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Operating Instructions

EyeVolution® MAX

LED-based polymerisation device

Dreve

Dreve Dentamid GmbH · Max-Planck-Straße 31 · 59423 Unna/Germany

EyeVolution® MAX

1. Device description

EyeVolution® MAX is a light-polymerising unit based on LED for all tooth-coloured composite materials that are cured using light.
The integrated LEDs cover both the requisite UVA and blue light ranges and offer a very high penetration depth of objects to be polymerised at an extremely low thermal load.

A reflective rotary plate guarantees shadow-free polymerisation even of larger objects at short polymerisation times.
The highly energy-efficient 24 V appliance can be operated using any kind of socket and is perfectly suited to single unit facilities due to its small dimensions.

2. Technical data

Dimensions (H x W x D):		205 x 205 x 255 mm
Weight:		1.6 kg
Mains voltage	Input:	100–240 V / 50–60 Hz, 0.7A
	Output:	24V
Max. power consumption:		max. 20 W
Polymerisation range:		1x 385-390 nm / 6x 465-470 nm
Plate rotation speed:		6x 180°/min
Time programmes:		1/2/3/5/10 min

3. Declaration of Conformity

Herewith we declare that the machine described below in its conception and design and in the shape delivered by us is in accordance with the fundamental requirements for safety and health as prescribed in the applicable EC directives.

In the case of any change or modification of the machine, not authorised by us, this declaration becomes invalid.

Machine designation: EyeVolution® MAX
D-38101

Type of unit: Light polymerization unit

Applicable EC Directives:
2004/108/EG EMC Directive

Applied harmonised standards:

2004/108/EG	**EMC Directive**
EN 61000-3-2:2010-03 + Corrigendum to EN 61000-3-2:2011-06	Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current <= 16 A per phase) (IEC 61000-3-2:2005 + A1:2008 + A2:2009); German version EN 61000-3-2:2006 + A1:2009 + A2:2009.
EN 61000-3-3:2013	Electromagnetic compatibility (EMC) - Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current <=16 A per phase and not subject to conditional connection (IEC 61000-3-3:2013); German version EN 61000-3-3:2013.
EN 61326:1:2013	Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements (IEC 61326-1:2012); German version EN 61326-1:2013 Emission according to living area, business and industrial undertakings as well as small enterprises interference stability according to industrial area.

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4. Safety instructions

NB: Please read these instructions carefully before connecting and commissioning the device. The operational safety and function of the device can only be guaranteed if both the general statutory safety and accident prevention guidelines and the safety information in the operating instructions are observed.

1. The device may only be used in accordance with these operating instructions. We do not accept any liability for damage incurred as a result of non-designated use or incorrect operation.

2. The device must be set up on a stable and level surface.

3. In order to prevent water (e. g. spray water) ingress into the device, the device should be set up in a dry environment.

4. Do not store any highly-inflammable materials in the direct vicinity of the device.

5. Never touch the mains plug with wet hands.

6. Only use the plug-in power supply provided; other power supply units can cause damage to and failure of the device.

7. Authorised operators: The owner of the machine must provide the operator with the operating instructions and ensure that he has read and understood them. Only then may the operator commission the device.

8. Prior to each operating cycle, the device must be examined to ensure its impeccable condition and operational safety. If it does not display an impeccable condition, the device may not be used and must be marked accordingly.

9. Do not insert any objects into the housing interior.

10. Do not lock the device operating elements in place.

11. Never look directly at the LED lights.

12. The device should be disconnected from the mains supply for longer periods of non-use.

13. Signs and labels must be kept clearly legible and may not be removed.

14. The mains plug must be removed before cleaning and maintaining the device or replacing parts.

15. The device may only be opened and repaired by authorised specialists.

16. Only accessories and spare parts approved by the manufacturer may be

used. We do not accept any liability for damage incurred by using parts which have not been approved.

17. Independent conversions and modifications are not permissible for safety reasons.

18. It is imperative that the above operating and maintenance conditions in these operating instructions are observed. The general accident prevention regulations must be observed when working with the EyeVolution® MAX.

5. Commissioning

Insert the mains cable in the device socket (1) to establish a mains connection. The power supply unit is supplied with the EU connector plug. The plug adapters supplied for the UK, Japan and the US can be replaced at the mains device at any time.

