

Table 1

## Introduction

Thank you for having purchased our product. Please read instructions on use in this manual **as well as the safety rules given in the attached booklet** and follow them carefully to get the best performance from the plant and be sure that the parts have the longest service life possible. This manual will show you the best way to do any maintenance jobs or repairs eventually needed by your plant to resolve any eventual problems, we do however recommend our customers to arrange to have maintenance and eventual repairs done at our servicing centers as they have the right equipment and the highly qualified personnel is constantly updated. All our machinery and systems are subject to continual development. We must therefore reserve the right to modify their construction and properties.

## Description

The synergic multifunction **NBM-500L** power source, based on the most modern IGBT based inverter technology with digital control, allows high quality welding both in MIG/MAG, and in Pulsed MIG on all materials and particularly on stainless steel, aluminum and galvanized steel, by minimizing any reworking job after welding thanks to its spatter free performance.

Technologically advanced, robust and easy-to-use, **NBM-500L** represents the ideal solution for any application requiring high precision and repeatability of the achieved results, by making this power source particularly suitable for the most qualified jobs in any industrial application. The high versatility of **NBM-500L** also achieves performances in MMA welding.

The wire-feeder was designed for using all types of wire, either solid or cored, and must only be used as part of the welding generator and not for improper or any other use.

## Technical data

The general technical data of the system are summarized in Table 1, Table 2 and Table 3.

## Operating features

### NBM-500L

The main feature of the welding unit **NBM-500L** are:

- Innovative and user friendly design;
- Metallic main structure with shockproof plastic front frames;
- Robust handles built into the chassis;
- Control panel protected against accidental impact;
- Synergic digital control of all the welding parameters;
- BURN BACK control. At the end of each weld, in any condition and with any material, the digital control ensures a perfect wire cut, prevents the typical "wire globule" from forming and ensures correct arc restriking;
- Spatter free exceptional welding characteristics in both MIG/ MAG, MIG Pulsed and MIG Dual Pulsed on any material and with any gas;
- High welding performance in MMA mode striking;


Model		NBM-500L
Three phase feeding 50/60 Hz	V	380
Power supply: Zmax	ohm	(*)
Current range MIG MAG ELECTRODE		30-500 A / 16.5-40 V 30-500 A / 21.2-40 V
Installation power	kVA	25.1(MMA)/25.1(MIG)
Open circuit voltage	V	75-85V
Duty cycle at 100%	A	350
Duty cycle at 60%	A	500
Insulation class		F
Protection class		IP 21
Dimensions 	mm	650*510*285
Weight	kg	28.6

Table 2


Model		Wire Feeder
Input voltage of feeder	V	24
Power output of feeder motor	W	84
N° rolls		4
Wire diameter	mm	0.8-1.6
Rated wire feeding speed	m/min	2-21
Compatible wire types		<ul style="list-style-type: none"> <li>• Carbon steel</li> <li>• Stainless steel</li> <li>• Aluminium magnesium</li> <li>• Aluminium silicon</li> </ul>
Protection gas		<ul style="list-style-type: none"> <li>• Carbon dioxide</li> <li>• Pure Argon</li> <li>• Argon-Carbon dioxide-Oxygen</li> <li>• Argon and Carbon dioxide blends</li> </ul>
Coolant Maximum pressure	bar	Distilled water 3,5
Insulation class		F
Motor and control protection grade		IP 21
Dimensions 	mm	375*370*285
Weight	kg	13.2

Table 3

Model		Cooling unit
Input voltage	V	380
Rated frequency	Hz	50-60
Power output	W	75
Capacity of tank	L	6
Maximum of flow	GPM	1.6
Maximum of pressure	PSI	60

- Wave form control. Both welding parameters and pulse wave form, digitally controlled by the microprocessor, are monitored and modified every few microseconds in order to keep the arc constantly precise and stable by compensating for continuous changes in welding conditions caused by torch movement and workpiece irregularity;
- Ability to store personalized welding programs;
- Monitoring and repetition of welding parameters;
- User friendly and easy-to-use selection and recalling of

- the parameters and welding programs;
- Low energy consumption;
- “Energy Saving” function to operate the power source cooling fan and the torch water cooling only when necessary;
- Auto-diagnostic feature for trouble shooting;
- Initial and crater welding cycle control;

#### **Wire feeder**

The main features of the wire feeder are:

- Welding current SYNERGIC adjustment;
- Arc length FINE adjustment;
- Wire test;

#### **Cooling unit (optional)**

- Water level monitoring;

## Usage limits

The use of a welder is typically discontinuous, in that it is made up of effective work periods (welding) and rest periods (for the positioning of parts, the replacement of wire and underflushing operations etc. This welder is dimensioned to supply a I2 max nominal current in complete safety for a period of work of 60% of the total usage time. The regulations in force establish the total usage time to be 10 minutes. The work cycle is considered to be 60% of this period of time. If the permitted work cycle time is exceeded, an overheat cut-off occurs to protect the components around the welder from dangerous overheating. Messages flashing on the display will warn you when the heat safety device starts working (see paragraph “Alarm conditions”). After several minutes the overheat cut-off rearms automatically and the welder is ready for use again. Do not weld in the rain. This generator is constructed in compliance with the IP23 protection level.

## Opening the packaging

The system essentially consists of:

- Weld unit;
- Wire feeder unit;
- Wire-feeder/generator interconnection cable;
- Coolant unit for welding torch;
- Trolley to carry it around;

Perform the following operations on receiving the apparatus:

- Check that the welding apparatus is in good condition; otherwise immediately inform the retailer or distributor;
- Check that all the ventilation grilles are open and that there are no objects obstructing the free flow of air.

## How to lift up the system

Strap the system safely and securely in the slings working from the bottom, then lift up from the ground.

#### **NBM-500L**

The welder has two handles to carry it around manually.

#### **Wire feeder**

The wire-feeder has a handle and a tray so that it can be hung up.

**NOTE:** Do not use other equipment to lift or transport the feeder.

## Installation and connections

The installation site for the system must be carefully chosen in order to ensure its satisfactory and safe use. The user is responsible for the installation and use of the system in accordance with the producer's instructions contained in this manual.

Before installing the system the user must take into consideration the potential electromagnetic problems in the work area.

In particular, we suggest that you should avoid installing the system close to:

- signaling, control and telephone cables;
- radio and television transmitters and receivers;
- computers and control and measurement instruments;
- security and protection instruments.

Persons fitted with pace-makers, hearing aids and similar equipment must consult their doctor before going near a machine in operation. The equipment's installation environment must comply to the protection level of the frame.

