



# INSTRUCTION MANUAL FOR PLASMA CUTTER

**IMPORTANT:** BEFORE STARTING THE EQUIPMENT, READ THE CONTENTS OF THIS MANUAL, WHICH MUST BE STORED IN A PLACE FAMILIAR TO ALL USERS FOR THE ENTIRE OPERATIVE LIFE-SPAN OF THE MACHINE.

THIS EQUIPMENT MUST BE USED SOLELY FOR WELDING OPERATIONS.

## 1 SAFETY PRECAUTIONS

  WELDING AND ARC CUTTING CAN BE HARMFUL TO YOURSELF AND OTHERS. The user must therefore be educated against the hazards, summarized below, deriving from welding operations. For more detailed information, order the manual code 3.300.758

### NOISE



This machine does not directly produce noise exceeding 80dB. The plasma cutting/welding procedure may produce noise levels beyond said limit; users must therefore implement all precautions required by law.

### ELECTRIC AND MAGNETIC FIELDS - May be dangerous.



· Electric current following through any conductor causes localized Electric and Magnetic Fields (EMF). Welding/cutting current creates EMF fields around cables and power sources.

· The magnetic fields created by high currents may affect the operation of pacemakers. Wearers of vital electronic equipment (pacemakers) shall consult their physician before beginning any arc welding, cutting, gouging or spot welding operations.

· Exposure to EMF fields in welding/cutting may have other health effects which are now not known.

· All operators should use the following procedures in order to minimize exposure to EMF fields from the welding/cutting circuit:

- Route the electrode and work cables together - Secure them with tape when possible.
- Never coil the electrode/torch lead around your body.
- Do not place your body between the electrode/torch lead and work cables. If the electrode/torch lead cable is on your right side, the work cable should also be on your right side.
- Connect the work cable to the workpiece as close as possible to the area being welded/cut.
- Do not work next to welding/cutting power source.

### EXPLOSIONS.



· Do not weld in the vicinity of containers under pressure, or in the presence of explosive dust, gases or fumes. · All cylinders and pressure regulators used in welding operations should be handled with care.

### ELECTROMAGNETIC COMPATIBILITY

This machine is manufactured in compliance with the instructions contained in the standard IEC 60974-10 (CL. A), and must be used solely for professional purposes in an industrial environment. There may be potential difficulties in ensuring electromagnetic compatibility in non-industrial environments.

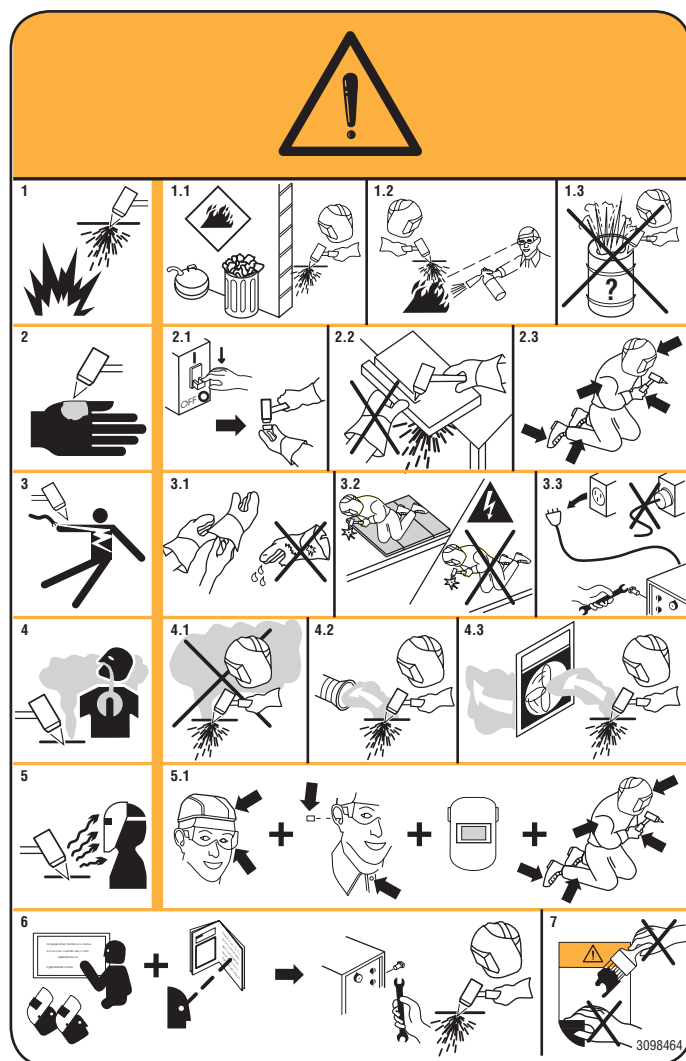


### DISPOSAL OF ELECTRICAL AND ELECTRONIC EQUIPMENT

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!

IN CASE OF MALFUNCTIONS, REQUEST ASSISTANCE FROM QUALIFIED PERSONNEL.

### 1.1 WARNING LABEL



The following numbered text corresponds to the label numbered boxes.

1. Cutting sparks can cause explosion or fire.
  - 1.1 Keep flammable materials away from cutting.
  - 1.2 Cutting sparks can cause fires. Have a fire extinguisher nearby, and have a watchperson ready to use it.
  - 1.3 Do not cut on drums or any closed container.
2. The plasma arc can cause injury and burns.
  - 2.1 Turn off power before disassembling torch.
  - 2.2 Do not grip material near cutting path.
  - 2.3 Wear complete body protection.
3. Electric shock from torch or wiring can kill.
  - 3.1 Wear dry insulating gloves. Do not wear wet or damaged gloves.
  - 3.2 Protect yourself from electric shock by insulating yourself from work and ground.
  - 3.3 Disconnect input plug or power before working on machine.
4. Breathing cutting fumes can be hazardous to your health.
  - 4.1 Keep your head out of fumes.
  - 4.2 Use forced ventilation or local exhaust to remove fumes.
  - 4.3 Use ventilating fan to remove fumes.
5. Arc rays may injure the eyes and burn the skin. Operators should therefore shield their eyes with lenses with a protection rating equal to or greater than DIN11 and adequately protect their face.
- 5.1 Wear hat and safety glasses. Use ear protection and button shirt collar. Use welding helmet with correct shade of filter. Wear complete body protection.
6. Become trained and read the instructions before working on the machine or cutting.
7. Do not remove or paint over (cover) the label.

## 2 GENERAL DESCRIPTION

This equipment is a direct current continuous power source designed for plasma arc cutting of electro-conducting materials (metals and alloys). The plasma gas can be air or nitrogen.

### 2.1 UNPACKING AND ASSEMBLY

Remove the packing material from the equipment, screw the three eyebolts provided and lift as indicated in Fig. 1. Since this machine is equipped with wheels without brake, make sure the machine is not positioned on sloping planes, to avoid tilting or noncontrolled motion of the machine itself.

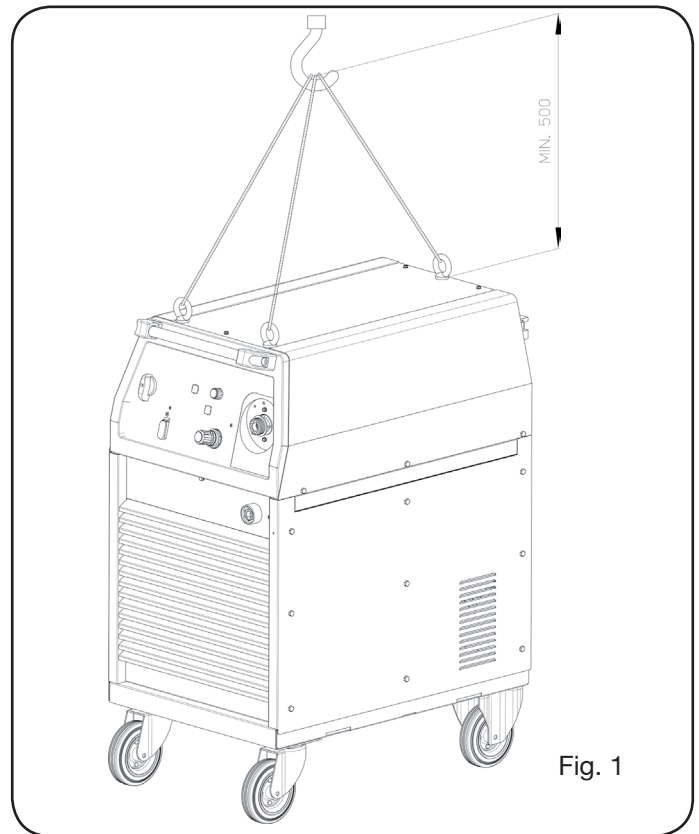


Fig. 1

### 2.2 DESCRIPTION OF THE EQUIPMENT (fig. 2)

- A) Function switch 0-1.
- B) Serial input port RS232.
- C) Fixed fitting for the welding torch.
- D) Welding torch coupling protection.
- E) Socket for earth cable.
- F) Mobile fitting.
- H) Knob for adjusting gas pressure.
- I) Gas supply fitting (1/4" gas female thread).
- J) Condensation collecting tray.
- K) Power cord.
- L) Interface connector. (on demand).
- N) Cutting mode LED.
- O) Self Restart mode LED (pilot arc automatic restart).
- P) Gouging mode LED.
- Q) Push-button that selects the plasma gas channel for pressure adjusting.
- R) Display that shows the plasma gas pressure.
- U) Display that shows:
  - at start-up = machine code (956), torch type (CP161 or CP101), torch length (Len).
  - otherwise = cutting current and error codes.
- V) Display that shows:
  - at start-up = software version (01, 02, ...), torch type (CP), torch length (6)
  - otherwise = nozzle diameter and error codes.
- W) Operating mode selector Every time this push-button is pressed the corresponding LED lights.
- Z) Knob to adjust the cutting current.

