

UV CURING FURNACE

PHOTOPOL ANALOG



USER AND MAINTENANCE MANUAL



PHOTOPOL

1. DESCRIPTION

1.1 PURPOSE OF USE

PHOTOPOL Analog has been expressly designed to carry out curing operations under the effect of ultraviolet rays. The system has been developed to suit with the requirements of Dental, Jewellery and Rapid Prototyping laboratories for the hardening (post-curing) process of objects manufactured with 3D DLP printers which use liquid resins and for the final stabilisation of photosensitive composites. The UV spectrum range achieved by this unit corresponds to the specific value of those resins (from 320 to 450nm) thus assuring to reach the complete result.

The curing process of **PHOTOPOL Analog** is achieved in a wide working chamber, the UV radiation sources are uniformly distributed on all walls which assures to reach the objects from any direction.

The operating software features a logical user interface providing ease of use and immediate understanding, all controls are readily available on the panel. The control board includes an electronic timer to set the length of the radiation cycle, a warning light, a key for highest or reduced power and the start button.

The unit works under independent condition, it may not be supervised by the User himself therefore no defined working place is required.

1.2 IMPROPER USE

Do not use the UV radiation performed by this unit for any different purposes of use not herewith stated; the manufacturer will assume no liability further to improper use of the unit for any damage which could incur to persons, animals or things.

2. TECHNICAL SPECIFICATIONS

Width	450 mm (500 with the connections)
Depth at the base	360 mm
Height	215 mm
Net weight	11,0 kg
Gross weight	13,0 kg
Rated voltage	230VAC +/-10% – 50/60 Hz
Delayed effect fuses	2 Ø 5x20 - 3.15 Amp
Absorption	300 W – 1.75 Amp
Height	Up to 2000m slm
Operating temperature	from 10 to 40°C
Humidity (for storage, too)	from 20 to 80%
Storage temperature	from -10 to +70°C
Protection level	IP42
Acoustic pressure LAeq, Tp	<70 dB(A)
Pure UV LED (violet)	4 circuits à 16 LED
Near UV LED (blue)	2 circuits à 16 LED
Chamber useful size	250 x 250 x 120h
Electronic timer	1-30 min

3. TECHNICAL REFERENCE GUIDELINES AND TEST REGULATIONS

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 and integrations. PHOTOPOL Analog complies with the Directives EMC 2014/30/EU and LVD 2014/35/EU.






Careful inspection and full routine testing is carried out singularly on each machine which is further tested by an automatic test installation (Chauvin Arnoux C.A 6155) carrying out in sequence several tests and it prints a report assuring compliance with the fixed limits.

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 2012/19/UE.



4. GENERAL PRECAUTIONS

- Read carefully the present manual before carrying out any starting, operating or maintenance operation on the machine
- The final User of the machine is an adult, skilled and well trained professional on the specific curing process and risks involved and not merely an occasional worker
- 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
- During the transport and the following storage do not turn the unit upside down and conform to the directions printed on the box
- In consideration of low weight of the unit, handling operations can be carried out by a single Operator
- Do not install and do not use the machine in potentially explosive areas
- The assembly components do not have any contraindication for persons with implantable active or passive devices, in any case we recommend to contact beforehand your Doctor
- Do not tamper the electrical wiring system of the machine
- The built-in safety mechanisms and the warning labels of the machine shall in no way be removed or modified
- Check regularly the parts which tend to wear out easily because of their specific working conditions
- Check periodically that the feeding cable and most specifically the ground connection are intact with no damage
- Do not allow unauthorized persons to try to repair the machine
- No modification to this unit is allowed unless previously authorised
- Should any inconvenience or malfunction occur, pls contact our Technical Servicing
- Residual risks: on the unit some warning or precaution symbols are affixed you will have to comply with according to their meaning as follows:

Risk of misunderstanding	Risks deriving from the exposure to UV rays and from materials handling		Electric risk	Risk of burning
				