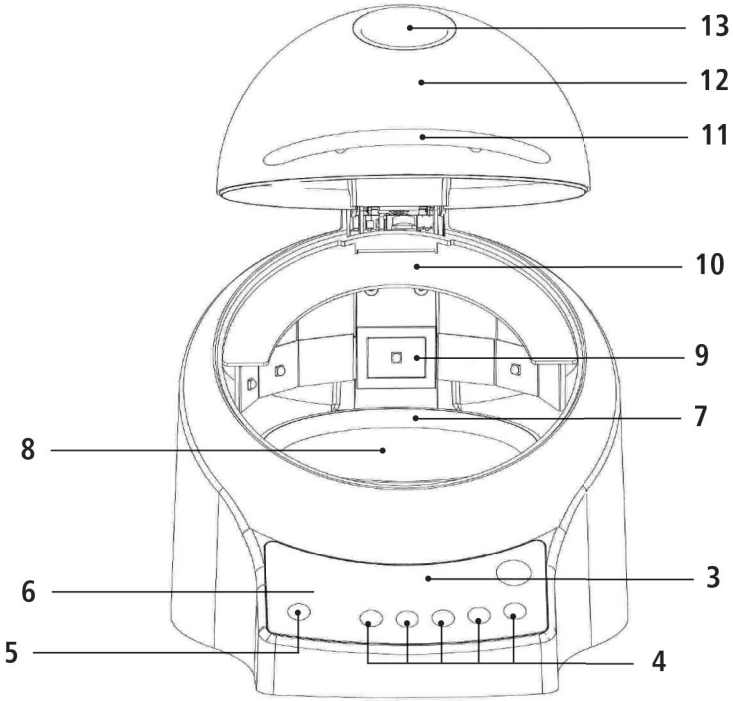
Do this by pressing the push-button on the inside of the power supply unit and pulling the EU connector unit out upwards. Insert the corresponding plug adapter into the guide groove. Slide it forwards until it audibly clicks into place.

Only use the plug-in power supply provided for connecting to the mains supply; other power supply units can cause damage to and failure of the device.

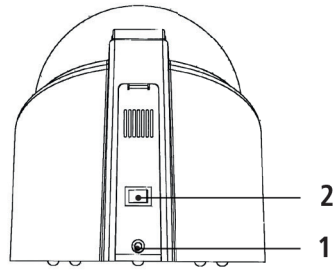
Important: Read the operating instructions thoroughly before commissioning the device for the first time. If there are any interpretative problems, please contact the responsible depot or Dreve Dentamid GmbH directly.

Scope of supply:
1x EyeVolution® MAX light-curing device
1x 24 V plug-in power supply unit incl. EU connector
1x plug adapter for UK
1x plug adapter for US/JAPAN
1x operating instructions in 5 languages

6. Functional elements

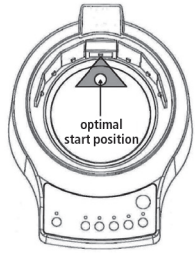


No.	Description
1	Power supply connector socket
2	Main switch
3	Display foil
4	Time programme push-button
5	Rotary plate function push-button
6	Function display
7	Rotary plate
8	Reflective foil
9	LED circuit board
10	Glare protection
11	Cover handle
12	Device cover
13	Inspection window



7. Operation

Activate the main switch (2) on the back of the device; the functional display LED (6) lights up in red. The device is now ready for operation.
Open the polymerisation chamber by raising the device cover (12) at the handle (11). The opening angle is approx. 55° and is fixed in its final position by a magnet.
The central point of the surface that is to be polymerised must always be positioned on the seating for the model at a distance of 2-3 cm from the middle LED that has a black circle round it.
Fixing the model vertically on the pendulum plate is recommended for exclusively occlusal modelling (e.g. inlay or onlay).



Release the cover from its magnetic anchoring by pulling slightly on the handle and close the polymerisation chamber.

7.1 Time programmes

The EyeVolution® MAX light-curing device features several pre-programmed time relays. Use the push-button (4) to activate time programmes with 1, 2, 3, 5 and 10 minutes.
The following times apply, depending on the composite material that is being used and for a maximum layer thickness of 2 mm:

Opaquer: 1:00 – 2:00 min
Pre-polymerisation: 0:30 – 1:00 min
Interim polymerisation: 1:00 – 2:00 min
End polymerisation: 2:00 – 5:00 min
Start the selected time programme by pressing the corresponding push-button (4). The polymerisation process starts automatically and is indicated as an active programme by a green LED.

7.2 Rotary plate

A reflective pendulum plate (7) was designed for the seating of the model to ensure optimum polymerisation with as little shadowing as possible. Starting in a central position (see point 7.1), the seating of the model first moves to the right by 90° after the program is started and then shifts into a 180° pendular motion. The oscillation function is coupled with the time programmes and is automatically activated when the polymerisation programme starts. The LED (6) indicates the operating status of the rotary plate:
Green LED = rotary plate in action
Red LED = rotary function deactivated
Use the push-button (5) to activate or deactivate the rotary plate function at any time, even during on-going polymerisation programmes.