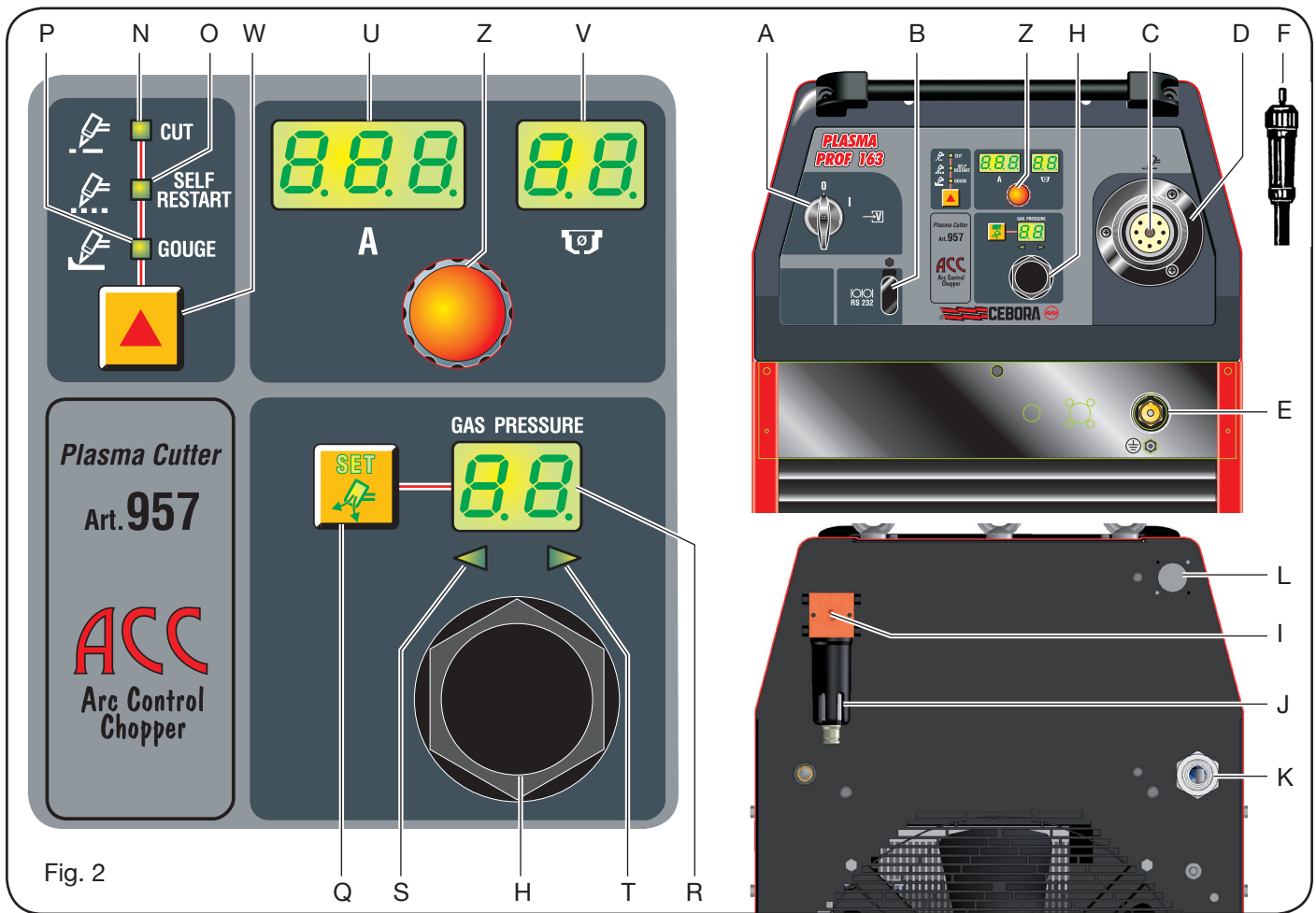


Fig. 2

## 2.3 EXPLANATION OF THE TECHNICAL SPECIFICATIONS LISTED ON THE MACHINE PLATE.

The equipment is manufactured according to these international standards: IEC 60974.1-IEC 60974.3-IEC 60974.10 CL. A-IEC 61000-3-11-IEC 61000-3-12 (See note 2).

3~ transformer threephase-rectifier-converter DC/DC (chopper).

N°. Serial number, which must be indicated on any request regarding the equipment.

Drooping characteristic.

P.A.C. Suitable for plasma cutting.

torch type Welding torch type which can be used with this equipment.

U0 Secondary open-circuit voltage (peak value).

X Duty cycle percentage.

The duty cycle expresses the percentage of 10 minutes during which the equipment may run at a certain current without overheating.

I2 Cutting current.

U2 Secondary voltage with I2 cutting current. This voltage depends on the distance between nozzle and the workpiece. **If this distance increases also the cutting voltage increases and the duty cycle X% may decrease.**

U1 Rated supply voltage.

3~ 50/60Hz 50- or 60-Hz three-phase power supply. I1 max. This is the maximum value of the absorbed current.

I1 eff. This is the maximum value of the actual current absorbed, considering the duty cycle.

IP21 Degree of housing protection. Degree 1 as the second digit means that this device is not suitable for use outdoors.

**S** This device is not suitable for use outdoors. Suitable for use in high-risk environments.

NOTES:

1- The equipment has also been designed for use in environments with a pollution rating of 3. (See IEC 60664).

2- This equipment complies with IEC 61000-3-11 provided that the maximum permissible system impedance  $Z_{max}$  is less than or equal to 0,034 ohm at the interface point between the user's supply and the public system. It is the responsibility of the installer or user of the equipment to ensure, by consultation with the distribution network operator if necessary, that the equipment is connected only to a supply with maximum permissible system impedance  $Z_{max}$  less than or equal to 0,034 ohm.

## 3 INSTALLATION

### 3.1 WELDING TORCH ASSEMBLY

This equipment is supplied without welding torch and

is suitable for torches **CEBORA CP161** both manual and automatic (straight) and **CP101**.

After introducing the mobile fitting **F** into the protection **D**, insert it onto the fixed fitting **C**, by screwing down the fitting collar **F** to avoid air leaking that may jeopardize a good operation.

Do not dent the contact tip, do not bend the mobile fitting **F** pins.

Screw the protection **D** onto the panel.

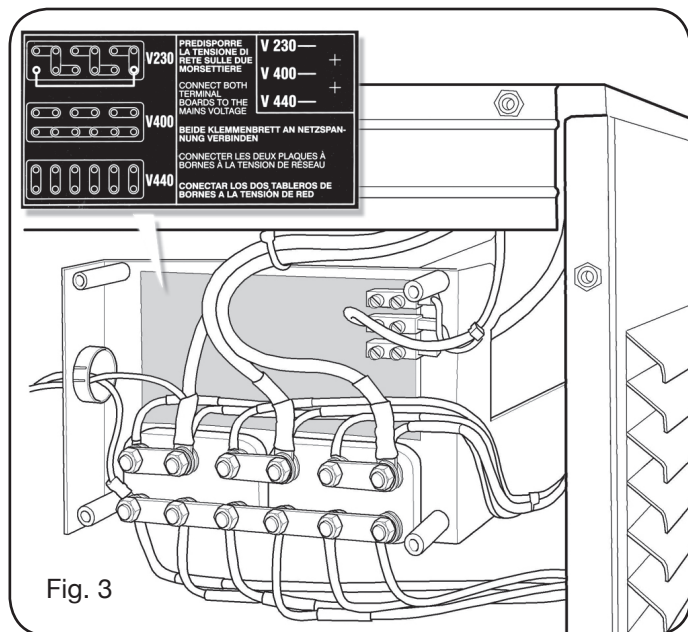
### 3.2 START-UP

**Only skilled personnel should install the machine. All connections must be carried out according to current regulations, and in full observance of safety laws (CEI 26-23 and IEC/TS 62081 standards).**

Connect the gas supply to fitting **I** making sure that the equipment can supply adequate capacity and pressure to the torch being used.

If the air is supplied from a compressed air cylinder, the cylinder must be equipped with a pressure regulator; **never connect a compressed air cylinder to the machine reducer direct. Pressure may be higher than the reducer capacity with consequent possible explosion.**

Make sure that the supply voltage matches the voltage indicated on the specifications plate of the power cable. If not, change voltage by means of the terminal board inside the equipment (fig.3).



The machine is equipped with a function switch, and therefore :

a) In case of a permanent connection to the power system (with no plug) a main switch of adequate capacity must be provided for according to the plate specifications.

b) In case of a plug connection use a plug complying with the plate specifications. In this case the plug must be used to completely disconnect the machine from the mains, after setting the switch **A** to "O" (fig. 2).

The yellow-green wire must be connected to the earth terminal.

Extension cords must have a section complying with the maximum absorbed voltage **I1** indicated on the specifications plate.

## 4. USE

Select type of work by means of button **W**: LED's **N**, **O**, **P** corresponding to CUT, grid cutting (SELF -RESTART) and GOUGE will glow.

Turn the equipment on by means of knob **A** (displays **U**, **V**, **R** and LED's **N**, **O**, **P**, **T** and **S** will glow).

