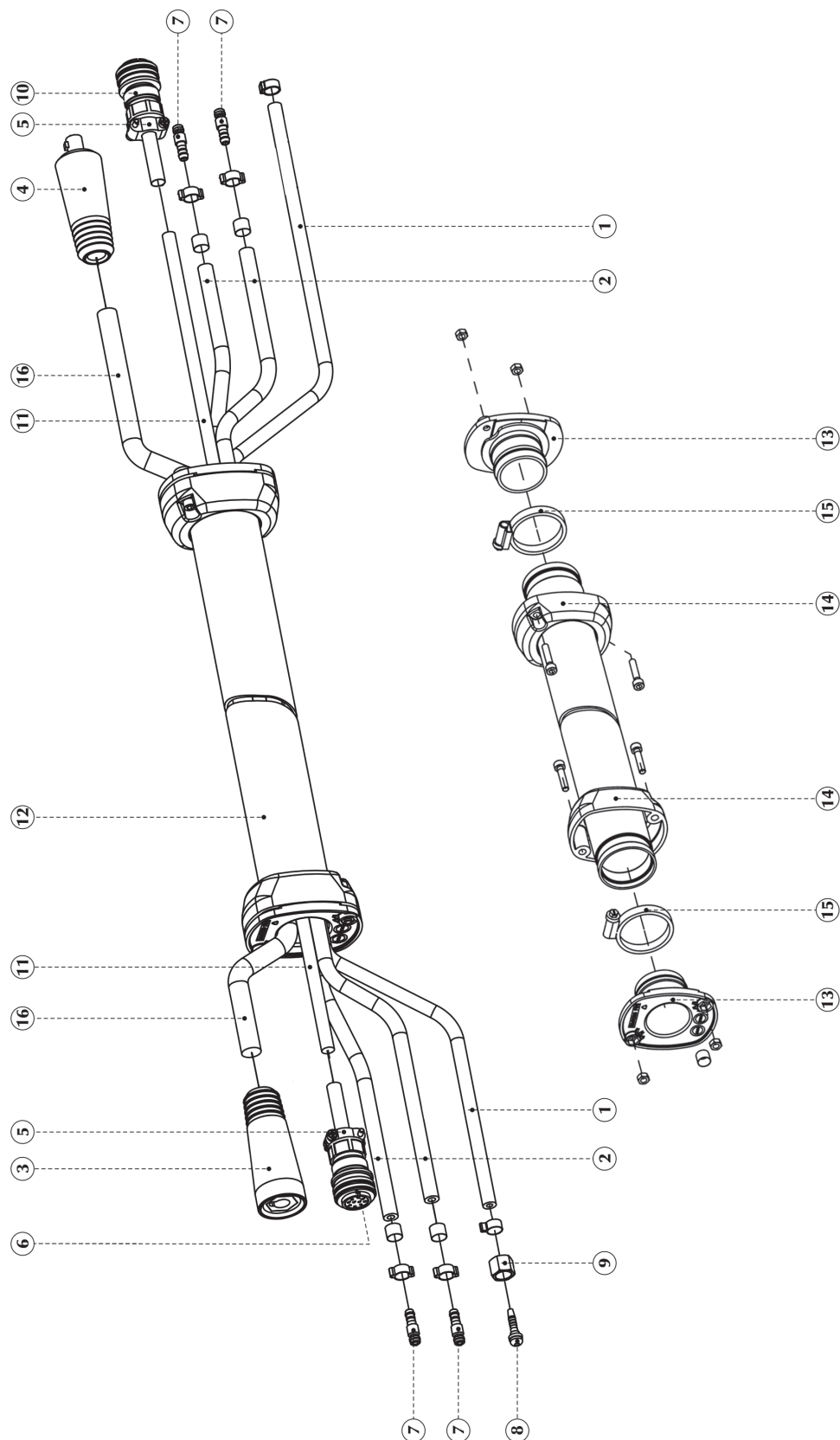




POS. CODE	ENGLISH
1 21.04.001	Braided pvc hose - 5x11
2 10.13.004	Current socket (cable) 50mm <sup>2</sup>
3 10.13.051	Current plug (cable) 50mm <sup>2</sup>
4 10.01.100	Cable clamp
5 10.01.026	10 Pins connector - male
6 72.02.043	Hose holder d.6mm
7 72.02.044	Nut-1/4"
8 10.01.027	10 Pins connector - female
9 08.05.038	Shielded control cable
10 21.04.013	Hose 45x48
11 20.07.163	Retaining system
12 20.07.164	Cap
13 08.03.00501	Welding cable 70mm <sup>2</sup> (per meter)
14 18.78.001	Locking tie

