



WECO srl  
Via S. Antonio, 22 - BELVEDERE  
36050 TEZZE SUL BRENTA (VICENZA) ITALY  
Tel. +39 0424 561943 - Fax +39 0424 561944  
www.weco.it - E-mail info@weco.it

# Discovery 150TP







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## 1 INTRODUCTION



### IMPORTANT!


This handbook must be consigned to the user prior to installation and commissioning of the unit. Read the "General prescriptions for use" handbook supplied separately from this handbook before installing and commissioning the unit.

The meaning of the symbols in this manual and the associated precautionary information are given in the "General prescriptions for use".

If the "General prescriptions for use" are not present, it is mandatory to request a replacement copy from the manufacturer or from your dealer.



**Retain these documents for future consultation.**

### KEY



### DANGER!

This pictogram warns of danger of death or serious injury.

-  This symbol identifies an action that occurs automatically as a result of a previous action.
-  This symbol identifies additional information or a reference to a different section of the manual containing the associated information.

### NOTES

The figures in this manual are purely guideline and the images may contain differences with respect to the actual equipment to which they refer.

## INTRODUCTION

Discovery 150TP is an advanced inverter power source characterized by a robust and reliable industrial construction. It is recommended for MMA welding and TIG DC applications providing excellent arc characteristics.

Discovery 150TP is ideal for operations on site like basic maintenance and building construction.

A built-in Total Protection Device saves the inverter components from overvoltage and makes the unit suitable for use with unstable power supply and motor-generators.

Factory optimized Hot Start, Arc Force and Anti Sticking allow an easy and excellent quality welding using electrodes up to 3.25 mm diameter.

In TIG DC, Pulse selection is included, making Discovery 150TP unique in its range.

Lift Start function guarantees arc ignition without damaging the tungsten electrode.

## 2 INSTALLATION



### DANGER!

Lifting and positioning

Read the warnings highlighted by the following symbols in the "General prescriptions for use".

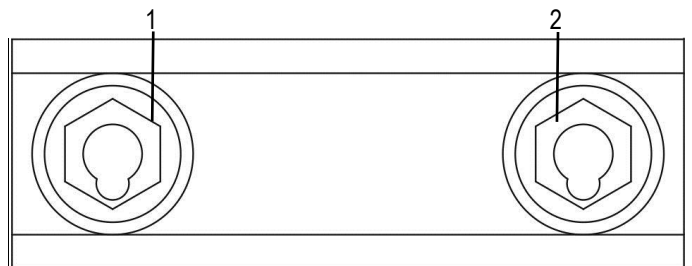


### 2.1 CONNECTIONS TO THE ELECTRICAL MAINS NETWORK

The characteristics of the mains power supply to which the equipment shall be connected are given in the section entitled "Technical data" on page 8.

Connect/disconnect the various devices with the machine switched off.

