

**LIGHT-CURING FURNACE**

**PHOTOPOL PRO**



**USER AND MAINTENANCE MANUAL**



## 1. DESCRIPTION

**PHOTOPOL PRO** has been expressly designed to carry out light curing operations by means of ultraviolet rays.

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** 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 are carried out singularly on each machine, which is furtherly tested by an automatic test installation 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

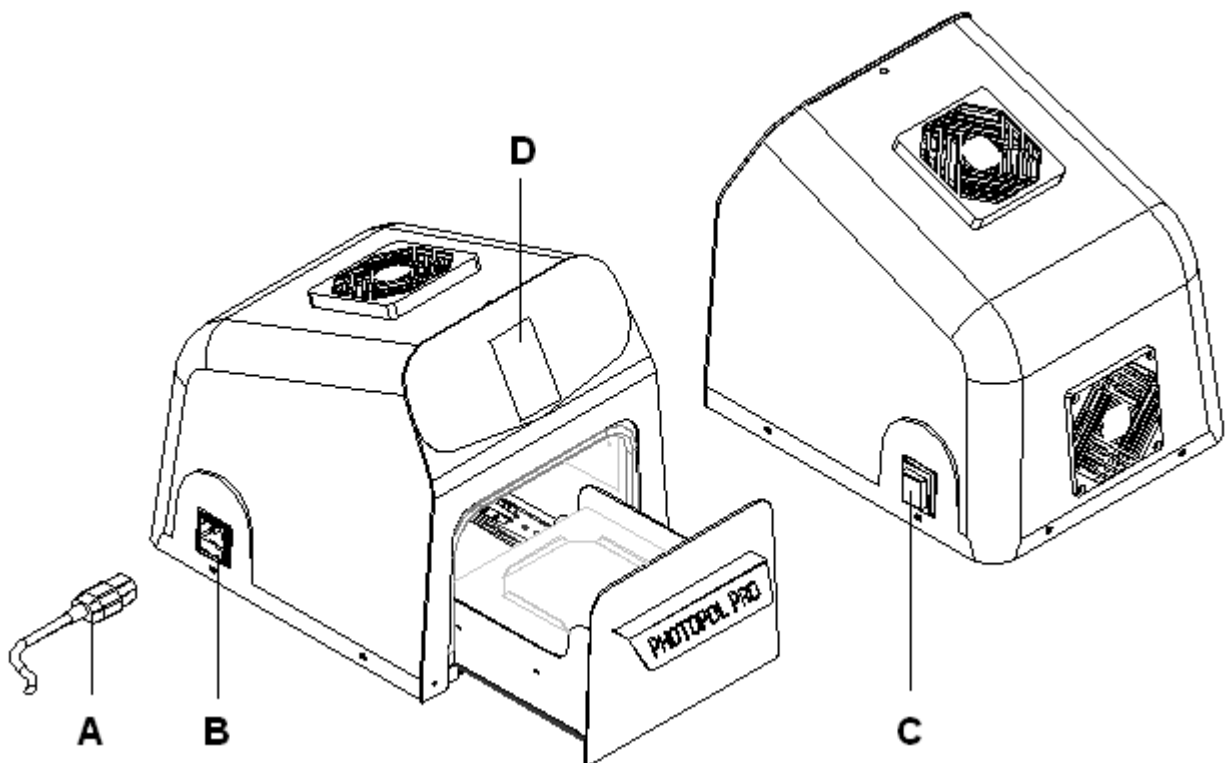
- Read carefully the present manual before carrying out any starting, operating or maintenance operation on the machine
- Safety of the User depends on the skillness, on the good sense and on the caution when using the machine; for this reason, it is of utmost importance to know in detail the allocation 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 (C), the display (D) will light up.