The welding unit is characterized by the following classes:

- IP 21 protection class indicates that the generator can be used in both interior and exterior environments;

This system is cooled by means of the forced circulation of water.

Assemble the system in the following way:

- Assemble the trolley;
- Attach the welding unit to the trolley;
- Assemble the wire-feeding unit onto the trolley;
- Attach the coolant unit to the trolley and to the welder (electrical and water connections).
- Connect up the wire-feeder/generator interconnection cable;
- Connect up the welding cables;
- Connect up the welder to the mains.

## CONNECTING THE WIRE-FEEDER/GENERATOR INTERCONNECTION CABLE

This cable connects the welding machine to the wire-feeder.

**WARNING:** *Do not disconnect the wire-feeder until the machine has been switched off (see paragraph “Alarm conditions”).*

### ■ DIRECT-POLARITY welding

Connect up the interconnection cables (power cable, ancillary wiring and gas tube) to the special attachments and couplings shown in Figure 1.

The delivery and return water tubes, used for cooling the torch of the welding machine, are part of the interconnection cable and should be connected as follows:

interconnection cable on generator side: connect up air plug and welding cable (positive) to their rapid couplings;  
wire feeder side connecting cable: connect up air plug, air pipe and welding cable (positive) to their rapid couplings (Figure 1);

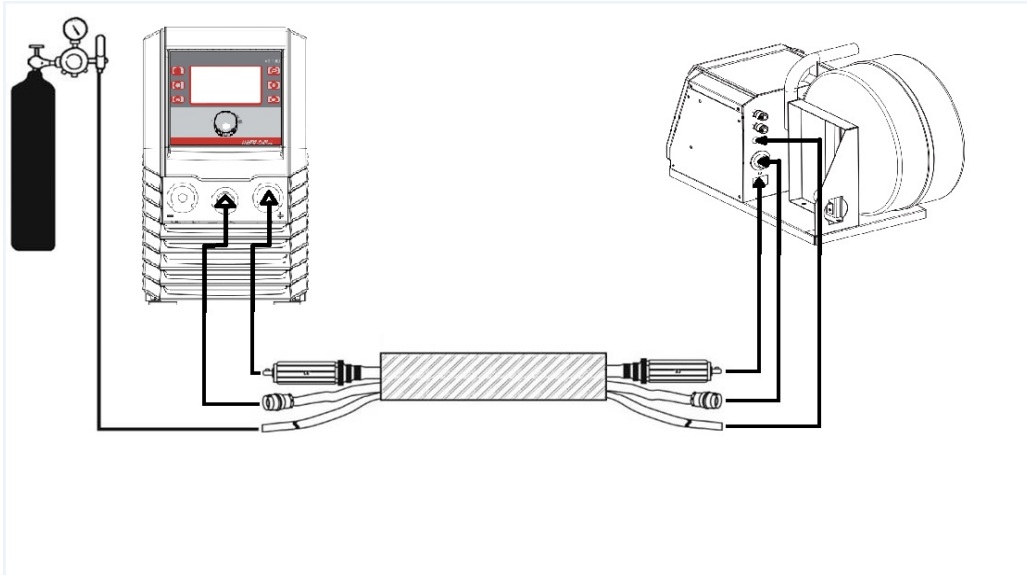


Figure 1

## CONNECTION OF THE WELDING CABLES

### ■ Electrode welding (MMA)

With the machine disconnected from the supply, connect the welding cables to the out terminals (positive and negative) of the welder, connecting them to the gripper and the earth, with the correct polarity provided for the type of electrode to

be used. Choosing the indications supplied by the electrode manufacturer, the welding cables must be as short as possible, close to one other, and positioned at floor level or close to it.

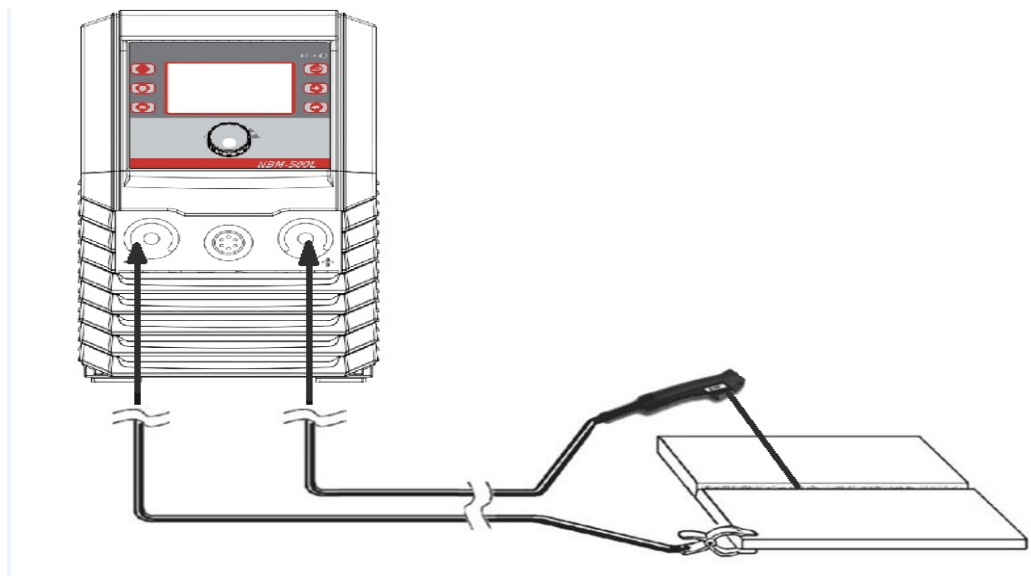


Figure 2

### ■ MIG-MAG / MIG PULSED / MIG DUAL PULSED welding

#### DIRECT-POLARITY welding

To start MIG-MAG welding, make the connections shown in Figure 3, more precisely (with the machine switched off): connect the generator - feeder connecting cable as shown in Figure 3. Gas cylinders are supplied with a pressure reducer to adjust pressure of the gas used for welding;

- connect up the earthing system cable to the rapid coupling marked by a - (negative) symbol and then the relevant earth clamps to the piece being welded or to its support in an area free from rust, paint and grease. Using particularly long earthing cables reduces the voltage and causes

some problems from increased resistance and inductance of the cables that could cause faulty welding. Follow instructions to avoid these problems:

- use earthing and extension cables with appropriate section;
- lay out the cables as a flat as possible to prevent them from coiling up.
- screw the torch power cable to the centralized attachment on the front panel of the wire-feeder and connect up the delivery and return water tubes to their rapid couplings located on the wire-feeder.