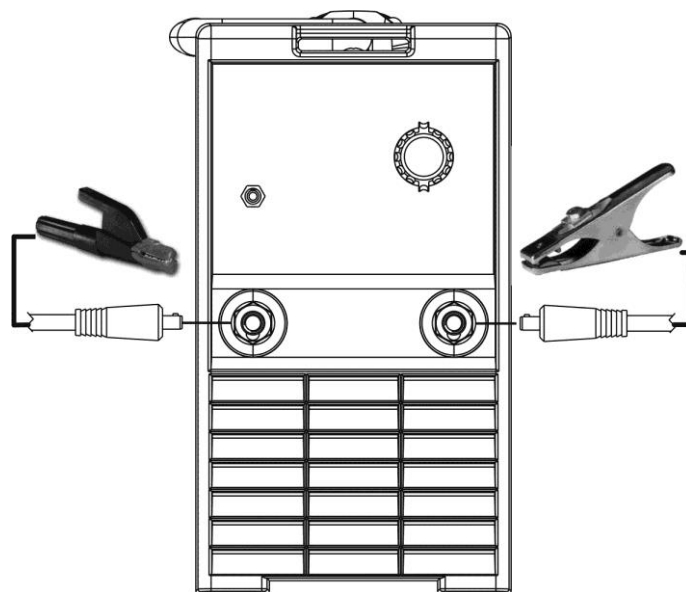
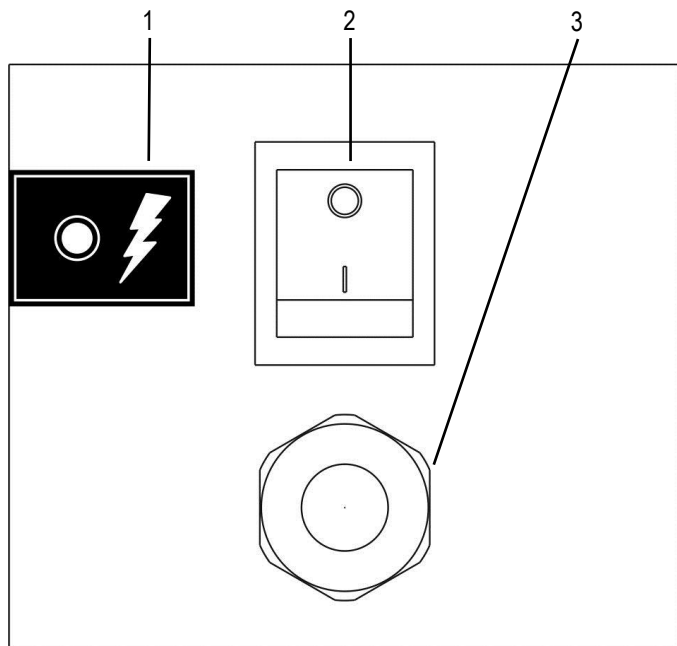
### 2.2 FRONT PANEL



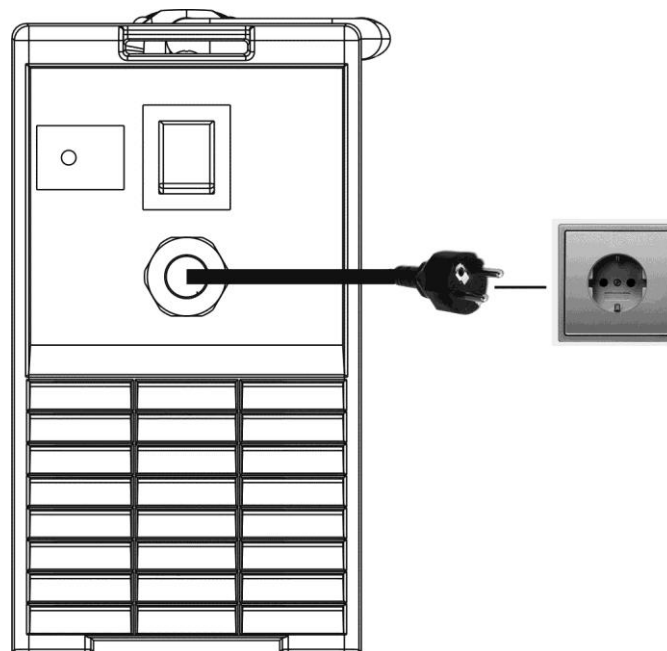
1. Positive pole welding socket.
2. Negative pole welding socket.