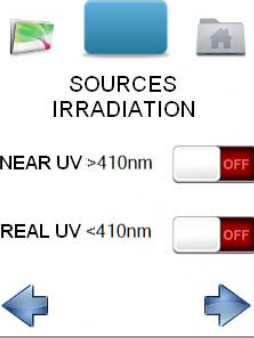

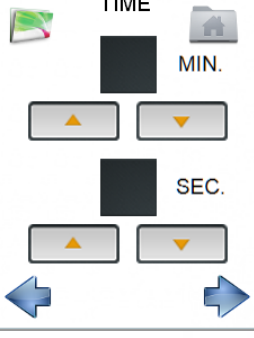


## 6. DESCRIPTION OF THE WORKING FUNCTIONS




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><b>SETTINGS</b> To set the software language</p> <p><b>PROGRAM STORAGE</b> Where the cycles entered by the Customer are stored</p> <p><b>INFORMATION</b> How to contact Dentalfarm</p>
	<p><b>SETTING</b> 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: <b>ITA – FRA – ENG – DEU – ESP</b></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><b>INFORMATION</b> 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 <b>PROGRAM STORAGE</b></p>
<p>START PROG</p>  	<p>Find a <b>free number</b> to be attributed to the program (at the beginning they are all free, once the cycle contains some stored data the <b>V</b> combined to the number will turn from <b>green to red</b>)</p> <p>RIGHT ARROW to next page</p>
 <p><b>MODE</b></p> <p>STEP MODE <input type="checkbox"/> OFF</p> <p>LIGHT-CURING <input type="checkbox"/> OFF</p> 	<p>The first screenshot will allow to select the <b>PROGRAM</b> The selected push button will become green Under the <b>STEP MODE</b> 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 <b>LIGHT-CURING</b> cycles are more articulated and are applicable in most cases</p> <p>RIGHT ARROW to next page</p>
 <p><b>CONDITION OF WORK</b></p> <p>NONE <input type="checkbox"/> OFF</p> <p>UNDER VACUUM <input type="checkbox"/> OFF</p> 	<p>The preparation of a polymerization cycle starts with the choice of the <b>WORKING CONDITIONS</b>, the selected button turns into green</p> <p><b>NONE</b> identifies the normal atmosphere <b>UNDER VACUUM</b> 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>SOURCES IRRADIATION</p> <p>NEAR UV &gt;410nm <input type="checkbox"/> OFF</p> <p>REAL UV &lt;410nm <input type="checkbox"/> OFF</p>	<p>Select the <b>UV RADIATION SOURCE</b>, 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>POWER DELIVERED</p> <p>PROGRESSIVE <input type="checkbox"/> OFF</p> <p>REDUCED (70%) <input type="checkbox"/> OFF</p> <p>MAX (120%) <input type="checkbox"/> OFF</p>	<p>Select <b>POWER</b>, the selected button turns into green</p> <p><b>PROGRESSIVE</b> providing for slower start to avoid extreme initial impacts (plates)</p> <p><b>REDUCED</b> LEDs working at lower power (for very fine thickness)</p> <p><b>MAX</b> exploiting the full power (thick or dark material)</p> <p>RIGHT ARROW to next page</p>
 <p>TIME</p> <p>MIN.</p> <p>SEC.</p>	<p>Select <b>TIME</b>, data will be shown in the frame above</p> <p><b>MINUTES</b> are inserted in the upper section</p> <p><b>SECONDS</b> are inserted in the lower section</p> <p><b>Once all the parameters have been entered the cycle will be automatically stored</b> (adjustable at any time)</p> <p>RIGHT ARROW to next page</p>
	<p><b>START CYCLE</b>, press the green key to start the treatment</p>
 <p>TIME</p>	<p><b>Screenshot of the operating cycle</b></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><b>READY</b></p>   	<p><b>Screenshot for end cycle</b></p> <p>As the program is definitively concluded, a sequence of sound signales 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 <b>HOME</b> 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 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 and 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

 <b><u>ATTENTION:</u></b>	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.
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### Cleaning of the working chamber

