



WELD THE WORLD

# POWER PULSE DIGITAL 405d POWER PULSE DIGITAL 505d

## Instruction manual

ENGLISH

Translation of original instructions







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## INDEX

<b>1</b>	<b>INTRODUCTION</b> .....	<b>4</b>
1.1	INTRODUCTION.....	5
<b>2</b>	<b>INSTALLATION</b> .....	<b>6</b>
2.1	CONNECTIONS TO THE ELECTRICAL MAINS NETWORK.....	6
2.2	FRONT PANEL.....	6
2.3	REAR PANEL.....	7
<b>3</b>	<b>USER INTERFACE</b> .....	<b>8</b>
<b>4</b>	<b>TECHNICAL DATA</b> .....	<b>9</b>
<b>5</b>	<b>ELECTRICAL DIAGRAM</b> .....	<b>12</b>
5.1	POWER PULSE 405d/505d→WF-205 CABLE.....	12
5.2	POWER PULSE 405d/505d.....	13
<b>6</b>	<b>SPARE PARTS</b> .....	<b>18</b>

## 1 INTRODUCTION

 	<b>IMPORTANT!</b>
<p><i>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.</i></p> <p><i>The meaning of the symbols in this manual and the associated precautionary information are given in the "General prescriptions for use".</i></p> <p><i>If the "General prescriptions for use" are not present, it is mandatory to request a replacement copy from the manufacturer or from your dealer.</i></p> <p><i>Retain these documents for future consultation.</i></p>	

### LEGEND

	<b>DANGER!</b>
<i>This pictogram warns of danger of death or serious injury.</i>	

	<b>WARNING!</b>
<i>This pictogram warns of a risk of injury or damage to property.</i>	

	<b>CAUTION!</b>
<i>This pictogram warns of a potentially hazardous situation.</i>	

	<b>INFORMATION</b>
<i>This pictogram gives important information concerning the execution of the relevant operations.</i>	

- ⦿ 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.
- § This symbol identifies a reference to a chapter of the manual.
- \*1 The symbol refers to the associated numbered note.

### 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.

## 1.1 INTRODUCTION

Power Pulse 405d-505d is a power source for welding.  
When combined with a wire feeder it can be used for MIG/MAG welding.

**Fan.** The fan is turned on only during welding, at the end of the welding process it remains on for a fixed period of time according to welding conditions.  
The fan is nonetheless controlled by specific thermal sensors that guarantee a correct cooling of the machine.

**Accessories/ancillary devices that can be connected to the unit:**

- Power source trolley for multi-function configuration (MIG/MAG).
- Liquid cooler for MIG/MAG torches.
- Wire feeder.

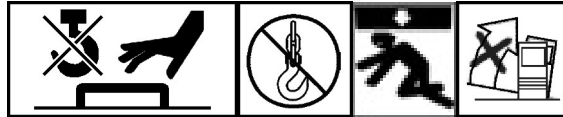
Consult your dealer for an updated list of accessories and the latest new products available.

## 2 INSTALLATION



### **DANGER!** **Lifting and positioning**

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

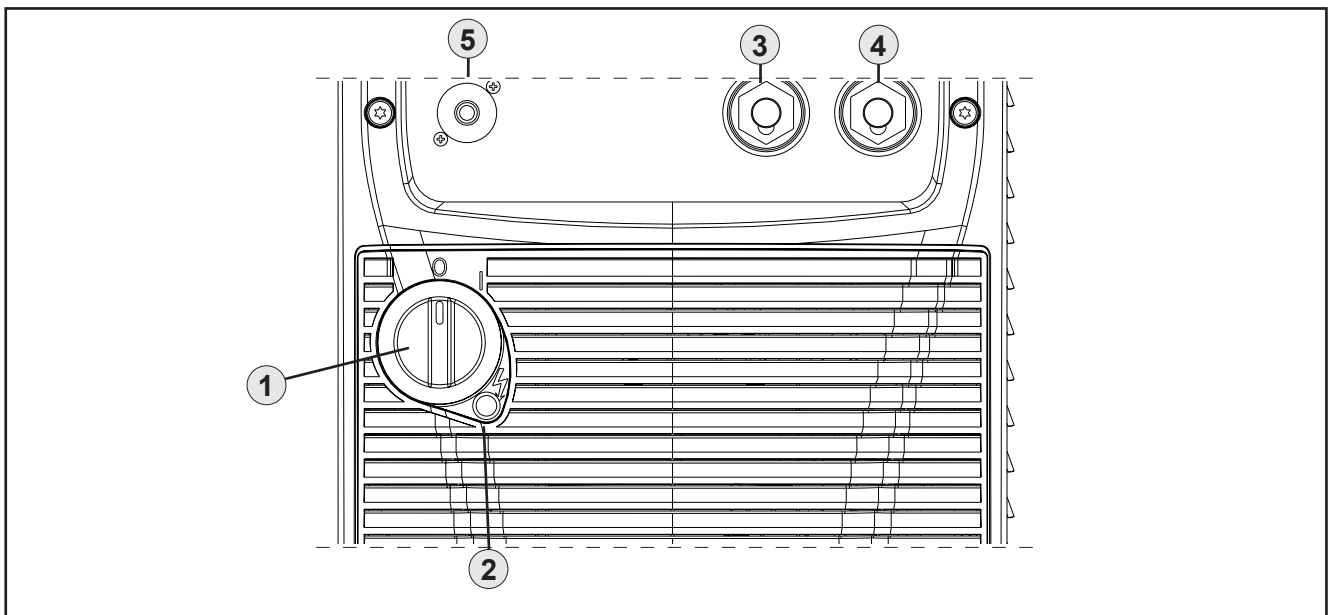


### 2.1 CONNECTIONS TO THE ELECTRICAL MAINS NETWORK

The mains power supply features to which the equipment should be connected are given in chapter "TECHNICAL DATA".