## 2.3 REAR PANEL

Preparing for MMA (polarity to basic electrode)



1. Warning LED for overcut protection triggering.  
In case of over-voltage in the supply line, the supply to the power source is cut off. The overcut protection protects electronic parts of the machine against damage caused by voltage surges.
2. Welding power source ON/OFF switch.
3. Power cable.  
Total length (including internal part): 3.0 m  
① Number and cross section of wires: 3 x 2.5 mm<sup>2</sup>  
Power plug type: Schuko



## 2.4 PREPARING FOR MMA WELDING

1. Set the welding power source ON/OFF switch to "O" (unit de-energized).
2. Plug the power cable plug into a mains socket outlet.
3. Choose the electrode based on the type of material and thickness of the workpiece to be welded.
4. Insert the electrode in the electrode holder.
5. Connect the electrode holder cable to the welding socket based on the polarity requested by the type of electrode used.
6. Connect the plug of the ground clamp to the welding socket on the basis of the polarity required.
7. Connect the earth clamp to the workpiece being processed.

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

Read the warnings highlighted by the following symbols in the "General prescriptions for use".




8. Set the welding power source ON/OFF switch to "I" (unit powered).
9. Select the following welding mode on the user interface: MMA  
The system is ready to start welding.

## 2.5 PREPARING FOR TIG WELDING

1. Set the welding power source ON/OFF switch to "0" (unit de-energized).
2. Plug the power cable plug into a mains socket outlet.
3. Choose the electrode based on the type of material and thickness of the workpiece to be welded.
4. Insert the electrode in the TIG torch.
5. Connect the torch plug to the welding socket on the basis of the polarity required by the type of electrode in question.
6. Connect the plug of the ground clamp to the welding socket on the basis of the polarity required.
7. Connect the earth clamp to the workpiece being processed.
8. Set the welding power source ON/OFF switch to "1" (unit powered).

9. Select the following welding mode on the user interface: DC TIG

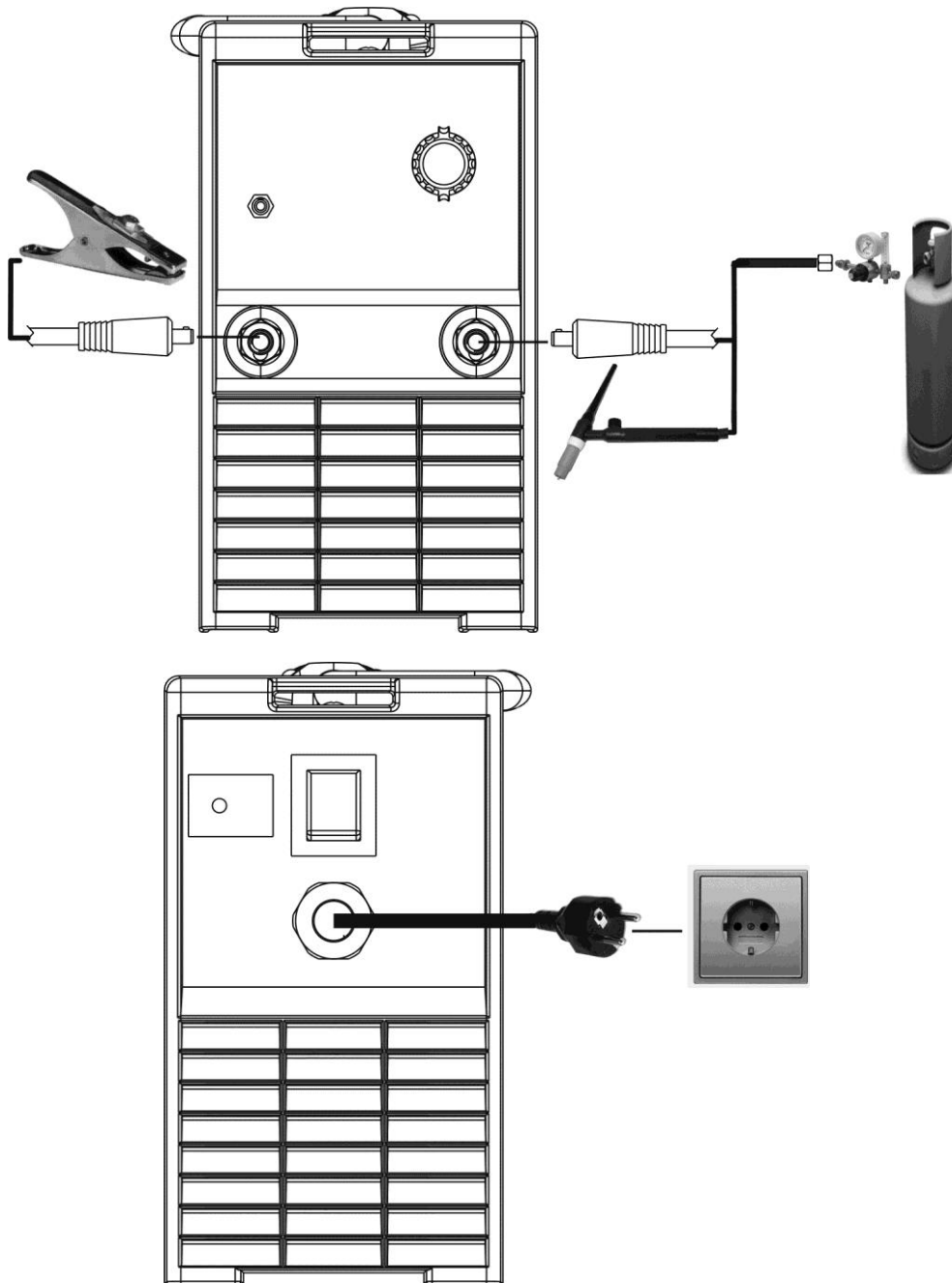
This model of welding machine has not been provided either with the control for gas flow (solenoid valve) or with the torch button.