Fascio cavi H<sub>2</sub>O, H<sub>2</sub>O cable bundle, Verkabelung H<sub>2</sub>O, Câblage faisceau H<sub>2</sub>O, Grupo de cables de H<sub>2</sub>O, H<sub>2</sub>O feixe de cabos, Slangenpakket H<sub>2</sub>O, Kablage H<sub>2</sub>O, Kabelbündels H<sub>2</sub>O, Kabelfestes H<sub>2</sub>O, Johdinsarjan H<sub>2</sub>O, Καλωδίωσης H<sub>2</sub>O

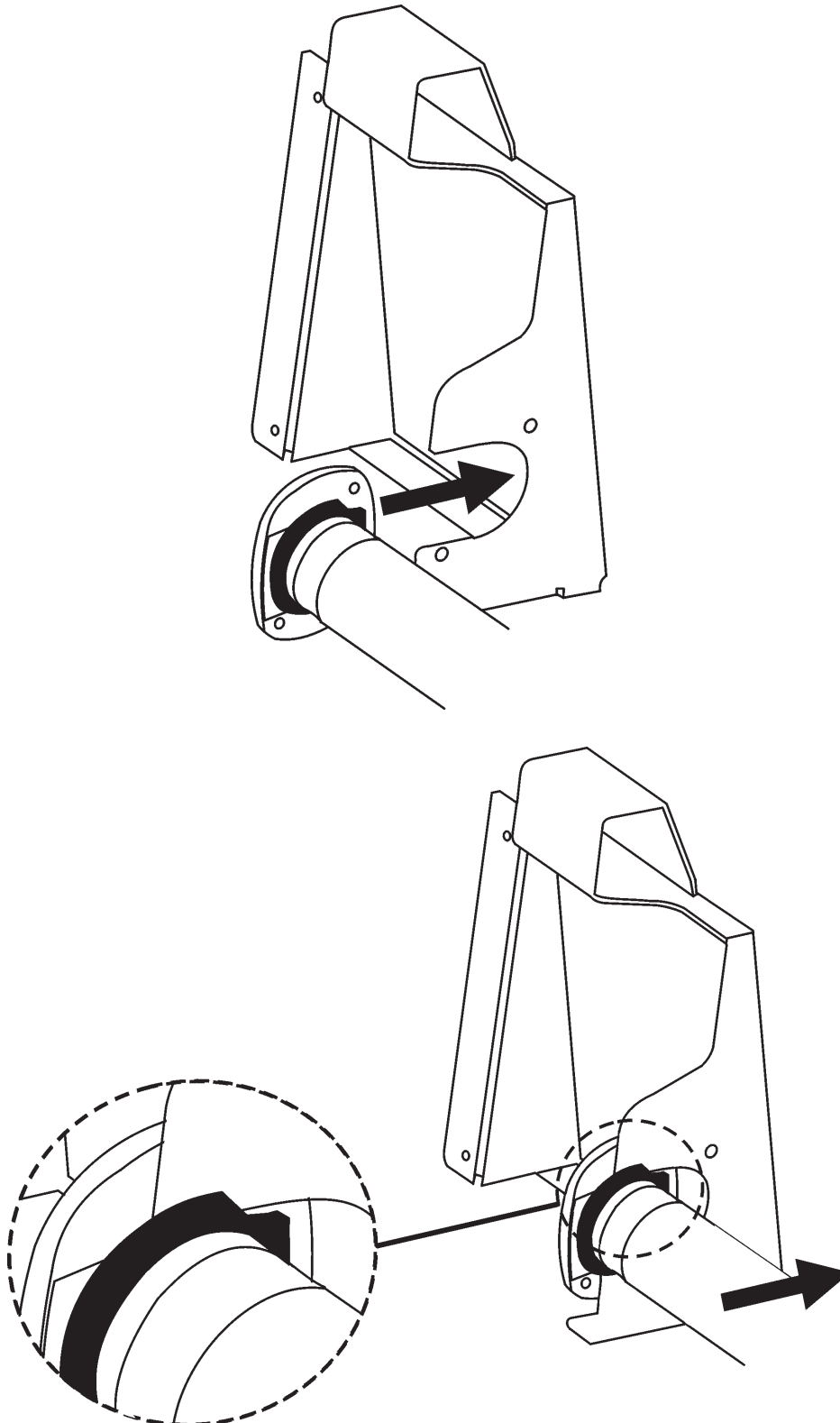
71.06.327 70 mm<sup>2</sup> 4 m

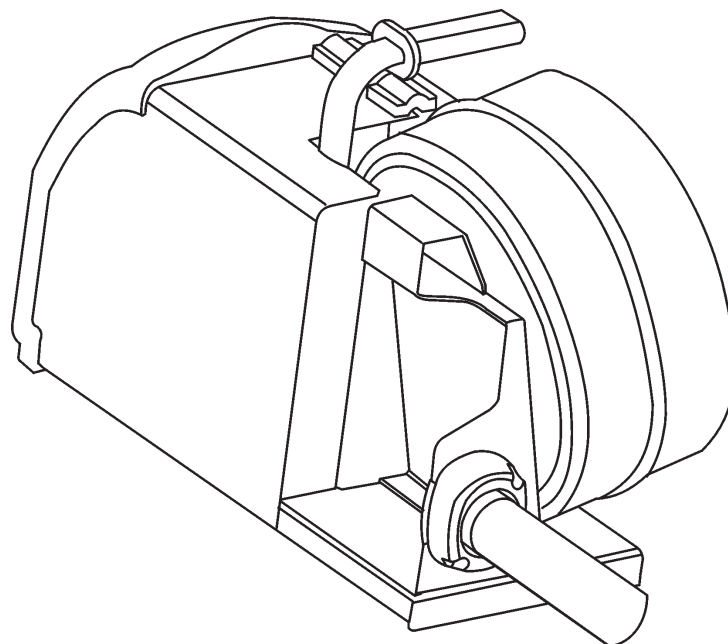
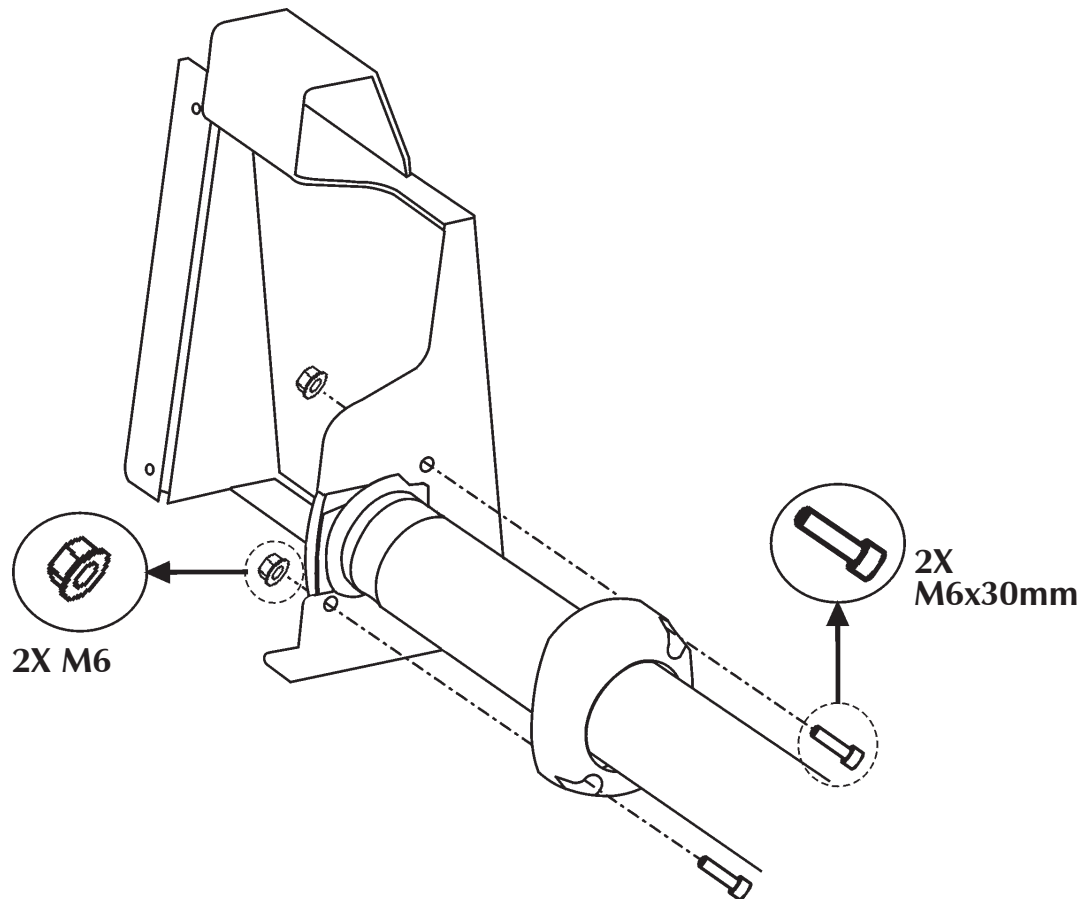