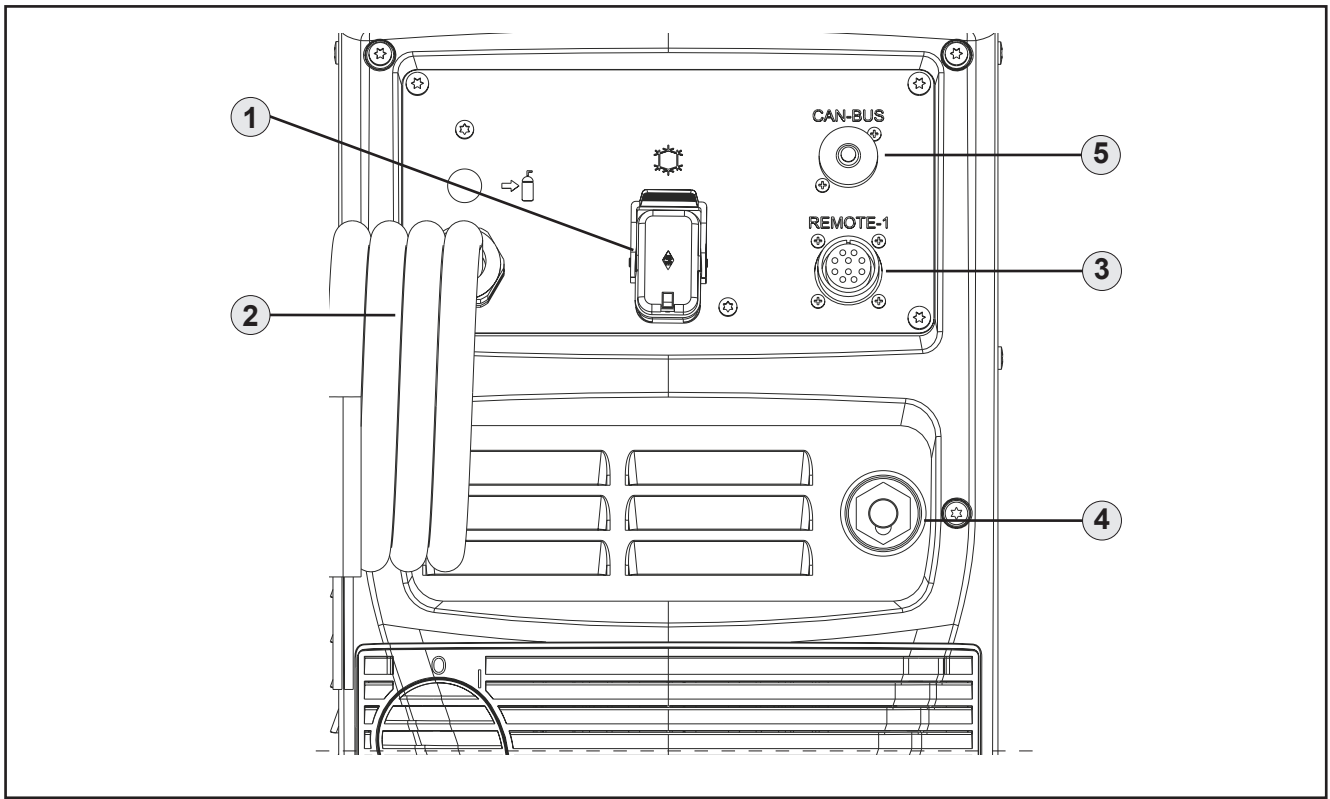
The machine can be connected to motorgenerators provided their voltage is stabilised.  
Connect/disconnect the various devices with the machine switched off.

### 2.2 FRONT PANEL



- Welding power source ON/OFF switch. [Item 1].
- Mains protection ON LED [Item 2].
- Negative pole welding socket [Item 3].
- Positive pole welding socket [Item 4].
- Remote controller connector [Item 5].

## 2.3 REAR PANEL



- Cooler group power feeding connector [Item 1].
  - Voltage: 400 V a.c.
  - Current output: 1.0 A
  - IP protection rating: IP20 (cap open) / IP66 (cap closed)