The following data will be rapidly displayed :

-power source code (display **U**),

-installed firmware version (display **V**),

-name of assembled welding torch (display **U** and **V**).

Then display **U** will show wording **LEN** (welding torch length) and on display **V** size (= 12 meters from supplier) will be flashing.

If the welding torch length is different, the size must be changed by means of knob **Z**.

After 5 seconds the selected value is stored and maintained every time the power source is started. If the initial setting is not correct, it is possible to change the length by pressing simultaneously buttons **W** and **Q** and selecting the required size with knob **Z**.

Now it is possible to set the correct working pressure by pressing button **Q** (SET) and following instructions of **S** and **T** LED's. LED **S** on indicates a low pressure while LED **T** on indicates a high pressure. Keep down knob **H** of the pressure reducing valve until both LED's are on (correct pressure). Push down to lock this knob.

### 4.1 CUTTING ("CUT" OPERATING MODE)

With knob **Z** adjust the cutting current according to the thickness to be cut by following the cutting table instructions.

While the current is adjusted display **V** will show the correct diameter of the nozzle to be used.

Connect the earth cable clamp to the workpiece to be cut making sure that the clamp and the workpiece have a good electric contact especially in case of painted or oxidized plates or with insulating coatings. Do not connect the clamp to the material to be removed.

Select the cutting current by means of the knob **Z**.

**Cebora CP101 welding torch:**

with nozzle  $\varnothing$  1.2 and 45 to 60 A currents use the two faces spacer Art. 1404.

**Cebora CP161 welding torch:**

With a 20 to 40A cutting current and a 0.8 mm diameter nozzle a cut can be made by placing the nozzle directly on the workpiece (drag cut).

For currents higher than 40A a spring spacer or a 2-end spacer must be used to avoid to put into direct contact the nozzle or the nozzle protection with the workpiece to be cut.

With the welding torch in automatic mode, keep a distance of approximately 4mm between the nozzle protection and the workpiece, as indicated in the cutting tables.

Press the torch trigger to start the pilot arc.

If the cutting operation is not started, the pilot arc goes out after 2 seconds; to restart it press the torch trigger again. Keep the welding torch in a vertical position while working.

When the cutting is finished and the torch trigger is released air continues leaking from the welding torch to assure the torch cooling.

It is recommended not to turn the equipment off before this operation is over.

When using the welding torch in manual mode and when holes are to be cut or cutting must be started from the workpiece center the welding torch must be placed in a slanted position and then slowly straightened up to prevent melted metal from being sprayed onto the nozzle protection (see fig.4). This operation must be carried out when holes thicker than 3mm are to be cut.

When using the welding torch in automatic mode (see fig. 5) follow strictly the instructions contained in the cutting tables as for sagging, working height and maximum cutting thicknesses, which must comply with the current.

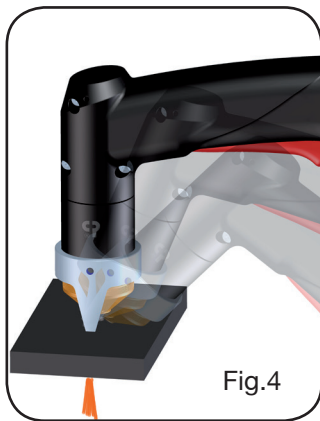


Fig.4

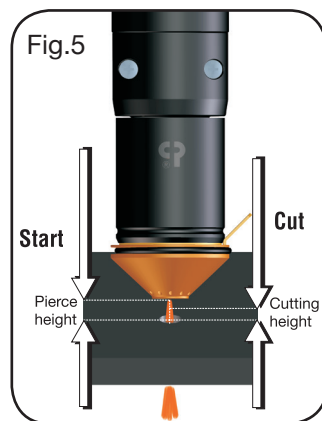


Fig.5

When circular cuts are to be made we recommend to use the caliper supplied on demand. Do not forget that when using the caliper it may be necessary to follow the above mentioned starting method.

To avoid excessive wearing of the electrode, swirl ring and nozzle the pilot arc should not be kept on in the air if not necessary.

**Once the operation is completed, turn the machine off.**

#### 4.2 GRID CUTTING (SELF-RESTART OPERATING MODE)

Use this function to cut drilled plates or grids.

When cutting is completed, keep the knob pressed and the pilot arc will restart automatically. **Use this function only if required, to avoid excessive wearing of the electrode and the nozzle.**

#### 4.3 GOUGING ("GOUGE" OPERATING MODE). only for CP161 torches.

This operation makes it possible to remove defective welds, to separate welded pieces, to prepare edges, etc. For this operation use a 3 mm  $\varnothing$  nozzle.

The value of the current to be used varies from 60 to 120A depending on the thickness and quantity of material to be removed. With the welding torch in slanted position (fig.6) proceed towards the melted metal so that the gas coming out of the welding torch keeps it away. The welding torch slanted position versus the workpiece depends on the penetration you want to obtain. As melted dross tends to stick to the nozzle holder and nozzle protection during this procedure, it is recommended to frequently clean them so as to avoid problems (double arc) which may destroy the nozzle in few seconds. Given the strong (infrared and ultraviolet) radiation emission during this operation, it is recommended that the operator and people nearby wear an adequate protection.

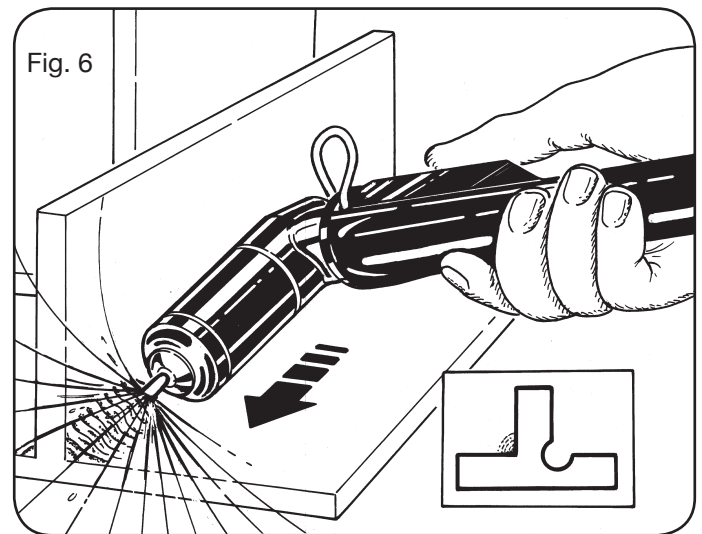


Fig. 6

**Once the operation is completed, turn the machine off.**

#### 4.4 ADDITIONAL FUNCTIONS (SECOND FUNCTIONS)

In the following descriptions, we refer to Fig.2.

Equipment switched on enter the menu "second function" by pressing buttons **Q** and **W**.






##### 4.4.1 Preparing and carrying out Spot Marking (SPOT MARK)

Spot marking is a particular type of marking where the track consists of a point, unlike a line drawing or any of its normal markings.

After setting some parameters you can manage and run the marking spot from the CNC, while maintaining the same cutting parameters and the same consumables.

Set the spot marking parameters as indicated in table 1, which can be subsequently selected by pressing button **W**:

After the parameters are set as described above, by means of a digital signal in the relevant pins (see electrical diagram) the operating mode is changed from cutting to spot marking (CUT/SPOT MARK). This is shown by the flashing LED **M**.

SELECTION (by pressing the button <b>W</b> )		DESCRIPTION	SELECTION (by turning the knob <b>Z</b> )
	SEN	Spot ENable (enable/disable spot marking function)	OF = disable ON = enable
			
	SI	Spot Current (spot marking current)	From 10 to 39 A
			
	St	Spot Time (spot marking time)	OF From 0.01 to 99 s/100

Tab. 1

## 5. REPLACING THE CONSUMABLES

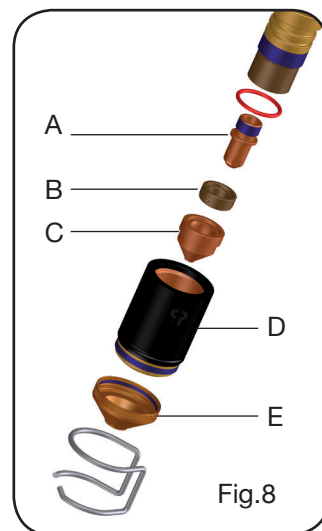
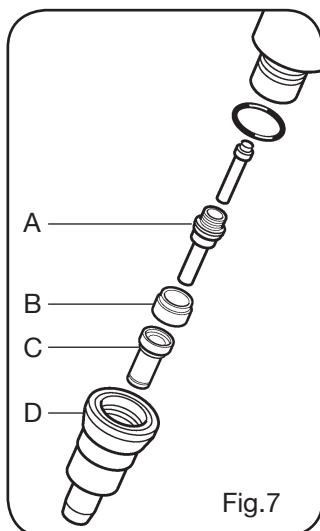
**IMPORTANT: Switch the power source off before replacing any consumables.**

Making reference to Fig. 7 and Fig 8, parts subject to wear are electrode **A**, swirl ring **B**, nozzle **C** and nozzle protection **E** (only for torch CP161). These should be replaced after unscrewing the nozzle holder **D**.

Electrode **A** must be replaced when it shows an approx 1.2 mm deep crater at the center.

**CAUTION:** do not use sudden force to unscrew the electrode; work gradually to release the thread. The new electrode must be screwed into the seat and fastened in place without tightening fully.

