

LIGHT-CURING FURNACE PHOTOPOL PRO VACUUM



USER AND MAINTENANCE MANUAL



1. DESCRIPTION

PHOTOPOL PRO VACUUM has been expressly designed to carry out light curing operations under the effect of ultraviolet rays also without oxygen thanks to the vacuum treatment.

The system is extremely versatile and can suit the most discerning requirements of both the Dental Laboratory and Dental Cabinet.

This unit allows to treat the light-hardening composites: the wide operating spectrum assured by this unit (ranging from 320 to 550 nm) permits to treat in the most correct way all the products available on the market.

PHOTOPOL PRO VACUUM inside walls and the support plate are made of highly reflecting, polished aluminium which ensures the ideal distribution of the rays all over the working area. The drawer allows for total opening which facilitates positioning of the elements to be treated on the rotating plate.

All functions are controlled and operated by an electronic microprocessor circuit. The operating software features a logical user interface providing ease of use and immediate understanding. All stored operating data are always clearly visible and can be easily modified on the full colour touch-screen display.

A set of essential accessories needed for a correct and practical processing is included in the supply consisting of: rotating plate to grant best irradiation of the models, LED circuits featuring special collimation lens enhancing power and the cooling fan.

2. TECHNICAL REFERENCE REGULATIONS AND TEST PROCEDURES

The light-curing furnace is mass-manufactured by DENTALFARM in compliance with technical and safety rules in force, as provided for by the 2006/42 EEC Community Directive on machinery and following amendments.

Careful inspection and full routine testing is carried out singularly on each machine which is furtherly tested by an automatic test installation (Model TS48 Elektrotech. Laboratorium Postfach D-7015 KORNTAL 1) carrying out in sequence:

Dielectric Strength Test; Test on the Protection Conductor; Insulation Resistance Test; Short Circuit Test

and it prints a report assuring compliance with the fixed limits.

3. DEMOLITION AND WASTE DISPOSAL

According to International regulations, this unit has been classified as AEE (electric and electronic device, whose correct operation depends on electric currents and electromagnetic fields) and as a consequence, at the end of its lifetime, it can not be treated as normal waste material but it must be disposed separately, complying with the Directive 2002/96/CE.



4. GENERAL PRECAUTIONS

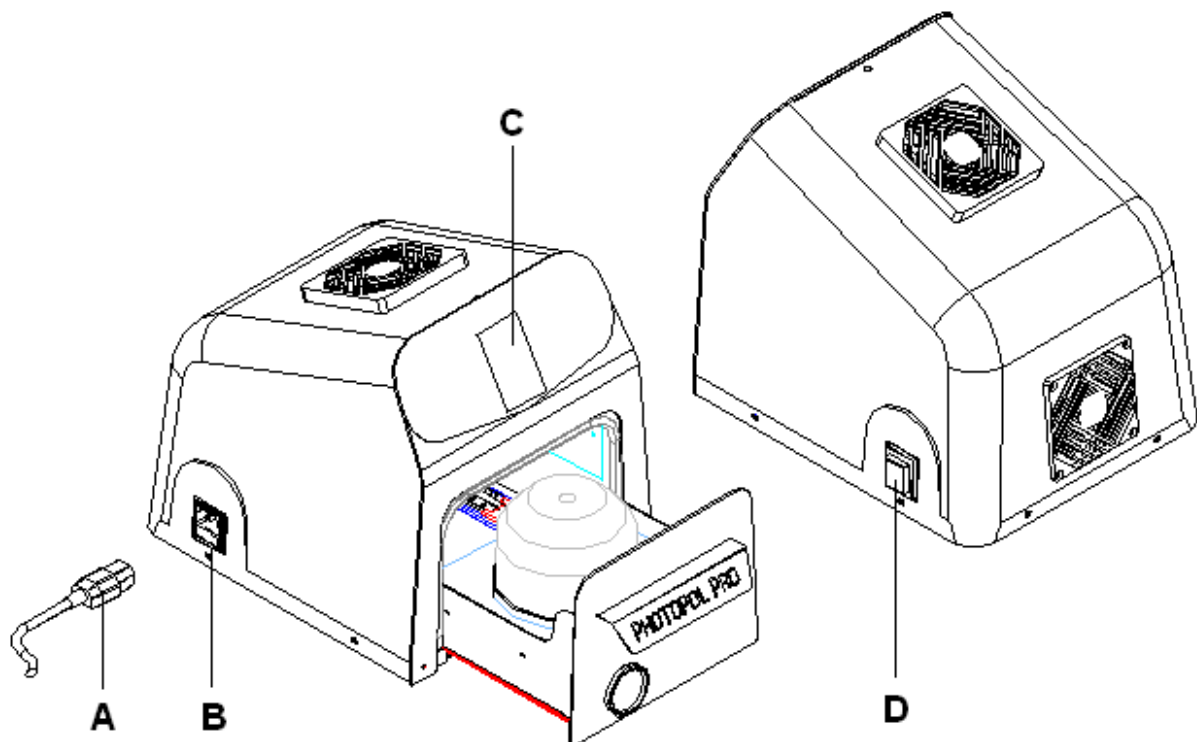
- Read carefully the present manual before carrying out any starting, operating or maintenance operation on the machine
- Safety of the User depends on the skillness, on the good sense and on the caution when using the machine; for this reason, it is of utmost importance to know in detail the allocation and the function of all the controls
- The final User of the machine is a skilled and well trained professional and not merely an occasional worker
- Check regularly the parts which tend to wear out because of their specific working conditions
- Do not tamper the electrical wiring system of the machine
- The built-in safety mechanisms shall in no way be removed or modified
- Do not allow unauthorized persons to try to repair the machine.