7.3 Programme sequence

Each time program starts up with the intensity of the LEDs reduced by 50% to ensure polymerisation is as tension-free as possible. The LEDs automatically switch to 100 % output after 30 s.

Important: In order to protect your eyes, polymerisation is only possible when the device cover is closed.

The light used is not suitable for direct eye contact and can cause retinal damage over the long term when unfiltered. The cover features a light-filtering inspection window (13) to facilitate visual inspection of the polymerisation process.

An on-going time programme is always interrupted by opening the cover (12); the LED assigned to the respective programme flashes. The time remaining is saved in the electronics module and continues once the polymerisation chamber is closed again.

Once a time programme is complete, 2 brief signal tones sound and the polymerisation LEDs and rotary motor switch off automatically. The green LED indicating the programme on the operating foil (3) is also deactivated. A ring of 6 white LEDs stays active and is only dimmed down after the device cover is opened.

7.4 Premature programme abort

An on-going time programme can be ended and deleted at any time by pressing the activated programme key.

8. Cleaning and maintenance

Always remove the mains plug from the mains power supply before carrying out any cleaning or maintenance work.

Ideally, the device is cleaned using a soft cloth, possibly a slightly dampened sponge and a mild resin-cleaning agent.

Water and cleaning agent must not penetrate the device.

The LED circuit board (9) must not come into contact with damp materials. Minor soiling can be removed using a soft brush.

9. General instructions

Repairs and maintenance work on the EyeVolution® MAX polymerisation device may only be carried out by qualified personnel. In any case, the power supply to the device must be interrupted. The Dreve Group is only responsible for the safety, reliability and performance of the device when

- the device is only used for the corresponding designated application
- operation is only by qualified personnel.
- the device is used in accordance with these operating instructions.
- extensions, new settings, modifications or repairs are only carried out by persons authorised by Dreve Dentamid.

As we constantly strive to develop our products, we reserve the right to make technical modifications.

10. Disposal of old appliances pursuant to WEEE regulations

The EU Directive 2002/96/EC for the reduction of the increasing quantities of waste from electric and electrical equipment (WEEE). The aim is to avoid and reduce the increasing quantities of waste from electric and electrical equipment and to dispose of such waste in an environmentally friendly manner. Appliances labelled accordingly must not be disposed of with household waste, but correctly disposed of at communal rubbish dumps, by your specialist dealer or the manufacturer.

11. Warranty

The warranty period is 2 years as of the delivery date. The warranty only applies for material or manufacturing errors. Warranty claims do not apply for natural wear or damage incurred after the transfer of risk as a result of incorrect or non-designated handling, excessive strain, unsuitable operating equipment and such chemical, electrochemical or electrical influences which are not intended by the contract. Warranty claims are excluded by any non-designated modifications made by the customer, third parties or maintenance and repair work as well as in the event of violation of lead seals.

Responsibility for defects

Claims for defects shall expire one year after delivery. Claims for defects do not apply for natural wear or damage incurred after the transfer of risk as a result of incorrect or non-designated handling, excessive strain, unsuitable operating equipment and such chemical, electro-chemical or electrical influences which are not intended by the contract. Claims for defects are excluded by any non-designated modifications made by the customer, third parties or maintenance and repair work as well as in the event of violation of lead seals.

