

Operator's Manual



SAFETY PRECAUTIONS

(read first before proceeding)

Warning Before connecting and operating the **Sapphire[®] Supreme Plasma Arc Curing Light**, read all safety instructions. When used properly and with normal precautions, the **Sapphire Supreme** is a safe and effective light curing system. However, the Sapphire Supreme is a source of high electrical voltage, intense light, and heat. This product must only be used as indicated in this manual.

Before connecting the **Sapphire Supreme** to the mains (the AC wall outlet), verify that the voltage to be applied is within the range of that specified on the identification label on the backside of the instrument. If you have any questions concerning the proper voltage, call the factory for clarification.

To avoid risk of electric shock, disconnect the power cord before opening the lamp access door or removing the product cover. All repairs other than lamp replacement must be made by a factory authorized representative. Do not touch or probe other electronic components inside the product.

High intensity light can be harmful to the eyes. When the system is in use, the patient, operator, and assistant(s) must wear protective eyewear. Caution should be used to avoid accidentally starting the light outside of the mouth. To avoid possible injury, never look directly into the end of the light guide or directly into the light output on the front panel (even with protective eyewear). Never shine the light into the eyes.

High intensity curing lights should not be used by operators or on patients who may be photo-sensitive.

Do not expose soft oral tissues directly to the tip of the light at close proximity.

Only use the light guide supplied with the **Sapphire Supreme**. Other light guides may not be effective and may damage the light. Do not cause excessive bending in the light guide. Do not drop the light guide or tip. Do not autoclave the light shield provided with the unit. Do not autoclave the light guide (removable tip is autoclavable). Do not use abrasives or liquid chemicals to clean the tip or the light housing.

The fan at the rear of the light provides cooling when the system is on. Obstructing the air flow will cause heat buildup and will damage the system.

Disconnect the **Sapphire Supreme** power cord from the power outlet and contact the factory for service instructions if the light has been exposed to liquid spills, dropped or otherwise damaged (including the power cord), or otherwise malfunctions.

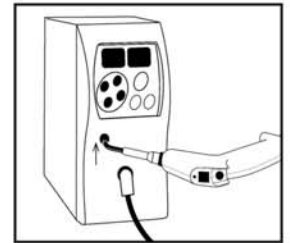
Do not use in the presence of flammable materials.

IMPORTANT START-UP INSTRUCTIONS

(Follow these instructions prior to using the system.)

1. Do not saturate the controller keypad area with disinfectant or other liquids. Wipe the keypad surface with a damp towel and dry completely.
2. Make sure the light guide is **firmly inserted** all the way into the front panel receptacle **before turning on the power**. If the light guide is not completely inserted, the system controls may not work properly and the light intensity may be reduced.
3. When using the built-in light meter, the pistol should be held in the position as indicated in the illustration. The tip should be centered inside of the aperture. Positioning the tip differently may result in reduced light intensity values.

4. If the lamp access plate on the bottom of the system is removed to check the lamp, make sure that it is replaced correctly. The corners of the plate must fit into the outline of the cutout area and not rest on top of the edges of the surrounding metal. When installed properly all surface areas are even with each other. If the access plate is misaligned, the unit may not receive AC power. If the front panel display does not light up, check the access plate.



Dangerous Voltage



Attention: consult accompanying documents



Attention: may be hot



Protection Class BF, Insulation Class 1



Alternating Current



Fuse



Hazard, High Intensity Light



Enclosed Equipment Protected Against Dripping Water



DO NOT use in the presence of flammable substances

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GENERAL DESCRIPTION

The **Sapphire[®] Supreme Plasma Arc Curing Light** is a high intensity curing light used to initiate rapid polymerization of photoinitiated dental restoratives. A specially designed filter provides peak performance in the visible light spectrum required for curing, yet effectively reduces unwanted ultraviolet (UV) and infrared (IR) wavelengths.

Switches on the control panel have a wide range of preset timing increments to provide complete curing by selecting the cycle which works best with the restorative being used. A bright numeric display provides a visual indication of the curing time and an audio signal indicates completion of the cycle.

The **Sapphire Supreme Light** guide assembly has a 60° angled tip that is detachable for sterilization between procedures.

The **Sapphire Supreme** may be used to accelerate the effectiveness of peroxide whitening.

CONTENTS AND INSTALLATION

System Contents:

Sapphire Light Source	Operator's Manual
Light Guide and Tip	AC Power Cord
Protective Glasses (2 pair)	Composite Test Rings (200 each)

Installation:

Plug the light guide into the front panel and push it in until it reaches the end of its travel. When properly installed the light guide is in the optimal focal position for the light and should only be removed for occasional cleaning.

Do not pull on the light guide to move the system.

Do not pull on the light guide cable to unplug it.