The nozzle **C** must be replaced when the central hole is damaged or wider than that of a new part. Delays in replacing the electrode or nozzle will cause the parts to overheat, and jeopardize the life-span of the swirl ring **B**. Make sure that the gas nozzle holder **D** is firmly tightened after replacement.



**WARNING:** screw the nozzle holder **D** onto the welding torch body only when electrode **A**, swirl ring **B**, nozzle **C** and nozzle protection **E** (only for CP 161) are assembled. **If any of these parts are missing, this will interfere with smooth operation of the machine and, especially, jeopardize operator safety.**

## 6 HINTS

- Should the equipment air contain plenty of moisture and oil the use of a filter dryer is recommended. This will prevent excessive oxidation and wearing of consumables, welding torch damage and reduction in cutting rapidity and quality.

- Air impurities cause oxidation of the electrode and nozzle and may make pilot arc start-up more difficult. If this condition is present, clean the electrode terminal end and the nozzle interior with thin abrasive paper.

- Make sure that the new electrode and nozzle that are going to be assembled are perfectly clean and oil-free.

- To avoid welding torch damage always use Cebora original parts.

## 7 DESCRIPTION OF PROTECTIVE DEVICES

The equipment comes with different protective devices highlighted by "Err" on the displays U and V. (See tab. 2). To assure efficiency of these protective devices:

- **Do not remove nor by-pass the protective devices.**
- **Replace them with original Cebora spare parts.**
- **Always replace any damaged parts of the machine or the welding torch with original parts.**
- **Use torches CEBORA Type CP 161 only.**

## 8 MAINTENANCE

**Any maintenance operation must be carried out by qualified personnel in compliance with standard CEI 26-29 (IEC 60974-4).**

### 8.1 GENERATOR MAINTENANCE

In the case of maintenance inside the machine, make sure that the switch **A** is in position "O" **and that the power cord is disconnected from the mains.**

Even though the machine is equipped with an automatic condensation drainage device that is tripped each time the air supply is closed, it is good practice to periodically make sure that there is no condensation accumulated in the water trap **J** (fig.1).

It is also necessary to periodically clean the interior of the

machine from the accumulated metal dust, using compressed air.

## 8.2 PRECAUTIONS AFTER REPAIRS.

After making repairs, take care to organize the wiring so that there is secure insulation between the primary and secondary sides of the machine. Do not allow the wires to come into contact with moving parts or those that heat

up during operation. Reassemble all clamps as they were on the original machine, to prevent a connection from occurring between the primary and secondary circuits should a wire accidentally break or be disconnected. Also mount the screws with geared washers as on the original machine.

ERROR DESCRIPTION	DISPLAY	POSSIBLE SOLUTION
Direct current lower than the minimum allowed value for the IGBT module	Err 16	Call CEBORA Service Department.
Torch protection device disengaged	Err 50	Mount the protection device
No torch recognition at start-up or recognition modified in invalid state.	Err 51	Call CEBORA Service Department.
Start command present while resetting the operating mode.	TRG (Err. 53)	Shut off the Power Source, remove the start command and restart the Power Source.
High temperature of output diode or of the transformer.	TH0 (Err. 73)	Don't shutting off the Power Source, to keep the fan running and thus allow rapid cooling. Normal operation is restored automatically as soon as the temperature returns within the allowed limits. If the problem persists, call CEBORA Service Department.
High temperature of the IGBT group on power board.	TH1 (Err. 74)	Don't shutting off the Power Source, to keep the fan running and thus allow rapid cooling. Normal operation is restored automatically as soon as the temperature returns within the allowed limits. If the problem persists, call CEBORA Service Department.
Gas inlet pressure low.	GAS LO (Err. 78)	Increase the gas inlet pressure.
Guard on HV14 Unit open.	OPN (Err. 80)	Check the proper closing of HV14 unit.
Emergency stop originating from the CNC.	rob (Err. 90)	Turn on the CNC, exit from emergency and check the connection between CNC and Power Source.
EEPROM error.	Err 2	Call CEBORA Service Department.
Detected current with no plasma arc.	Err 30	Call CEBORA Service Department.
Current out of scale during cutting.	Err 35	Call CEBORA Service Department.
detected current on pilot arc circuit with no plasma arc.	Err 39	Call CEBORA Service Department.
Hazardous voltage: failure of the power circuit.	Err 40	Call CEBORA Service Department.
Communication serial error between control circuit and torch circuit.	Err 43	Call CEBORA Service Department.
detected current on pilot arc circuit during cutting.	Err 49	Call CEBORA Service Department.
Electrode finished.	Err 55	Replace electrode and/or nozzle.
AC supply voltage out of range.	Err 67	Check the value of supply voltage.
Purge cycle not completed or pressure highs	Err 79	Check the consumables or reduce the inlet gas pressure of gas.

Tab. 2

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QUESTA PARTE È DESTINATA ESCLUSIVAMENTE AL PERSONALE QUALIFICATO.

THIS PART IS INTENDED SOLELY FOR QUALIFIED PERSONNEL.

DIESER TEIL IST AUSSCHLIESSLICH FÜR DAS FACHPERSONAL BESTIMMT.

CETTE PARTIE EST DESTINEE EXCLUSIVEMENT AU PERSONNEL QUALIFIE.

ESTA PARTE ESTÁ DESTINADA EXCLUSIVAMENTE AL PERSONAL CUALIFICADO.

ESTA PARTE È DEDICADA EXCLUSIVAMENTE AO PESSOAL QUALIFICADO.

TÄMÄ OSA ON TARKOITETTU AINOASTAAN AMMATTITAITOISELLE HENKILÖKUNNALLE.

DETTE AFSNIT HENVENDER SIG UDELUKKENDE TIL KVALIFICERET PERSONALE.

DIT DEEL IS UITSLUITEND BESTEMD VOOR BEVOEGD PERSONEEL.

DENNA DEL ÄR ENDAST AVSEDD FÖR KVALIFICERAD PERSONAL.

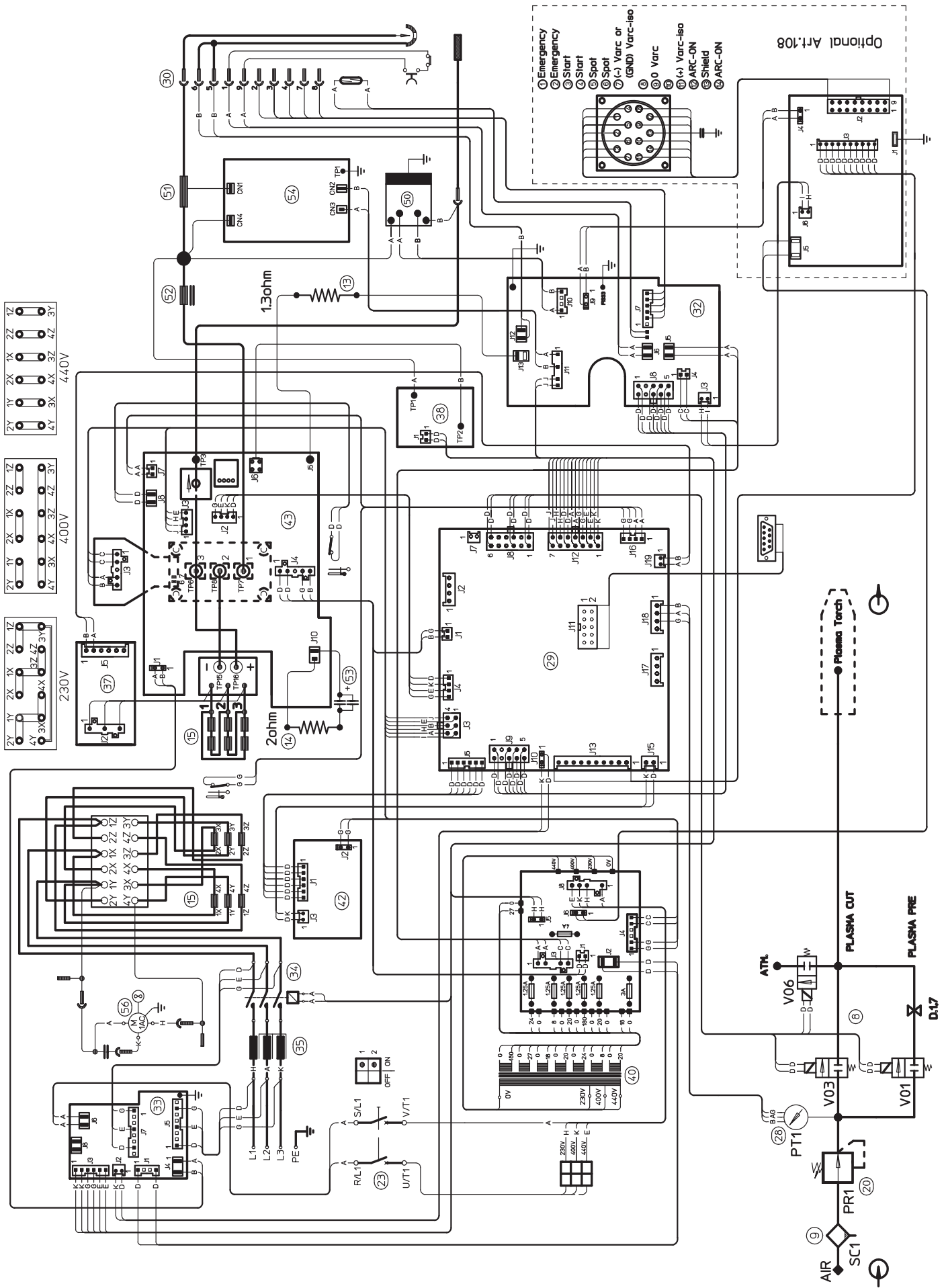
ΑΥΤΟ ΤΟ ΤΜΗΜΑ ΠΡΟΟΡΙΖΕΤΑΙ ΑΠΟΚΛΕΙΣΤΙΚΑ ΓΙΑ ΤΟ ΕΙΔΙΚΕΥΜΕΝΟ ΠΡΟΣΩΠΙΚΟ.