For any information and to restrict any risks read through the manual	Wear goggles as protection against UV radiation which may harm the eyes		Parts under tension, do not remove the protections	Presence of hot surfaces
	Wear protective gloves in case of hypersensitivity in resin handling			

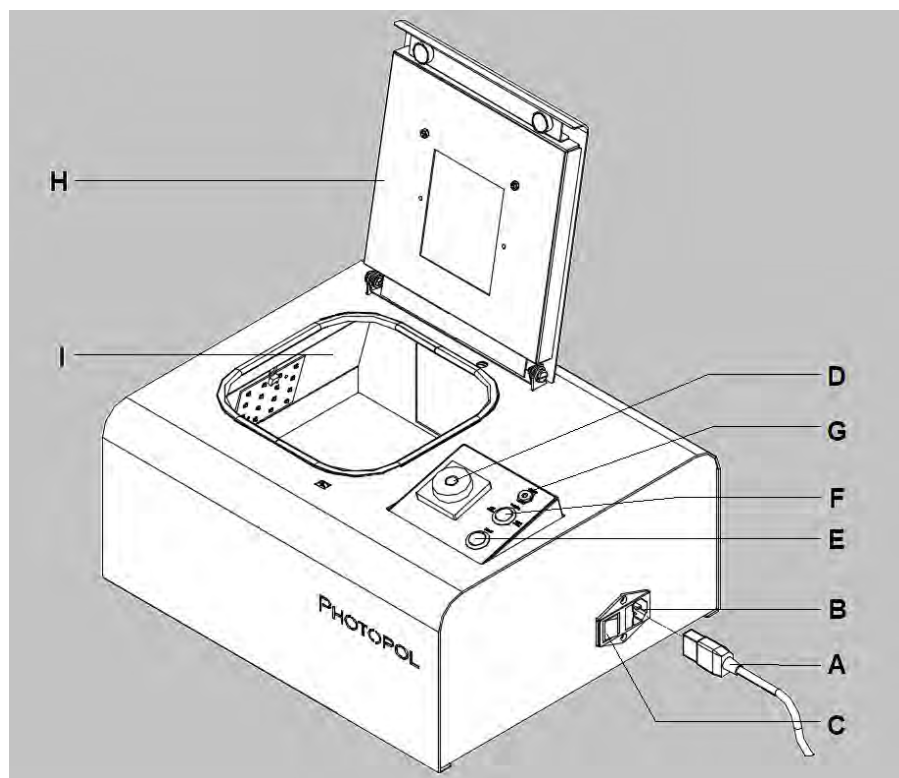
5. INSTALLATION INSTRUCTIONS

/!\ ATTENTION

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

Store the original package of the unit for any further handling or shipment under extraordinary maintenance intervention. Remove the protective foils all around the metallic housing and inside the transparent shelves positioned at the inside of the working chamber.

1. Place the machine on a suitable work bench, in a stable position appropriate to its weight, at least 10cm away from the wall to allow the necessary space for the connections. During operation no vibrations are originated, therefore no additional precautions are required at installation.
2. Check the plate data, referring to the electrical feeding and the absorption then feed the unit through a protected line by 10Amp magneto-thermic bipolar switch and circuit breaker with 30mA sensibility (devices not part of the supply)
3. Connect the feeding cable (A) to the socket (B) placed on the right side panel and plug the other end into an approved 230v AC - 50Hz socket with ground connection
4. Switch on the unit (C), the green light (G) will light up as confirmation for the input tension



- A = Feeding cable
- B = Feeding plug
- C = Main switch
- D = Electronic timer
- E = START push button
- F = POWER Change-over switch
- G = READY warning light
- H = Lid
- I = Radiation chamber

6. INSTRUCTIONS FOR USE


1. Switch on the main switch, the READY warning light will light up and the unit is ready to work
2. Turn the timer knob to set the requested time
3. The desired power can be adjusted by means of the POWER change-over switch (if not pressed, 50% of power only will be released, in case all LEDs must be on then take care to have it fully pressed)
4. Open the lid to position the objects to be treated inside the chamber, then close it completely (pls note that in case the lid is not fully closed the working cycle can not start)
5. Press the START push button (START)
6. Once the preset time is at the end, the LEDs will extinguish, the READY light is on and the treated objects can be picked up from the chamber.

