

SPECTROWAVE™

OWNER'S MANUAL



DAZOR®
Strong Since 1938



SPECTROWAVE™

OWNER'S MANUAL

Contents

Spectrowave™ Introduction	1
Copyright, Trademarks, Contact Information	1
Warranty	2
Components Included	2
Equipment Set-Up	3
General Use and Care	5
Using Spectrowave™ Light Sources	7
Representative Spectrowave™ Energy Quantification	7
Spectrowave™ Certificate of Performance	9
Spectrowave™ Recertification Program	10
Recommended Additional Equipment	11
Service and Repair	12
What To Do If There is a Problem	12

For a complete product catalog of all Dazor products, please contact Dazor at US + 314.652.2400 or www.dazor.com.



SPECTROWAVE™ INTRODUCTION

Thank you for your decision to purchase Dazor's new Spectrowave™ Diamond Grading Cabinet. This manual describes the hardware and operation of the Model GC-100.

Additional information regarding the purpose and the background behind the design and development of the GC-100 can be found at www.dazor.com.

Dazor has designed and manufactured task lighting solutions in St. Louis, Missouri, USA for over 70 years. Most popular in the jewelry trade are the authentic Dazor 2- and 3-bulb fluorescent desk base and bench clamp fixtures, as well as the authentic Dazor optical grade illuminated desk base and bench magnifiers. These fixtures are used for diamond sorting, grading, and bench work throughout the global trade.

Using the best in today's lighting technology, Dazor is continuing efforts to design and manufacture product solutions for the trade based upon direct feedback from end-users all over the world. The Spectrowave™ Diamond Grading Cabinet continues this tradition.

COPYRIGHT

© Dazor Manufacturing Corp. All rights reserved. December 2009.

Trademarks

Spectrowave™ is a trademark of Dazor Manufacturing Corp. All other products or company names which are mentioned in this manual are used solely for the purpose of identification and/or description and can be the trademark or registered trademark of the respective owners.

Contact Information

Please visit Dazor's web site where you will find all the latest information about the Spectrowave™ family of products and accessories.

Web site: <http://www.dazor.com>

Address: Dazor Manufacturing Corp.
2079 Congressional Drive
St. Louis, Missouri, 63146 USA

Phone: US+ 314.652.2400

Fax: US+ 314.652.2069

Sales: sales@dazor.com

Support: support@dazor.com



WARRANTY

Dazor Manufacturing Corp. warrants to the original owner that their Spectrowave™ system is free from defects for a period from the date of original purchase as follows:

- **Mechanical components:** five (5) years
- **LED light engine:** three (3) years
- **Internal electronic components:** one (1) year

This warranty is not transferable and does not cover damage due to accident, abuse, misuse, alteration, modification, faulty installation, bulb breakage, or repair by anyone other than Dazor's Factory Repair Center or other Dazor Authorized Repair Center.

The obligation of Dazor is solely to repair or replace the product or to refund the purchase price at Dazor's option. Dazor is not liable for any incidental or consequential damage due to such defect.