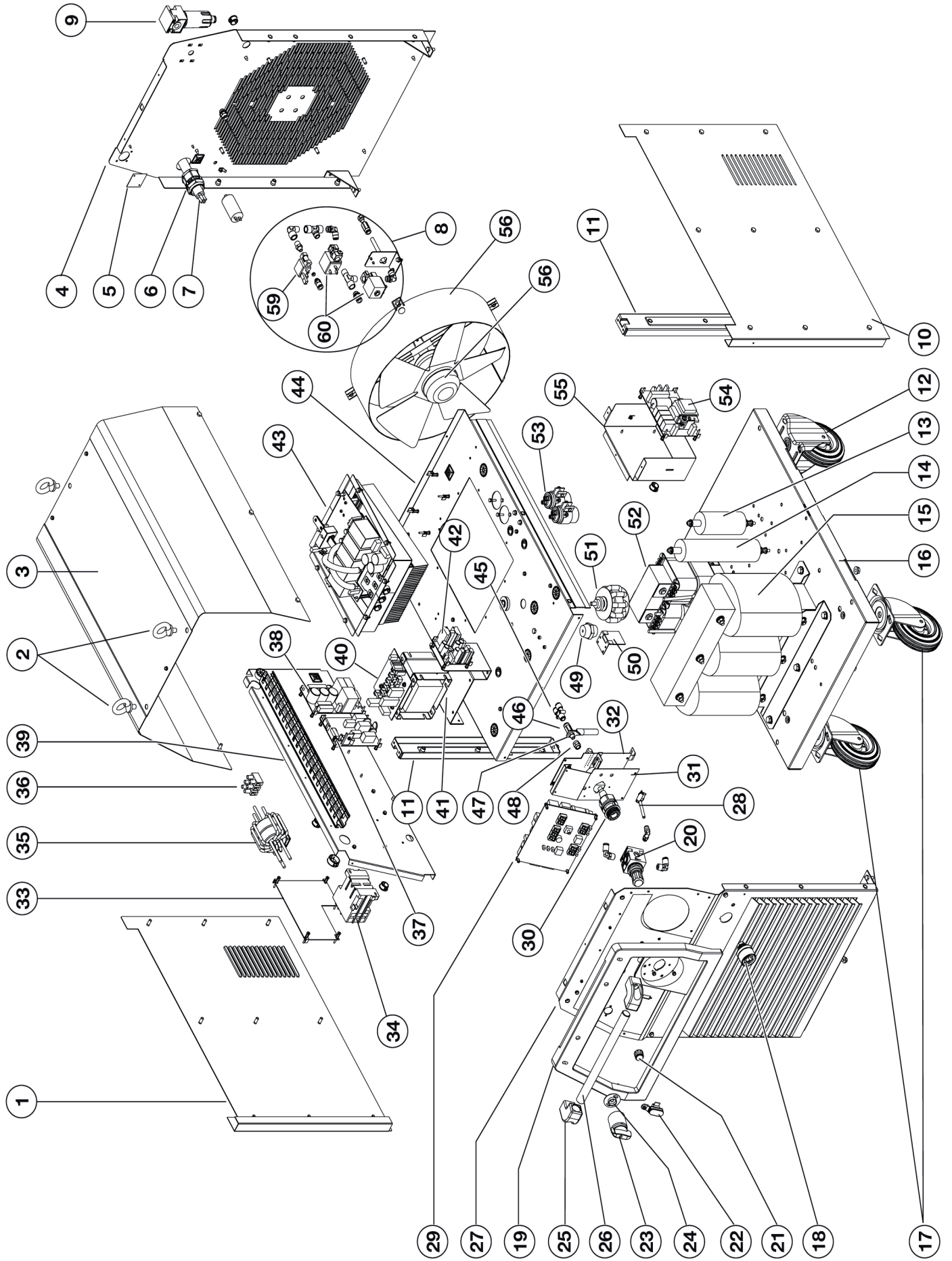
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CODIFICA COLORI CABLAGGIO ELETTRICO		WIRING DIAGRAM COLOUR CODE
A	NERO	BLACK
B	ROSSO	RED
C	GRIGIO	GREY
D	BIANCO	WHITE
E	VERDE	GREEN
F	VIOLA	PURPLE
G	GIALLO	YELLOW
H	BLU	BLUE
K	MARRONE	BROWN
J	ARANCIO	ORANGE
I	ROSA	PINK

CODIFICA COLORI CABLAGGIO ELETTRICO		WIRING DIAGRAM COLOUR CODE
L	ROSA-NERO	PINK-BLACK
M	GRIGIO-VIOLA	GREY-PURPLE
N	BIANCO-VIOLA	WHITE-PURPLE
O	BIANCO-NERO	WHITE-BLACK
P	GRIGIO-BLU	GREY-BLUE
Q	BIANCO-ROSSO	WHITE-RED
R	GRIGIO-ROSSO	GREY-RED
S	BIANCO-BLU	WHITE-BLUE
T	NERO-BLU	BLACK-BLUE
U	GIALLO-VERDE	YELLOW-GREEN
V	AZZURRO	BLUE







POS	DESCRIZIONE	DESCRIPTION
01	LATERALE SINISTRO	LEFT SIDE PANEL
02	GOLFARA	EYEBOLT
03	COPERCHIO	COVER
04	PANNELLO POSTERIORE	BACK PANEL
05	APPOGGIO	REST
06	PASSACAVO	CABLE OUTLET
07	CAVO RETE	POWER CORD
08	GRUPPO ARIA	AIR UNIT
09	FILTRO ARIA	AIR FILTER
10	LATERALE DESTRO	RIGHT SIDE PANEL
11	RINFORZO	REINFORCEMENT
12	RUOTA FISSA	FIXED WHEEL
13	RESISTENZA	RESISTANCE
14	RESISTENZA	RESISTANCE
15	TRASFORMATORE DI POTENZA	POWER TRANSFORMER
16	FONDO	BOTTOM
17	RUOTA PIROETTANTE	SWIVELING WHEEL
18	PRESA GIFAS	GIFAS SOCKET
19	CORNICE	FRAME
20	RIDUTTORE	REGULATOR
21	MANOPOLA	KNOB
22	PROTEZIONE	PROTECTION
23	INTERRUTTORE	SWITCH
24	PROTEZIONE	PROTECTION
25	SUPPORTO MANICO	HANDLE SUPPORT
26	MANICO	HANDLE
27	PANNELLO ANTERIORE	FRONT PANEL
28	CONNESSIONE	CONNECTION
29	CIRCUITO SENSORE	SENSOR CIRCUIT
30	ADATTATORE FISSO	FIXED ADAPTOR

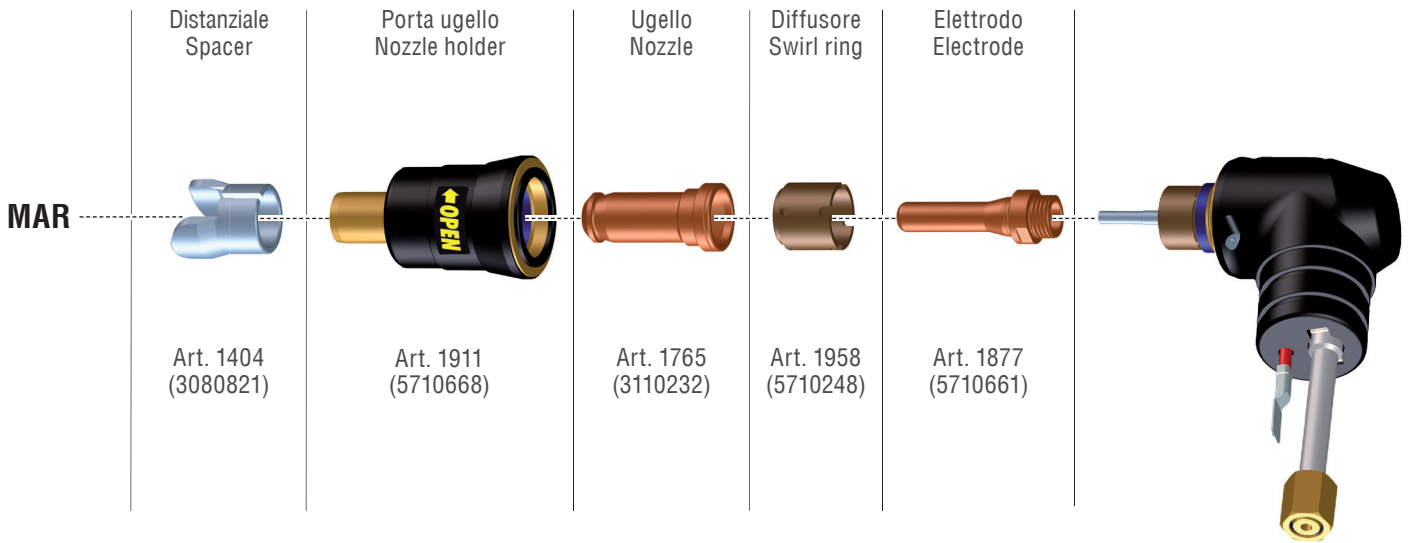
POS	DESCRIZIONE	DESCRIPTION
31	SUPPORTO TORCIA	TORCH SUPPORT
32	CIRCUITO TORCIA	TORCH CIRCUIT
33	CIRCUITO DI PRECARICA	PRECHARGE CIRCUIT
34	TELERUTTORE	CONTACTOR
35	CONNESSIONE	CONNECTION
36	MORSETTIERA	TERMINAL BOARD
37	CIRCUITO DI MISURA	MEASUR CIRCUIT
38	CIRCUITO R.C.	R.C. CIRCUIT
39	PIANO INTERMEDIO	INSIDE BAFFLE
40	TRASFORMATORE DI SERVIZIO	AUXILIARY TRANSFORMER
41	SUPPORTO	SUPPORT
42	CIRCUITO ALIMENTAZIONE	SUPPLY CIRCUIT
43	GRUPPO IGBT	IGBT UNIT
44	PIANO INTERMEDIO	INSIDE BAFFLE
45	RACCORDO A TRE VIE	T-FITTING
46	RACCORDO	FITTING
47	RACCORDO	FITTING
48	RACCORDO	FITTING
49	SUPPORTO	SUPPORT
50	CIRCUITO FILTRO H.F.	H.F. FILTER CIRCUIT
51	TRASFORMATORE H.F.	H.F. TRANSFORMER
52	IMPEDENZA	CHOKE
53	CONDENSATORE	CAPACITOR
54	CIRCUITO H.F.	H.F. CIRCUIT
55	PROTEZIONE	PROTECTION
56	TUNNEL	COOLING TUNNEL
57	MOTORE CON VENTOLA	MOTOR WITH FAN
58	CAVO MASSA	EARTH CABLE
59	ELETTROVALVOLA	SOLENOID VALVE
60	ELETTROVALVOLA	SOLENOID VALVE