If the lid is opened the lights will extinguish but the preset time will continue to elapse and, once the lid is closed again, the radiation will re-start. When execution of the cycle has been definitively completed the green light will be on and the unit is ready again to perform a new cycle.

In case of any voltage drop during operation, the cycle will stop definitively and can not be recovered.

For this reason we recommend to protect it with an interruptible power supply to avoid wasting the objects as a result of the incomplete treatment (however we recommend to verify always the structure of the treated objects).

7. MAINTENANCE

<p> <u>ATTENTION:</u></p>	<p>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 damage.</p>
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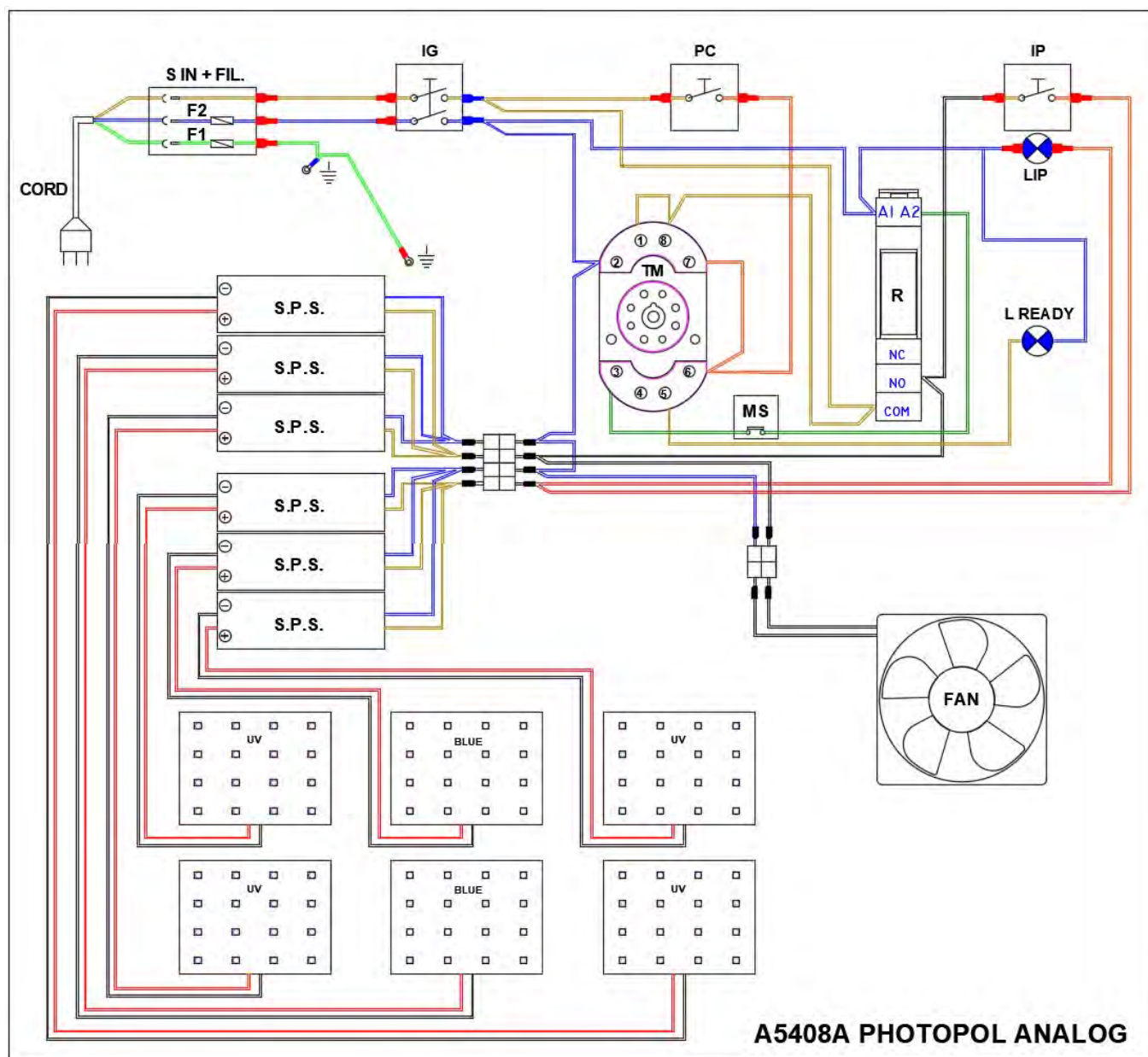
Cleaning of the working chamber