COMPONENTS INCLUDED

1. AC Power Cord



2. (Qty 2) F6T5 6500°K Northern Daylight Fluorescent Bulbs



3. (QTY 1) Polycarbonate UV Filter for Fluorescent Bulbs



4. (QTY 1) F6T5 Short Wave UV 254nm Bulb



5. (QTY 1) F6T5 Long Wave UV 365nm Bulb



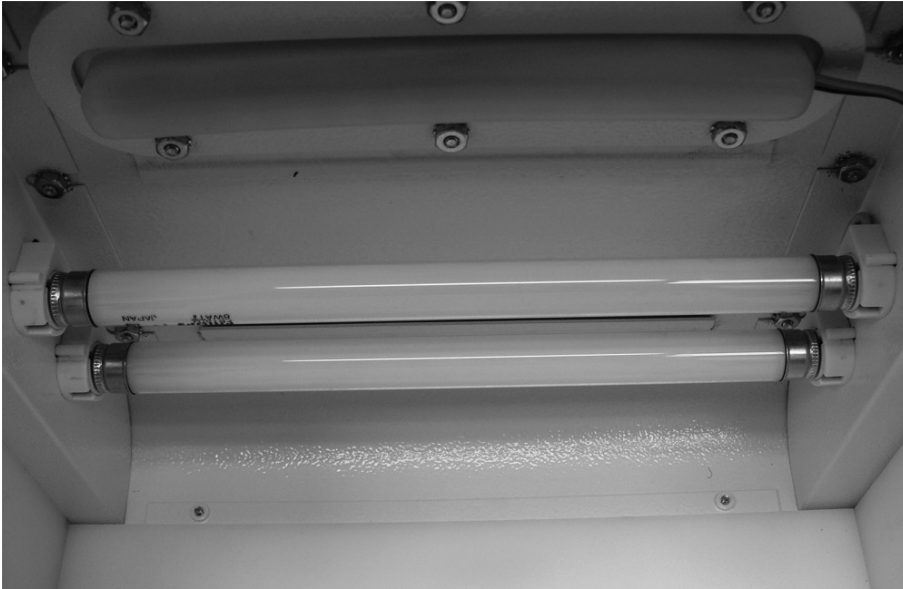
6. (QTY 1) Diamond Grading Tray



EQUIPMENT SET-UP

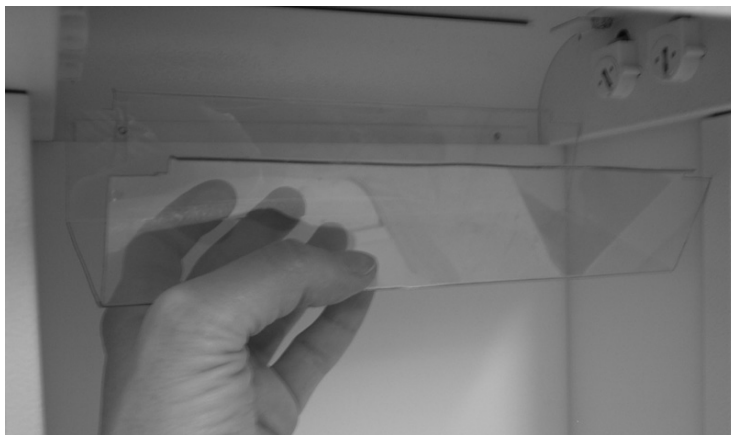
1. Bulb Installation:

Install one or both 6500°K Daylight Fluorescent bulbs using the easy insert lamp holder connectors located in the top of the Spectrowave™, and rotate into position. Make sure bulbs securely snap into place.



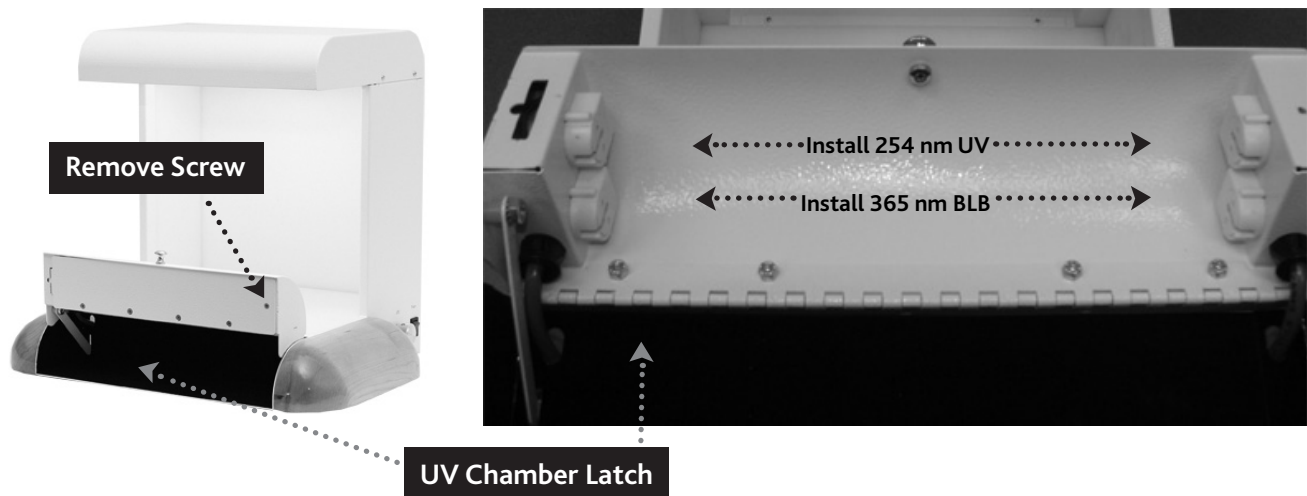
2. UV Filter Installation:

If a UV free grading environment is desired, install the polycarbonate UV filter around the two fluorescent bulbs. Gently squeeze the sides of the filter and insert into the quick release grooves located on either side of the fluorescent bulbs. Release sides of filter and snap into place.