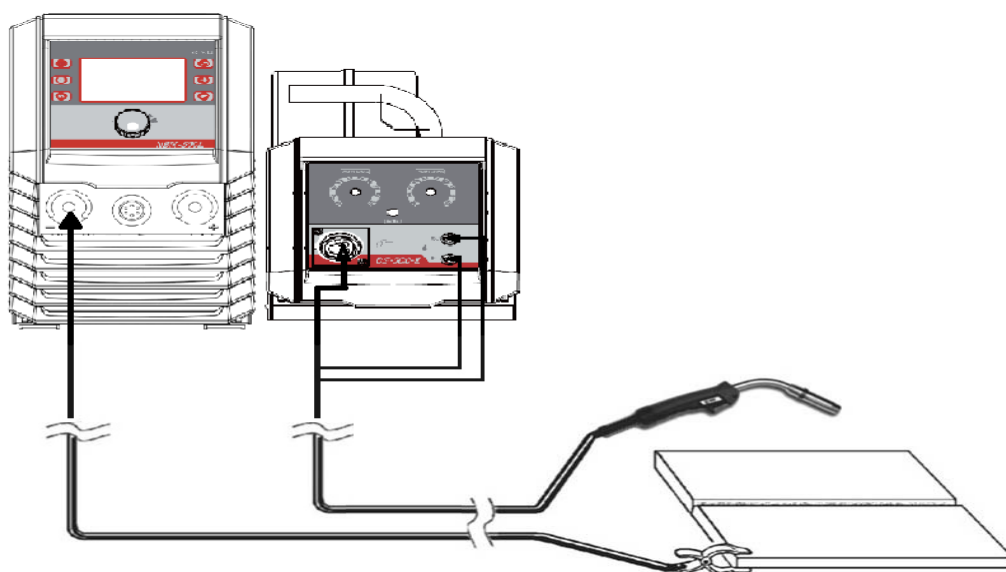


Figure 3

## Loading wire

- Open the side panel and fit the reel on the support so that the wire unrolls clockwise, and center the projecting reference on the support with the relative hold on the reel.
- Thread the end of the wire into the back guide (Pos. 1, Figure 4) on the drawing mechanism.
- Lift up the idle rolls (Pos. 8, Figure 4) releasing the roll pressure device (Pos. 5, Figure 4). Make sure that the drive rolls (Pos. 3, Figure 4) have the diameter corresponding to the wire being used stamped on the outside.
- Thread the wire into the central wire guide (Pos. 9, Figure 4) and into the wire guide of the centralized attachment (Pos. 4, Figure 4) for a few centimetres. Lower the idle roll-holder arm making sure the wire goes into the slot of the drive roll. If necessary, adjust the pressure between the rolls with the screw provided (Pos. 5, Figure 4). The correct pressure is the minimum that does not allow the rolls to skid on the wire. Excessive pressure will cause deformation of the wire and tangling on the entrance of the sheath; insufficient pressure can cause irregular welding.

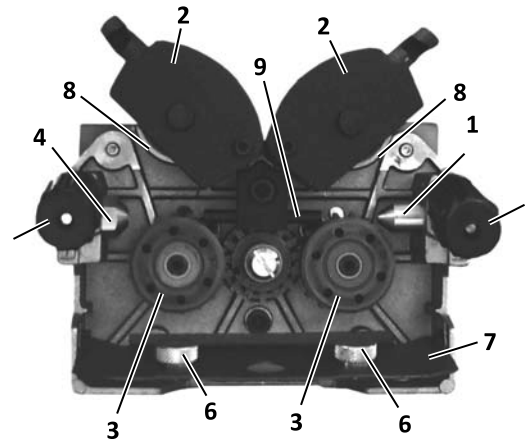
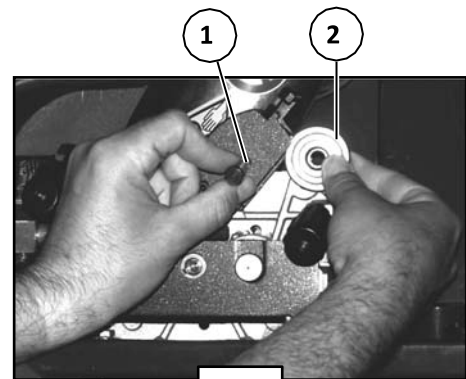


Figure 4



## Assembly of drive rolls

Unscrew the two screws (Pos. 6, Figure 4) and lower the safety guard of the gearing (Pos. 7, Figure 4). Lift up the idle rollholder arm (Pos. 2, Figure 4) and proceed as follows:

- Each roll shows the type of wire and diameter on the two external sides.
- Install the right rolls (Pos. 3, Figure 4) making sure the groove is in the correct position for the diameter of the wire being used.
- Close up the gearing safety guard again.



Figure 5

## Command and control units NBM-500L

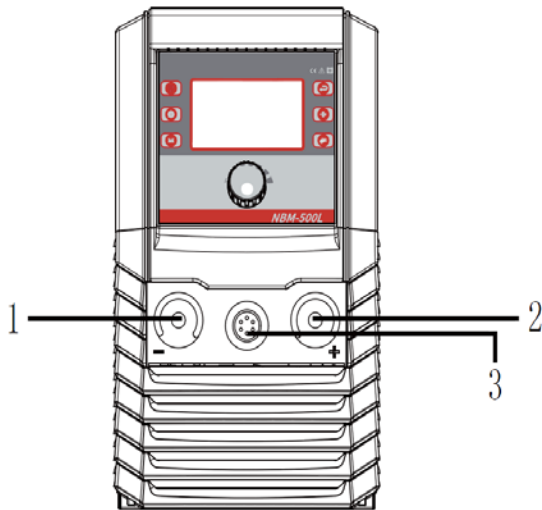


Figure 6

- Pos. 1** Fast coupling reverse polarity.
- Pos. 2** Fast coupling straight polarity.
- Pos. 3** Communication interface.
- Pos. 4** Power switch.

