ClearLink™ Controlled Phototherapy Equipment
Clinical Operation Manual

UVseries

1series

3 series NeoLux

7series

Mseries

4series

Table of Contents

1.0 Introduction

Thank you for purchasing a Daavlin Phototherapy Unit. The use of light for the treatment of photoresponsive skin disorders has been our passion since 1981. From the beginning we have been devoted to providing our customers with the highest quality products coupled with industry-leading customer service.

At Daavlin, we are always keeping track of new developments and are doing our best to implement the latest findings in our products. We appreciate receiving feedback from the medical community and patients, so we can further improve our products. If you have any comments or suggestions, please contact our Customer Service department and your input will be channeled to the appropriate person.

The purpose of this manual is to instruct users on the proper methods of operation and general maintenance. In addition to this, the manual also addresses important information regarding device specifications, warnings, treatment protocols and warranty information. Please take a moment to read the entire operation manual before operating your Daavlin phototherapy unit.

Here at Daavlin we are proud of our tradition of development and innovation in the field of phototherapy, and we are honored that you have chosen us for your phototherapy needs. Let's be clear. Our commitment to you starts…Now!

Sincerely,

Daavlin Distributing Company

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Bryan, OH 43506-0626

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2.0 Indications for Use

The ClearLink Controlled Phototherapy Equipment are medical ultraviolet devices, which are intended for use, by or under the direction of a physician, for therapeutic treatment for individuals who require ultraviolet radiation for diagnosed skin disorders. When equipped with blue lamps the ClearLink Controlled Phototherapy Equipment is intended for use for the treatment of acne vulgaris.

Note: Only Daavlin's 1 Series or 4 Series devices, when equipped with blue lamps and controlled with the ClearLink Controlled Phototherapy Equipment, have intended use for the treatment of acne vulgaris.

WARNING: Do not use these devices for anything other than their intended purposes.

CAUTION: Federal law restricts this device to sale by or on the order of a physician or any other practitioner licensed by the law of the state in which he/she practices.

The 7 Series Phototherapy Device is not a Class III or implantable device. The Summary of Safety and Clinical Performance is not required.

3.0 Classifications

FDA:	Class II Device
93/42/EEC:	Class IIa Device
IEC 60601-1:	Class I Device
Pollution Degree:	Class II
Mode of Operation:	Non-continuous
IEC/EN 62471:2006 UV Risk Group:	Risk Group 2 (Moderate-Risk)

WARNING: This device is designed for intermittent operation only and not for continuous use. The device should not be cycled continuously for more than 10 minutes. After such time, the unit should either be turned off or left idling for at least 10 minutes.

4.0 Operating Specifications

Ambient Temperature:	15°C to 30°C (59°F to 86°F)
Relative Humidity:	10% to 95%, Non-condensing
Liquid Ingress Rating:	IPX0 (This device does not have protection against ingress of water.)
Ocular Hazard Distance:	3 Meters (9.84 Feet)
Ambient Luminance:	250 – 500 lux
Atmospheric Pressure	70 kPa to 106 kPa

WARNING: Equipment not suitable for use in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide.

5.0 Transport and Storage Specifications

Ambient Temperature:	-40°C to 70°C (-40°F to 158°F)
Relative Humidity:	10% to 95%, Non-condensing
Atmospheric Pressure:	50 kPa to 106 kPa

6.0 EMC Precautions

The devices contained in this manual have been tested and found to comply with the EMC limits of the international standard IEC 60601-1-2. These limits are designed to provide reasonable protection against interference in a typical medical installation. The system can radiate radio frequency energy if not installed in accordance with the instructions and may cause harmful interference to other devices in the vicinity. There is no guarantee that interference will not occur in a particular installation. If the system does cause interference with other devices, which can be determined by turning the system off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Re-orient or relocate the receiving device
- Increase the separation between the equipment
- Connect the System into an outlet on a circuit different from that to which the other device(s) is connected
- Consult the manufacturer or field service technician for help

7.0 Labels and Symbols

7.1 Domestic and International Units

Each device comes affixed with an orange “unlock code” label on top of the ClearLink Control System. This label will provide you with important information about the factory default key code needed to unlock the unit.

Figure 1 Unlock Code

A warning label is affixed to your device in a prominent and easily readable position. Please read the label carefully as it contains important safety information for you.