It is advisable to keep always clean the internal surfaces of the working chamber to allow the correct refraction of the emitted rays; be careful to use exclusively non-aggressive liquid detergent specific for glass and PMMA (absolutely with neither abrasive components nor alcohol).

Cleaning and replacement of the internal shelves

In case the internal shelves shall be removed or replaced pay attention not to hit the connector of the LED circuit on the wall. Seize the shelf with your both hands and slightly bend it to allow to overcome the obstacle. Use exclusively genuine spare-parts which permit the correct UV Rays to pass through.

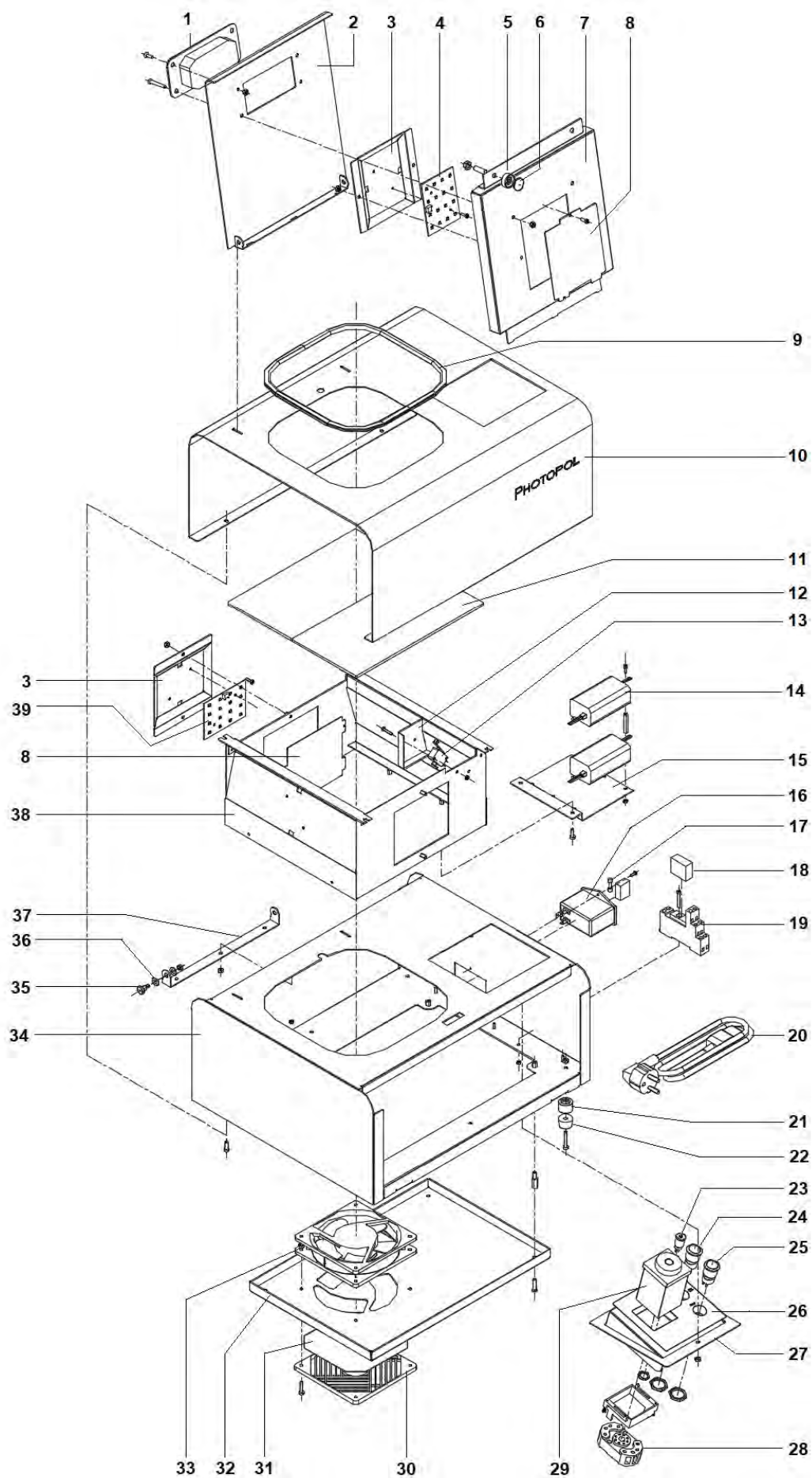
8. WIRING DIAGRAM



Symbol	Description
S-IN + FIL	Plug and fuase-holder unit
F1-F2	3.15 A Fuses
IG	Man switch
PC	START cycle starting button
IP	POWER change-over switch
LIP	POWER switch warning light
TM	Timer
MS	Lid microswitch
R	Power relay
L READY	READY warning light
S.P.S.	100-240VAC – 0.35° Switching feeder
UV - BLUE	16 LED UV or BLUE Circuits
FAN	Cooling fan