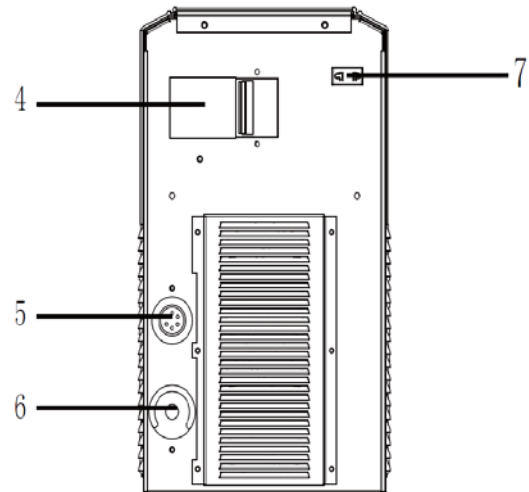


Figure 7

- Pos. 5** Communication interface.
- Pos. 6** Fast coupling straight polarity.
- Pos. 7** AC36V output power.

## Command and control units wire feeder

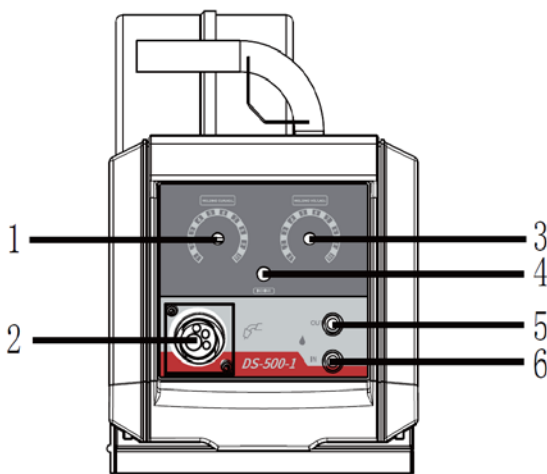


Figure 8

- Pos. 1** Current encoder knob.
- Pos. 2** Voltage encoder knob.
- Pos. 3** Wire feeding key.
- Pos. 4** MIG-MAG welding torch.
- Pos. 5** Water tube.
- Pos. 6** Water tube.

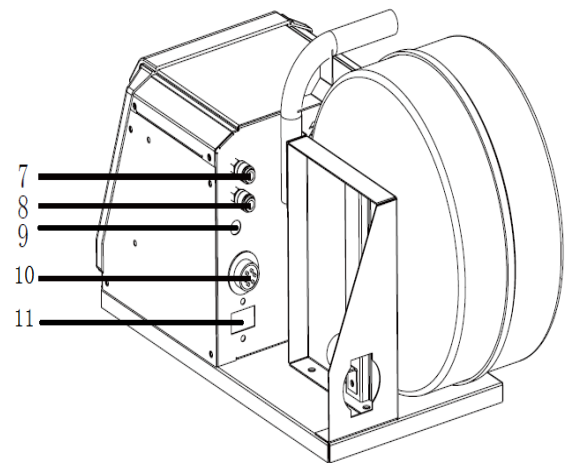


Figure 9

- Pos. 7** Water tube.
- Pos. 8** Water tube.
- Pos. 9** Gas tube.
- Pos. 10** Communication interface.
- Pos. 11** Straight polarity.

## Command and control units wire feeder

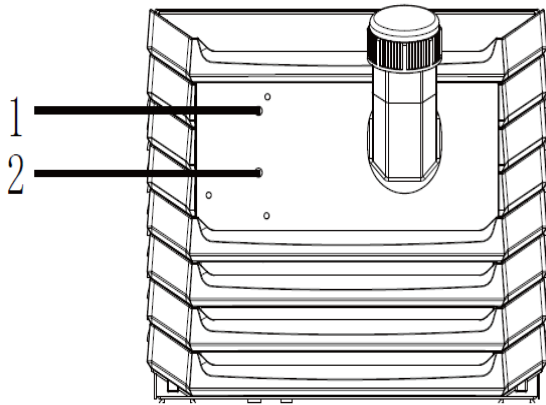


Figure 10

**Pos. 1** Water shortage light.  
**Pos. 2** Power indicator light.

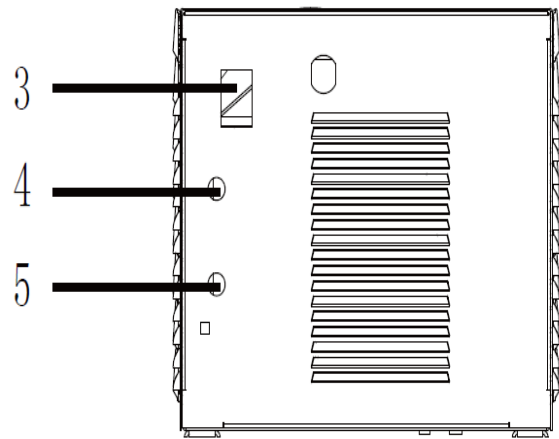


Figure 11

**Pos. 3** Power switch.  
**Pos. 4** Water tube.  
**Pos. 5** Water tube.

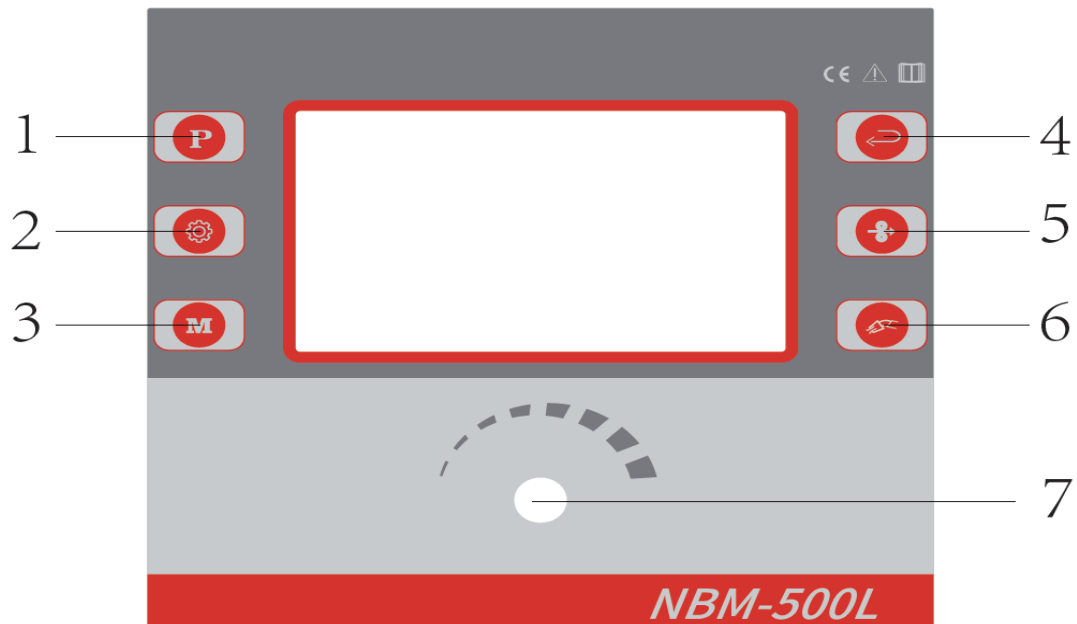


Figure 12

■ **Page switching key (Pos.1)**

This key is used to switch pages among welding page, welding mode page and program page;

■ **More paras key (Pos.2)**

This key is used to access more parameters page;

■ **Memory key (Pos.3)**

This key is used to access memory page;

■ **Back key (Pos.4)**

This key is used to access the last page;

■ **Wire feeding test key (Pos.5)**

While system operates in GMAW mode, this key is used to

test wire feeding function.