La richiesta di pezzi di ricambio deve indicare sempre: numero di articolo, matricola e data di acquisto della macchina, posizione e quantità del ricambio.

When ordering spare parts please always state the machine item and serial number and its purchase data, the spare part position and the quantity.

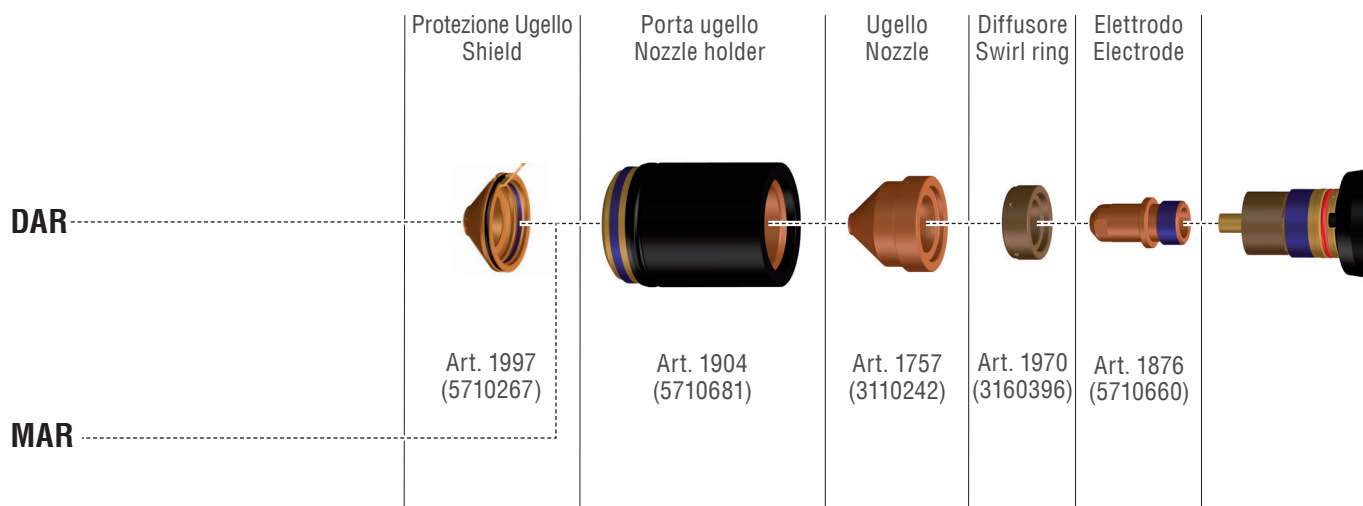
# TABELLE DI TAGLIO CUTTING CHARTS

## CP101 - 60 A



Corrente di taglio Cutting current	Acciaio dolce <i>Mild steel</i>		Acciaio inossidabile <i>Stainless steel</i>		Alluminio <i>Aluminium</i>	
	Spessore Thickness	Velocità di taglio Cutting speed	Spessore Thickness	Velocità di taglio Cutting speed	Spessore Thickness	Velocità di taglio Cutting speed
(A)	(mm)	(m/min)	(mm)	(m/min)	(mm)	(m/min)
60	3	5,20	4	3,20	4	4,00
60	6	2,20	5	2,30	6	2,30
60	8	1,60	6	1,80	8	1,60
60	10	1,10	8	0,90	12	0,90
60	12	0,85	12	0,40	15	0,70
60	15	0,50	15	0,25	20	0,50
60	20	0,26	20	0,15	25	0,40
60	25	0,17				
60	30	0,07				

## CP161 - 40 A



## ACCIAIO DOLCE - MILD STEEL

Corrente di taglio <i>Cutting current</i>	Spessore <i>Thickness</i>	Tensione d'arco (qualità) <i>Arc voltage</i> (quality)	Velocità di taglio <i>Cutting speed</i>		Altezza di lavoro <i>Cutting height</i>	Altezza di sfondamento <i>Pierce height</i>	Ritardo di sfondamento <i>Pierce delay</i>	Solco di taglio (qualità) <i>Kerf width</i> (quality)
			Qualità <i>Quality</i>	Produzione <i>Production</i>				
(A)	(mm)	(V)	(m/min)		(mm)	(mm)	(s)	(mm)
40	1	87	8,00	10,00	1,5	3,0	0,1	0,6
40	2	92	6,00	6,60	1,5	3,0	0,1	0,9
40	3	98	3,30	4,00	1,5	3,0	0,2	1,2
40	5	101	1,50	2,00	1,5	5,0	0,4	1,5
40	6	106	1,00	1,50	1,5	5,0	0,5	1,7

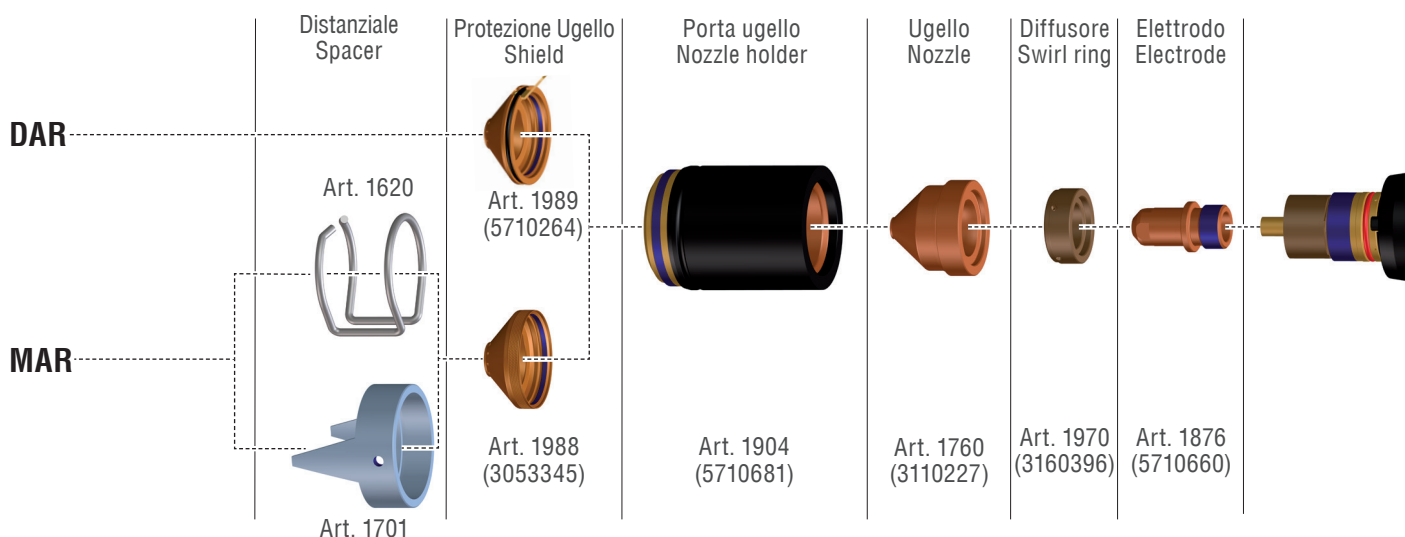
## ACCIAIO INOSSIDABILE - STAINLESS STEEL

40	1	92	8,00	10,00	1,5	3,0	0,1	1,4
40	2	96	4,80	5,50	1,5	4,0	0,4	1,6
40	3	98	2,80	3,40	1,5	4,0	0,4	1,9
40	5	101	1,30	1,80	1,5	5,0	0,4	2,0
40	6	105	0,70	0,90	1,5	5,0	0,5	2,1