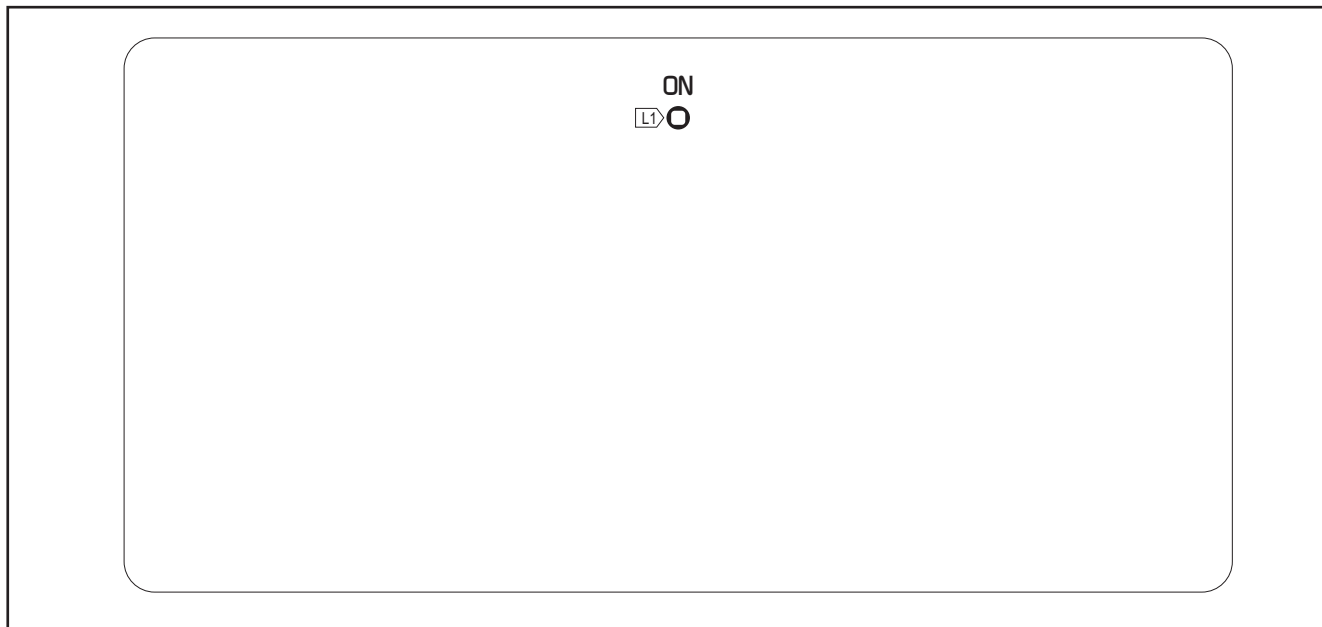
**DANGER!**  
**High voltage!**

*If the socket is not connected to any devices always close cap*

- Power cable [Item 2].
  - Total length (external part): 4,3 m
  - Number and cross section of wires: 4 x 4 mm<sup>2</sup>
  - Power plug type: not supplied
- Connector of the bundle of cables for connecting the power source to the remote control device [Item 3].
- Socket for connecting the power cable between the power source and the remote control device [Item 4].
- Connector for CAN-BUS devices: devices that communicate via CAN-BUS (remote control, data manager, IR (robot interface), etc. can be connected to this connector. [Item 5].

### 3 USER INTERFACE





#### Power Pulse 405d - Power Pulse 505d



CODE	SYMBOL	DESCRIPTION
L1	<b>ON</b>	This LED illuminates to confirm the presence of power on the output sockets.






## 4 TECHNICAL DATA




<b>Directives applied</b>	Waste electrical and electronic equipment (WEEE)
	Electromagnetic compatibility (EMC)
	Low voltage (LVD)
	Restriction of the use of certain hazardous substances (RoHS)
<b>Construction standards</b>	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 WEEE directive
	 Equipment compliant with RoHS directive
<b>Supply voltage</b>	3 x 400 Va.c. $\pm$ 15 % / 50-60 Hz 3 x 230 Va.c. $\pm$ 15 % / 50-60 Hz
<b>Mains protection</b>	30 A 500 V Delayed
<b>Zmax</b>	This equipment complies with IEC 61000-3-12 provided that the maximum permissible system impedance is less than or equal to 25 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 25 m $\Omega$ .
<b>Dimensions ( D x W x H )</b>	712 x 301 x 465 mm
<b>Weight</b>	42.8 kg
<b>Insulation class</b>	H
<b>Protection rating</b>	IP23
<b>Cooling</b>	AF: Air-over cooling (fan assisted)