■ **Gas test key (Pos.6)**

While system operates in GMAW mode or TIG mode, this key is used to test gas function.

■ **ENCODER knob and ENCODER key (Pos.7)**

ENCODER knob is used to change parameter values or switch selected options. ENCODER key are equal to enter key.



## Before welding

**WARNING:** Before welding, check that the data on the power source plate correspond to the supply voltage and frequency.

- Start up the welder by turning the switch on the back panel to 1 (**N.B.:** the machine will display the last settings made before it was switched off when it is turned on again);
- Set the various units according to the chosen welding process.

## Welding procedures

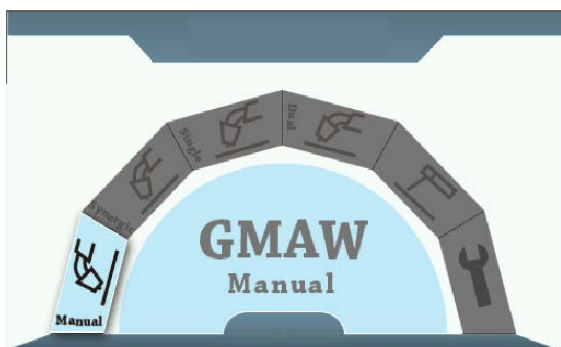



Figure 13

### ELECTRODE WELDING (MMA)

For coated electrode welding with devices that can be adjusted from the user's "Arc Force" and "Hot Start".

You can access this welding mode by adjusting the ENCODER knob to MMA  and then pressing the ENCODER key.

Connect up the welding cables following description in paragraph "Connecting up welding - ELECTRODE welding cables".

### Welding parameters

Table 3 shows the values of current to use with the respective electrodes for the welding of common steels and low-grade alloys. These data have no absolute value and are indicative data only. For a precise choice follow the instructions provided by the electrode manufacturer. The current to be used depends on the welding positions and the type of joint, and it increases according to the thickness and dimensions of the part.

A fairly approximate indication of the average current to use in the welding of electrodes for ordinary steel is given by the following formula:

$$I = 50 \times (\varnothing e - 1)$$

where:

I = intensity of the welding current  $\varnothing e$  = electrode diameter

Example: for electrode diameter 4 mm

$$I = 50 \times (4 - 1) = 50 \times 3 = 150A$$

The preset values of the welding current **A** (adjustable with ENCODER knob) and open-circuit voltage will be displayed on the screen before welding starts.

The values of the welding current **A** being used for welding and the welding voltage **V** will appear on the displays during the welding process.

Table 3

Ø ELECTRODE (mm)	ELECTRODE TYPE - Current adjustment field (A)									WELDING THICKNESS (mm)
	6010 6011	6012	6013	6020	6027	7014	7015 7016	7018	7024 7028	
1,6	-	20-40	20-40	-	-	-	-	-	-	≤ 5
2	-	25-60	25-60	-	-	-	-	-	-	≤ 5
2,4	40-80	35-85	45-90	-	-	80-125	65-110	70-100	100-145	≤ 6,5
3,2	75-125	80-140	80-130	100-150	125-185	110-160	100-150	115-165	140-190	> 3,5
4	110-170	110-190	105-180	130-190	160-240	150-210	140-200	150-220	180-250	> 6,5
4,8	140-215	140-240	150-230	175-250	210-300	200-275	180-255	200-275	230-305	> 9,5
5,6	170-250	200-320	310-300	225-310	250-350	260-340	240-320	260-340	275-365	
6,4	210-320	250-400	250-350	275-375	300-420	330-415	300-390	315-400	335-430	
8	275-425	300-500	320-430	340-450	375-475	390-500	375-475	375-470	400-525	

### Special functions

**NOTE:** Press the More parameters key to access more parameters page. A brief description of parameters that could be changed follows

- Hot start** - i.e. overcurrent being supplied when the arc is switched on. (**Hot start** - from 0 to 10 with an adjustment interval at 1).
- Arc force** - Intensive arc drive force to prevent to be stuck.
- Anti-stick** - The switch of prevention to stick.
- VRD** - The switch of voltage reduction safeguard.

The following jobs must be done before starting to weld:

- Open the gas cylinder valve slowly and adjust the pressure regulator to obtain about 1,3 - 1,7 bar;
- Work the gas check key and adjust the flow to between 14 and 20 l/min. according to the current being used for welding;
- The welding machine is now ready to be used.

### Manual welding mode (activated for MIG-MAG welding process only)

## MIG-MAG, MIG PULSED AND MIG DUAL PULSED WELDING

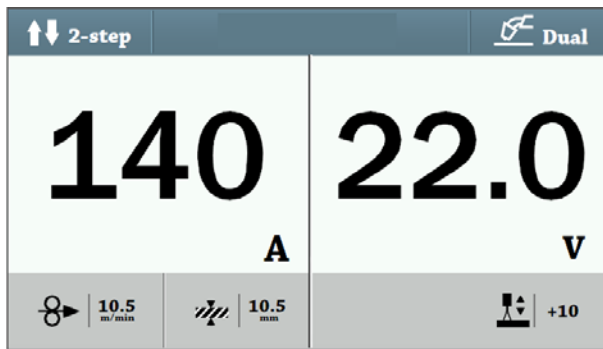



Figure 14

Adjust the ENCODER knob and turn to GMAW Manual  then press the ENCODER key to access this welding mode. The programs available for MIG-MAG (see paragraph "Synergic work procedures") and adjustable parameters are used as a basis for this welding procedure through the ENCODER knob, which are not combined with each other so that you are free to them as you wish.

Connect up the welding cables following the description given in paragraph "Connecting the welding - MIG-MAG, MIG PULSED or MIG DUAL PULSED welding cables".