5. INSTALLATION INSTRUCTIONS







Installation of this machine is quite easy but it must be carried out paying utmost attention in order to avoid any mistake which may originate problems during operation, inconvenience or even damages.

1. Place the machine on a suitable work bench, in a stable position
2. Check the plate data, referring to the electrical feeding and the absorption
3. Connect the feeding cable (A) to the plug (B) placed on the left side of the unit and plug the other end into an approved 220v AC - 50Hz socket with ground connection.
4. Open the door and remove the packing material as protection for the internal components
5. Switch on the unit (D), the display (C) will light up.















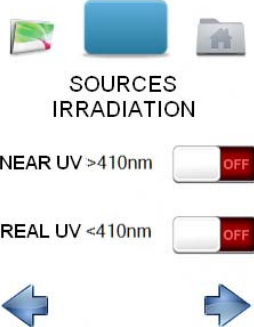

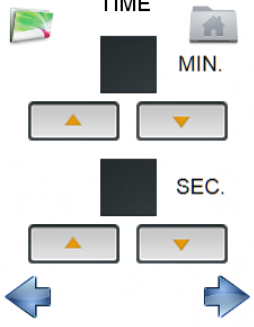


6. DESCRIPTION OF THE WORKING FUNCTIONS




All the functions of the machine can be selected, stored and operated by means of the display touch. The software will show some consecutive screenshots featuring all the necessary parameters to execute the most suitable working cycle and afterwards to launch and store the program.

	<p>On startup the Dentalfarm mark will appear, touch the screen to enter the main menu where the three icons are visible.</p>
	<p>SETTINGS To set the software language</p> <p>PROGRAM STORAGE Where the cycles entered by the Customer are stored</p> <p>INFORMATION How to contact Dentalfarm</p>
	<p>SETTING Screenshot</p> <p>First of all check the preset language: touch on the language identification flag (the selected icon will light up). Available languages are: ITA – FRA – ENG – DEU – ESP</p> <p>To go back to the main menu touch the icon up on right (HOME)</p>
 <p>DENTALFARM SRL VIA SUSA 9/A 10138 TORINO -I TEL. +39 0114346632 info@dentalfarm.it www.dentalfarm.it</p>	<p>INFORMATION Screenshot</p> <p>Showing the data of the installed software and the references to contact Dentalfarm</p> <p>To go back to the main menu touch the icon up on right (HOME)</p>