12. Troubleshooting

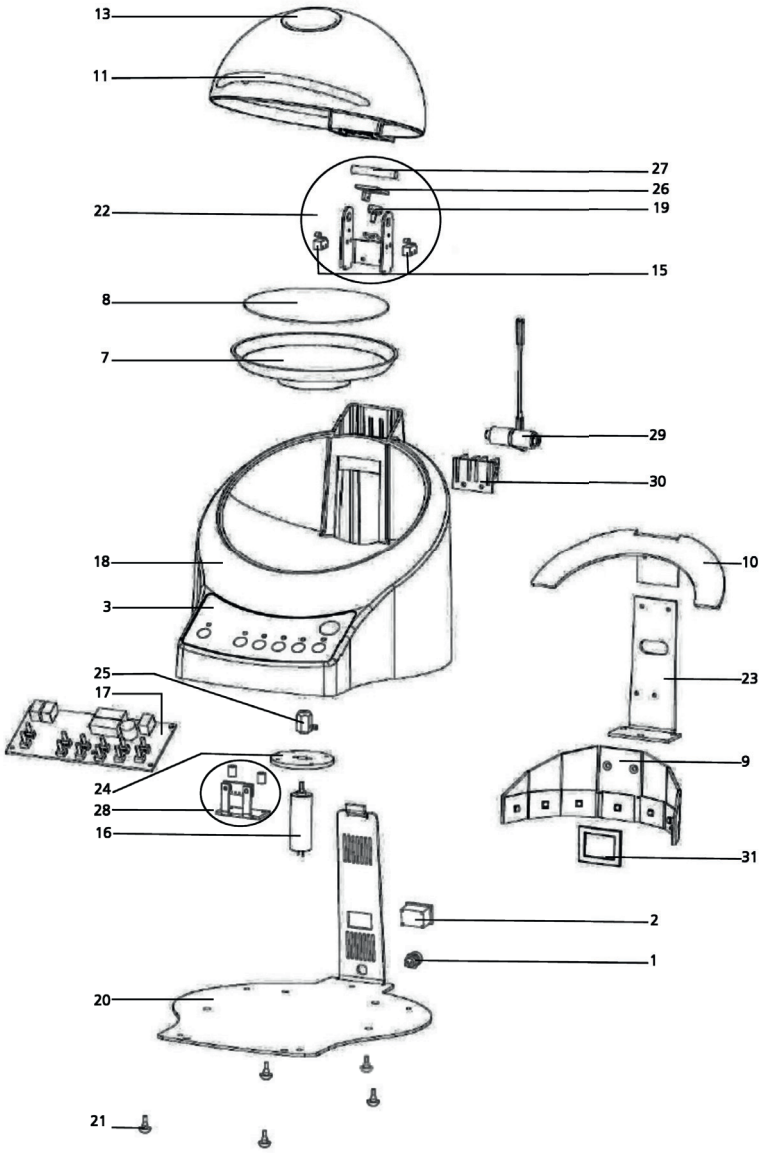
Fault	Cause	Troubleshooting
Device shows no function	Incorrect mains connection	Check mains connection
	Main switch off	Switch on main switch
	Internal cabling is defective	Internal cabling must be checked by a specialist.
	Plug-in power supply unit is defective	Replace the plug-in power supply unit
LED lights up, electronics without function	Electronics are defective	Electronics must be checked by a specialist
Rotary plate without function	Function deactivated	Activate with pressure switch (5)
	Device cover is open	Close cover (12)
	Cable connection to rotary motor (16) is defective	Examine the cabling
	Rotary motor (16) is defective	The motor must be examined by a specialist, and replaced if necessary.
	Electronic module is defective	The electronics must be examined by a specialist, and replaced if necessary.
	Motor adapter (25) rotates continuously	Tighten the motor adapter threaded pin
Time programmes can not be activated	Main switch off	Switch on the device
	Device cover is open	Close cover (12)
	Internal cabling is defective	Internal cabling must be checked by a specialist

Fault	Cause	Troubleshooting
	LED circuit board (9) is defective	The LED circuit board must be examined by a specialist, and replaced if necessary.
	Electronic module is defective	The electronics must be examined by a specialist, and replaced if necessary.
	Micro-switch (15) is defective	The micro-switch must be checked by a specialist and replaced if necessary.
Polymerisation time does not end automatically	Electronic module is defective	The electronics must be examined by a specialist, and replaced if necessary.
Polymerisation process is not interrupted when the cover is opened	Both micro-switches (15) are defective	**Deactivate the device immediately.** The micro-switch must be checked by a specialist and replaced if necessary.
Unsatisfactory polymerisation results	Polymerisation time is too short	Extend the polymerisation time
	Material reacts to fluctuating wavelengths	Replace the material
	LED circuit board (9) is soiled	Clean the LED circuit board carefully
	LED circuit board is damaged	Examine the LED circuit board, replacing if necessary

13. List of spare parts

No.	Description	Art. no.
1	Connection jack for power supply	1201
2	Main switch	1202
3	Adhesive display foil	1203
7	Rotary plate with reflective foil	1207
8	Reflective foil	1208
9	LEDs, including mirror with frame and fixings	1209
10	Aluminium cooling screen	1210
11	Handle, including fixings	1211
13	Inspection window with frame	1213
14	Power supply unit, 24V, with international connector plug	1214
15	Microswitch with cable, including fixings	1215
16	Rotary plate drive	1216
17	Electronic components, including fixings	1217
18	Full housing (lid, handle and base of housing)	1218
19	Anchor magnet, disc magnet, including fixings	1219
20	Floor plate, sheet metal base plate, including fixings	1220
21	Unit foot (5x)	1221
22	Full hinging for lid (microswitch, cable, lid plate, lid shaft, disc magnet), including fixings	1222
23	Cooler panel	1223
24	Motor flange	1224
25	Motor adaptor, including set screw	1225
26	Lid plate, including fixings	1226
27	Lid shaft	1227
28	Light barrier	1228
29	Rotary shock absorber	1229
30	Seating for rotary shock absorber	1230
31	LED frame	1231

14. Explosion drawing



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