Connect the power cord to the rear of the system first, then plug into an AC outlet.

The Cure mode indicator on the front panel will light up showing that system power is available.

AC Plug  **Input**

3 conductor grounding plug with International IEC connector provided. This common power cord is used for computers and other peripheral devices and is readily available for separate purchase if a different plug configuration is needed for international customers.

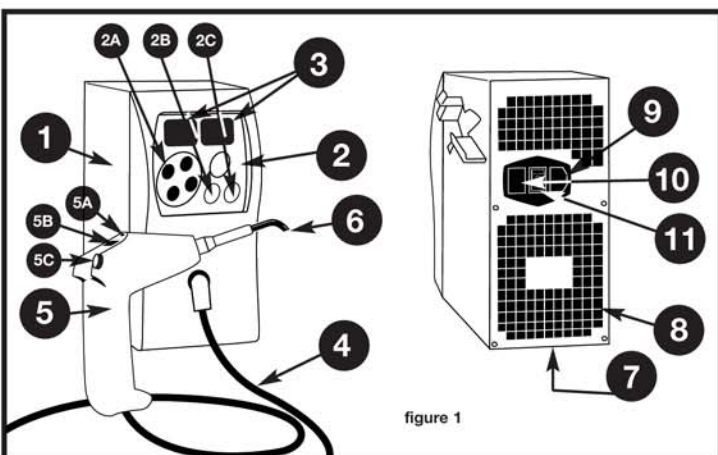


figure 1

CONTROLS AND FUNCTIONS

- Sapphire[®] Supreme Lightsource**
- Sapphire Supreme Control Panel. Start Switch:** Control power to the lightsource and panel control preset operating times.
 - Timer preset switches.
 - Standard curing mode switch.
 - Optional curing mode switch.
- Sapphire Supreme Display Windows:** Digital display of the pre-set time, program mode, and light meter.
- Sapphire Supreme Light Guide:** Flexible optical device for delivery of light. Make sure the light guide is pushed all the way in until it stops.
- Sapphire Supreme Hand-Piece:**
 - Timer select button.
 - Timer display.
 - Timer start button.
- Removable Autoclavable Tip:** Optical device for exact placement of light.
- Access to Lamp:** Access area where the lamp is removed and replaced.
- Cooling Fan:** Provides cooling to the lightsource.
- Power Module:** Accepts AC power cord.
- Fuse Holders** – Contains the main fuses. (see fuse replacement section)
- Power Switch** – Turns power ON (1) and OFF (0).

ACCESSORIES

Eyewear

The protective eyewear provided with the **Sapphire Supreme** must be worn by the operator, assistants and patient when the system is in use. Additional eyewear is available through Den-Mat[®]. See page 15 for order information.

PROTECTIVE EYEWEAR

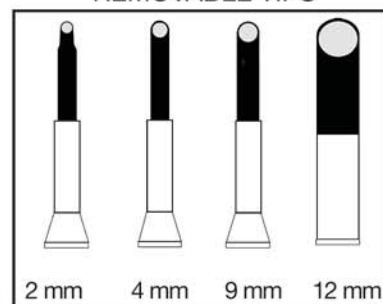


Light Guide and Tips

The Light Guide provided with the **Sapphire Supreme** provides an optical path for transmitting light energy from the source to the tip. Both the Light Guide and removable tip are available through Den-Mat as spares or replacement parts. See page 15 for order information.

2 mm and 4 mm Ceri-Taper™ Tacking Tips reduce placement time of **LUMINEERS[®] BY CERINATE[®]** by 50%.

REMOVABLE TIPS



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QUICK SET-UP INSTRUCTIONS

- Insert the 6ft. light cable into the front panel receptacle until it stops.
- Insert the curing tip into the pistol receptacle until it stops.
- Plug in the AC power cord to the back of the unit and wall socket.
- Turn power switch to the on (I) position. Switch is located on the systems back panel.

The **Sapphire Supreme** is now ready for use. It is recommended that you become familiar with all system features before use. Make sure the light guide is pushed all the way in until it stops. Also, it is important to check that the lamp access plate is on correctly if it has been removed.

Standard Curing Mode (SC)

NOTE: When power is applied, diagnostic information briefly appears on the panel display before the 05 Second default timer (Key Pad 2) comes up.

Time settings for keys 1, 2, 3, 4 are adjustable. If key 2 is pressed after power-up, it will change from 05 to 06 seconds. Each time the key is pressed, one second is added. All 4 timers have a range of 1-10 seconds.

Whenever the power switch is turned on, the system defaults to the Standard Curing Mode 5 Second Timer. SC is displayed in the Program Window and 05 is displayed in the Seconds Window of the front panel. 05 is displayed on the hand-piece display. A new time setting can be selected at any time by pressing one of the four numeric keypads on the front panel or pressing the timer select button above the display on the hand-piece. You can return directly to the Standard Curing Mode at any time by pressing the Standard keypad on the front panel.