POS.	CODE	ENGLISH
1	21.04.001	Braided pvc hose - 5x11
2	21.04.002	Braided pvc hose - 6x12
3	10.13.004	Current socket (cable) 50mm <sup>2</sup>
4	10.13.051	Current plug (cable) 50mm <sup>2</sup>
5	10.01.100	Cable clamp
6	10.01.026	10 Pins connector - male
7	19.50.045	Quick connector fitting
8	72.02.043	Hose holder d.6mm
9	72.02.044	Nut-1/4"
10	10.01.027	10 Pins connector - female
11	08.05.038	Shielded control cable
12	21.04.013	Hose 45x48
13	20.07.163	Retaining system
14	20.07.164	Cap
15	18.78.001	Locking tie
16	08.03.00501	Welding cable 70mm <sup>2</sup> (per meter)

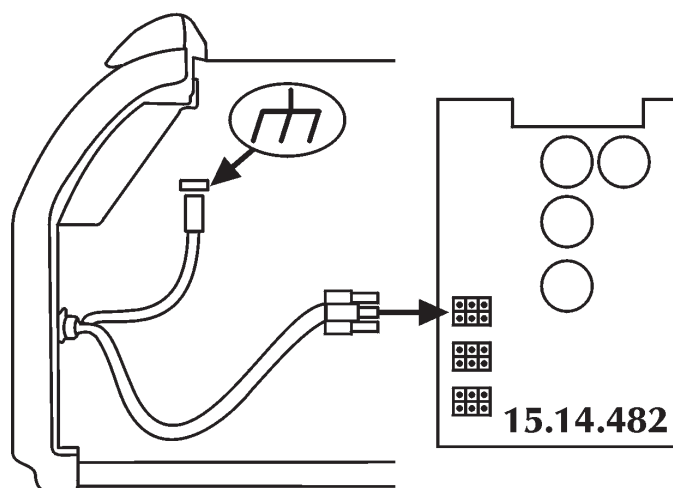