Welding programs are displayed in the program table (see special paragraph).

Use the ENCODER knob to select the program best suited for the type of work to be done based on the knowledge of a few parameters. (diameter of wire, material being welded, type of gas to use)

The values of the preset welding current **A** and the preset welding voltage **V** are displayed on the screen before starting to weld.

Set as required and start welding.

The actual weld current **A** and the actual weld voltage **V** will be displayed on the screen during welding.

The parameter on the displays remains unaltered when changing from the setting to the welding phases and vice versa.

Welding spot settings may also be created and memorized with this welding procedure (see special paragraphs).

#### ■ SYNERGIC welding mode

Adjust the ENCODER knob and turn to GMAW Synergic, GMAW Single or GMAW Dual then press the ENCODER key to enter this welding mode.

Synergy is nothing else but a bond that unites the numerous different sizes in the sense that when one of these sizes are changed the others automatically change in synergy.

Set the welding current and welding voltage by adjusting the panel on main engine or wire feeder. **When setting the welding current value, the value of wire feeding velocity**

**and material thickness will be displayed on the screen.**

Connect up the welding cables following description given in paragraph "Connecting the welding - MIG-MAG, MIG PULSED or MIG DUAL PULSED welding cables".

Use the ENCODER knob to select the program best suited for the type of work to be done based on the knowledge of a few parameters (diameter of wire, material being welded, type of gas to use).

The actual welding current and the actual welding voltage will be displayed on the screen during welding.

The parameter on the display does not alter when changing

from the setting to the welding phases and vice versa.

#### ■ Welding mode

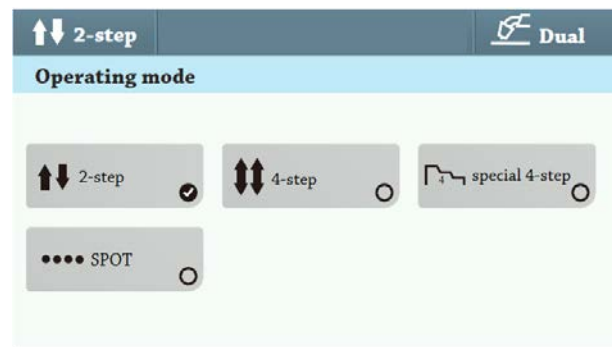


Figure 15

When the machine operates in GMAW process, change welding mode as follows:

- Press the Page switching key to access welding mode page;
- Adjust the ENCODER knob to select welding mode wanted then press the ENCODER key.
- The welding mode will be displayed on the top left corner of the screen.

#### ■ Material program

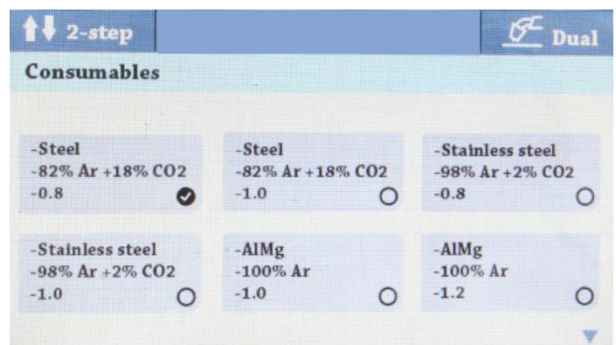


Figure 16

When the machine operates in GMAW process, change material program as follows:

- Press the Page switching key to access material program page;
- Adjust the ENCODER knob to select material program wanted then press the ENCODER key.
- The welding mode will be displayed on the top center of the screen.

#### ■ Special functions

**NOTE:** Press the More parameters key to access more parameters page. A brief description of parameters that could be changed follows and all the eventual combinations to be had are summed up in table 5 (easily legible).

↑↓ 2-step	Synergic
Inductance	1
Gas preflow (s)	0.3
Run in speed	2
Hot start	1
Burn back	1
Gas postflow (s)	0.3

Figure 17

- 1) **Inductance** - Make the arc soft or hard.
- 2) **Gas pre-flow** - Supplies a quantity of extra gas, for a given time set in the factory, before starting to weld (from 0 to 3 seconds with a 0.1 seconds interval for adjustment);
- 3) **Run in speed** - Adjusts the starting speed of wire to the piece. The given value is a variation against the values set in the factory (from 0 to 10 with a 1 interval for adjustment);
- 4) **Hot start** - over current when ignition
- 5) **Start current** - in special 4T mode. The current of start stage.
- 6) **Start voltage** - in special 4T mode. The voltage of start stage.
- 7) **End current** - in 4T or special 4T. The current of end stage.
- 8) **End voltage** - in 4T or special 4T. The voltage of end stage.
- 9) **Burn back** - Adjusts the length of the wire coming out of the gas nozzle after welding. The given value is a variation against the values set in the factory. A higher number corresponds to greater wire burn back (from 0 to 10 with a 1 interval for adjustment);
- 10) **Gas post-flow** - Supplies a quantity of extra gas, for a given time set in the factory, before finishing welding (from 0 to 6 seconds with a 0.1 seconds interval for adjustment);
- 11) **Spot time** - Time needed for spot-welding (after pressing the torch key) after which the arc automatically switches off (from 0.1 to 20 seconds with a 0.1 seconds interval for adjustment).
- 12) **Dual frequency** - Establishes the dual impulse frequency (from 0 to 5 Hz with a 0.1 Hz interval for adjustment);
- 13) **Dual dynamic** - the dual pulse peak and base current adjust. The percentage is -20% ~ 20%.

**Table 5** sums up the special programs available in the various welding modes and processes.

### Create and memorize new GMAW welding spots

↑↓ 2-step	Dual
Program 001	
Program 002	
Program 003	
Program 004	
Program 005	
Program 006	
Program 007	
Program 008	

Figure 18

Establishing a new welding spot as follows:

- Press the MEM key then enter the memory options page;
- Select the "Save" option and press the ENCODER key then enter the memory channel page;
- Select the channel in that the data will be saved and press the ENCODER key.

**NOTE:** The creation of a GMAW welding point implies the memorization of all the corresponding special functions.

### Call up GMAW spots memorized beforehand

Call up a welding spot as follows:

- Press the MEM key then enter the memory options page;
- Select the "Load" option and press the ENCODER key then enter the memory channel page;
- Select the channel in that the data were saved and press the ENCODER key.