There are four preset Standard Curing Timers.

- Keypad #1 - 3 seconds
- Keypad #2 - 5 seconds
- Keypad #3 - 7 seconds
- Keypad #4 - 9 seconds

Pressing any of the keys will change the system timer and the displays on the front panel and hand-piece will show the time. The timer select button on the hand-piece will change the timers in sequence.

Do Not hold down the start button. Press and release.

Use the round 1/2" pushbutton on the hand-piece, or the start button on the front panel to start and stop timers. Press the start button and release to activate a timer. Press the start button and release to pause a cycle. Press the start button and release again to restart and complete the cycle. During an active cycle, press and hold down the start button for 5 seconds to reset the timer to the beginning.

BLEACHING AND AUTOMATIC CYCLING MODES

Press the Optional keypad on the front panel to advance to the next set of timers. When the Optional keypad is pressed, the system defaults to the Bleaching Timer (keypad #2). The display shows bL (Bleach). Press keypad #2 and bL 60 is displayed. When the Start keypad or Activator button is pressed, the lamp ignites and the timer counts down. The display shows 60 59 (60 minutes and 59 seconds) and counts down. Timer settings in this mode are as follows:

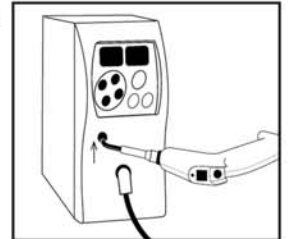
- keypad #1** – cc 05 continuous cycles of 5 seconds with audio signal and short pause every 5 seconds
- keypad #2** – bL Whitening Crystal mode; 60 minutes with audio signal at 45, 30, 15, and 0 minutes
- keypad #3** – 03 03; three cycles of 3 seconds with audio signal and short pause every 3 seconds
- keypad #4** – 03 05; three cycles of 5 seconds with audio signal and short pause every 5 seconds

Pressing any of the keys will change the system timer and the displays on the front panel and handpiece will show the time. The timer select button on the handpiece will change the timers in sequence.

RADIOMETER - MEASURING LIGHT INTENSITY

Use the system radiometer to check light intensity prior to each use to verify curing power. The light meter window is located below the system control panel under the numeric keypads (see illustration below).

Select the Standard Curing Mode and any programmed timer that will allow sufficient time to position the curing tip directly into the aperture of the meter. The system will automatically switch to the radiometer mode and display light output intensity on the numeric front panel display. Light intensity is measured and displayed in mW/cm².



IMPORTANT INSTRUCTION

Care should be taken to position the tip directly into the aperture and held steady during testing because inaccurate alignment will effect the reading. After measuring the light intensity, move the tip away from the window. The system is now ready for normal use. The pistol should be held as illustrated. Positioning the tip differently may result in reduced light intensity values.

The size of the active diameter of the curing tip will effect the mW/cm² delivered by the light source and consequently the amount of time it takes to cure. Smaller diameter tips produce greater mW/cm² and larger tips produce less intensity. It may be necessary to adjust curing times when different tip sizes are used.

Guidelines For Curing Times Based On Light Intensity

- Under 300 mW/cm² - Do not use for curing. Check the lamp, tip, and light guide. Replace any parts which are not working properly. See Service section page 11.
- Over 1500 mW/cm² - High intensity allows faster curing. It is necessary to test the material being used, see curing section page 8, to determine the correct exposure time.

The radiometer has been designed to accurately measure the output of the Sapphire Supreme light source. The radiometer can be used to measure the output of other light sources but accuracy is highly dependent of the size of the curing tip and the spectral range of the secondary light source. When used with other light sources the readings should be used as a reference to intensity.

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OPERATION

Initial Set-Up

- Insert the 6 foot light cable into the front panel receptacle until it stops.
- Insert the curing tip into the pistol receptacle until it stops.
- Plug in the AC power cord to the back of the unit and wall socket.
- Turn power switch to the on (I) position. Switch is located on system back panel.

The **Sapphire[®] Supreme** is now ready for use. It is recommended that you become familiar with all system features before use.

System Basics (See figure 1, p. 2)

NOTE: When power is applied, diagnostic information briefly appears on the front panel display before the 05 second default timer (Keypad 2) comes up.

Time settings for Keys 1, 2, 3, 4 are adjustable. If key 2 is pressed after power-up, it will change from 05 to 06 seconds. Each time the key is pressed, one second is added. All 4 timers have a range of 1-10 seconds.

Timers and Modes

Do not hold down the start button. Press and release.

The system defaults to Standard Curing Mode Keypad #2 5 second curing timer on power up. The display shows SC 05 with 05 on the hand piece.