7. SETTING THE WORKING CYCLE

	<p>From the main menu select the central icon PROGRAM STORAGE</p>
<p>START PROG</p>  	<p>Find a free number to be attributed to the program (at the beginning they are all free, once the cycle contains some stored data the V combined to the number will turn from green to red)</p> <p>RIGHT ARROW to next page</p>
 <p>MODE</p> <p>STEP MODE </p> <p>LIGHT-CURING </p> 	<p>The first screenshot will allow to select the PROGRAM The selected push button will become green Under the STEP MODE cycle the unit will activate part of the blue LEDs for few seconds to fix the stratification layers (after this selection the program will shift to the time setting and pass over the intermediate steps) The LIGHT-CURING cycles are more articulated and are applicable in most cases</p> <p>RIGHT ARROW to next page</p>
 <p>CONDITION OF WORK</p> <p>NONE </p> <p>UNDER VACUUM </p>  	<p>The preparation of a polymerization cycle starts with the choice of the WORKING CONDITIONS, the selected button turns into green</p> <p>NONE identifies the normal atmosphere UNDER VACUUM means contained in a transparent bell-jar where the air is extracted by a vacuum pump (available with the VACUUM model only)</p> <p>RIGHT ARROW to next page</p>

	<p>Select the UV RADIATION SOURCE, the selected button turns into green</p> <p>If the exact spectrum value activating the reaction in the material is known then use the pertinent key only, otherwise select both options</p> <p>RIGHT ARROW to next page</p>
	<p>Select POWER, the selected button turns into green</p> <p>PROGRESSIVE providing for slower start to avoid extreme initial impacts (plates)</p> <p>REDUCED LEDs working at lower power (for very fine thickness)</p> <p>MAX exploiting the full power (thick or dark material)</p> <p>RIGHT ARROW to next page</p>
	<p>Select TIME, data will be shown in the frame above</p> <p>MINUTES are inserted in the upper section</p> <p>SECONDS are inserted in the lower section</p> <p>Once all the parameters have been entered the cycle will be automatically stored (adjustable at any time)</p> <p>RIGHT ARROW to next page</p>
	<p>START CYCLE, press the green key to start the treatment</p>
	<p>Screenshot of the operating cycle</p> <p>Both the count-down and the residual time are steadily shown</p> <p>Should you decide to abort the cycle, press the red key</p>

<p>READY</p>   	<p>Screenshot for end cycle</p> <p>As the program is definitively concluded, a sequence of sound signals will be emitted.</p> <p>It is possible to launch again the same program by pressing the green key (the cycle will start only provided the drawer has been opened and then closed) or select the HOME icon at the bottom to go back to the main menu.</p>
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8. INSTRUCTIONS FOR USE

1. Switch on the main switch, the display will light up and the unit is now ready to input the operating data, touch the display to enter the main menu.
2. click the central icon **ARCHIVE**, select the desired working cycle or create a new one – **if the cycle has already been stored and data should not be modified, start up procedure can be activated right away by pressing START at the top.**
3. Make the drawer slide forward to position the elements to be treated on the rotating plate (if the cycle under vacuum is activated, place the transparent bell-jar onto its seat, safely laid to the joint), then close it completely (may we remind that in case the drawer is not fully closed the working cycle will not start)
4. Press the green starting key.

When the drawer is opened the cycle will be immediately interrupted (the vacuum pump only is on), re-start once closed from the stage where it has been cut off.

As the cycle has become to the end and definitively finished, the unit will emit a sequence of sound signals. When the drawer is opened to pick up the element, parameters will be reset to zero and the furnace is ready for a new cycle.

9. ACCESSORIES

Dentalfarm has developed a completely transparent flask facilitating the light-curing process of fluid composites. **PHF PhotoFlask** is a very useful and convenient accessory whose separators can be individually splitted. This innovative system allows to work in a quicker and cost/time-saving way with no need to modify your standard operating procedures.



10. MAINTENANCE



Before carrying out any maintenance operation inside the machine or any technical activity to the connections, unplug the electric cable from the socket; in such a way the machine will be completely insulated from the electric wiring system.

If you still have any doubts, difficulties or any possibility of mistake, contact our Technical Service to avoid any risks or damages.

Cleaning of the working chamber and the polycarbonate bell-jar

It is advisable to keep always clean the internal surface of the working chamber, of the drawer and of the bell-jar to allow the correct refraction of the emitted rays; be careful to use exclusively non-aggressive liquid detergent specific for shiny metal surfaces.

Removal or replacement of the LED circuits

The LED circuits are installed on a metallic support screwed up onto the chamber ceiling. To gain access to it, unscrew the 2 M4 nuts (7mm set screw wrench). Each circuit is fed by a bipolar white connector and duly marked for easy identification (**blue** – with LED of wavelength higher than 410nm or **UV** – in case LEDs with lower wavelength are fitted). To remove it unscrew the two screws fixing the circuit with its dissipator (M3 cross-slotted screw with M3 nut), pay utmost attention to the positioning and avoid wasting the conductive paste.