Table 5

PARAMETER	WELDING PROCESS				WELDING MODE			
	GMAW Manual	GMAW synergic	GMAW Single	GMAW Dual	2T	4T	Spot	Special 4T
Inductance	✓	✓	✓	✓	✓	✓	✓	✓
Gas pre-flow	✓	✓	✓	✓	✓	✓	✓	✓
Run in speed	✓	✓	✓	✓	✓	✓	✓	✓
Hot start	✓	✓	✓	✓	✓	✓	✓	✓
Start current	✓	✓	✓	✓				✓
Start voltage	✓	✓	✓	✓				✓
End current	✓	✓	✓	✓		✓		✓
End voltage	✓	✓	✓	✓		✓		✓
Burn back	✓	✓	✓	✓	✓	✓	✓	✓
Gas post-flow	✓	✓	✓	✓	✓	✓	✓	✓
Spot time	✓	✓	✓	✓			✓	
Dual frequency				✓	✓	✓	✓	✓
Dual dynamic				✓	✓	✓	✓	✓

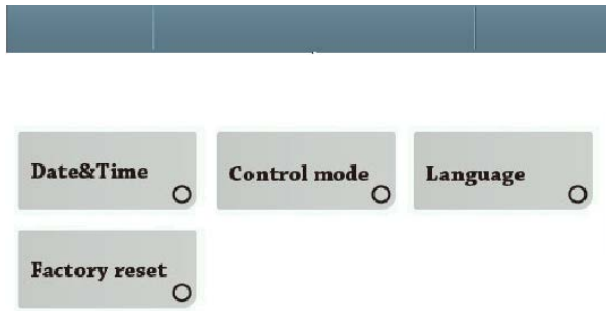


Figure 19

## Resetting

Reset factory values as follows:

- Adjust the ENCODER knob and turn to "Settings" then press the ENCODER key to access setting page.
- Adjust the ENCODER knob and select the "Factory reset" option, then press the ENCODER key to reset the system.

**NOTE:** *The special parameters of all the welding programs are returned to their factory settings and the data in memory are cleared.*

## Date & Time

Set time values as follows:

- Adjust the ENCODER knob and turn to "Settings" then press the ENCODER key to access setting page.
- Adjust the ENCODER knob and select the "Date&Time" option, then press the ENCODER key to set the date and time.

## Control mode

Set control mode as follows:

- Adjust the ENCODER knob and turn to "Settings" then press the ENCODER key to access setting page.
- Adjust the ENCODER knob and select the "Control mode" option, then press the ENCODER key to set the Control mode.

**Panel mode** - In this mode, set the welding current and welding voltage by the panel of main engine;

**Remote mode** - In this mode, set the welding current and welding voltage by the panel of wire feeder;

## Maintenance

### NBM-500L

**WARNING:** *It is very important to remove all dust sucked into the machine by the fans, as the welders are completely electronic.*

Proceed as described to keep the machine in good working order:

- Periodic removal of accumulated dirt and dust from the inside of the device, using compressed air. Do not aim the air jet directly onto the electrical components, in order to avoid damaging them.
- Make periodical inspections in order to individuate worn cables or loose connections that are the cause of overheating.

ing.

## TORCH

The torch is subjected to high temperatures and is also stressed by traction and torsion. We recommend not to twist the wire and not to use the torch to pull the welder. As a result of the above the torch will require frequent maintenance such as:

- cleaning welding splashes from the gas diffuser so that the gas flows freely;
- substitution of the contact point when the hole is deformed;
- cleaning of the wire guide liner using trichloroethylene or specific solvents;
- check of the insulation and connections of the power cable;
- The connections must be in good electrical and mechanical condition.

## Alarm conditions

Alarm conditions found in the welder are described in this paragraph and the screen on the operator's interface used to view them:

### GENERAL FAILURE:

There is an inside fault. The machine needs to be restarted. (Fig. 20)



Figure 20

### OVER TEMPERATURE:

The temperature exceeds the limits. (Fig. 21)

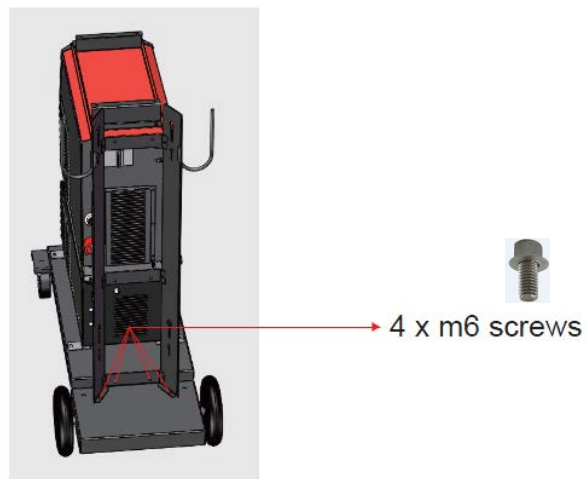
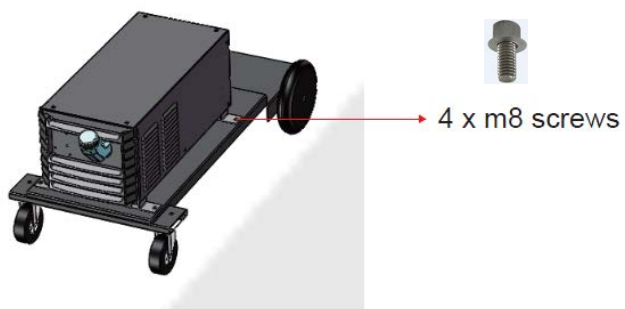