3. Fluorescence Chamber Bulb Installation:

Open the UV chamber door and lock the door into the upright position using the latch located on the left inside of the chamber.



With the UV chamber in the raised position, remove the bottom panel located under the chamber door by first removing the phillips screw located on the right side of the cover (see picture).

Then, install the longwave UV (365nm BLB bulb) in the back position on inside the chamber by inserting and rotating the bulb in the lamp holder connectors until locked.

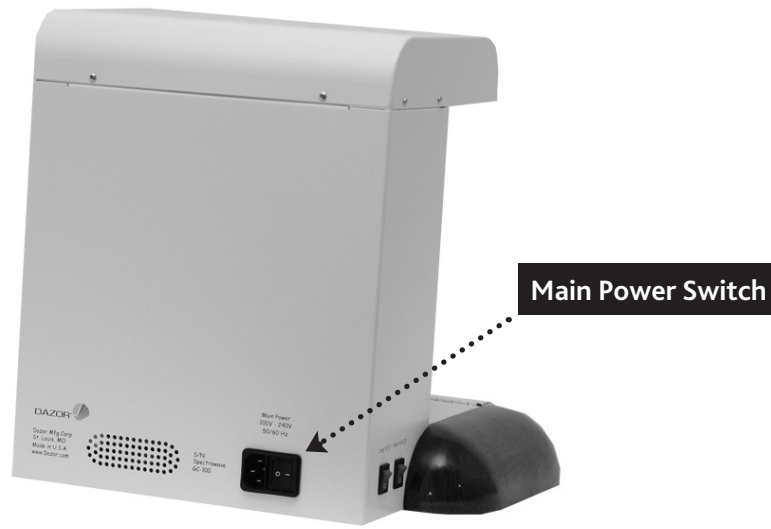
Next, install the shortwave UV (254nm bulb) in the front location underneath the door. Insert and rotate the bulb until the connectors lock.

Reattach the bottom panel and close the UV chamber door lifting up on the door and gently pressing and unlocking the UV chamber latch. DO NOT FORCE.

NOTE: Bulb installation is much easier when installing the back bulb first.

GENERAL USE AND CARE

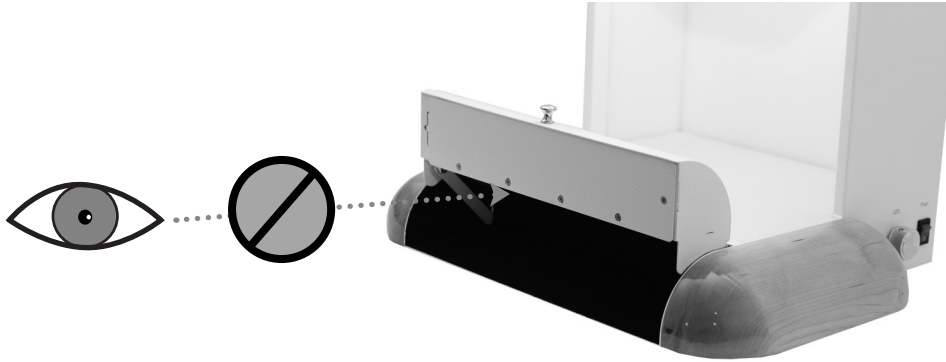
1. The Spectrowave™ should be used indoors within a temperature range of 10°C-40°C.
2. Do not use this equipment near water.
3. Place Spectrowave™ in a proper diamond grading environment. The unit should be indoors in a low ambient lighting environment at a comfortable height for easy viewing.
4. Insert the power supply cable into the back of the light box and plug power cord into the nearest power outlet.
5. Turn on the main power switch located on the back of the unit.



After each use, turn off the equipment at the main power switch located on the back of the Spectrowave™ to preserve the life of certain internal electronic components.



6. CAUTION: use proper safety when using the UV fluorescence chamber. NEVER LOOK DIRECTLY AT BULBS INSIDE THE UV CHAMBER, without the use of UV safety glasses to avoid direct exposure to potentially harmful UV energy. See recommended additional equipment on pg. 11 or use your own safety approved UV protection glasses. Use safety glasses during exposure to UV.



7. Turn off LED and UV lights when not in use. Each source is individually controlled. All switches are labeled and are located on the sides of the cabinet.



8. Only use accessories/bulbs specified by Dazor. Changing the light bulb manufacturer will negate the Certificate of Performance and compromise the integrity of light source consistency.
9. To clean equipment, only use a clean, soft cloth lightly dampened with clean water.