**ENGLISH**

**Power Pulse 405d**

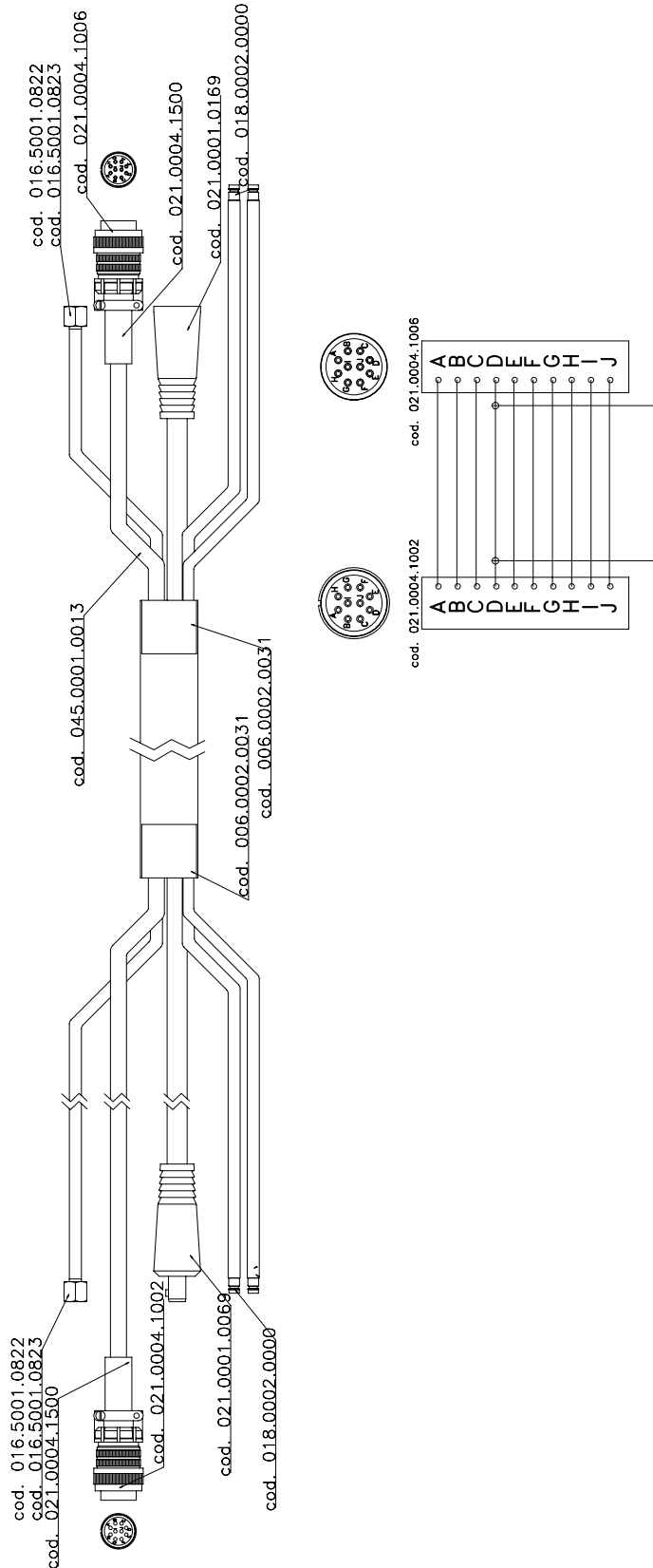
<b>Static characteristic</b>	MMA  Falling characteristic			
	TIG  Falling characteristic			
	MIG/MAG  Flat characteristic			
<b>Welding mode</b>		MMA 400 Va.c. (230 Va.c.)	TIG 400 Va.c. (230 Va.c.)	MIG/MAG 400 Va.c. (230 Va.c.)
<b>Current and voltage adjustment range</b>		10A/ 20.4 V - 400A/ 36.0 V (10A/ 20.4 V - 350A/ 34.0 V)	5A/ 10.2 V - 400A/ 26.0 V (5A/ 10.2 V - 400A/ 26.0 V)	10A/ 15.0 V - 400A/ 34.0 V (10A/ 15.0 V - 350A/ 31.5 V)
<b>Welding current / Working voltage</b>	50% (40° C)	--- (---)	--- (---)	--- (---)
	60% (40° C)	--- (---)	--- (---)	--- (---)
	100% (40° C)	400 A - 36.0 V (350A/ 34.0 V)	400 A - 26.0 V (400A/ 26.0 V)	400 A - 34.0 V (350A/ 31.5 V)
<b>Maximum input power</b>	50% (40° C)	--- (---)	--- (---)	--- (---)
	60% (40° C)	--- (---)	--- (---)	--- (---)
	100 % (40° C)	16.8 kVA – 16.0 kW (14.3 kVA – 13.7 kW)	12.5 kVA – 11.9 kW (12.7 kVA – 12.2 kW)	16.0 kVA – 15.2 kW (13.3 kVA – 12.7 kW)
<b>Maximum input current</b>	50% (40° C)	--- (---)	--- (---)	--- (---)
	60% (40° C)	--- (---)	--- (---)	--- (---)
	100 % (40° C)	24.3 A (35.9 A)	18.0 A (32.0 A)	22.9 A (33.3 A)
<b>Actual input current</b>	50% (40° C)	--- (---)	--- (---)	--- (---)
	60% (40° C)	--- (---)	--- (---)	--- (---)
	100 % (40° C)	24.3 A (35.9 A)	18.0 A (32.0 A)	22.9 A (33.3 A)
<b>No-load voltage (U0)</b>		70 V	70 V	70 V
<b>Reduced no-load voltage (Ur)</b>		19 V	0 V	0 V
<b>Power source efficiency</b>	Efficiency (400A / 36,0V): 88,4%			
	No-Load condition power consumption (U1= 400 Va.c.): 29 W			
<b>Essential raw materials</b>	According to the information provided by our suppliers, this product does not contain essential raw materials in quantities greater than 1g per component.			