The system is ready to start welding.

### LIFT-ARC WELDING

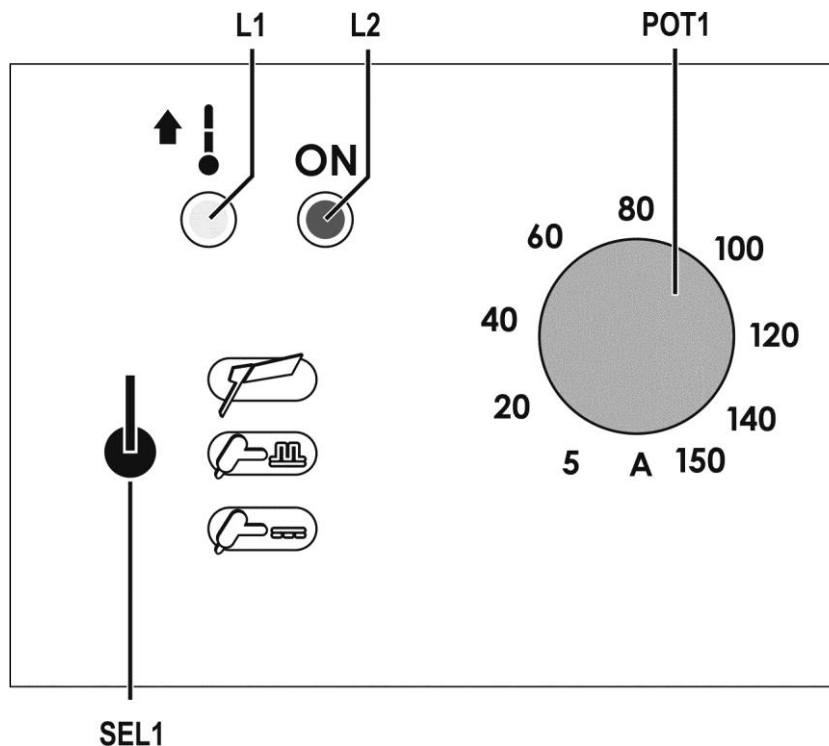
1. Open the torch valve to let the gas out.
2. Touch the workpiece with the torch electrode.
3. Slowly lift the torch to strike the arc.
4. The WELDING CURRENT reaches the preset value.
5. Quickly move the torch clear of the workpiece to extinguish the welding arc.
6. Close the torch valve to interrupt the gas flow.