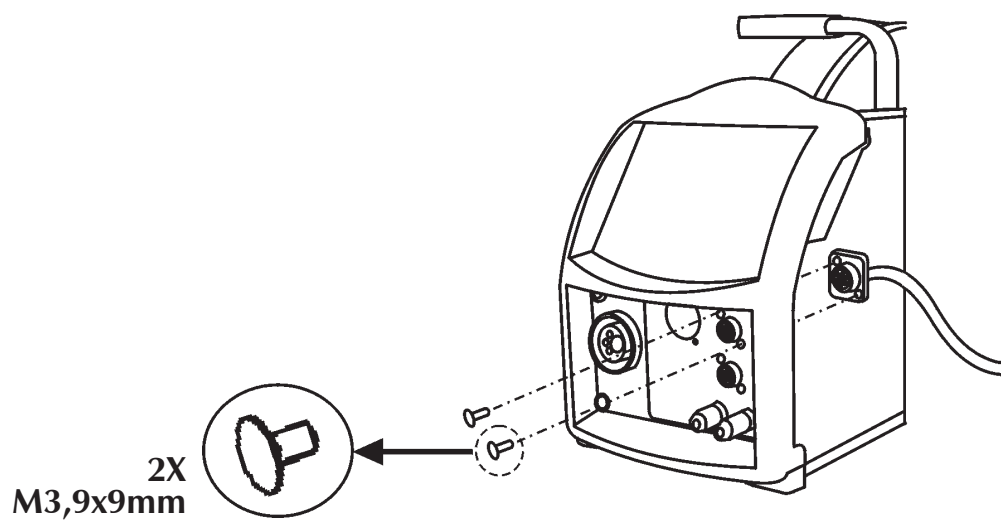
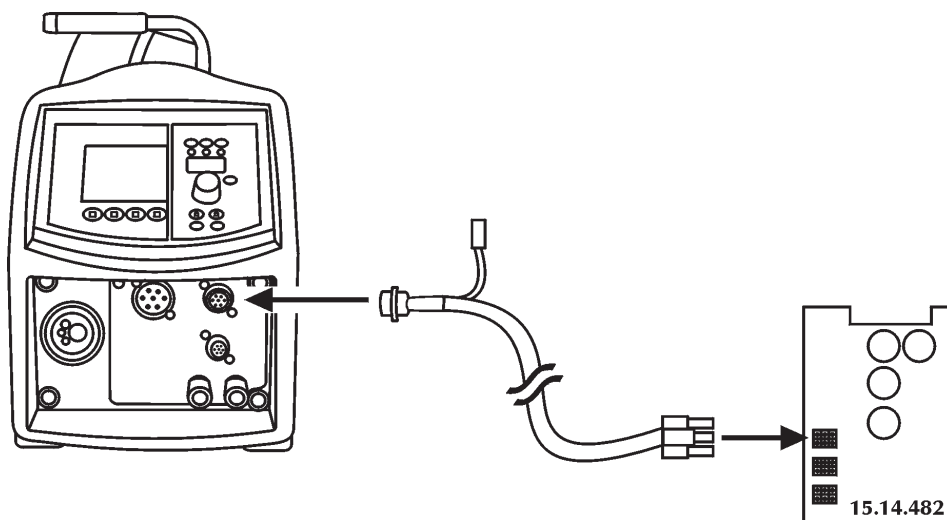
**14** Installazione kit/accessori, Installation kit/accessories, Installation kits/zubehör, Installation kit/accessoires, Instalación kit/accesorios, Instalação kit/acessórios, Het installeren kit/accessoires, Installation kit/tillbehör, Installering kit/ekstraudstyr, Installasjon kit/tilbehørssett, Asennus kit/lisävarusteet, Εγκατάσταση kit/ αξεσουαρ

Fascio cavi, Cable bundle, Leistungskabel, Faisceau câbles, Grupo de cables, Feixe de cabos, Slangenpakket, Ledningsknippet, Kabelbundtets, Kabelfestets, Voimansiirtokaapeli, Δέσμη καλωδίων