It is recommended to clean regularly the spotlights with a jet of **low pressure compressed air** to prevent dust particles from accumulating likely to reduce the reflecting power and the focus of the ultraviolet rays: no need to remove the LED group when carrying out this operation.

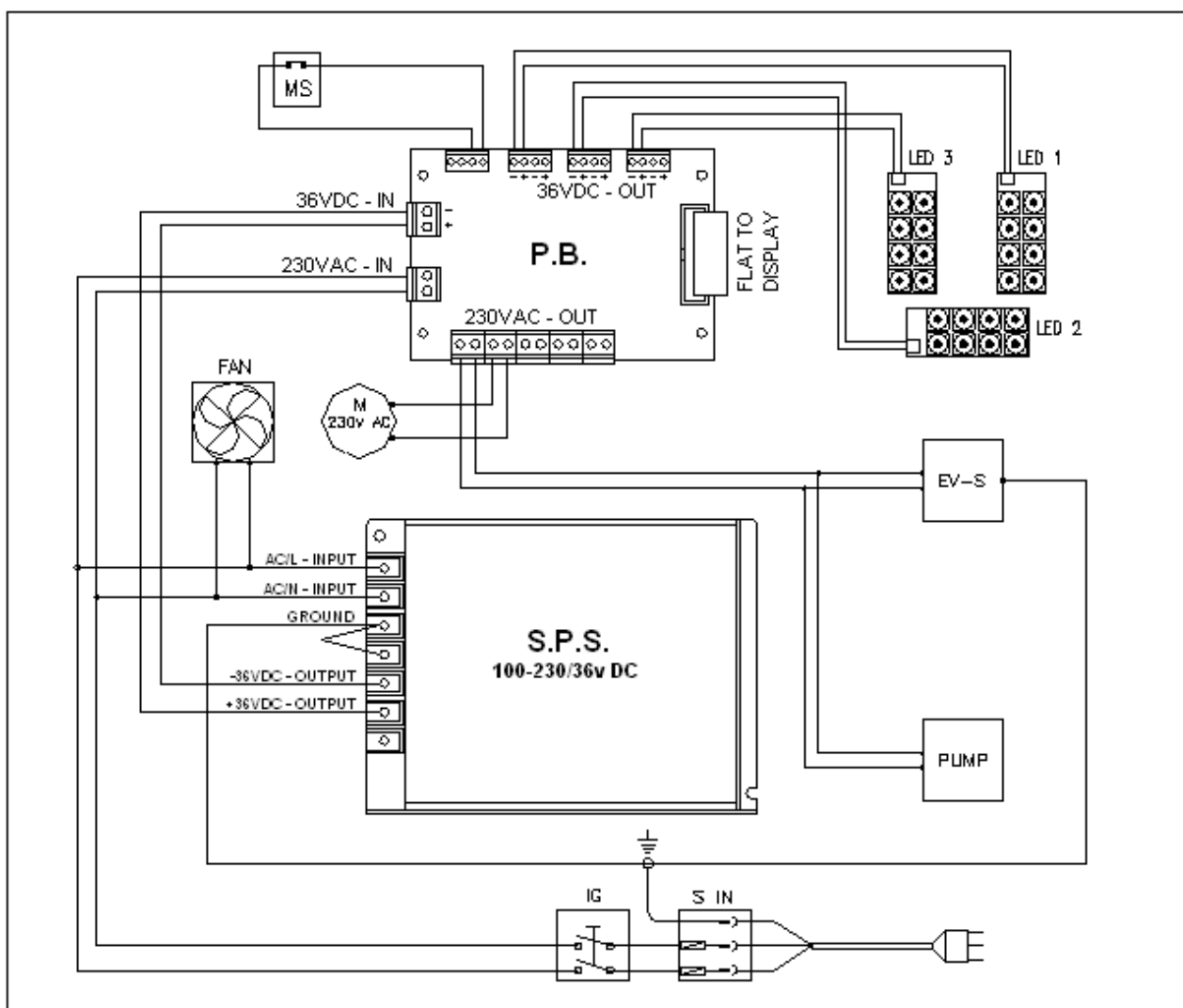
Replacement of the rotating plate motor

For a correct replacement of the motor first operate from the upper part of the drawer to lift the reflecting plate (simply placed on the metallic plate), unscrew the M3 cross-slotted screw, remove the metallic plate and the feeder disc. As further step unscrew the 2 M4 cross-slotted screws fixing the motor to the drawer lower part and recover the cylindric bush fastened on the shaft (no. 02 dowels M4 set screw wrench 2mm).