Preparing for TIG (polarity for tungsten electrode)



### 3 COMMISSIONING

#### 3.1 USER INTERFACE



CODE SYMBOL	DESCRIPTION
L1 <b>ON</b>	This LED illuminates to confirm the presence of power on the output sockets.
L2	<p><b>Overheating alarm</b> Indicates tripping of the welding power source thermal protection. Leave the unit running so that the overheated components cool as rapidly as possible.</p> <p>When the unit has cooled, the welding power source will reset automatically.</p> <ul style="list-style-type: none"> <li>- Make sure that the power required by the welding process is lower than the maximum rated power output.</li> <li>- Check that the operating conditions are in compliance with the welding power source data plate specifications.</li> <li>- Check for the presence of adequate air circulation around the welding power source.</li> </ul>
POT1	The potentiometer sets the value of the following parameter: WELDING CURRENT
SEL1	The selector sets the welding mode.
	<p> MMA</p> <p> PULSED DC TIG</p> <p> TIG DC CONTINUOUS</p>

#### 3.2 WELDING PARAMETERS

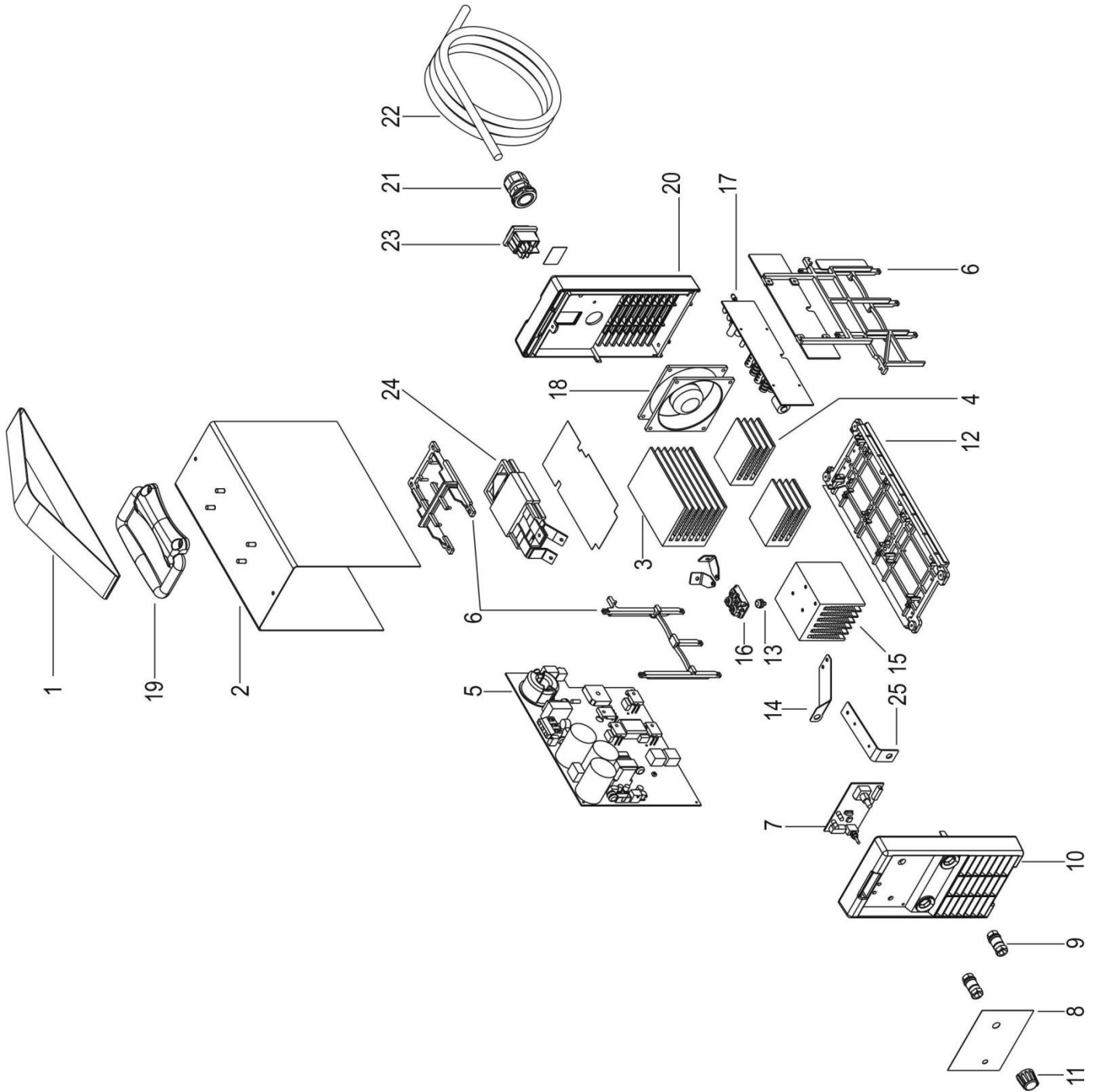
PARAMETER	MIN	DEFAULT	MAX	NOTES
WELDING CURRENT (MMA)	5 A	-	140 A	
WELDING CURRENT (TIG)	5 A	-	150 A	
PULSED CURRENT FREQUENCY		100 Hz		TIG only, set by the manufacturer.
HOT-START		50 %		Set by the manufacturer.
ARC FORCE		50 %		Set by the manufacturer.