## ALLUMINIO - ALUMINIUM

40	1	100	8,10	10,00	1,5	3,0	0,2	1,4
40	2	105	6,00	7,00	1,5	4,0	0,3	1,5
40	3	106	2,70	3,70	1,5	4,0	0,4	1,7
40	5	110	1,60	2,20	1,5	4,0	0,5	1,9
40	6	112	1,10	1,70	1,5	5,0	0,5	2,0

## CP161 - 60 A



### ACCIAIO DOLCE - MILD STEEL

Corrente di taglio <i>Cutting current</i>	Spessore <i>Thickness</i>	Tensione d'arco (qualità) <i>Arc voltage (quality)</i>	Velocità di taglio <i>Cutting speed</i>		Altezza di lavoro <i>Cutting height</i>	Altezza di sfondamento <i>Pierce height</i>	Ritardo di sfondamento <i>Pierce delay</i>	Solco di taglio (qualità) <i>Kerf width (quality)</i>
			Qualità <i>Quality</i>	Produzione <i>Production</i>				
(A)	(mm)	(V)	(m/min)		(mm)	(mm)	(s)	(mm)
60	3	136	5,50	6,25	4,0	5,0	0,3	1,7
60	6	139	2,30	2,70	4,0	7,0	0,5	1,8
60	8	140	1,70	1,90	4,0	7,0	0,5	1,8
60	10	141	1,30	1,51	4,0	7,0	0,6	1,9
60	12	146	0,90	1,02	4,0	7,0	0,7	2,1
60	15	155	0,45	0,51	4,0	8,0	1,0	2,3
60	20	158	0,30	0,42	4,0	N.A.		2,6
60	25	169	0,15	0,19	4,0	N.A.		3,2
60	30	183	0,07	0,08	4,0	N.A.		4,0

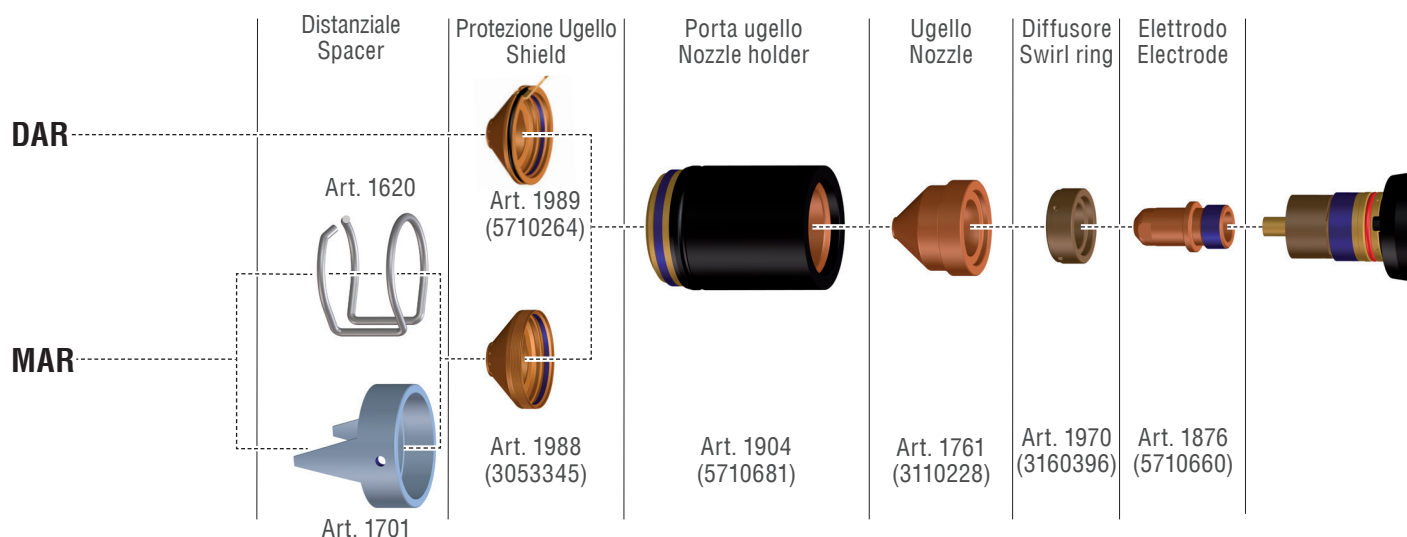
### ACCIAIO INOSSIDABILE - STAINLESS STEEL

60	3	141	5,50	6,10	4,0	5,0	0,2	1,7
60	4	145	4,20	5,40	4,0	5,0	0,3	1,8
60	5	134	2,50	3,10	4,0	6,0	0,4	1,9
60	6	136	1,70	2,05	4,0	6,0	0,4	1,9
60	8	144	1,00	1,45	4,0	6,0	0,4	2,0
60	12	146	0,59	0,74	4,0	7,0	0,5	2,2
60	15	157	0,32	0,40	4,0	N.A.		2,4
60	20	158	0,21	0,27	4,0	N.A.		2,7
60	25	160	0,15	0,17	4,0	N.A.		3,2

### ALLUMINIO - ALUMINIUM

60	3	129	6,50	7,10	4,0	4,0	0,2	1,7
60	4	134	5,40	6,50	4,0	4,0	0,3	1,8
60	6	142	2,80	4,00	4,0	4,0	0,4	1,9
60	8	150	2,00	2,45	4,0	5,0	0,7	1,9
60	12	157	1,10	1,35	4,0	7,0	1,1	2,1
60	15	162	0,70	0,80	4,0	N.A.		2,2
60	20	170	0,35	0,42	4,0	N.A.		2,5
60	25	178	0,15	0,18	4,0	N.A.		3,1

## CP161 - 100 A



## ACCIAIO DOLCE - MILD STEEL

Corrente di taglio Cutting current	Spessore Thickness	Tensione d'arco (qualità) Arc voltage (quality)	Velocità di taglio Cutting speed		Altezza di lavoro Cutting height	Altezza di sfondamento Pierce height	Ritardo di sfondamento Pierce delay	Solco di taglio (qualità) Kerf width (quality)
			Qualità Quality	Produzione Production				
(A)	(mm)	(V)	(m/min)		(mm)	(mm)	(s)	(mm)
100	3	131	6,50	9,00	4,0	4,0	0,2	1,7
100	6	132	4,20	5,80	4,0	7,0	0,5	1,7
100	8	132	3,00	3,80	4,0	7,0	0,6	2,0
100	10	134	2,20	2,70	4,0	7,0	0,7	2,1
100	12	136	1,80	2,10	4,0	7,0	0,8	2,3
100	15	138	1,00	1,40	4,0	7,0	0,9	2,2
100	20	143	0,80	0,91	4,0	7,0	1,2	2,8
100	25	149	0,50	0,60	4,0	N.A.		2,9
100	30	155	0,30	0,40	4,0	N.A.		3,2
100	35	160	0,25	0,30	4,0	N.A.		3,3
100	40	166	0,15	0,19	4,0	N.A.		3,4

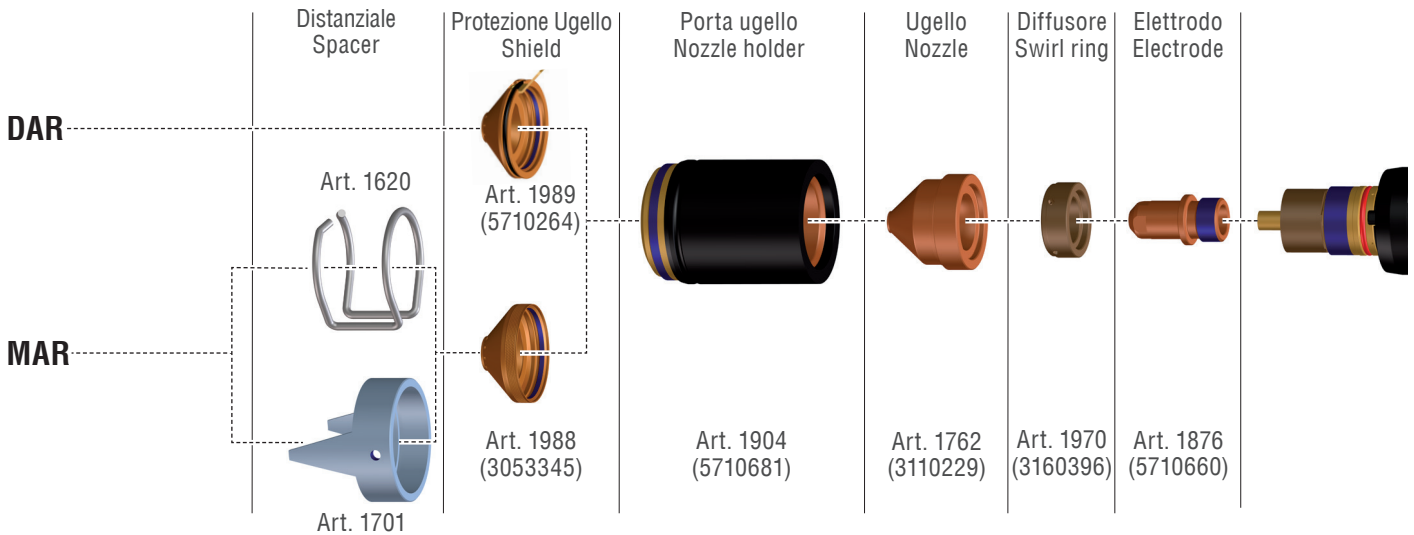
## ACCIAIO INOSSIDABILE - STAINLESS STEEL