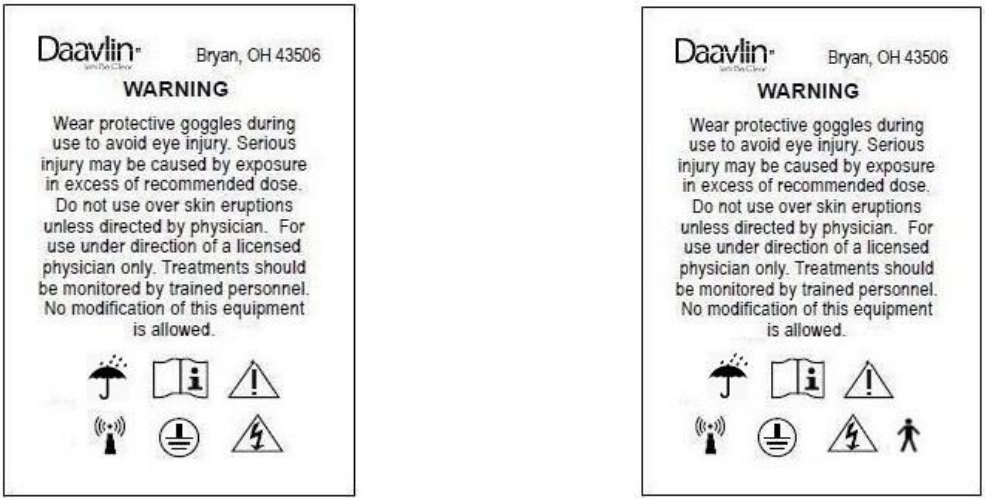


Figure 2 Warning Labels

In addition to the warning labels mentioned above, an identification label, see Figure 3 Identification Label, indicates the serial number and date of manufacture that is specific to your device.

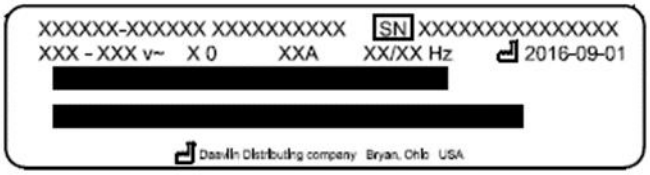
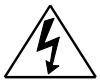


Figure 3 Identification Label

Figure 4 Medical Device Label

The following is a chart detailing all symbols located on the cabinet and their definitions:

Table 1 Symbols

Symbol	Description
	DANGEROUS VOLTAGE
	ATTENTION, CONSULT ACCOMPANYING DOCUMENTS
	NON-IONIZING RADIATION
	TYPE B EQUIPMENT (3 Series NeoLux & M Series) *
	FAN (3 Series NeoLux Only)
	LIGHTS (3 Series NeoLux Only)
	PROTECTIVE EARTH (ground)
	INSTRUCTION MANUAL
	KEEP DRY
	MEDICAL DEVICE

***The only applied part in the M Series is the acrylic lamp cover, a Type B part**

7.2 UV Risk Group 2 Labels (CE Devices Only)

According to IEC/EN 62471:2006, sources of optical radiation are classified into risk groups subject to their potential photobiological hazard. This device falls under Risk Group 2 (Moderate-Risk) and does not pose a severe hazard due to the natural aversion response to bright light or thermal discomfort. A Risk Group 2 warning label, which also includes the primary emission range and potential output range, is affixed to your device in a prominent and easily readable position.

Figure 5 Risk Group 2 Warning Labels

8.0 Delivery and Inspection

When you first receive the device, please inspect the shipping crate or box.

Any signs of shipping damage must be noted on the delivery receipt that you will be asked to sign by the delivery driver. Be sure to open the crate and verify that there is no damage to your unit before the driver leaves. If it is not possible for you to inspect your unit before the driver leaves, we recommend you write "**Concealed damage possible. Further inspection required**" on the delivery receipt. If damage is discovered after unpacking the unit, save all packing materials and call Daavlin at 1 800 322 8546 for inspection and repair.

Note: The delivering carrier must be notified of any shipping damage within twenty-four (24) hours to protect your right to an insurance claim.

Note: As part of the claims process the delivering carrier may require that a damage inspection be conducted. The delivering carrier may request to conduct the inspection at the delivery site, provided that a mutually agreed upon date and time can be established, or they may elect to collect the package for inspection at their facilities.

