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USER AND SERVICE MANUAL

FUSION CURING LIGHT (2008 RELEASE)



For dental use only!

U.S. Federal Law restricts this device to sale by or on the order of a licensed dentist

Made in USA

CE

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Curing Times

1. Normal composite resin (2mm A3 or lighter): 5 seconds.

2. Orthodontic bonding resin: 3~4 seconds

3. Veneer

* Tacking: 1~2 seconds

* Bonding: 4 seconds

It is recommended a timed curing test outside the mouth be performed. Using a 3mm hardness disk, cure from the top for the recommended time, and reverse the disk. Using a sharp instrument, compare the hardness of the disk to the hardness of the composite - it should feel exactly the same if well cured.

Tips

Cooling - A simple cooling method is placing a suction tip or compressed air close to the Light Head during or between uses. Do not overcure to avoid overheat. Another method is Half Power Mode.

Half Power Mode - Press Unit Power Key during operation to switch to half power mode (800mW/cm2) to minimize heat. Press Unit Power Key again to switch back to normal power mode.

Connection - Ensure good mechanical and electrical contact at both junctions of Light Head to Main Control and Battery Assembly to Main Control. Make sure there is no loose and dirty connection. Clean contact as instructed below if needed.

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PARTS LIST



- LED Light Head
- Main Control Unit
- Battery Assembly
- Charge Stand
- Power Adapter and Adapter Power Jack (5a)
- Barrier Sleeves (100)
- 9mm Curing Caps（2）*
- 13mm Curing Caps（2）*
- 3mm Tacking Tips（2）*
- Unit Mount Eyeshield **

* Included in 7500080-08

** Included in 7500080-08-O

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1. Charge BATTERY ASSEMBLY



Before use, charge Battery Assembly overnight by either direct plugging the Power Adapter or through the Charge Stand.



2. Assemble handpiece:

Push down LED Light Head and quick connect with Main Control Unit.

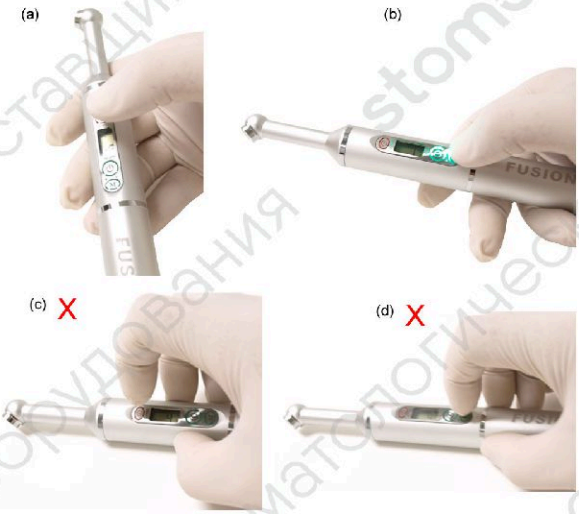


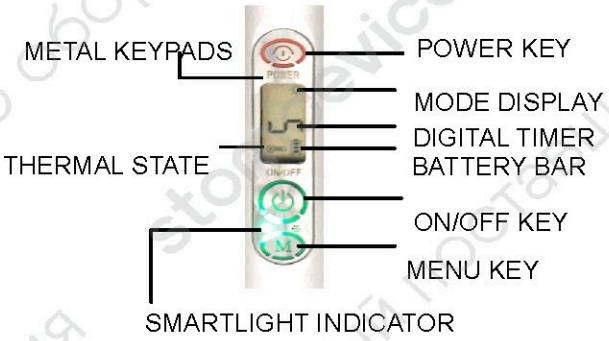
Turn Battery Assembly clockwise and screw-on connect with Main Control Unit.

3. Power on handpiece and select Mode

PRESS AND HOLD the unit Power Key for 5 seconds until LCD display is turned on.

Press Menu Key to select operation mode. Use smooth side of thumb and apply normal force (a) (b). Do not point finger nail or use sharp object forcing the Metal Keypads (c) (d).





Digital Timer displays operation modes (1, 2, 3, 4, 5, 10 and 20) when Menu Key is pressed successively.

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Seven modes are grouped in Sequential and Constant Power modes. Constant power mode is recommended for single tooth curing. Sequential mode is recommended for full arch curing.