Figure 21

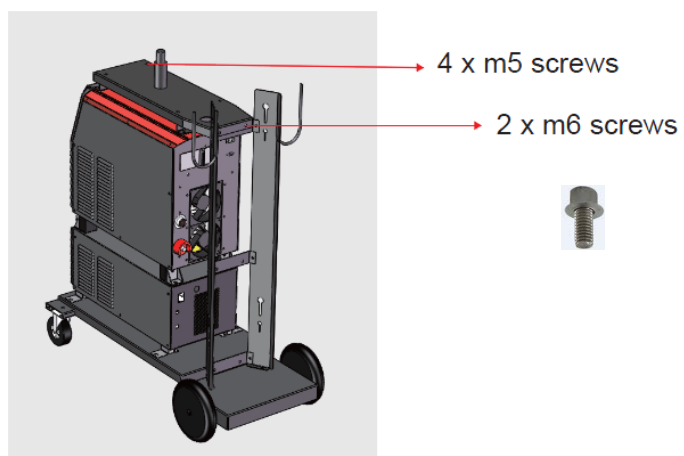
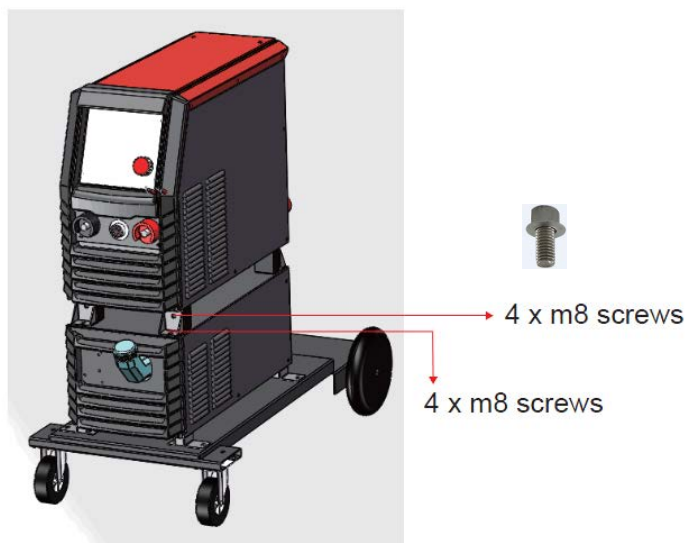


## Installation illustration

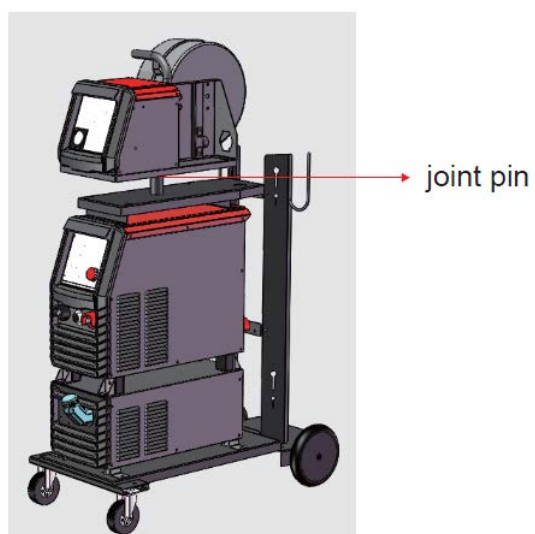
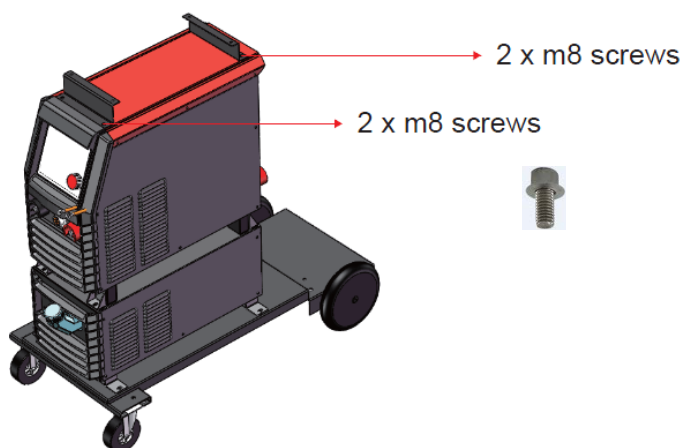
### STEP 1: Install the water tank



### STEP 2: Install the main engine



### STEP 3 Install the wire feeder



#### STEP 4 Connect the tube and cable

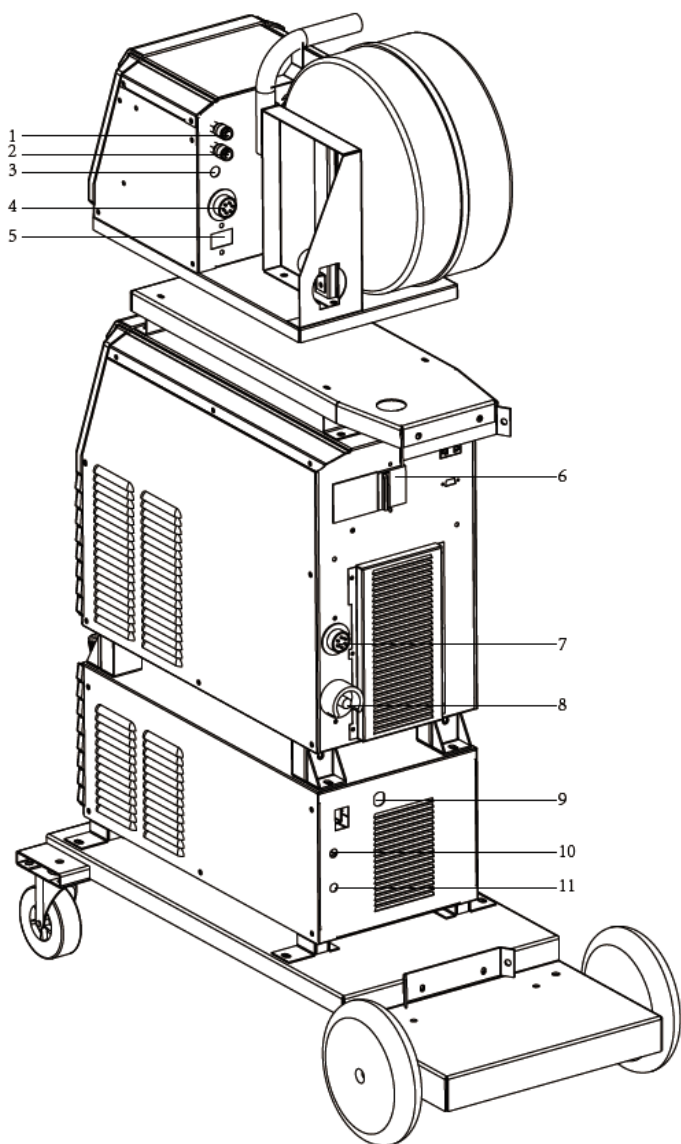


Figure 22

In the Figure 22:

- Pos.1, Pos.2, Pos.10, Pos.11 - Connect the water connectors in same colour with one water tube;
- Pos.3 - Connect the gas connector to gas cylinder;
- Pos.4, Pos.7 - Connect the two communication interface with communication cable;
- Pos.5, Pos.8 - Connect the two straight polarity connectors with one power cable;
- Pos.6, Pos.9 - Connect the water tank power cable (Pos.9) to the power socket (Pos.6);