It is advisable to keep always clean the internal surface of the working chamber 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

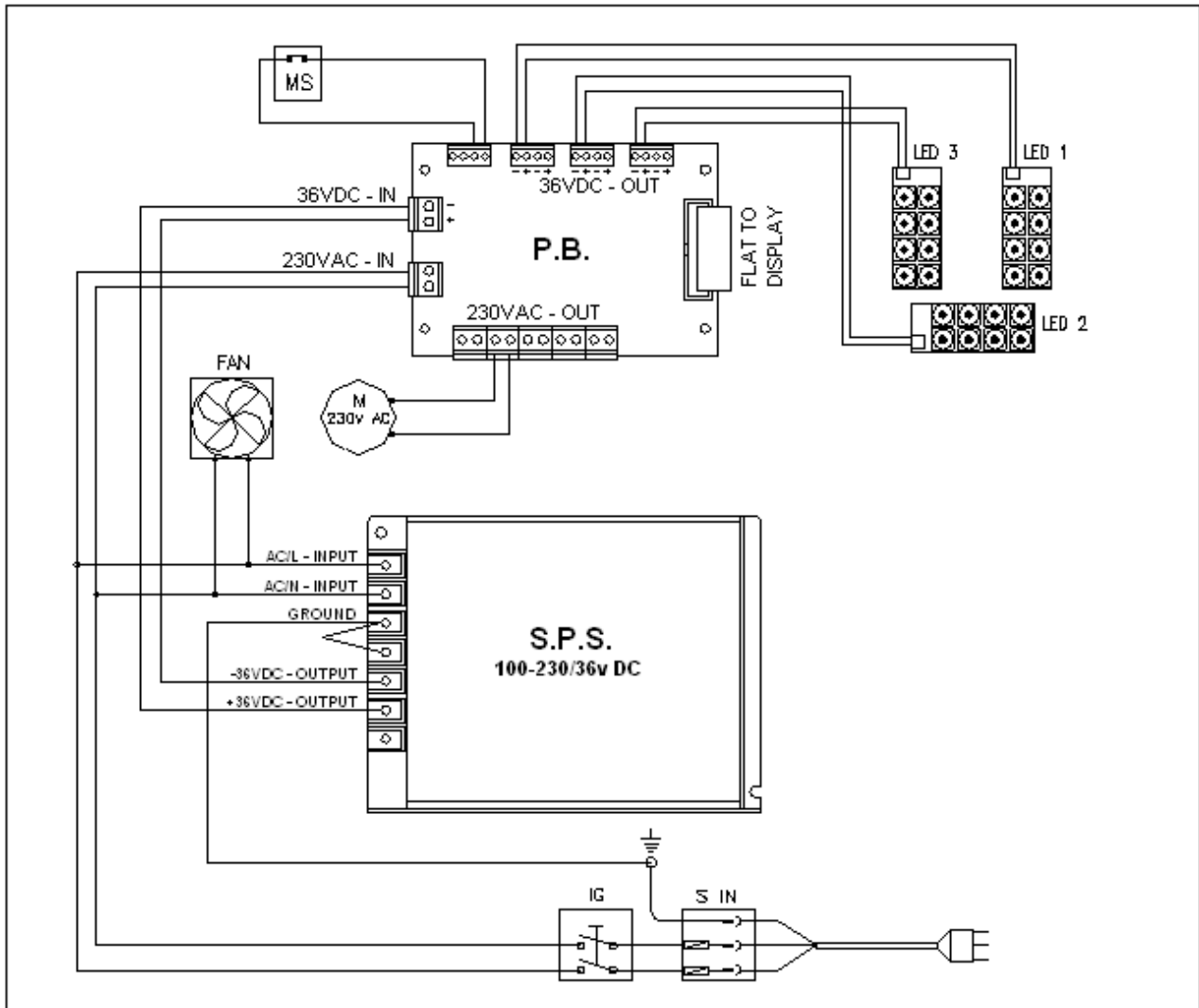
For a correct replacement of the motor first operate from the upper part of the drawer to lift the reflecting plate (simply placed on the metallic plate), unscrew the M3 cross-slotted screw, remove the metallic plate and the feeder disc. As further step unscrew the 2 M4 cross-slotted screws fixing the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