Menu Key	Constant On; Count Down; 5 second per beep		
Mode Display ☼	5	10	20
Timing Sequence	5 sec.	10 sec.	20 sec.

CONSTANT POWER MODE

Menu Key	80 seconds count down; 5 second per beep			
Mode Display ⎍	1		2	
Timing Sequence	1 sec. On	4 sec. Off	2 sec. On	3 sec. Off
Mode Display ⎍	3		4	
Timing Sequence	3 sec. On	2 sec. Off	4 sec. On	1 sec. Off

SEQUENTIAL POWER MODE

4. Activate Curing

Make sure LCD display is on. Grip in either pen style (e) or torch style (f). Press On/Off Key to activate curing. DIGITAL TIMER counts down in seconds. Press On/Off Key any time to stop (cycle auto recalls in 15 seconds).

An audible signal beeps at start, during (every 5 seconds) and completion of cycle. An audible beep signals key activation (Power, Menu or ON/OFF) together with visual backlight signals for Menu and ON/OFF key activation.



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5. Battery Maintenance

Battery Assembly uses a high capacity Lithium-Ion battery with built-in smart recharging electronics. Keep light charged at all times when not in use by:

I: Drop and push the handpiece to the bottom of the Charge Stand.

II: Direct plug in the power jack from the Power Adapter to the receptor end of the handpiece.

III: Drop and push the handpiece into a Dental Unit Charge Holder (optional kit and accessory), which can be mounted on a standard dental unit bar or cabinet bar (12) via its two bottom set screws. The Dental Unit Charge Holder connects to Power Adapter through its outlet power jack 11a and extension cord 11b.

SMARTLIGHT INDICATOR is green while charging and turns off automatically when fully charged. The battery capacity is indicated by the Battery Bar and displays three bars when fully charged. During operation, the unit warns at low battery followed by automatic low power shutdown indicated with an audible alarm as well as flashing backlight and battery bar.

To avoid battery power drain, shut down the unit power during storage or transport by pressing and holding the Unit Power Key for 3 seconds until display is turned off indicated with a beep sound.



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6. Safety Precautions

- Light must be used with barrier sleeves to avoid patient contact. Optional cap and shield are placed outside the sleeve. **Replace the barrier sleeve after each patient use.** Handle and dispose of used sleeves in accordance with accepted medical practice and applicable laws and regulations
- Do not touch and open any electronics parts and circuit boards. **Warranty void if seal broken.**
- Do not apply excessive force or use sharp objects on the keypads to avoid damage.
- Do not immerse handpiece in waters or solutions. **Warranty void in case of liquid damage.**
- The very high light intensity of FUSION results in a certain development of heat. Prolonged exposure of the pulp and soft tissues may result in irreversible or reversible damage. This high-performance polymerization light must only be used by specially trained dental personnel
  - Do not place light directly on the same tooth segment for more than 10 seconds.
  - Do not place light in direct contact with unprotected gingival, oral mucous membrane or skin. Prevent heat accumulation with a rubber dam in place.
  - Follow Cooling Tips to reduce contact heat.
- Adjust curing techniques in accordance with increase in curing energy: e.g., decrease curing time and decrease power (Dual Power Switch).
- Do not look directly at light emitted from this curing unit. Do not use this device without suitable shield or protective eyewear for the operator and assistant. Three levels of protective eye shields are offered by DentLight: curing caps (partial eyeshield at the tip of the curing light), unit mount Eyeshield (mounts on the chrome section in between the Light Head and Main Control), and eyeshield goggles.
- If time intervals between exposures are too short, LED tip may overheat and potentially cause soft tissue injury. Do not continuously use the handpiece for over 2 minutes. It is recommended to wait for at least 30 seconds after continuous exposure of two minutes or when overheat alarm indicator has turned on and using the Cooling Tips suggested.
- Charge batteries while not in use to extend the lifetime of the rechargeable battery.

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- Do not short circuit battery.

- Do not store above 60°C (140°F).