9. EXPLODED VIEW AND SPARE-PART LIST PHOTOPOL ANALOG (A5408A)

POS.	CODE	DESCRIZIONE	DESCRIPTION
1	NVT193	MANIGLIA SPORTELLO	DOOR HANDLE
2	5408054B	SPORTELLO SUPERIORE	UPPER LID
3	5408056	SUPPORTO CIRCUITO LED	LED CIRCUIT SUPPORT
4	5408200	CIRCUITO 16 LED UV (VIOLETTO)	16 UV LEDs CIRCUIT (VIOLET)
5	5408031	ISOLANTE PER MAGNETE	MAGNET GUIDE
6	NEC043	UNITA' MAGNETICA CILINDRICA	MAGNETIC UNIT
7	5408054A	SPORTELLO INFERIORE	LOWER LID
8	5408063	RIPARO SU SUPPORTO CIRCUITO LED	PANEL ON LED CIRCUIT SUPPORT
9	NVG034	PROFILO A "U" IN GOMMA	"U" RUBBER PROFILE
10	5408052	COPERCHIO ESTERNO ALLUMINIO SATINATO	SATIN FINISHED ALUMINUM COVER
11	5408057	RIPIANO INTERNO CAMERA	CHAMBER INSIDE SHELF
12	5408064	RIPARO PER MICROINTERRUTTORE	COVER FOR MICROSWITCH
13	NEC041	MICROINTERRUTTORE SPORTELLO	DOOR MICROSWITCH
14	NES101	ALIMENTATORE SWITCHING 100-240V	SWITCHING POWER SUPPLY 100-240V
15	5408058	SUPPORTO PER 6 ALIMENTATORI	SUPPORT FOR 6 POWER SUPPLIES
16	NEC131I	GRUPPO SPINA, FILTRO, PORTAFUS. & INTER	SET OF PLUG, FILTER, FUSE HOLDER & SWITCH
17	NEA070	FUSIBILE D.=5x20 – 3.15 A	FUSE D.=5x20 – 3.15 A
18	NEC104	RELAIS DI POTENZA	POWER RELAIS
19	NEA086	ZOCCOLO PER RELAIS	BASE FOR RELAIS
20	NEV013	CAVO ELETTRICO 3x1 SPINA/PRESA	ELECTRIC CABLE 3x1 PLUG/SOCKET
21	5408066	SUPPORTO PER PIEDINO	FOOT SUPPORT
22	NVG048	PIEDINO GOMMA H=12	RUBBER FOOT
23	NEA035	SPIA LUMINOSA VERDE	GREEN LIGHT
24	NEC036	COMMUTATORE POTENZA	POWER SWITCH
25	NEC035	PULSANTE CICLO	CYCLE BUTTON
26	5408035N	SUPPORTO COMANDI (VERS. ANALOGICA)	CONTROL SUPPORT (ANOLOGIC VERSION)
27	5408059	ETICHETTA QUADRO COMANDI	CONTROL PANEL LABEL
28	NEA080	ZOCCOLO PER TEMPORIZZATORE	BASE FOR TIMER
29	NEC122	TEMPORIZZATORE ELETTRONICO	ELECTRONIC TIMER