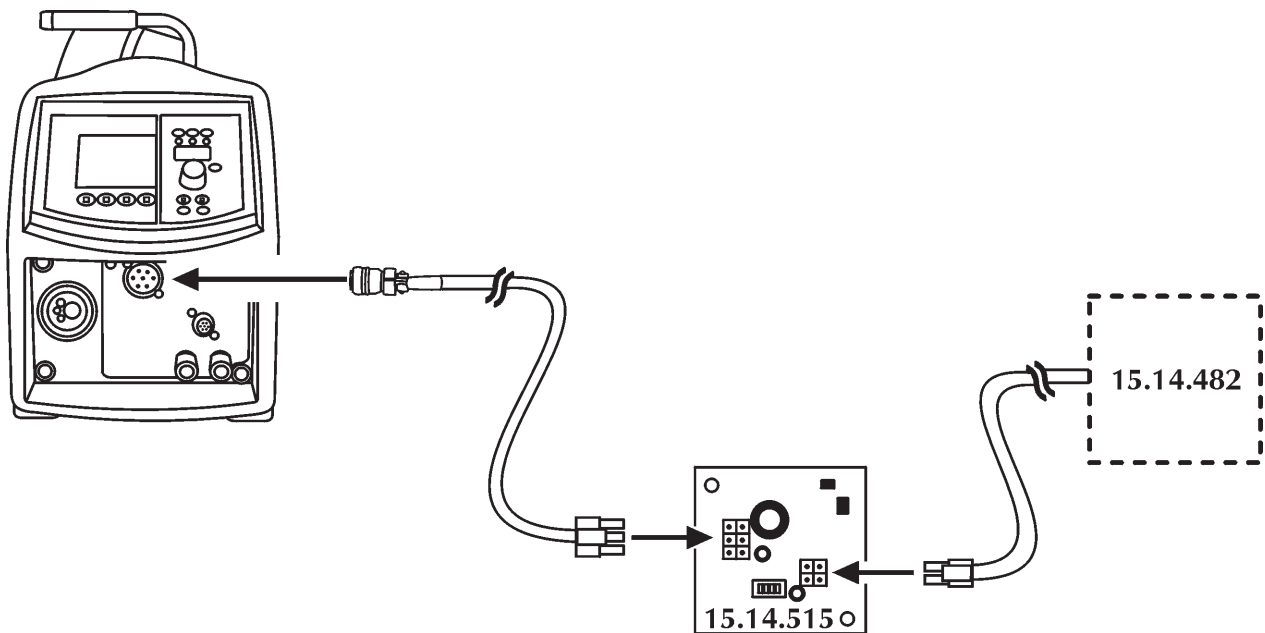
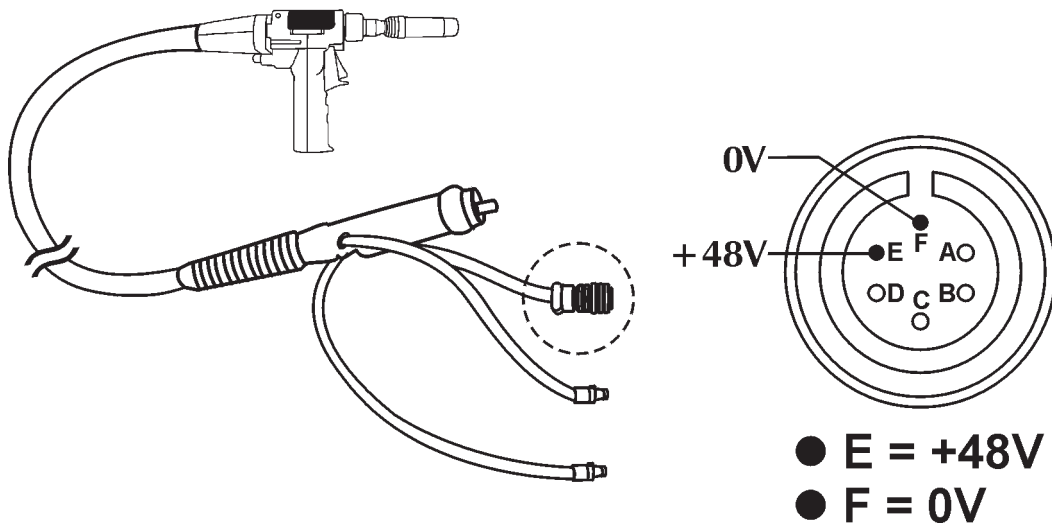