## 11. TECHNICAL SPECIFICATIONS

Width	<b>270 mm</b>
Depth at the base	<b>320 mm (350 max)</b>
Height	<b>300 mm</b>
Net weight	<b>8,5 kg</b>
Gross weight	<b>10,5 kg</b>
Rated voltage	<b>230 v AC – 50/60 Hz</b>
Fuses	<b>3.15 A</b>
Absorption	<b>200 W</b>
UV LED wavelength higher than 410nm (blue)	<b>2 circuits à 8 LEDs each</b>
UV LED wavelength lower than 410nm (violet)	<b>1 circuit à 8 LEDs</b>
Rotating plate useful size	<b>square 100x100 mm</b>
Element max size	<b>100x 100 x 75h</b>
Number of available programs	<b>100</b>



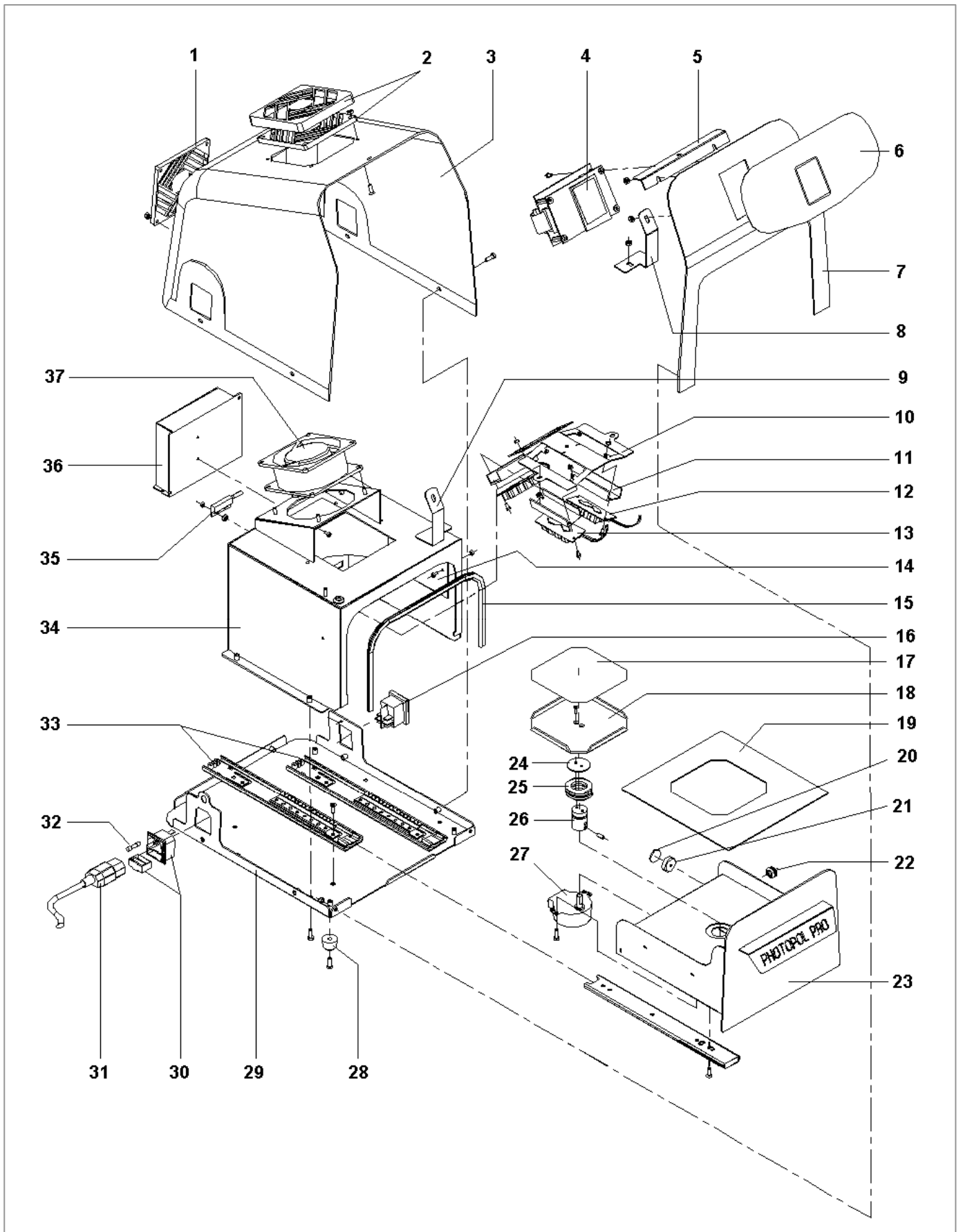
## 12. WIRING DIAGRAM



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

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

POS.	CODE	DESCRIPTION
1	<b>NVT252</b>	PLASTIC GRATE FOR THE FAN
2	<b>NVT251</b>	COVER SET AND FAN FILTER
3	<b>5407005</b>	REAR HOUSING PHOTOPOL PRO
4	<b>5407103</b>	CONTROL BOARD WITH TOUCH DISPLAY
5	<b>5407027</b>	HOUSING SUPPORT CLAMP
6	<b>5407019</b>	MARK LABEL PHOTOPOL PRO
7	<b>5407002</b>	FRONT PANEL
8	<b>5407009</b>	RIGHT CONNECTION CLAMP
9	<b>5407009S</b>	LEFT CONNECTION CLAMP