Power Pulse 505d

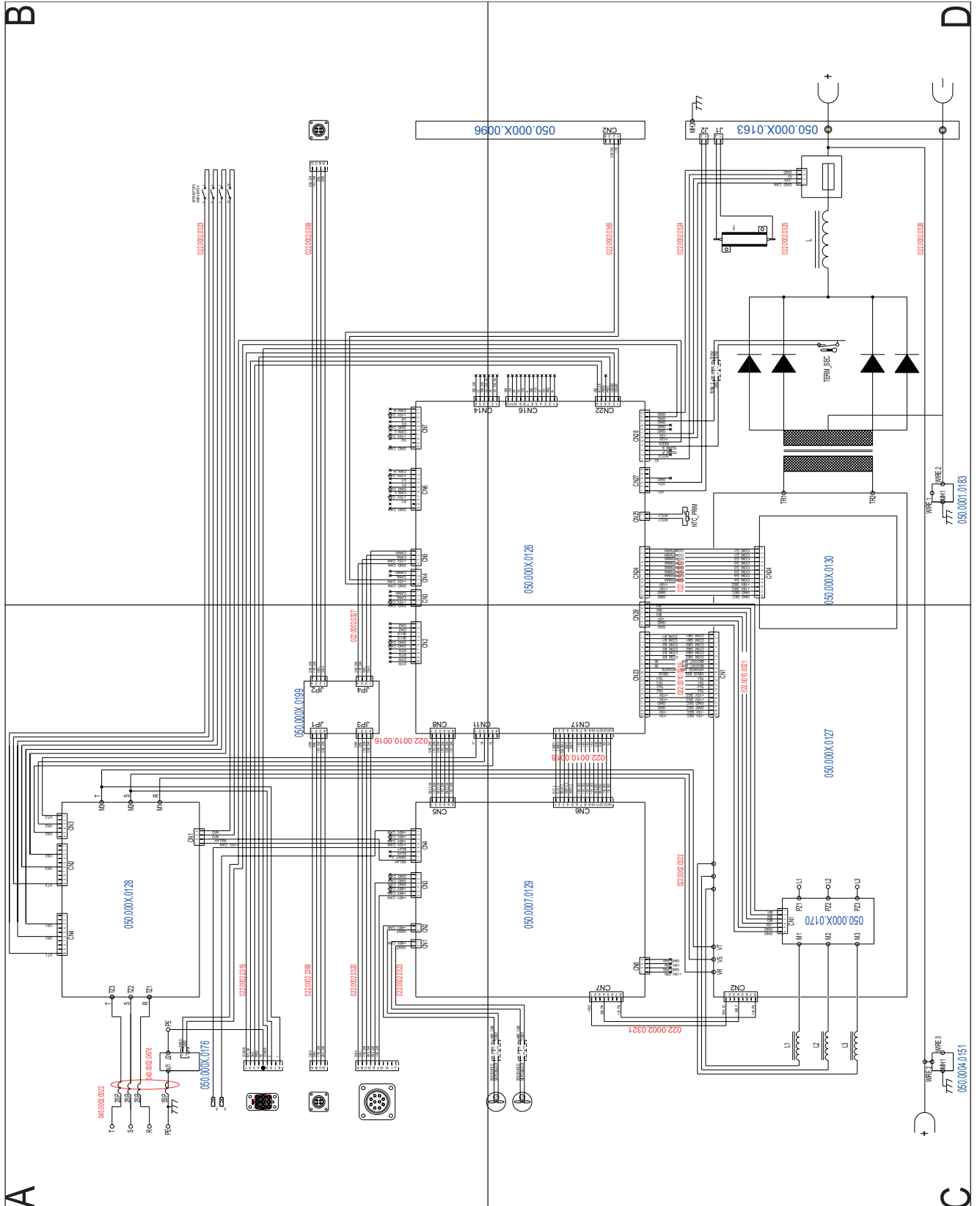
Static characteristic	MMA  Falling characteristic			
	TIG  Falling characteristic			
	MIG/MAG  Flat characteristic			
Welding mode	MMA 400 Va.c. (230 Va.c.)	TIG 400 Va.c. (230 Va.c.)	MIG/MAG 400 Va.c. (230 Va.c.)	
Current and voltage adjustment range	10A/20.4V - 500A/40.0V (10A/20.4V - 350A/34.0V)	5A/10.2V - 500A/30.0V (5A/10.2V - 400A/26.0V)	10A/15.0V - 500A/39.0V (10A/15.0V - 350A/31.5V)	
Welding current / Working voltage	50% (40° C)	500A/40.0V (---)	500A/30.0V (---)	500A/39.0V (---)
	60% (40° C)	450 A - 38.0 V (---)	450 A - 28.0 V (---)	450 A - 36.5 V (---)
	100% (40° C)	400 A - 36.0 V (350A/34.0V)	400 A - 26.0 V (400A/26.0V)	400 A - 34.0 V (350A/31.5V)
Maximum input power	50% (40° C)	23.7 kVA – 22.6 kW (---)	18.0 kVA – 17.1 kW (---)	23.1 kVA – 22.0 kW (---)
	60% (40° C)	20.2 kVA – 19.2 kW (---)	15.1 kVA – 14.4 kW (---)	19.6 kVA – 18.6 kW (---)
	100 % (40° C)	16.8 kVA – 16.0 kW (14.3 kVA – 13.7 kW)	12.5 kVA – 11.9 kW (12.7 kVA – 12.2 kW)	16.0 kVA – 15.2 kW (13.3 kVA – 12.7 kW)
Maximum input current	50% (40° C)	34.3 A (---)	26.0 A (---)	33.0 A (---)
	60% (40° C)	29.1 A (---)	21.8 A (---)	28.2 A (---)
	100 % (40° C)	24.3 A (35.9 A)	18.0 A (32.0 A)	22.9 A (33.3 A)
Actual input current	50% (40° C)	24.3 A (---)	18.4 A (---)	23.3 A (---)
	60% (40° C)	22.5 A (---)	16.9 A (---)	21.8 A (---)
	100 % (40° C)	24.3 A (35.9 A)	18.0 A (32.0 A)	22.9 A (33.3 A)
No-load voltage (U0)	70 V	70 V	70 V	
Reduced no-load voltage (Ur)	19 V	0 V	0 V	
Power source efficiency	Efficiency (500A / 40,0V): 88,2%			
	No-Load condition power consumption (U1= 400 Va.c.): 29 W			
Essential raw materials	According to the information provided by our suppliers, this product does not contain essential raw materials in quantities greater than 1g per component.			