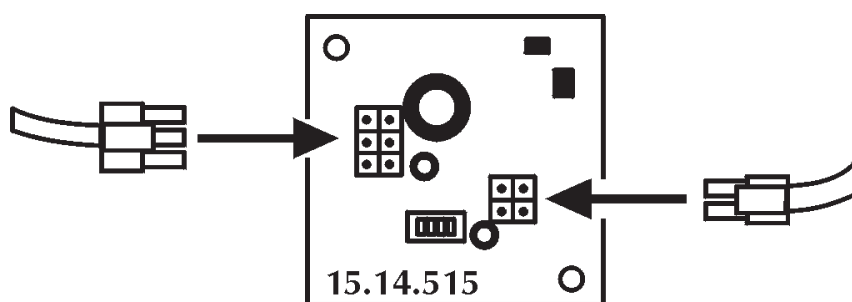
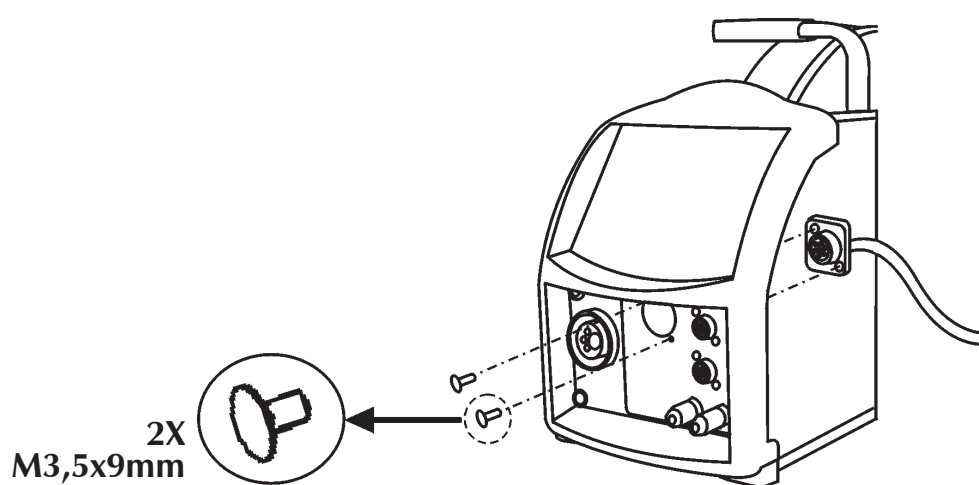