10	<b>5407008</b>	UV SUPPORT
11	<b>5407014</b>	DISSIPATOR (3PCS.)
12	<b>5407100</b>	8 LED UV <410NM (2PCS.) CIRCUIT
13	<b>5407101</b>	8 LED UV >410NM CIRCUIT
14	<b>5407029</b>	REFLECTING WALLS
15	<b>NVG034</b>	"U" OUTLINE JOINT
16	<b>NEC016</b>	GREEN BIPOLAR PROTECTED SWITCH
17	<b>5407030</b>	REFLECTING PLANE FOR SQUARE PLATE
18	<b>5407010</b>	SQUARE PLATE
19	<b>5407028</b>	REFLECTING PLANE FOR DRAWER
20	<b>NEC043</b>	MAGNETIC UNIT
21	<b>5406027</b>	MAGNET GUIDE
22	<b>NEA100</b>	CABLE RUBBER SEAL
23	<b>5407004</b>	DRAWER PHOTOPOL PRO
24	<b>5407016</b>	WASHER ON FLAT FEEDER
25	<b>NVT028</b>	AXIAL BEARING 51104
26	<b>5407015</b>	FLAT FEEDER
27	<b>NES045</b>	ROTATING MOTOR
28	<b>NVG048</b>	RUBBER FEET H=12
29	<b>5407001</b>	BASE
30	<b>NEA046</b>	BUILT-IN PLUG + DUAL FUSE-HOLDER
31	<b>NEV013</b>	ELECTRIC CABLE 3x1 PLUG/SOCKET
32	<b>NEA071</b>	FUSE 5x20 QUICK 6,3A
33	<b>NVT071</b>	PAIR OF GUIDES FOR DRAWER
34	<b>5407006</b>	IRRADIATION CHAMBER
35	<b>NEC044</b>	FLAT MAGNETIC SENSOR
36	<b>NES100</b>	SWITCHING POWER SOURCE
37	<b>NES048</b>	FAN




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