9.0 Lamp Inspection

Your device can be equipped with a variety of different lamps, each having a different effect on the skin. While you are unpacking and setting up your device it is important to check that the proper lamps are installed in the device. Consult Table 2 Lamp Specification Guide on page 11 and if there is any question as to whether or not your device it is equipped with the lamps that you have ordered, contact Daavlin immediately. The code numbers shown are generally located at the base of the lamp.

Table 2 Lamp Specification Guide

Applicable Units	UVA	UVA-1	Narrowband UVB	Broadband UVB	Blue	Visible
3 Series NeoLux:	-F72T12-BL-HO-RDC	-TL100W/10R	-TL-01/100W-FS72 – FS72T12/NB UVB/HO/RDC/100W	-FS72T12-UVB-HO-TL100W/12	N/A	Undefined
UV Series:	-F72T12-BL-HO-RDC	-TL100W/10R	-TL-01/100W-FS72 – FS72T12/NB UVB/HO/RDC/100W	-FS72T12-UVB-HO-TL100W/12	N/A	Undefined
7 Series:	-F72T12-BL-HO-RDC	-TL100W/10R	-TL-01/100W-FS72 – FS72T12/NB UVB/HO/RDC/100W	-FS72T12-UVB-HO-TL100W/12	N/A	Undefined
M Series:	-PLL-36W/P-F24T12/BL/HO/RDC	-PLL-36W/10/4P	-PLL-36W/01/4P -TL20W/01-RS	-060PLL-36W-06-FS24T12-UVB-HO	N/A	Undefined
4 Series:	-PLL-36W/P	-PLL-36W/10/4P	-PLL-36W/01/4P	-060PLL-36W-06	PLL-36W/03	Undefined
1 Series:	-PLL-36W/P	-PLL-36W/10/4P	-PLL-36W/01/4P	-060PLL-36W-06	PLL-36W/03	Undefined

10.0 Site Selection

A site should be chosen within reach of the specified electrical connection (refer to the Electrical Requirements section of your specific device) and where the unit can be left in place without obstructing traffic flow. The device should be positioned in such a way the power inlet or circuit breakers on the device are easily accessible. It is important that the unit be properly grounded. Extension cords are not recommended. The site should not be in any area where water or moisture might collect and should be protected from access by children and other unintended users.

WARNING: To avoid the risk of electric shock this equipment must only be connected to a supply main with a protective earth.

11.0 Training Requirements

Phototherapy services require staff having appropriate training, knowledge, and clinical skills in order to ensure effective outcomes and quality care for patients. Staff must be assessed as being competent and safe in order to provide phototherapy treatments that maximize benefit and minimize adverse effects. Recommended training requirements include:

- Staff should be either a physician, nurse, or any other practitioner licensed by the law of the state or country in which he/she practices
- Training and experience in dermatology is important to provide holistic patient care. This knowledge includes:
    - Anatomy and the Physiology of the skin
    - Recognition and understanding of skin diseases
    - Skin assessment
    - Understanding of photoresponsive diseases
- Theoretical knowledge of phototherapy and its use
- A period of supervised practice for approximately 3 months with a competent practitioner
- Managers should ensure that staff members have, or are provided with, the appropriate level of training and education needed prior to administering phototherapy services.

12.0 Important Safeguards and Warnings

- To protect the eyes during operation, the operator and anyone in view of the device must wear the provided UV blocking glasses or goggles designed to block 100% of all UVA and UVB light from the eye area when worn. **Always use Daavlin approved eyewear.**
- Do not remove protective eyewear, or any other protective equipment, during treatment.
- If psoralens (photosensitizing drugs) are being used as part of treatment ("PUVA"), the eyes should be protected from exposure to ultraviolet (sunlight) for 24 hours after taking the drug. Ultraviolet blocking glasses are provided with all Daavlin devices.
- Do not use over skin eruptions without express consent from the attending physician.