NOTE: If keypad #2 is pressed the 05 second timer will change to 06. See the discussion about User Adjustable Timers. Select a different time setting by pressing keypads 1-4. Select the Bleaching Mode by pressing the Optional Keypad.

keypad #1	SC 03 - 3 second count down timer
keypad #3	SC 07 - 7 second count down timer
keypad #2	SC 05 - 5 second count down timer
keypad #4	SC 09 - 9 second count down timer

Start/Pause/Restart/Reset Timers

Start and stop timers with the round 1/2" pushbutton on the hand-piece or from the front panel. Press the start button and release to activate a timer. Press the start button and release to pause a cycle. Press the start button and release again to restart and complete the cycle. During an active cycle, press and hold down the start button for 5 seconds to reset the timer to the beginning.

Displays

The front panel and hand-piece displays show the time selected and counts down when the cycle is activated. In addition, the front panel display shows the mode and program selection. When the curing tip is placed in the light meter window, the front panel display automatically changes to the radiometer mode and displays light intensity in mW/cm².

Light Meter

When the curing tip is placed in the light meter window, the system radiometer is activated. Light intensity is displayed on the 4 digit front panel display. The curing tip must be centered directly into the light meter aperture to get an accurate reading. Use Standard Curing Mode and any programmed timer that will allow enough time to position the tip correctly.

SYSTEM MODES AND TIMERS

1) STANDARD CURING MODE (SC)

Note: When power is applied, diagnostic information briefly appears on the front panel display before the 05 second default timer (Keypad 2) comes up.

Time settings for Keys 1, 2, 3, 4 are adjustable. If key 2 is pressed after power-up, it will change from 05 to 06 seconds. Each time the key is pressed, one second is added. All 4 timers have a range of 1-10 seconds.

Do not hold down the start button. Press and release.

Whenever the power switch is turned on, the system defaults to the Standard Curing Mode 5 Second Timer. SC is displayed in the Program Window and 05 is displayed in the Seconds Window of the front panel. 05 is displayed on the hand-piece display. A new time setting can be selected at any time by pressing one of the four numeric keypads on the front panel or pressing the timer select button above the display on the hand-piece. You can return directly to the Standard Curing Mode at any time by pressing the Standard keypad on the front panel.

There are four preset Standard Curing Timers.

- **keypad #1** - 3 seconds
- **keypad #2** - 5 seconds
- **keypad #3** - 7 seconds
- **keypad #4** - 9 seconds

Pressing any of the keys will change the system timer and the displays on the front panel and hand-piece will show the time. The timer select button on the hand-piece will change the timers in sequence.

Start and stop timers using the round 1/2" pushbutton on the hand-piece or from the front panel. Press the start button **and release** to **activate a timer**. Press the start button and release during an active timer to pause the timer. Press the start button and release again to restart and complete the cycle. During an active timer, press and hold down the start button for 5 seconds to **reset the timer** to the beginning.

2) USER ADJUSTABLE TIMERS

The four Standard Curing Mode timers can be adjusted for different time settings. The system will remember the new setting even after power has been turned off. After the system default 05 second timer on Keypad #2 comes up or after Keypad #1, #3, or #4 is selected, 1 second is added each time the keypad is pressed. The range of time settings for each keypad is 1 to 10 seconds. Each time the keypad is pressed the front panel display and the hand-piece display will show the new time setting.

Recommended Use

When placing **LUMINEERS[®] BY CERINATE[®]**, set timers 1 and 3 for 01 second and timers 2 and 4 for 05 seconds. Use 1 second for spot curing the LUMINEERS in place with the 2 mm **Ceri-Taper[™] Tacking Tip** and 05 seconds with the 9 mm tip for finishing. Use the timer select button to quickly alternate between the timers. Spot curing with the 2 mm tip makes clean-up of the margins a breeze and greatly reduces finishing time!

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3) AUTOMATIC CYCLING MODE

The Automatic cycling mode is used for whitening and multiple restorations so that the Start button doesn't have to be pressed each time. Examples are placements of brackets, laminates, MOD's and bleaching.

Pressing the Optional keypad on the front panel advances the system through the Optional Curing Modes in sequence. Each time the Optional keypad is pressed, a new mode is selected and the front panel Program window displays the option selected.

bL is displayed in the Program window on the front panel and 60 is displayed on the hand-piece display.

A new time setting can be selected at any time by pressing one of the four numeric keypads on the front panel or by pressing the timer select button above the display on the hand-piece. You can return directly to the Standard Curing Mode at any time by pressing the Standard or Optional keypad on the front panel.