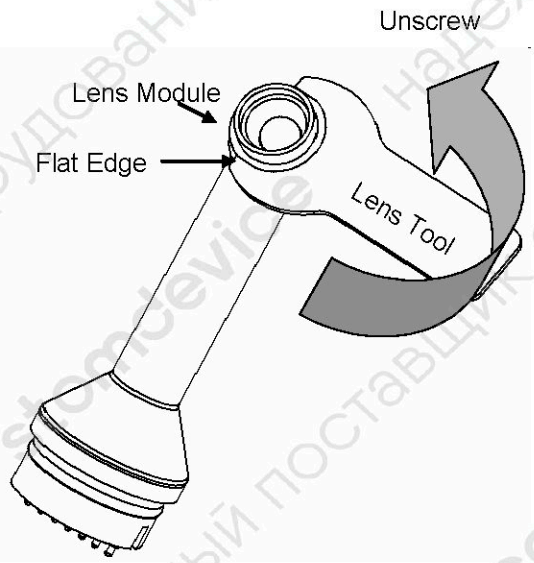
- Dispose of unserviceable batteries and curing lights according to the national rules and regulations. Batteries must not be incinerated.

- Replace the battery assembly after the lifetime of the battery usage by ordering replacement battery assembly from the manufacturer.

7. Cleaning and Disinfecting

- Thoroughly wipe off handpiece and charge base with cleaning solution or soap and water. Do not spray or soak. Disinfecting agents and water must not enter any openings on unit.
- Disinfect by thoroughly wiping down with a soft cloth or tissue damped with isopropyl alcohol.
- Clean curing lens and electrical metal contact using Q-tips slightly damped (do not soak) with isopropyl alcohol.
- Always safeguard handpiece opening area, metal keypads, curing lens and LED tip against moisture as this may cause electrical short-circuit, permanent optical damage or malfunction.

8. Use of Main Optional Items



Tip Size and Lens replacement

Note the tip and beam size from the curing light can be adjusted using a combination of 3mm, 9mm or 13 mm caps and Focus or Expanded Beam Lens Module. The lens module can be switched using the lens tool by aligning and locking the tool's flat edge to the flat edge of the lens mount and turning counter-clockwise similar to unscrewing a nut. Clean thread following instruction in 7c. To replace the lens module, reverse the above step with a replacement Lens Module. Example of obtaining different optical tips:

13mm tip: use Expanded Beam Lens Module (optional accessory) and snap on orange 13mm curing caps.

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LED Light Head Options

Three optional light heads are offered.

Standard Light Head comes with the kit for LED light curing applications with photoinitiators active to wavelengths from 420-490nm.



UV (Purple) Light Head option cures composite with photoinitiators active to 385-425nm.



White Light Head option offers intra oral illumination and diagnostic tools for detecting dental caries and diseases.

Dental Unit Charge Holder

This option provides the user a convenient mounting and charging option on a standard dental unit or cabinet unit. See Section 5 for details.



9. Technical Specifications

Voltage to handpiece	Regulated 5V DC
Protection from Ingress Liquids	None
Lamp	High Power LEDs. 100000 hours lifetime.
Wavelength Range	Standard Light Head: 420 – 490 nm White Light Head: 5000-6500 K UV Light Head: 385 – 430 nm
Curing Intensity	Standard Light Head: 1500 mW/cm^2 (±10%) UV Light Head: 300 mW/cm^2
Battery	Lithium Ion. 90 minutes recharge time. 35-45 minutes continuous run time. 500 full charge-discharge life cycles.
Shutoff	Timer auto shutoff; User shut off anytime by pressing On/Off key; Low battery auto shutoff; Overheat auto shutoff (typically after 4 minutes continuous run time in full power). Self protection shutoff is accompanied by warning backlight and audible alarm as well as flashing THERMAL STATE or BATTERY BAR symbols.
Operating	0 –35 ºC

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Temperature	
Storage	Take apart battery assembly from main control unit; temperature: -10 – 40 °C
Weight	111 grams
Dimension	22 mm diameter; 200 mm full handpiece length;
Standards	Complies to CE 89/336/EEC, EN60601-1-2, EN61000-3-2, EN61000-3-3, IEC60601-1-2

10. Limited one-year WARRANTY

Register your purchase of **FUSION** at www.dentlight.com. Your **FUSION** is warranted to be free from defect in material and workmanship for a period of one year under normal use after its original purchase date. This warranty extends only to the original retail purchaser and only when purchased from an Authorized DentLight dealer. Consult with DentLight to purchase extended warranty beyond one year within thirty days of your purchase. This warranty does not cover products damaged by the following:

-Improper operation, accident or neglect, misuse or abuse, such as physical damage (dents, cracks, scratches, etc.);

-Liquid, water, rain, extreme humidity;

-Improper repairs or modifications that have not been carried out by a certified Service Center.