- If a patient experiences burning, never treat the patient until the noticeable effects of burning subside, and always reduce the subsequent treatment time.
- To protect unaffected skin during operation, the operator, patient, and anyone in view of the device must generously apply UV blocking skin protection to all exposed skin that the physician does not intend to treat.
- During extremely long treatments, some surfaces may become hot. Remove any body parts from those surfaces if it becomes uncomfortable. The unit should have a 50% duty cycle of 10 minutes on, 10 minutes off.
- Erythema can result in as little as 15 seconds of exposure, or approximately 200 millijoules of dose to UVB light. If using the unit at home, contact your prescribing physician for specific treatment instructions and dosing information.
- Center patients between the lamps during treatment to avoid over exposure to isolated areas of the body.
- All people and pets should leave the treatment area to avoid exposure to ultraviolet light.
- If operating at home, ask your doctor about protecting areas of your body that have not been exposed to sunlight.
- Do not use this device for anything other than its intended purpose.
- This device is only to be used by authorized users.
- Do not operate this device with a damaged cord or plug.
- If appliance coupler or mains plug is used as the mains disconnect, do not position the ME equipment so that it is difficult to operate the disconnection device
- To avoid the risk of electric shock this equipment must only be connected to a supply main with a protective earth.
- To prevent electric shock, remove power to the device prior to cleaning and servicing.
- To eliminate the risk of fire when replacing the fuse, replace ONLY with a fuse of the same type and rating.
- **NO MODIFICATION OF THIS EQUIPMENT IS PERMITTED**. Unauthorized modification will void the warranty and may result in hazardous or improper device operation.
- **DANGER - ULTRAVIOLET RADIATION**. As with natural sunlight, overexposure can cause eye and skin injury, and allergic reactions. Repeated exposure may cause premature aging of the skin and/or skin cancer. **ALWAYS WEAR PROTECTIVE EYEWEAR: FAILURE TO DO SO MAY RESULT IN SEVERE ERYTHEMA OR LONG-TERM INJURY TO THE EYES**. Medications or cosmetics may increase skin sensitivity to ultraviolet radiation. Inform physician before using this device if you are using medications or have a history of skin problems or sensitivity to light.
- If the device malfunctions, cease operation immediately. If the device is placed close to other equipment, it is possible that the cause is interference by external noise sources and

fields, in which case you should follow the remedies found under EMC Precautions. If the device continues to malfunction cease operation and contact the Daavlin Service Department.

- If necessary, operation of equipment may be terminated by disconnecting unit from AC mains. This can be accomplished by unplugging device or, if hard wired, turning off quick disconnect.
- Prior to each use, always verify that the device is in correct working order and operating condition and plugs, sockets, lamps, and electrical cables and connections are not worn or damaged.
- Only original components and accessories should be used with the device to avoid damage.
- This device should be a minimum of 12 inches (30 cm) away from RF generating equipment
- Before opening the device casing to perform maintenance or service, disconnect the device from the power source.
- The device must never be directly exposed to flowing or splashing liquids of any kind. If the device is inadvertently exposed to liquid, it must be tested for safe function before being placed in operation again.
- The device contains glass lamps. Avoid excessive force to the device to prevent lamp damage.
- The device control system display is susceptible to damage from excessive force. Avoid excessive force to the control system to prevent damage.
- All treatments must be administered under the direction of a licensed physician only.
- The room that the device is placed in should be vented to allow free air displacement to ensure the device and surroundings remain cool.
- The device should be placed a minimum of 1 inch (2.5 cm) away from surrounding walls, devices, and furniture to ensure proper cooling airflow.
- A qualified, licensed electrician must wire the service for all devices in accordance with all national and local codes and the electrical instructions provided in the accompanying Service & Installation Instructions manual. Unauthorized personnel should not open the panels. The Daavlin Service Department should be consulted before any service is performed.

13.0 Unlocking the Device

To prevent unauthorized use, the device will "self-lock" when left idle for twenty (20) minutes. To unlock your unit, follow the instructions below.

Figure 6 Logo Screen

Figure 7 Lock Screen

1. Tap screen to awaken your unit. The Logo Screen will appear.
2. Tap Logo Screen. This will open the Lock Screen.
3. The factory preset Key Code is "0007". On the touch keypad, enter the number "7".
4. Press the Enter key → to unlock your unit.

14.0 Changing or Disabling the Key Code

If you would like to disable or personalize your factory default key code, please contact the Daavlin service department at 1-800-322-8546 for step-by-step instructions.

The Daavlin service department is available to assist you Monday through Thursday 7:30am-8:00pm EST and Friday 8:30am-5:00pm EST.

15.0 Checking the Power Output of Device

The power output value of your device, as measured at the factory, is shown on the *Power Output Certificate* included with your device literature.

Note: It is not necessary to take a power output reading before each treatment. We suggest once every couple of weeks, or earlier if the backup time ends your treatment before the full dose has been delivered.