There are four preset Automatic Curing Timers.

keypad #1 - cc Continuous cycles of 5 seconds; Audio signal every 5 seconds

keypad #2 - bL Crystal Whitening Mode; 60 minute timer. Audio signal at 45, 30, 15 and 0 minutes

keypad #3 - 3 cycles of 3 seconds

keypad #4 - 3 cycles of 5 seconds

Pressing any of the keys will change the system timer and the displays on the front panel and hand-piece will show the time. The timer select button on the hand-piece will change the timers in sequence.

Start and stop timers with the round 1/2" pushbutton on the hand-piece or from the front panel. Press the start button and release to activate a timer. Press the start button and release to pause a cycle. Press the start button and release again to restart and complete the cycle. During an active cycle, press and hold down the start button for 5 seconds to reset the timer to the beginning.

CURING

Clean the tip prior to use for maximum light output.

Do not touch the curved tip of the light guide handle to the restorative. Hold the tip approximately 2 mm to 5 mm above the material to be cured!

It is recommended that you test all restorative materials for the time required for complete curing prior to use. The curing test rings provided with the Sapphire are 2 mm deep x 5 mm interior diameter. Fill the ring with the restorative to be used and select Timer Preset #2 in the standard curing mode (5 seconds). Position the curved tip of the light approximately 2 mm to 5 mm from the composite and start the system. After the timing cycle is completed and the light turns off, test the bottom surface for hardness using a dental probe. If the material is not completely cured, restart the system again for another 5-second exposure. Test, and repeat again, if necessary. This will give you an indication of the optimum timing increment for the specific restorative to be used. Select a new timer increment which is close to the total time it took to cure the material. Repeat the test and verify that complete curing has occurred. If curing time is longer than 5 seconds, it is recommended that you repeat an additional 5-second exposure. It is important that you maintain a log of composite materials, shades, and associated curing times. This log can also be used to monitor system performance.

If the cavity preparation is deep, an incremental filling technique is recommended and each increment should be cured following the manufacturer's guidelines or your own experience with the restorative being used.

Do not direct the light to unprotected gingiva or skin.

WHITENING INSTRUCTIONS

Sapphire™ Professional Whitening gel contains stabilized hydrogen peroxide for maximum whitening ability and fluoride for overall oral health. See page 15 for ordering information. Remove the **Sapphire Whitening Gel** syringe from the refrigerator and allow it to come to room temperature for about 30 minutes before it is used.

1. Prophy teeth to remove calculus and extrinsic stains before beginning the whitening treatment.
2. Take "before" photographs and record tooth color using a shade guide arranged in bleaching order.
3. Insert cheek retractors. Have the patient bite down and rest tongue on a tongue block.
4. Air-dry the gingival tissue and teeth.
5. Using the dispensing tip, apply **Paint-On Dental Dam** to the gingiva to isolate gums around the selected teeth. Overlap the dental dam onto the gingival tissue of adjacent teeth about 0.5 mm and light-cure for 1–2 seconds per tip width with a **Sapphire® Supreme Plasma Arc Curing (PAC) Light**.
6. Once the **Paint-On Dental Dam** has been cured, apply **Lip Moisturizer** provided in the kit to the lips and mucosa, applying well beyond the vermillion border.
7. Remove the tip from the end of the **Sapphire Desensitizing Enhancer** recappable syringe and dispense the **Sapphire Desensitizing Enhancer** in a very thin (about 0.2 mm) layer on the labial surface of the teeth. Distribute the gel evenly using the brush applicator provided in the kit and allow to sit for one minute. Wipe off any excess. Firmly recap the **Sapphire Desensitizing Enhancer** syringe.
8. Remove the tip from the **Sapphire Whitening Gel** syringe and apply a 1–1.5 mm layer directly onto the labial surface of the teeth. Use the brush applicator to distribute the gel evenly over the teeth treated in Step 7 with the **Sapphire Desensitizing Enhancer**. Agitate to mix **Sapphire Desensitizer** and **Sapphire Whitening Gel**.
9. Install the **Sapphire Whitening Crystal** in place of the curing tip on the end of the **Sapphire PAC Light** pistol.
Center the **Sapphire Whitening Crystal** 1/4 to 1/2 inch from the teeth within the cheek retractor with the outer edges touching (if possible).
11. Press the Optional button on the **Sapphire Supreme PAC Light** keypad, then press 2 to select bleaching mode.
The letters bL (bleach) will appear in the Program window, the number 60 will appear in the seconds window and 60 minutes will appear on the pistol handle.
12. Press the Start or pistol activator button to start the bleaching process.
The number 60 (minutes) appears in the Program window and seconds begin to count down in the Seconds window. When the **Sapphire Supreme PAC Light** beeps, fifteen (15) minutes have elapsed. Check on the comfort of the patient. After the second beep, 30 minutes have elapsed.