USING SPECTROWAVE™ LIGHT SOURCES

Below is a description of the various illumination sources in your Spectrowave™. Refer to table below for a representative chart of quantified Spectrowave™ energy using alternative illumination sources at common grading distances.

REPRESENTATIVE SPECTROWAVE™ ENERGY QUANTIFICATION AT COMMON GRADING DISTANCES

	SPECTROWAVE™					Diamond Dock 2pc F15T8 Unfiltered Verilex Bulbs
	Unfiltered Fluorescent Bulbs <u>2 bulbs</u> <u>1 bulb</u>		Filtered Fluorescent Bulbs <u>2 bulbs</u> <u>1 bulb</u>		LED Engine at Max Int	
UV Energy (μcm^2):						
5.5" (14cm)	40	24	0	0	0	58
7.0" (18cm)	28	18	0	0	0	28
9.0" (23cm)	20	14	0	0	0	24
Light Intensity (fc)						
5.5" (14cm)	490	270	485	255	585	600
7.0" (18cm)	380	195	366	199	332	425
9.0" (23cm)	290	170	286	152	238	295

1. Grade "Perceived Color" using a Fluorescence Stimulating

UV Grading environment:

This illumination alternative simulates the energy environment described in the basic technical specifications for the lighting used for D-Z color grading at GIA (G&G Winter 2008).

- Turn on the fluorescent bulbs by using the rocker switch on the lower right side when facing the unit.
- Gently squeeze the clear polycarbonate UV filter to release, and remove it from the unit.
- Place master stones on the diamond grading tray provided, and make certain the tray is situated on the base surface of Spectrowave™. This allows the diamond to be color-graded at a distance of approximately 9" (23cm).
- Proceed to color grade the stone in question at a comfortable viewing position.



2. Grade true "Body Color" using a UV free environment:

A UV free grading environment can be created in two ways. The user may choose to grade with the fluorescent light bulbs plus the polycarbonate UV filter properly installed, or to use the Dazor LED light engine.

Filtered Fluorescent Bulbs:

- To grade with the fluorescent bulbs, turn on the fluorescent bulbs by using the rocker switch on the lower right side of the unit. Install the clear polycarbonate UV filter by gently squeezing and inserting into the slots located at the top inside of the unit.
- To prevent blue fluorescence stimulation by visible violet energy emitted from the UV filtered fluorescent bulbs, make sure to grade at a distance of 7" (18cm) or more from the bottom of the fluorescent bulbs. At this distance, fluorescent bulb energy is diminished to less than 4000lux. Energy below this level is considered adequate to ensure visible violet energy is attenuated sufficiently to prevent blue fluorescence.
- Place master stones on the diamond grading tray provided and proceed to color grade the subject diamond.

Dazor LED Light Engine:

- If the Dazor LED light engine is desired, turn off the fluorescent bulbs and turn on the LEDs by using the round knob located on the lower right side of the unit. Adjust the intensity of the LED light engine by turning the knob to the desired position and proceed to grade stones at a 2"-9" grading distance. The fully diffused LEDs offer a light source free of UV energy and visible violet energy insufficient to stimulate blue fluorescence.



3. The UV Fluorescence Detection Chamber:

The fluorescence chamber consists of two bulbs: a UV-A long wave BLB at 365nm and a UV-C short wave bulb at 254nm. The chamber is fully enclosed except for a 2" X 3" viewing window filtered by Hoya U-325C type glass.

- Make sure both daylight fluorescent bulbs and/or the LED light engines are all turned to the off positions.
- Reduce room lighting to the best of your ability.
- Open the UV chamber and lock the door into the upright position.
- Place the stone in question in the center of the flock-lined interior of the chamber and proceed to assess the fluorescence characteristic of the subject diamond.
- The user may switch between long and shortwave lights by using the rocker switches labeled on the lower left side of the Spectrowave™.

NOTE: The 3 inch long viewing window is located in the center of the fluorescence chamber. Please use the knob on the fluorescence chamber door as a centering reference. Carefully place the stone in question in the middle of the viewing area.

SPECTROWAVE™ CERTIFICATE OF PERFORMANCE

Your Spectrowave™ unit is accompanied by a Certificate of Performance issued by Dazor during testing in production. The factory Certificate of Performance, located in a plastic sleeve which you can conveniently affix to the back of your Spectrowave™ unit, documents the energy emissions from Spectrowave™ illumination sources. The purpose of the Certificate of Performance is to provide independent assurance that the illumination sources you are using to color grade diamonds are current and in compliance with industry standards. The Certificate is valid for one-year from the date of issuance.