1. After unlocking device, tap the "Lamp Warmup" button.
2. Select Lamp Type to warmup (Only applicable for Combo devices).
3. Ensure that no persons are in treatment area.
4. Tap the Enter Arrow → to begin lamp warmup.
5. Once Lamp Warmup Completes, lamps will turn off and output will remain displayed on screen.
6. If lamps are cold, it may take more than one Lamp Warmup to determine max output.

16.0 Operating the ClearLink Controlled Phototherapy Equipment Control Systems

Daavlin ClearLink Controlled Phototherapy Equipment is available with two distinct control systems, Time Only and Dosimetry. Please verify the type of control system incorporated in your unit and proceed to the applicable operating instructions.

16.1 Dosimeter Instructions: 3 Series NeoLux, UV Series, 7 Series, M Series, and 4 Series

Your Daavlin phototherapy unit features a built-in power meter that measures energy output. Once a dose has been entered the unit will use the information gathered by the sensor to determine the exact amount of time that each treatment will last. The dose is entered in millijoules for UVB and Joules for UVA.

The output of fluorescent lamps varies with age, use and other factors such as room temperature. Integrated Dosimetry measures for such variations and then integrates them into the dose treatment time resulting in a very effective way to ensure the precision and consistency of each treatment.

16.1.1 Setting up a Treatment

1. After unlocking device, tap the Treat Patient button.
2. Touch the ▲/▼ arrows to set desired dose in millijoules (UVB) or Joules (UVA).
3. Tap the Enter Arrow  to enter Treatment Confirmation screen.
4. **Ensure patient has put on goggles and positioned themselves per the instructions.**
5. Confirm Dose and Estimated Treatment Time.
   - If Dose and Estimated Treatment Time are correct, tap Enter Arrow  to begin treatment.
   - If changes need to be made to Dose, tap Return Arrow  to return to step #2.
6. Following delayed start, if enabled, treatment will begin, and screen will display progress.
   To repeat the same dose for another exposure, touch the Repeat button 
   Note: The system beeps to signal the end of the treatment and displays the delivered dose with the elapsed time.

16.1.2 Special Functions of the Integrated Dosimeter

- To pause an active treatment, tap the Pause button 
- To resume a paused treatment, tap the Play button 
- To end or cancel an active treatment, first pause the treatment and then tap the Cancel button 

16.1.3 Special Notes

- It is **not** possible to enter a time of 60 seconds. You must enter 1 minute instead.

- If power goes off during a treatment, the system will remember how much of the treatment has elapsed. When power is restored, your device provides option to resume interrupted treatment.

16.1.4 ClearLink Controller Range and Accuracy

Backup Time Range:	1 Second - 59 Minutes 59 Seconds (00:01 - 59:59)
Dose Range:	UVA: 0.1 Joules - 999.9 Joules UVB: 1 Millijoule - 9999 Millijoules
Accuracy:	+ / - 5%
Calibration:	1 year or every 100 hours of use

16.2 Dosimeter Instructions: 1 Series

Your Daavlin 1 Series features a built-in power meter that measures energy output. Once a dose has been entered the unit will use the information gathered by the sensor to determine the exact amount of time that each treatment will last. The dose is entered in millijoules for UVB and Joules for UVA

The output of fluorescent lamps varies with age, use and other factors such as room temperature. Integrated Dosimetry measures for such variations and then integrates them into the dose treatment time. This is a very effective way to ensure the precision of each treatment.

16.2.1 Setting Up a Treatment

1. After unlocking device, tap the “Treat Patient” button.
2. Tap “0 inches” button or “9 inches” button depending on desired treatment distance.
3. Touch the ▲/▼ arrows to set desired dose in millijoules (UVB) or Joules (UVA)
4. Tap the Enter Arrow  to enter Treatment Confirmation screen.
5. **Ensure patient has put on goggles and positioned themselves per the instructions.**
6. Confirm Dose and Estimated Treatment Time.
   - If Dose and Estimated Treatment Time are correct, tap Enter Arrow  to begin treatment.
   - If changes need to be made to Dose, tap Return Arrow  to return to step #3.
7. Following delayed start, if enabled, treatment will begin, and screen will display progress.
   To repeat the same dose for another exposure, touch the Repeat button 
   Note: The system beeps to signal the end of the treatment and displays the delivered dose with the elapsed time.