30	NVT256	PROTEZIONE IN PLASTICA SU VENTOLA	PLASTIC PROTECTION ON FAN
31	NVT255	FILTRO METALLICO SU VENTOLA	METALLIC FILTER ON FAN
32	5408055	CHIUSURA INFERIORE	LOWER CLOSURE
33	NES047	VENTOLA DI RAFFREDDAMENTO	COOLING FAN
34	5408050	CORPO	METAL BODY
35	5408060	VITE ASSEMBLAGGIO SPORTELLO	DOOR ASSEMBLY SCREW
36	NVT081	RONDELLA NYLON D.=6mm	D=6mm NYLON WASHER
37	5408053	CERNIERA SPORTELLO	DOOR HINGE
38	5408051	CAMERA DI IRRAGGIAMENTO	RADIATION CHAMBER
39	5408201	CIRCUITO 16 LED NEAR UV (BLUE)	16 NEAR UV LEDs CIRCUIT (BLUE)



10. CE DECLARATION OF CONFORMITY



DICHIARAZIONE (CE) DI CONFORMITÀ' (CE) DECLARATION OF CONFORMITY

Noi sottoscritti,
We, the undersigned,

DENTALFARM S.r.l.

Via Susa, 9/A
10138 TORINO - I
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dichiariamo sotto la nostra esclusiva responsabilità che il prodotto di ns. fabbricazione
declare under our own responsibility that the product of our exclusive manufacturing

Codice
Code

Tipo
Type

Modello
Model

Matricola
Serial Number

Lotto
Batch

A5408A

**Fotopolimerizzatore
Light-curing unit**

PHOTOPOL ANALOG

è conforme alle seguenti Direttive e Norme Tecniche:
complies with the following Directives and Technical Standards:

- 2006/42/CEE - DIRETTIVA COMUNITARIA SULLE MACCHINE - COUNCIL DIRECTIVE ON MACHINERY
- 2014/35/UE - DIRETTIVA BASSA TENSIONE - DIRECTIVE ON LOW TENSION
- 2014/30/EU - DIRETTIVA COMPATIBILITÀ Elettromagnetica - E.M.C. DIRECTIVE
- 2011/65/EU - DIRETTIVA RoHS II - RoHS II DIRECTIVE
- 2012/19/EU - DIRETTIVA SUI RIFIUTI DI APPARECCHIATURE ELETTRICHE ED ELETTRONICHE (RAEE)
- DIRECTIVE ON WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT (WEEE)
- EN 12100:2010
- EN 50204-1
- EN 60601-1
- EN 60601-1-2

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