## 4 TECHNICAL DATA

<b>Directives applied</b>	Waste electrical and electronic equipment (WEEE)		
	Electromagnetic compatibility (EMC)		
	Low voltage (LVD)		
<b>Construction standards</b>	Restriction of the use of certain hazardous substances (RoHS)		
	EN 60974-1; EN 60974-10 Class A		
<b>Conformity markings</b>		Equipment compliant with European directives in force	
		Equipment suitable in an environment with increased hazard of electric shock	
		Equipment compliant with directive WEEE	
		Equipment compliant with directive RoHS	
<b>Supply voltage</b>	1 x 230 Va.c. $\pm$ 15 % / 50-60 Hz		
<b>Mains protection</b>	16 A Delayed		
<b>Z<sub>max</sub></b>	This equipment complies with IEC 61000-3-12 provided that the maximum permissible system impedance is less than or equal to 27 m $\Omega$ at the interface point between the user's supply and the public system. It is the responsibility of the installer or user of the equipment to ensure, by consultation with the distribution network operator if necessary, that the equipment is connected only to a supply with maximum permissible system impedance less than or equal to 27 m $\Omega$ .		
<b>Dimensions ( L x D x H )</b>	310 x 120 x 215 mm		
<b>Weight</b>	4.4 kg		
<b>Insulation class</b>	B		
<b>Protection rating</b>	IP23S		
<b>Cooling</b>	AF: Air-over cooling (fan assisted)		
<b>Static characteristic</b>	MMA	Drooping characteristic	
	TIG	Drooping characteristic	
<b>Current and voltage adjustment range</b>	MMA	10 A / 20.4 V - 140 A - 25.6 V	
	TIG	10 A / 10.4 V - 150 A - 16.0 V	
<b>Welding current / Working voltage</b>	MMA	35 % (40° C)	140 A - 25.6 V
		60 % (40° C)	110 A - 24.4 V
		100 % (40° C)	100 A - 24.0 V
	TIG	35 % (40° C)	150 A - 16.0 V
		60 % (40° C)	115 A - 14.6 V
		100 % (40° C)	100 A - 14.0 V
<b>Maximum input power</b>	MMA	35 % (40° C)	5.6 kVA
		60 % (40° C)	4.5 kVA
		100 % (40° C)	3.9 kVA
	TIG	35 % (40° C)	4.1 kVA
		60 % (40° C)	3.1 kVA
		100 % (40° C)	2.5 kVA
<b>Maximum supply current</b>	MMA	35 % (40° C)	24.3 A
		60 % (40° C)	19.2 A
		100 % (40° C)	17.0 A
	TIG	35 % (40° C)	17.8 A
		60 % (40° C)	13.2 A
		100 % (40° C)	10.9 A
<b>Maximum effective supply current</b>	MMA	35 % (40° C)	14.3 A
		60 % (40° C)	14.9 A
		100 % (40° C)	17.0 A
	TIG	35 % (40° C)	10.5 A
		60 % (40° C)	10.2 A
		100 % (40° C)	10.9 A
<b>No-load voltage (U<sub>0</sub>)</b>	MMA	94 V	
	TIG	94 V	
<b>Reduced no-load voltage (U<sub>r</sub>)</b>	TIG	11 V	