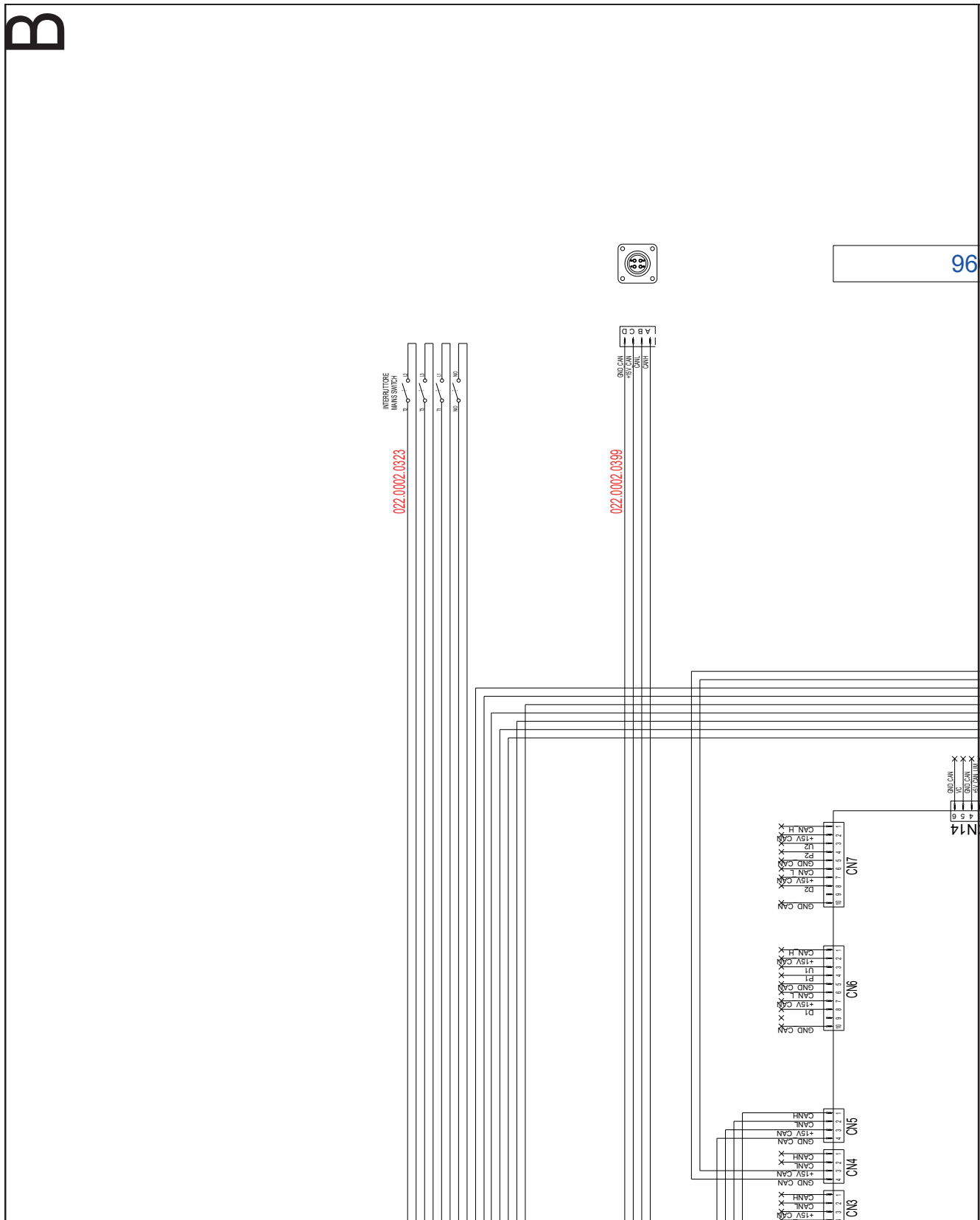
## 5 ELECTRICAL DIAGRAM

### 5.1 POWER PULSE 405d/505d → WF-205 CABLE

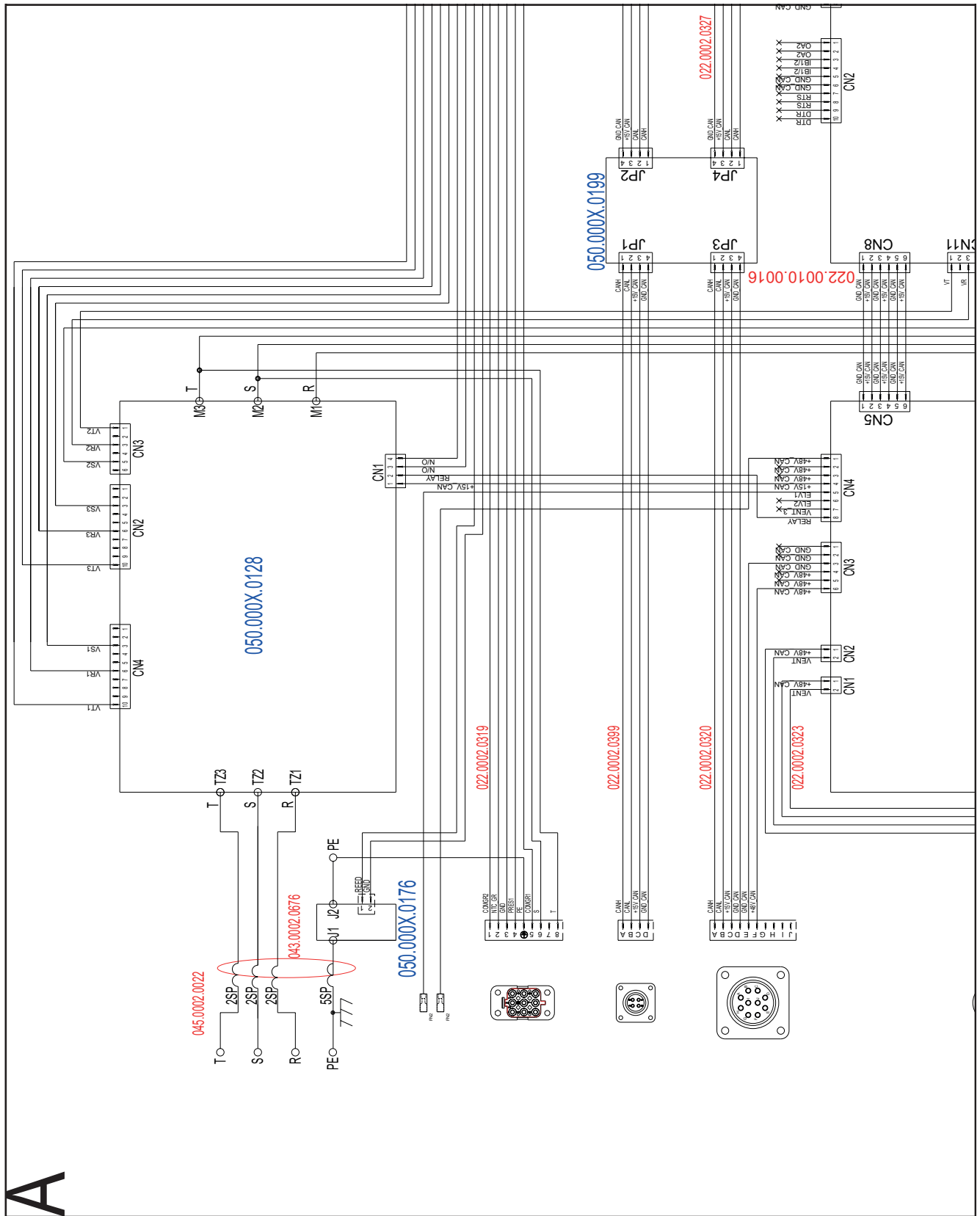


5.2 POWER PULSE 405d/505d



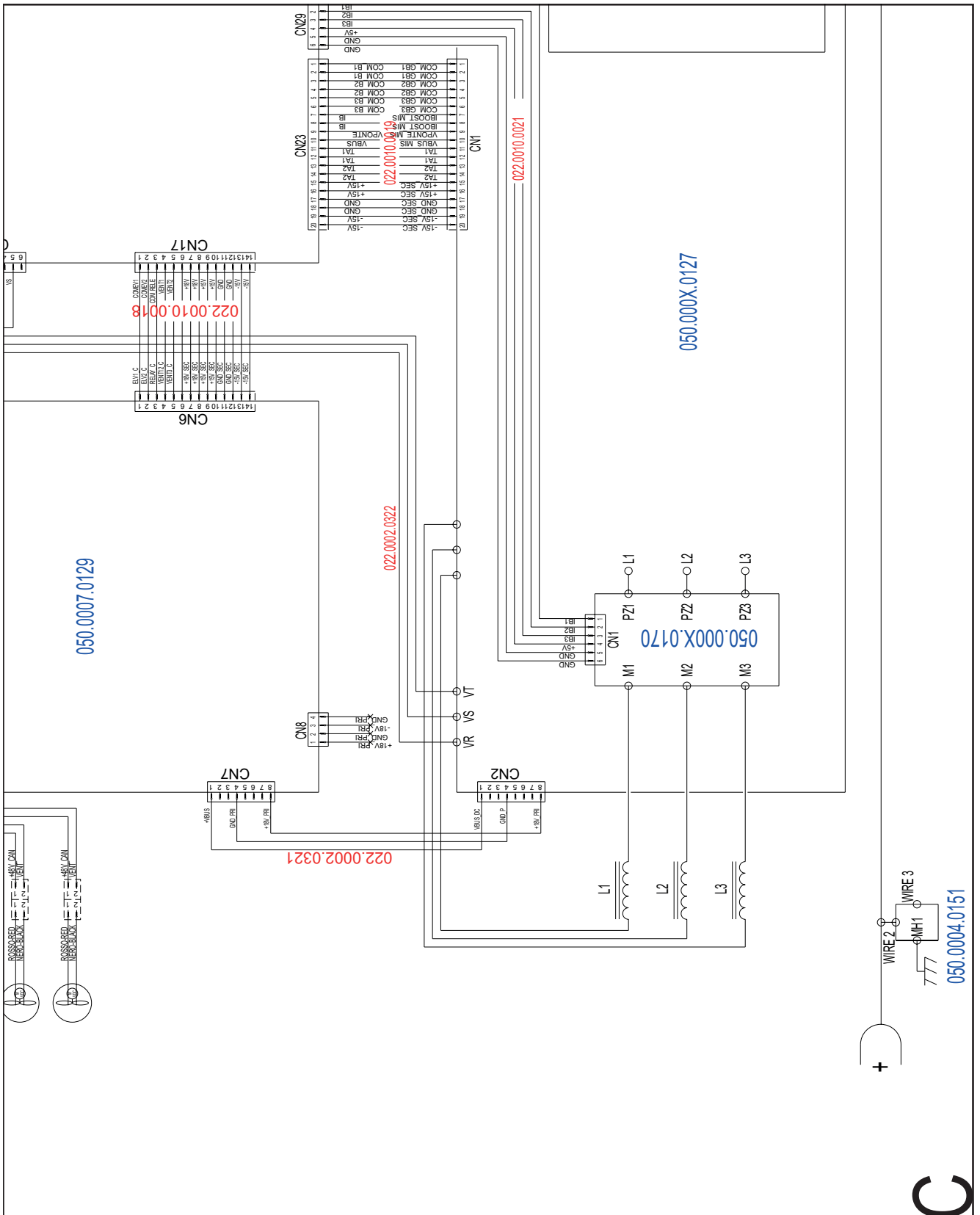






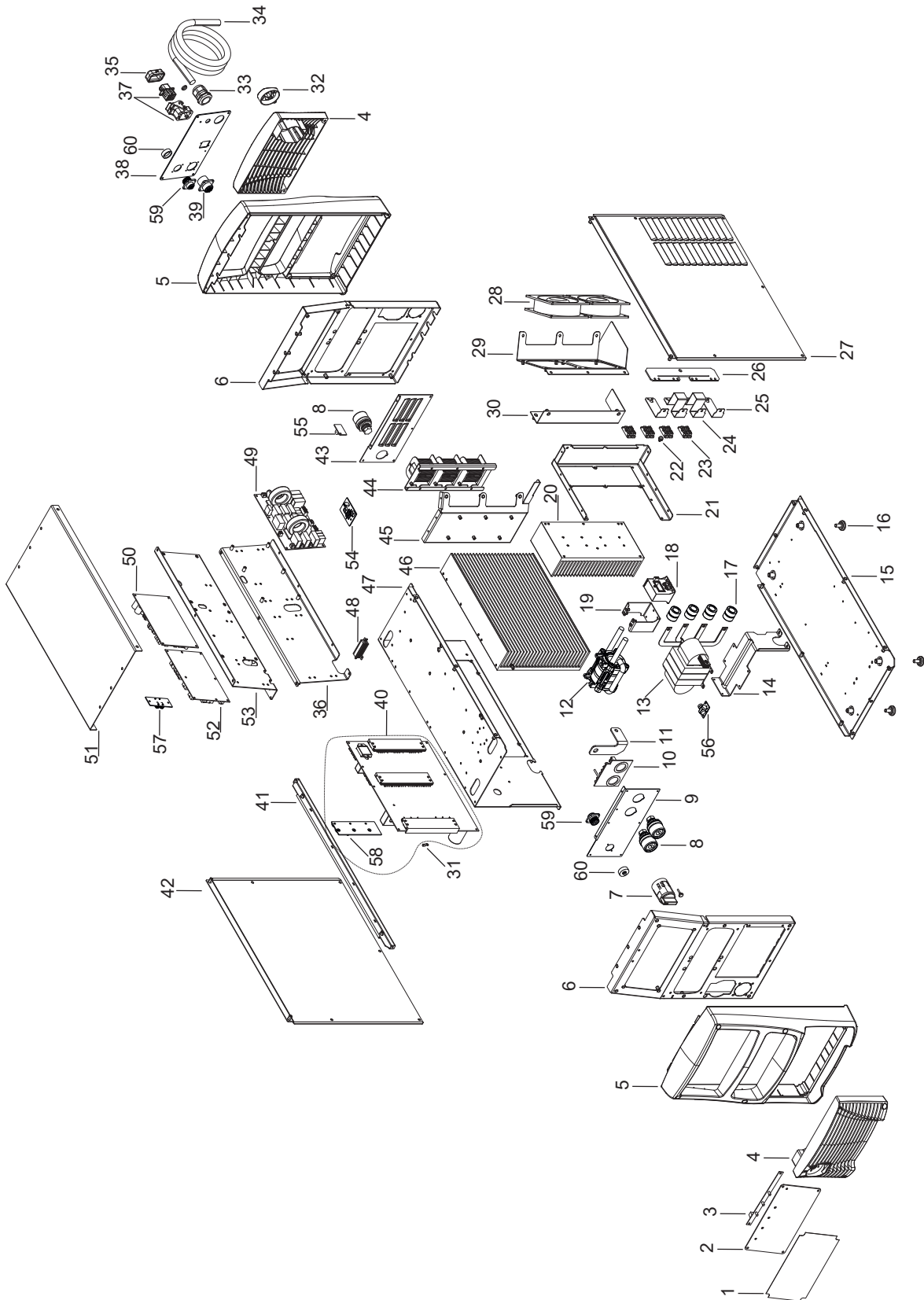
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6 SPARE PARTS



N°	CODE	DESCRIPTION
1	013.0023.0701	FRONT PANEL LABEL
2	013.0000.8044	FRONTAL PANEL PLATE
3	050.0002.0096	LED BOARD
4	012.0007.0020	PLASTIC LOUVRE
5	012.0007.0010	FRONT PLASTIC
6	011.0013.0021	FRONT PLATE
7	040.0001.0016	THREE-POLE SWITCH
8	021.0001.0279	OUTPUT SOCKET
9	011.0013.0163	FRONT SOCKETS PANEL
10	050.0001.0163	OUTPUT FILTER BOARD
11	045.0006.0113	TRASF/Socket COPPER BRACKET
12	044.0004.0029	OUTPUT INDUCTOR
13	042.0003.0051	POWER TRANSFORMER
14	011.0013.0159	POWER TRANSFORMER SUPPORT PLATE