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13. Move the **Sapphire Whitening Crystal** away from the teeth. Leave the **Paint-On Dental Dam** in place and vacuum gel from the teeth. Wipe with gauze and rinse the teeth while suctioning. Avoid splatter. Some patients with heavy discoloration or areas of unseen hypocalcification may need another 30-minute session to achieve desired whitening results. Evaluate the results with the patient, if possible.

Note: In some cases you may have attained acceptable whitening in the first 30-minute session. If so, a second session is not indicated.

Note: In some cases, it may be necessary to peel away the **Paint-On Dental Dam** to make a shade determination. If the **Paint-On Dental Dam** is removed and another 30-minute application is indicated, remember to reapply the **Paint-On Dental Dam** to protect the gingival tissue.

14. If another 30-minute session is desired, reapply both **Desensitizing Enhancer** and **Whitening Gel** following instructions beginning with Step 7.

Note: Be sure to inspect the **Paint-On Dental Dam** for any cracking or lifting before re-applying the **Desensitizing Enhancer** and **Whitening Gel**. If the seal has broken from the tissue, it is recommended to remove and replace the **Paint-On Dental Dam** and begin with Step 4.

15. At the end of the second 30-minute session, vacuum gel from the teeth, wipe away with gauze and rinse the teeth while suctioning. Avoid splatter.

16. Use a shade guide arranged in bleaching order to compare the color of the whitened teeth to the original shade recorded in Step 2 and take "after" photographs.

SANITIZING & STERILIZING

STERILIZING THE WHITENING CRYSTAL

Clean with a mild, non-abrasive, liquid soap and thoroughly dry all surfaces. Cold sterilize with solutions containing Glutaraldehyde, low concentrations of Hydrogen Peroxide, Isopropyl Alcohol or other disinfectants containing mostly inert ingredients.

STERILIZING THE CURING TIP

Clean the tip regularly with Composite Solvent. The removable tip must be sterilized using standard autoclave procedures for stainless steel instruments (135° C). Use a sterilization bag and leave sealed for future use.

DO NOT AUTOCLAVE THE LIGHT GUIDE!

SANITIZING THE LIGHT GUIDE AND HANDLE

The light guide cannot be autoclaved. It should be sanitized by using a non-abrasive disinfectant. Do not use glutaraldehyde type disinfectant.

CLEANING THE SYSTEM

Avoid spilling any liquid on the system. Do not use flammable liquids to clean the main system or light guide. If the internal electronics are exposed to any liquid, disconnect the power. Do not attempt to start the system. Contact the factory for instructions at 1-800-445-0345.

Clean the main system by using a mild, non-abrasive disinfectant. Do not saturate the controller keypad with liquid. Wipe with a damp towel and dry completely. Unplug the power cord prior to cleaning with any liquid. Allow the system to cool prior to cleaning.

REPLACEMENT PARTS

Additional Tips, Shields, and Curing Rings are available from Den-Mat[®] as well as Light Guides and Lamp Modules. See page 15 for ordering information.

SERVICE

Minor problems can be quickly identified and resolved. These are usually related to the electrical power connection, or light guide connection. All other malfunctions must be diagnosed and repaired by Den-Mat[®]. Contact Den-Mat for technical support at 1-800-445-0345.

ORANGE SAFETY GLASSES MUST BE WORN DURING TESTING

Problem

The front panel and pistol display does not light up. Pushbuttons do not respond.

Corrective action

Check the AC electrical outlet, power cord, and power input on the light to verify that all connections are secure and that AC power is on at the outlet. Verify that the power switch is in the (I) ON position. If the front panel display and pushbuttons still do not work check the alignment of the lamp access plate on the bottom of the light. Turn the power switch to the (O) OFF position and unplug the power cord from the light. Lay the light over on its side to expose the lamp access plate. Turn 2 thumbscrews counterclockwise until loose and remove the lamp access plate. Note the red plunger of the safety switch in the back corner of the lamp access opening. In order for the safety switch to provide power to the light, the lamp access plate must be properly aligned (all corners perpendicular) and completely tightened down to engage to switch plunger. Reinstall the lamp access plate. With the power switch in the (O) OFF position and with the power cord removed check the system fuses. Remove the fuse tray from the power inlet and check the 2 fuses inside. Replacement fuses are 6 amp ACG-6 .250". Do not attempt to use fuses other than those provided

Problem

The front panel display lights up but pistol display does not light. Lamp does not start when the Activator Button on the hand piece is pressed. Timer Select Button on the hand piece does not change timers.

Corrective action

Being careful not to look directly at the distal end of the light guide or into the light guide port on the front panel press the Start Button. If the lamp does not come on move to the next step. If the lamp comes on recheck the light guide connections. Disconnect the light guide and firmly reinstall making sure that it is plugged in all the way. Rotate the light guide 1/4 to 1/2 turn in the light guide receptacle. Look for the display to light up on the hand piece. If the display on the hand piece responds, try starting the light again with the Activator Button.