16.2.2 Special Functions of the Integrated Dosimeter

- To pause an active treatment, tap the Pause button 
- To resume a paused treatment, tap the Play button 

- To end or cancel an active treatment, first pause the treatment and then tap the Cancel button 

16.2.3 Special Notes

- It is **not** possible to enter a time of 60 seconds. You must enter 1 minute instead.
- If power goes off during a treatment, the system will remember how much of the treatment has elapsed. When power is restored, your device provides option to resume interrupted treatment.

16.2.4 Dosimeter Range and Accuracy

Backup Time Range:	1 Second - 59 Minutes 59 Seconds (00:01 - 59:59)
Dose Range:	**UVA**: 0.1 Joules - 999.9 Joules **UVB**: 1 Millijoule - 9999 Millijoules
Accuracy:	+ / - 5%
Calibration:	1 year or every 100 hours of use

16.3 Time Only Instructions: 3 Series NeoLux, UV Series, 7 Series, M Series, and 4 Series

16.3.1 Determining a Treatment Time

When using time as a dose, there are two treatment methods that can be used. The simplest is to start at a prescribed time and then increase treatment times by a specific time increment or by a percentage. Another method is to use the factory power output levels (shown on the *Power Output Certificate*) to determine estimated "time equivalents" needed to deliver doses in millijoules (UVB) or Joules (UVA or visible light).

To determine a "time equivalent", consult the laminated Time Chart that is provided and find the power output on the top row (horizontal axis). The numbers in the left most column (vertical axis) represent a range of potential treatment doses. Find the dose then trace that row to the right until it intersects with the column corresponding to the factory power output of the device. The time equivalent is shown where the two lines intersect. For example, if the factory power output is 4.0 mW/cm2 and the dose to be delivered is 280 mJ, then the appropriate treatment time will be 01:10. A partial time chart illustrating this is shown in Table 3 Partial UVB Time Chart on page 19.

Note: For your convenience, and as an alternative to the UVB time chart, the latest version of our free iPhone and Android application "Phototherapy Math" is available for download at the iTunes app store and Android market. It quickly calculates treatment time and makes the calculation of dose and time increases simple. If using a PC, visit www.phototherapymath.com for a web-based calculator and additional information.

mW/cm2 mJoules	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	7.0
240	01:36	01:20	01:09	01:00	00:53	00:48	00:44	00:40	00:34
280	01.52	01:33	01:20	01:10*	01:02	00:56	00:51	00:47	00:40
320	02.08	01:47	01:31	01:20	01:11	01:04	00:58	00:53	00:46

Table 3 Partial UVB Time Chart

The UVA Time Chart (not shown here) is configured the same as the UVB Time Chart. The doses are listed in Joules and the energy output levels and times are different than the UVB output levels. Each chart is clearly marked.

16.3.2 Setting Up a Treatment Time

1. After unlocking device, tap the "Treat Patient" button.
2. Touch the ▲/▼ arrows to set desired Treatment Time
3. Tap the Enter Arrow  to enter Treatment Confirmation screen.
4. **Ensure patient has put on goggles and positioned themselves per the instructions**.
5. Confirm Treatment Time.
   - If Treatment Time is correct, tap Enter Arrow  to begin treatment.
   - If changes need to be made to Treatment Time, tap Return Arrow  to return to step #2.
6. Following delayed start, if enabled, treatment will begin, and screen will display progress.

   To repeat the same dose for another exposure, touch the Repeat button 
   Note: The system beeps to signal the end of the treatment and displays the delivered dose with the elapsed time.

16.3.3 Special Functions of the Integrated Dosimeter

- To pause an active treatment, tap the Pause button 
- To resume a paused treatment, tap the Play button 
- To end or cancel an active treatment, first pause the treatment and then tap the Cancel button

16.3.4 Special Notes

- It is **not** possible to enter a time of 60 seconds. You must enter 1 minute instead.
- If power goes off during a treatment, the system will remember how much of the treatment has elapsed. When power is restored, your device provides option to resume interrupted treatment.

16.3.5 Timer Range and Accuracy

Time Range:	1 Second - 59 Minutes 59 Seconds (00:01 - 59:59)
Accuracy:	+ / - 5%

16.4 Time Only Instructions: 1 Series

16.4.1 Determining a Treatment Time

When using time as a dose, there are two treatment methods that can be used. The simplest is to start at a prescribed time and then increase treatment times by a specific time increment or by a percentage, per your physician's protocol. Another method is to use the factory power output levels (shown on the *Power Output Certificate*) to determine estimated "time equivalents" needed to deliver doses in millijoules (UVB) or Joules (UVA or visible light).