**73.11.015 Kit RC**  
**(WF...RapiDeep Steel)**



73.11.012 Kit Push-Pull

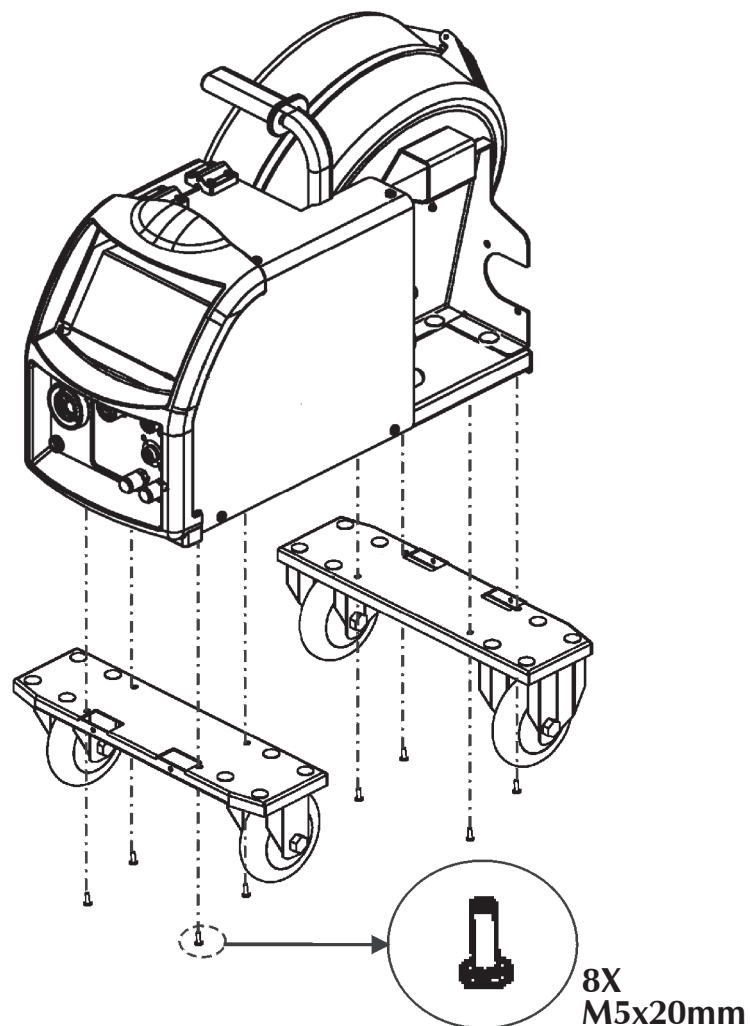
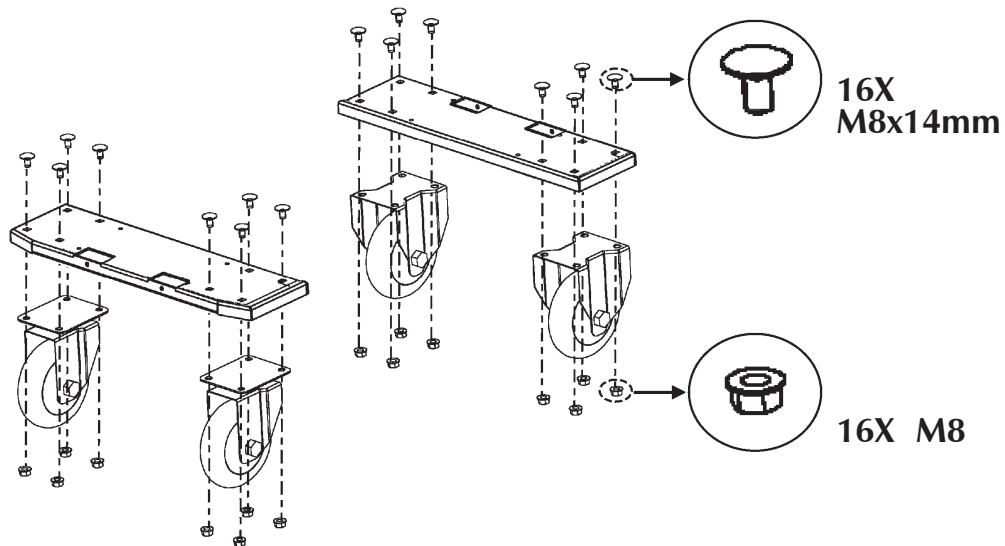






73.10.073

Kit ruote grandi trainafilo, Feed unit wheels - upgrade kit, Rollenkit für Drahtzugaggregat, Kit roulettes devoir, Kit ruedas alimentador de alambre, Unidade de alimentação de grandes rodas - kit de atualização, Draadtoevoer unit grote wielen, Trådmattingsenheten enhet stora hjul, Trådtrækket store hjul, Trådmaterenhet store hjul - oppgraderingssett, Langansyöttölaitteeseen isot pyörät - Muunnossarjan, Τροφοδότη σύρματος μεγάλες ρόδες - κιτ αναβάθμισης



73.10.074

Kit ruote trainafilo, Feed unit wheels - upgrade kit, Rollenkit für Drahtzugaggregat, Kit roulettes devoir, Kit ruedas alimentador de alambre, Unidade de alimentação de rodas - kit de atualização, Draadtoevoer unit wielen, Trådmåtningseenheten enhet hjul, Trådtrækket hjul, Trådmaterenhet hjul - oppgraderingssett, Langansyötölaitteeseen pyörät - Muunnossarjan, Τροφοδότη σύρματος ρόδες - κιτ αναβάθμισης