Problem

The front panel display lights up, Keypads and Timer Select Button work but the Start Button and Activator Button does not start the lamp.

Corrective action

Check the system lamp. Turn the power switch to the (O) OFF position and unplug the power cord from the light. Lay the light over on its side to expose the lamp access plate. Turn 2 thumbscrews counterclockwise until loose and remove the lamp access plate. Remove the lamp module and check for any obvious defects. If the lamp is defective there may be a dark spot on the clear glass lens on the front of the lamp. Firmly reinstall the lamp so that it is perpendicular and completely stops on the lamp contact pins.

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Reinstall the lamp access plate. Note the red plunger of the safety switch in the back corner of the lamp access opening. In order for the safety switch to provide power to the light, the lamp access plate must be properly aligned (all corners perpendicular) and completely tightened down to engage to switch plunger. Replace only with Den-Mat Sapphire lamp #043951175. Do not attempt to use a different lamp.

Problem

Light output is low or curing of the composite is low.

Corrective action

Verify the light guide is plugged all the way into the receptacle on the front of the unit. Check the tip for contamination, scratches, or breaks. Clean the tip with composite solvent. Check the light guide for damage. Follow instructions for checking and replacing the lamp.

If corrective action does not resolve the problem, contact Den-Mat for technical support. This includes possible lamp replacement or return of the system for repair.

LAMP REPLACEMENT INSTRUCTIONS

Symptoms indicating need for replacement are:

1. Low intensity on system light meter.
2. Lamp fails while in use or does not turn on.

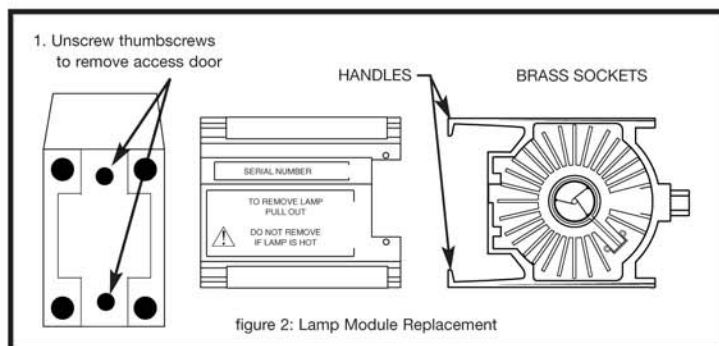
TO REMOVE THE OLD LAMP

1. Turn unit off and unplug the power cord from its power source.
2. Wait for the unit and the lamp to cool.
3. Unscrew thumbscrews to remove the access door located on the side of the light source.
4. Grasp lamp and slide towards you to remove from light source.
5. Unplug the lamp from the 2 pin lamp socket.

TO INSERT NEW LAMP

1. Orient the lamp facing forward in the lamp guides on the chassis.
2. Push toward the top of the unit until the lamp slides securely onto the lamp pins.
3. Replace the lamp access door and tighten thumbscrews.

Note: Make sure the access plate fits correctly in the cutout provided. All corners should be even with the surrounding surfaces. If the access plate is misaligned the unit may not receive AC power.



FUSE REPLACEMENT

1. If the **Sapphire[®] Supreme** source fails to operate after power is applied, disconnect the power cord from AC wall plug before checking the fuse(s). Switch the power switch to the off (O) position.
2. Check for blown fuses by removing the fuse covers using a flat blade screw driver (medium size) or equivalent.
3. Replace the blown fuse(s) with the same size and rating. Fuses are 6 amp AGC-6 1/4" x 11/4" Fast Acting.
4. Replace fuse cover.
5. Reconnect the power cord.
6. Switch the power switch to the on (I) position.
7. If the unit fails to operate properly again, contact Den-Mat for repair, see page 10.

TRANSPORTATION

When transporting the **Sapphire Supreme**, remove the power cord and the light guide from the **Sapphire Supreme** light source.

When transporting the **Sapphire Supreme**, hold the handle or carry it with both hands, one hand underneath the unit to insure safety.

To prevent damage to the **Sapphire Supreme** during transportation, it is highly recommended that the unit be wrapped with bubble wrap, and placed in a shipping box or similar packing materials.

STORAGE

Store the **Sapphire Supreme** and accessories in a clean area and maintain the room temperature as follows:

Storage Environment (Operating): Ambient Temperature 6°C to 45°C (43°F to 113°F)

Transportation & Storage Environment (Non-operating): Ambient Temperature -50° C to 70° C (-122° F to 158° F)
Relative Humidity 10-95% at 35° C (95° F)

- DO NOT** - bend the AC cord severely, apply excessive force, pull, twist, or squeeze the power cable.
- DO NOT** - bend the Light Guide severely, apply excessive force, pull, twist, or squeeze the Light Guide.
- DO NOT** - subject the **Sapphire Supreme** to excess impact during transportation, as this may cause the unit to malfunction.
- AVOID** - placing the **Sapphire Supreme** in direct sunlight, or high temperature.