11. TECHNICAL SPECIFICATIONS

Width	270 mm
Depth at the base	320 mm (350 max)
Height	300 mm
Net Weight	10,5 kg
Gross Weight	12,5 kg
Rated Voltage	230 v AC – 50/60 Hz
Fuses	3.15 A
Absorption	300 W
UV LED wavelength higher than 410nm (blue)	2 circuits à LEDs each
UV LED wavelength lower than 410nm (violet)	1 circuit à 8 LEDs
Rotating plate useful size	Ø 95 mm
Element max size	Ø 95 x 75h (50h under vacuum)
Number of available programs	100

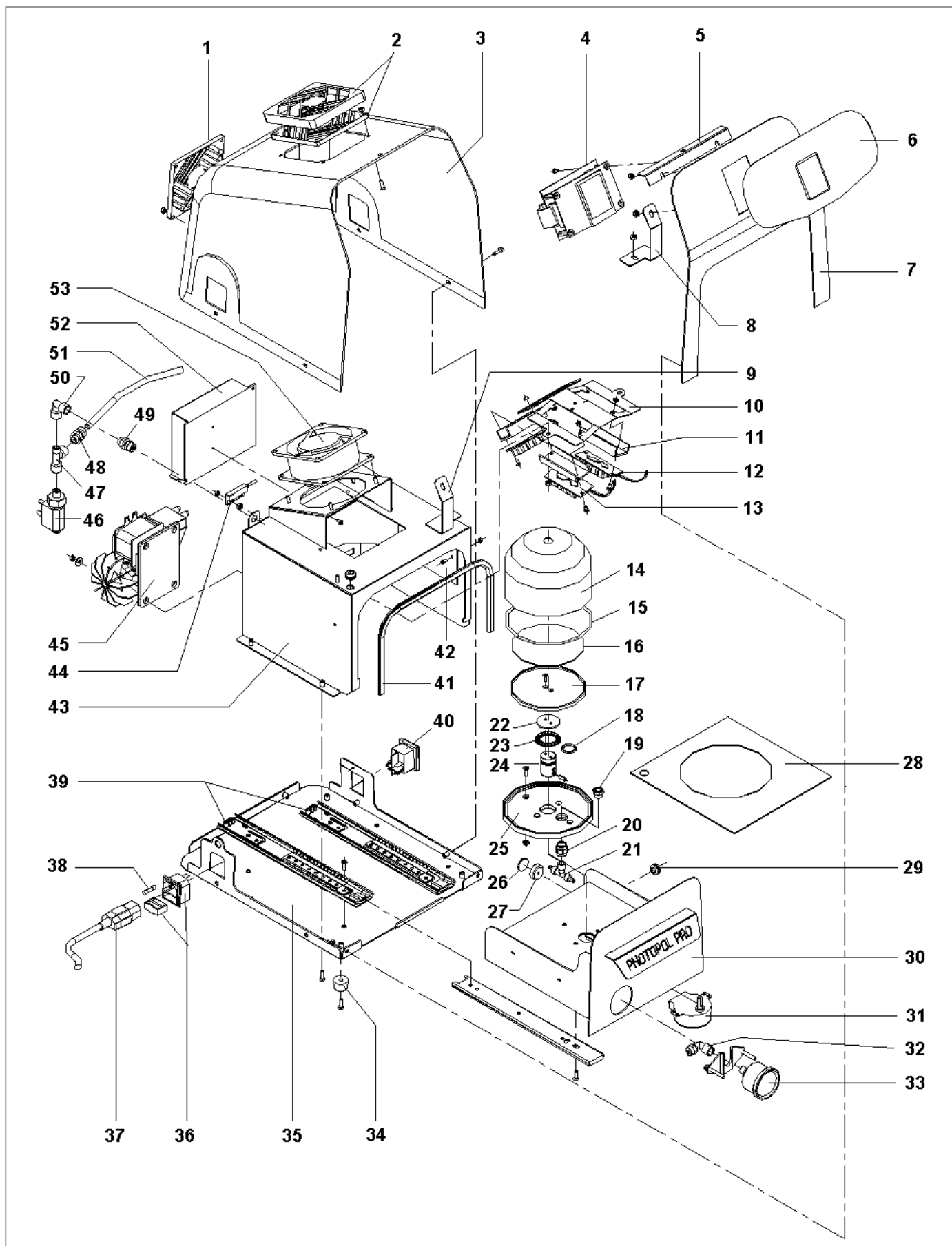
12. WIRING DIAGRAM



Symbol	Description
S-IN	Plug and fuse-holder unit 6.3A
IG	Main shutter
S.P.S.	Feeder switching 100-230VAC – 36VDC
P.B.	Power board + display board
LED 1-2	8 LEDs circuits wavelength higher than 410nm (blue)
LED 3	8 LEDs circuits wavelength lower than 410nm (violet)
MS	Drawer microswitch
FAN	Cooling fan
M	Flat rotating motor
PUMP	Piston-driven vacuum pump
EV-S	Vacuum release solenoid valve

13. EXPLODED DRAWING AND SPARE-PART LIST PHOTOPOL PRO VACUUM

POS.	CODE	DESCRIPTION
1	NVT252	PLASTIC GRATE FOR THE FAN
2	NVT251	COVER SET AND FAN FILTER
3	5407005	REAR HOUSING PHOTOPOL PRO
4	5407103	CONTROL BOARD WITH TOUCH DISPLAY
5	5407027	HOUSING SUPPORT CLAMP
6	5407019	MARK LABEL PHOTOPOL PRO
7	5407002	FRONT PANEL
8	5407009	RIGHT CONNECTION CLAMP
9	5407009S	LEFT CONNECTION CLAMP
10	5407008	UV SUPPORT
11	5407014	DISSIPATOR (3PCS.)
12	5407100	8 LED UV <410NM (2PCS.) CIRCUIT
13	5407101	8 LED UV >410NM CIRCUIT