## 5 SPARE PARTS



## 5.1 DISCOVERY 150TP

N°	CODE	DESCRIPTION
1	005.0001.0002	BELT
2	011.0000.0021	COVER PLATE
3	015.0001.0001	HEAT SINK L= 107mm
4	015.0001.0002	HEAT SINK L= 50 mm
5	050.0006.0001	POWER BOARD
6	012.0001.0000	INTERNAL FRAMEWORKS
7	050.0001.0018	LOGIC BOARD
8	013.0015.0201	FRONT LABEL
9	021.0001.1022	FIXED SOCKET
10	012.0001.0150	FRONT PLASTIC PANEL
11	014.0002.0000	KNOB WITH CUP AND INDICATOR
12	012.0001.0007	LOWER COVER
13	040.0003.1080	TERMAL SWITCH 80° C
14	045.0006.0002	COPPER BRACKET
15	015.0001.0027	HEAT SINK L= 75 mm
16	032.0002.2003	ISOTOP DIODE
17	050.0001.0043	OVERCUT BOARD
18	003.0002.0001	FAN
19	011.0006.0031	HANDLE
20	010.0006.0004	REAR PLASTIC PANEL
21	045.0000.0007	CABLE CLAMP
22	045.0002.0001	NEOPRENE CABLE
23	040.0001.0004	BI-POLE SWITCH
24	010.0007.0005	PLANAR TRANSFORMER
25	045.0005.0003	SHUNT

## 5.2 DISCOVERY 150TP PLUS

N°	CODE	DESCRIPTION
1	005.0001.0002	BELT
2	011.0000.0021	COVER PLATE
3	015.0001.0001	HEAT SINK L= 107mm
4	015.0001.0002	HEAT SINK L= 50 mm
5	050.0006.0001	POWER BOARD
6	012.0001.0000	INTERNAL FRAMEWORKS
7	050.0002.0018	LOGIC BOARD
8	013.0015.0201	FRONT LABEL
9	021.0001.1022	FIXED SOCKET
10	012.0001.0150	FRONT PLASTIC PANEL
11	014.0002.0000	KNOB WITH CUP AND INDICATOR
12	012.0001.0007	LOWER COVER
13	040.0003.1080	TERMAL SWITCH 80° C
14	045.0006.0002	COPPER BRACKET
15	015.0001.0027	HEAT SINK L= 75 mm
16	032.0002.2003	ISOTOP DIODE
17	050.0001.0043	OVERCUT BOARD
18	003.0002.0002	FAN
19	011.0006.0031	HANDLE
20	010.0006.0004	REAR PLASTIC PANEL
21	045.0000.0007	CABLE CLAMP
22	045.0002.0001	NEOPRENE CABLE
23	040.0001.0004	BI-POLE SWITCH
24	010.0007.0005	PLANAR TRANSFORMER
25	045.0005.0003	SHUNT

## 6 ELECTRICAL DIAGRAM

### 6.1 DISCOVERY 150TP