THE DEN-MAT SYSTEM SPECIFICATION

- **The Light source is Class I:** The Den-Mat Light source relies upon the connection to the protective earth conductor of the installation to prevent shock hazards.
- **The Light source is Type BF:** The Den-Mat Light source's applied part is floating from earth.
- **Classification of the light source against ingress of liquids:** Ordinary Equipment (IPX0) – This Den-Mat Light source provides no protection against the ingress of water.
- **Classification against Flammable Vapors with Air:** This Den-Mat Light source is not suitable for use in the presence of a Flammable Anaesthetic Mixture with Air, Oxygen or Nitrous oxide.

823046600W

DenMat
ISO 9001 CERTIFIED

1-800-445-0345

Sapphire[®] Supreme

CE 0459

Operator's Manual

SYSTEM WARRANTY

The **Sapphire[®] Supreme** system (main system, light guide, and tip) is warranted to be free of defects in workmanship, materials, and malfunctions for one year from the date of original shipment when used under normal operating conditions as described in this manual. The warranty applies to the original purchaser only and does not apply to or cover any third party buyer or user. The warranty does not cover any damage that may have occurred as a result of misuse, improper operation, alteration, adjustments, or neglect.

Within the one year warranty period, if service is required, the system must be returned to Den-Mat for diagnostics and repair. Contact the factory to receive Return Authorization prior to shipping. The Return Authorization will include a pick up notice (Call Tag) for a common carrier to return the merchandise to Den-Mat. Freight charges for returns within the warranty period will be paid by Den-Mat pending the results of evaluation of cause of the failure or damage. Freight charges for returns outside of the warranty period will be paid by the customer. The outside shipping container and any accompanying documents must be clearly marked **Repair Return**. Use only the original shipping container or other adequate shipping materials to protect the system in transit. All returns will be evaluated for the cause and extent of failure or damage by Den-Mat Service Representatives. Subject to the results of this evaluation, Den-Mat will authorize warranty repair or will contact the customer with a price quotation for the cost of repairs for failures and damages occurring as a result of misuse, improper operation, or for merchandise outside of the warranty period.

This is a limited warranty and the liability of Den-Mat is to repair or replace the system. Den-Mat has no liability to refund any part of the purchase price and no liability for consequential damages, loss of profits, and damages to person or injury by reasons of any defects in said system from any cause what-so-ever.

Any buyer who purchases said system acknowledges their familiarity with the terms, conditions, and provisions of this limited warranty and purchases said system agreeing to such terms, conditions, and provisions.

Buyer purchases the **Sapphire Supreme** system from Den-Mat on the terms, conditions, and provisions of this limited warranty and waives all other rights and claims against Den-Mat for any damages or remedies exceeding said limited warranty.

Den-Mat[®] Holdings, LLC
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Fax 805/349-2600
www.denmat.com

CALL YOUR **Den-Mat[®]** TECHNICAL SALES REPRESENTATIVE TO LEARN HOW TO INCREASE PROFITS WITH YOUR **Sapphire[®] SUPREME**.

Sapphire
PROFESSIONAL CHAIRSIDE
WHITENING SYSTEM . . . #035258355
Whiten patients' teeth comfortably and efficiently when combined with the Sapphire Whitening Crystal.



RESTORATIVE MATERIALS

Virtuoso[®] Flowable Custom Kit . . . #030381800
A low viscosity, easy flow restorative material with excellent physical properties.



Virtuoso[®] Universal Introductory Kit #030381950
A nanohybrid for posterior and anterior restorations.



Ultra-Bond[®] Plus . . . #032599750
Optimal viscosity for cementation of all porcelain restorations in a convenient, auto-mixing, syringe system.



Core Paste XP Syringe . . . #030654110
The recognized standard in core build-up materials in a fast, auto-mixing syringe that can be easily syringed directly into canals.



Infinity[®] Syringeable Value Kit . . . #039680100
Self-adhesive, dual cure resin cement with fluoride for placement of gold and PFM crown/bridge restorations.



REPLACEMENT PARTS

Description	Item Number
Sapphire [®] Lamp043951175
Standard Curing Tip 9 mm043958519
12 mm Tip043958503
Ceri-Taper [™] Tacking Tip043958506
4 mm Tip043958501
Sapphire Light Guide033958553
Curing Test Rings (bag of 200)043952114
Protective Eyeglasses (1 pair)043921901
Protective Light Shield043957515
Ring Activator Sapphire Wand043958109



CALL 1-800-445-0345 TO ORDER

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