14	5406023	POLYCARBONATE BELL-JAR
15	NPOR4425	OR 4425 JOINT
16	5407031	REFLECTING PLATE FOR ROUND SUPPORT
17	5407013	ROTATING PLATYE PHOTOPOL VACUUM
18	NPOR119	OR 119 JOINT
19	NPV024	CAP WITH 1/8 SILENCER
20	NPR211	SLEEVE PIPE-FITTING F/F 1/8
21	NPR100	T CENTRAL PIPE-FITTING 6x4 1/8
22	5407016	WASHER ON FLAT FEEDER
23	NVT028	AXIAL BEARING 51104
24	5407015	FLAT FEEDER
25	5407017	BELL-JAR BASE
26	NEC043	MAGNETIC UNIT
27	5406027	MAGNET GUIDE
28	5407028V	REFLECTING PLATE FOR DRAWER
29	NEA100	CABLE RUBBER SEAL
30	5407004V	DRAWER PHOTOPOL PRO VACUUM
31	NES045	ROTATING MOTOR
32	NPR105	FEMALE ELBOW 6x4 1/8 PIPE-FITTING
33	NPS048	VACUUM GAUGE 1/8" CASE D.=40
34	NVG048	RUBBER FOOT
35	5407001	BASE
36	NEA046	BUILT-IN PLUG + DUAL FUSE-HOLDER
37	NEV013	ELECTRIC CABLE 3x1 PLUG/SOCKET
38	NEA071	FUSE 5x20 QUICK 6,3 A
39	NVT071	PAIR OF GUIDES FOR DRAWER
40	NEC016	BIPOLAR PROTECTED GREEN SWITCH
41	NVG034	"U" OUTLINE JOINT
42	5407029	REFLECTING WALLS
43	5407006	IRRADIATION CHAMBER
44	NEC044	FLAT MAGNETIC SENSOR
45	NES040	PISTON-DRIVE VACUUM PUMP
46	NES019	2-WAY SOLENOID VALVE 220V N.A.1/8
47	NPR300	F F M 1/8 3-WAY PIPE-FITTING
48	NPR119	8x6 1/8 STRAIGHT MALE PIPE-FITTING
49	NPR111	6x4 1/8 STRAIGHT MALE PIPE-FITTING
50	NPR213	F/F 1/8 ELBOW PIPE-FITTING
51	NPV060	8x6 TRANSPARENT POLYURETHEN PIPE
52	NES100	SWITCHING LRS-100-36
53	NES048	FAN 92x92x38 230V




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