15	011.0013.0150	LOWER COVER
16	016.0009.0003	RUBBER FOOT
17	043.0002.0676	EMI TOROID
18	041.0004.0052	HALL EFFECT SENSOR
19	011.0013.0161	HALL SUPPORT PLATE
20	015.0001.0023	HEAT SINK 19X36X162
21	011.0013.0153	SEPARATION PLATE (1)
22	040.0003.1007	THERMAL CUT-OUT
23	032.0002.2403	ISOTOP DIODE
24	045.0006.0112	LONG COPPER BRACKET
25	045.0006.0111	SHORT COPPER BRACKET
26	045.0006.0110	OUTPUT COPPER BRACKET
27	011.0001.1141	RIGHT COVER
28	003.0002.0017	FAN
29	011.0013.0157	INTERNAL FAN SUPPORT
30	011.0013.0156	SEPARATION PLATE (2)
31	040.0003.1010	THERMAL CUT-OUT
32	012.0007.0040	CAP
33	045.0000.0017	CABLE CLAMP
34	045.0002.0022	SUPPLY CABLE
35	021.0013.0014	ILME CONNECTOR CAP
36	011.0013.0160	RIGHT SUPPORT BOARD PLATE
37	022.0002.0319	CU SUPPLY CABLE
38	013.0000.7010	REAR PANEL
39	022.0002.0320	10 PIN CONNECTOR CABLE
40	050.0004.0127	COMPLETE POWER BOARD