-Use of other spare parts and accessories than from the manufacturer;

-Other acts which are not the faults of DentLight.

DentLight shall under no circumstances be liable for incidental, special, or consequential damages or damage from misuse according to the manual.

In case of a claim under warranty, the complete apparatus (handpiece, charging base, and power adpater) must be returned, carriage paid, to your dealer or directly to DentLight, together with a receipt of purchase.

11. Troubleshooting Guide

If an error occurs, follow the troubleshooting guides below to determine the cause of problems and corrective action.

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TROUBLE	CAUSES	ERROR INDICATION	CORRECTIVE ACTION
Handpiece			
Light cannot be activated	**Unit Power is not turned on**	**LCD display is blank**	**Press and Hold Unit Power Key until the LCD display turns on. Then select a mode and press On/Off Key.**
Light cannot be activated	Battery is low	LCD Battery Indicator is low or LCD is blank and can not be turned on with Unit Power Key.	Charge the battery. If LCD is blank, charge the battery assembly separately overnight by first unscrewing the battery assembly from the main control unit and then plug in the power adapter directly.
Light cannot be activated	Handpiece is overheated	The handpiece, in particular the Light Head is hot	Allow the handpiece to cool down in ambient or with convection air from suction tip or compressed air.
Light cannot be activated or shuts down prematurely	Bad electrical contacts and connection between the Battery Assembly and Main Control Unit	Shuts down even when battery is full. Shows digital timer count down and hears beeps. Light works inconsistently.	Clean metal contacts as instructed. Ensure all electrical contact pins are not damaged. Ensure the Light Head is completely pressed into the Main Control adapter. **Screw Battery Assembly tight into Main Control Unit.**
Battery Assembly			
Battery not being charged	Electronic defect in the Charge Base	Charge Indicator shows no light; Charge Indicator turns green while bypassing the base and directly plugging into the handpiece	Please contact manufacturer or your dealer to replace Charge Base.
Battery not being charged	Electronic defect in the Power Adapter	Charge Indicator no light while charging either directly or with Charging Base.	Please contact manufacturer or your dealer to replace Power Adapter.
Battery not being charged or not holding charge	Electronic defect in the Battery Assembly	Operating inconsistently. Shuts down even when fully charged and battery screwed in tight.	Please contact manufacturer or your dealer to replace Battery Assembly.
Main Control Unit			
Unable to turn on LCD screen or incorrect LCD display	Electronic defect	After charging Battery Assembly, LCD screen still does not turn on or number displays incorrectly.	Contact the manufacturer or your local dealer to replace Main Control Unit.
Keypad malfunctions	Use of excessive force or electronic defect	Keypad is deformed or does not activate.	Contact the manufacturer or your local dealer for service.

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Reorder and optional item codes

REF	Description
7500080-08	FUSION Curing Light Kit - Silver
7500080-08-P	FUSION Curing Light Kit - Pink
7500080-08-B	FUSION Curing Light Kit – Blue
7500080-08-G	FUSION Curing Light Kit - Gold
7500081	Curing Caps – 9mm (50/pack)
7500081B	Curing Caps – 13mm (50/pack)
7500081C	Tacking Tips – 3mm (20/pack)
7500082	Barrier Sleeves (100/pack)
7500083	Charge Stand
7500084-08	FUSION'08 Battery Assembly
7500085	Power Adapter
7500088	Eye Goggle
7500092	Unit Mount Eye Shield
7500093	Focus Lens Module
7500094	Expanded Beam Lens
7500095	Lens Tool
7500050	Main Control Module
7500060	Standard Light Head Module with Focus Lens
7500060W	White Light Head Module with Focus Lens
7500060U	UV Light Head Module with Expanded Beam Lens
7500071	Dental Unit Charge Holder
7500072	Chair Power Extension Cord
7500070	FUSION'08 CHAIR SYSTEM

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