100	4	124	6,50	8,50	4,0	4,0	0,3	1,7
100	5	124	4,80	6,20	4,0	4,0	0,4	1,7
100	6	133	3,40	5,10	4,0	5,0	0,5	1,8
100	8	134	2,20	3,30	4,0	5,0	0,5	2,1
100	12	140	1,10	1,60	4,0	6,0	0,7	2,2
100	15	144	0,80	1,10	4,0	7,0	0,7	2,3
100	20	148	0,55	0,78	4,0	7,0	1,2	3,0
100	25	149	0,41	0,50	4,0	N.A.		3,1
100	30	153	0,28	0,34	4,0	N.A.		3,3

## ALLUMINIO - ALUMINIUM

100	4	125	7,80	9,50	4,0	3,0	0,3	1,6
100	6	133	5,00	7,00	4,0	4,0	0,3	1,7
100	8	137	3,60	5,20	4,0	5,0	0,3	1,9
100	12	143	1,70	2,30	4,0	6,0	0,4	2,3
100	15	148	1,30	1,59	4,0	7,0	0,4	2,4
100	20	156	0,86	1,12	4,0	7,0	0,8	2,8
100	25	158	0,60	0,67	4,0	N.A.		2,9
100	30	165	0,50	0,58	4,0	N.A.		3,1
100	35	167	0,32	0,36	4,0	N.A.		3,2
100	40	168	0,21	0,23	4,0	N.A.		3,4

## CP161 - 120 A



## ACCIAIO DOLCE - MILD STEEL

Corrente di taglio Cutting current	Spessore Thickness	Tensione d'arco (qualità) Arc voltage (quality)	Velocità di taglio Cutting speed		Altezza di lavoro Cutting height	Altezza di sfondamento Pierce height	Ritardo di sfondamento Pierce delay	Solco di taglio (qualità) Kerf width (quality)
			Qualità Quality	Produzione Production				
(A)	(mm)	(V)	(m/min)		(mm)	(mm)	(s)	(mm)
120	3	130	7,00	9,00	4,0	4,0	0,2	1,7
120	6	132	4,30	6,20	4,0	7,0	0,4	1,8
120	8	132	3,50	4,80	4,0	7,0	0,5	1,9
120	10	134	2,80	3,40	4,0	7,0	0,6	2,0
120	12	134	2,00	2,80	4,0	7,0	0,7	2,2
120	15	135	1,25	1,60	4,0	7,0	0,8	2,4
120	20	141	0,92	1,06	4,0	8,0	1,0	2,7
120	25	147	0,55	0,71	4,0		N.A.	3,0
120	30	153	0,38	0,50	4,0		N.A.	3,3
120	35	162	0,25	0,36	4,0		N.A.	3,5
120	40	164	0,21	0,25	4,0		N.A.	3,6
120	45	166	0,18	0,20	4,0		N.A.	3,6

## ACCIAIO INOSSIDABILE - STAINLESS STEEL

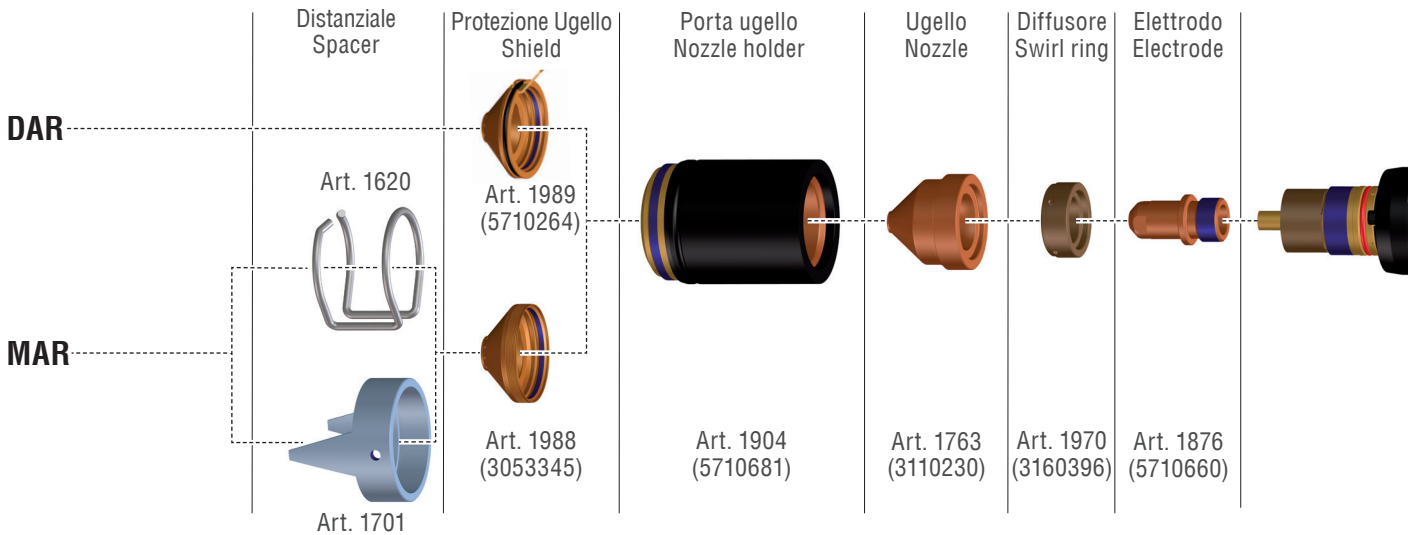
120	5	127	6,00	8,00	4,0	5,0	0,3	1,5
120	6	128	5,00	5,80	4,0	5,0	0,3	1,7
120	8	130	3,50	4,30	4,0	5,0	0,3	1,9
120	12	136	1,50	2,15	4,0	5,0	0,4	2,4
120	15	137	1,00	1,35	4,0	6,0	0,5	2,5
120	20	144	0,50	1,00	4,0	9,0	1,2	2,9
120	30	147	0,35	0,41	4,0		N.A.	3,4
120	40	153	0,22	0,25	4,0		N.A.	3,5

## ALLUMINIO - ALUMINIUM

120	6	132	5,50	7,20	4,0	4,0	0,2	1,6
120	8	138	3,50	5,70	4,0	5,0	0,3	2,0
120	12	145	2,10	2,92	4,0	7,0	0,5	2,3
120	15	150	1,50	1,90	4,0	7,0	0,6	2,4
120	20	153	1,00	1,21	4,0	8,0	1,0	2,8
120	25	155	0,80	0,93	4,0		N.A.	3,1
120	30	157	0,50	0,58	4,0		N.A.	3,3
120	40	161	0,30	0,33	4,0		N.A.	3,5



## CP161 - 160 A



### ACCIAIO DOLCE - MILD STEEL

Corrente di taglio Cutting current	Spessore Thickness	Tensione d'arco (qualità) Arc voltage (quality)	Velocità di taglio Cutting speed		Altezza di lavoro Cutting height	Altezza di sfondamento Pierce height	Ritardo di sfondamento Pierce delay	Solco di taglio (qualità) Kerf width (quality)
			Qualità Quality	Produzione Production				
(A)	(mm)	(V)	(m/min)		(mm)	(mm)	(s)	(mm)
160	6	127	5,50	7,42	4,0	6,0	0,3	2,5
160	8	129	4,70	5,65	4,0	6,0	0,4	2,6
160	10	130	3,40	4,20	4,0	6,0	0,4	2,6
160	12	131	3,00	3,45	4,0	7,0	0,5	2,7
160	15	134	1,70	2,10	4,0	8,0	0,6	2,5
160	20	136	1,30	1,52	4,0	9,0	0,8	3,2
160	25	141	0,80	1,00	4,0		N.A.	3,5
160	30	143	0,69	0,76	4,0		N.A.	3,9
160	35	149	0,50	0,57	4,0		N.A.	4,1
160	40	155	0,37	0,41	4,0		N.A.	4,2
160	45	160	0,25	0,28	4,0		N.A.	4,2
160	50	164	0,22	0,24	4,0		N.A.	4,3

### ACCIAIO INOSSIDABILE - STAINLESS STEEL

160	6	125	6,00	7,10	4,0	5,0	0,3	2,5
160	8	132	4,50	5,40	4,0	6,0	0,3	2,7
160	12	138	2,30	2,80	4,0	7,0	0,4	2,9
160	15	142	1,40	1,60	4,0	7,0	0,5	3,0
160	20	144	0,90	1,05	4,0	9,0	0,9	3,3
160	25	144	0,75	0,88	4,0		N.A.	3,6
160	30	145	0,64	0,76	4,0		N.A.	3,9
160	40	148	0,35	0,39	4,0		N.A.	4,3
160	45	153	0,25	0,27	4,0		N.A.	4,5

### ALLUMINIO - ALUMINIUM

160	6	125	6,50	7,55	4,0	4,0	0,2	2,5
160	8	129	4,50	5,62	4,0	5,0	0,3	2,7
160	12	136	2,70	3,30	4,0	7,0	0,4	2,8
160	15	142	2,10	2,52	4,0	7,0	0,5	2,9
160	20	147	1,40	1,64	4,0	9,0	0,9	3,1
160	25	149	1,10	1,26	4,0		N.A.	3,3
160	30	157	0,91	0,98	4,0		N.A.	3,4
160	40	163	0,45	0,50	4,0		N.A.	4,3
160	50	178	0,26	0,28	4,0		N.A.	4,5



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