SPECTROWAVE™ RECERTIFICATION PROGRAM

Dazor's exclusive recertification program is a renewal of the Certificate of Performance in order to provide verifiable evidence of your Spectrowave™ system's lighting performance and consistency. As part of this program, the energy emitted from Spectrowave™ illumination sources are spectrally measured, quantified and recorded on a new Certificate of Performance. Dazor recommends annual recertification of your Spectrowave™ Diamond Grading Cabinet.

There are two options for recertifying your Spectrowave™ system.

1. Ship Unit to Dazor or Authorized Dazor Distributor:

For those users requiring independent factory recertification of their Spectrowave™ system, units may be shipped to Dazor for bulb and filter replacement, spectral testing and documentation of each illumination source (prior to shipping the unit back to Dazor, first contact Customer Service at 800.345.9103 to receive an RMA #). This certification option provides you maximum protection from possible questions regarding the operating performance and consistency of your grading illumination sources. All performance certifications will be completed and shipped within one week from the date received. You will receive both an electronic and hard copy of the Certificate of Performance. Dazor will maintain a copy of each Certificate of Performance issued for each registered Spectrowave™ serial number.

2. Self-Certification:

Not all users will desire or have the opportunity to send their unit to Dazor for recertification. In these cases, Dazor recommends that you perform an annual self-certification of your Spectrowave™ system. Dazor offers a self-certification package which includes new bulbs (2x F6T5 6500°K fluorescent bulbs, a F6T5 365nm long wave UV-A bulb, and a F6T5 254nm short wave UV-C bulb), a new polycarbonate UV filter, and spectral data on these bulbs. You can install the components of the recertification package, take energy measurements as necessary (see Recommended Additional Equipment on P.10), and re-post the current date to the Certificate of Performance provided with your original system purchase.

NOTE: The LED light engine can not be fully documented using this method. However, Dazor will certify consistent LED performance for 3 years from the date of purchase.



RECOMMENDED ADDITIONAL EQUIPMENT

Light Measuring Kit:

Dazor offers a Light Measuring Kit for use in monitoring energy levels in your Spectrowave™ system or any other lighting environment. The Dazor Light Measuring Kit includes a NIST certified hand held light meter and a NIST certified portable hand held UV meter. This kit is an inexpensive, portable way to track the light output of any grading environment.



UV Safety Glasses:

Features:

- 99.9% protection from UVA/UVB/UVC rays.
- Sleek wraparound frame, no sideshield distortion.
- Durable lightweight Nylon temples.
- Scratch resistant hard coat and anti-fog Polycarbonate lens.



Lens Color:

Clear - General purpose with impact protection and maximum visibility.

Compliance:

Compliant with ANSI Z87.1+ 2003 standards and meets U.S. Military Eyewear Ballistic Impact Resistance Requirements - MIL-PRF-31013 clause 3.5.1.1, MIL-V-43511 clause 3.5.10.



SERVICE AND REPAIR

Service:

Do not attempt to service this product yourself. Please contact Dazor or your authorized Dazor distributor for all service questions. If unit must be returned to Dazor for servicing, our Customer Service representatives will assist you.

Replacement Parts:

Contact Dazor Manufacturing for replacement parts and repair questions.

WHAT TO DO IF THERE IS A PROBLEM...

Save your original bills of sales receipt and/or invoice from the sales outlet (distributor) where you purchased this Dazor product. The warranty is valid only for the original owner who has proof of purchase.

First, check with the sales outlet where you purchased the product to see if the problem can be resolved there. If the problem cannot be resolved through the sales outlet (distributor), please contact Dazor Customer Service at 800.345.9103 or US+ 314.652.2400.

After contacting Dazor Customer Service and it is determined a product defect may exist, you will receive a Returned Goods Authorization number (RGA#). Please do not ship any product back to Dazor without first receiving an RGA # from Customer Service.

After receiving an RGA #, follow the procedure below:

1. Repack fixture in original box. If original box is not available, wrap fixture in ample bubble wrap packing material and pack in sturdy cardboard box.
2. Please package securely to prevent damage even if box is dropped during shipment
3. Please include the RGA# on the outside of the box along with your name and address.

NOTE: ALL RETURNS MUST HAVE A RETURN GOODS AUTHORIZATION NUMBER (RGA#)

Thank you for purchasing the GC-100 Spectrowave™ Diamond Grading cabinet. We hope you enjoy your new purchase and would like to wish you success with this exciting new technology. Should you have any questions or require additional information, please contact us.