41	011.0013.0037	COVER PANEL SUPPORT PLATE
42	011.0001.0911	LEFT COVER
43	011.0013.0162	REAR SOCKETS PANEL
44	044.0004.0030	INPUT INDUCTOR

N°	CODE	DESCRIPTION
45	011.0013.0152	TUNNEL SUPPORT PLATE
46	015.0001.0022	HEAT SINK 17X37.3X162
47	011.0013.0151	TUNEL PLATE
48	030.0017.2200	RESISTOR
49	050.0004.0128	MAINS FILTER BOARD
50	050.0007.0129	SUPPLIES BOARD
51	011.0001.0901	UPPER COVER
52	050.0001.0126	405d CONTROL BOARD
52	050.0002.0126	505d CONTROL BOARD
53	011.0013.0158	LEFT SUPPORT BOARD PLATE
54	050.0001.0176	CURRENT SENSOR BOARD
55	050.0004.0151	EMI CAPACITORS BOARD (0151)
56	050.0001.0183	EMI CAPACITORS BOARD (0183)
57	050.0001.0199	CONNECTORS BOARDS
58	050.0001.0170	BOOST CURRENT SENSOR BOARD
59	022.0002.0399	CAN-BUS COMUNICATION CABLE
60	021.0004.2992	4 PIN CONNECTOR CAP



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