To determine a "time equivalent", consult the laminated Time Chart that is provided and find the power output on the top row (horizontal axis). The numbers in the column on the left (vertical axis) represent a range of potential treatment doses. Find the dose then trace that row to the right until it intersects with the column corresponding to the factory power output of the device. The time equivalent is shown where the two lines intersect. For example, if the factory power output is 4.0 mW/cm2 and the dose to be delivered is 280 mJ, then the appropriate treatment time will be 01:10. A partial time chart illustrating this is shown in "

mW/cm2 mJoules	**2.5**	**3.0**	**3.5**	**4.0**	**4.5**	**5.0**	**5.5**	**6.0**	**7.0**
240	01:36	01:20	01:09	01:00	00:53	00:48	00:44	00:40	00:34
280	01.52	01:33	01:20	01:10*	01:02	00:56	00:51	00:47	00:40
320	02.08	01:47	01:31	01:20	01:11	01:04	00:58	00:53	00:46

Table 4 Partial UVB Time Chart" below.

Note: For your convenience, and as an alternative to the UVB time chart, the latest version of our free iPhone and Android application "Phototherapy Math" is available for download at the iTunes app store and Android market. It quickly calculates treatment times, backup safety times, and makes the calculation of dose and time increases simple. If using a PC, visit www.phototherapymath.com for a web-based calculator and additional information.

	mW/cm2 mJoules	**2.5**	**3.0**	**3.5**	**4.0** ↓	**4.5**	**5.0**	**5.5**	**6.0**	**7.0**
	240	01:36	01:20	01:09	01:00	00:53	00:48	00:44	00:40	00:34
→	**280**	01.52	01:33	01:20	01:10*	01:02	00:56	00:51	00:47	00:40
	320	02.08	01:47	01:31	01:20	01:11	01:04	00:58	00:53	00:46

Table 4 Partial UVB Time Chart

The UVA Time Chart (not shown here) is configured the same as the UVB Time Chart however the doses are listed in Joules and the energy output levels and times are different than the UVB output levels. Each chart is clearly marked.

16.4.2 Setting Up a Treatment Time

To administer a treatment, you must enter your desired treatment time. Based on the example above the treatment time will be 1:10.

1. After unlocking device, tap the "Treat Patient" button.
2. Touch the ▲/▼ arrows to set desired Treatment Time
3. Tap the Enter Arrow  to enter Treatment Confirmation screen.
4. **Ensure patient has put on goggles and positioned themselves per the instructions.**
5. Confirm Treatment Time.
   - If Treatment Time is correct, tap Enter Arrow  to begin treatment.
   - If changes need to be made to Treatment Time, tap Return Arrow  to return to step #2.
6. Following delayed start, if enabled, treatment will begin, and screen will display progress.
   To repeat the same dose for another exposure, touch the Repeat button 
   Note: The system beeps to signal the end of the treatment and displays the delivered dose with the elapsed time.

16.4.3 Special Functions of the Integrated Dosimeter

- To pause an active treatment, tap the Pause button 
- To resume a paused treatment, tap the Play button 
- To end or cancel an active treatment, first pause the treatment and then tap the Cancel button

16.4.4 Special Notes

- It is **not** possible to enter a time of 60 seconds. You must enter 1 minute instead.
- If power goes off during a treatment, the system will remember how much of the treatment has elapsed. When power is restored, your device provides option to resume interrupted treatment.

16.4.5 Timer Range and Accuracy

Time Range:	1 Second - 59 Minutes 59 Seconds (00:01 - 59:59)
Accuracy:	+ / - 5%

17.0 3 Series NeoLux Information

17.1 Available Models:

- 3 Series NeoLux 350 (UVA)

- 3 Series NeoLux 305 (Broad Band UVB)
- 3 Series NeoLux 305/350 (Broad Band UVB +UVA)
- 3 Series NeoLux 311 (Narrow Band UVB)
- 3 Series NeoLux 311/350 (Narrow Band UVB + UVA)

Note: For setup, installation, electrical specifications and all maintenance and service questions, please refer to the Installation and Service manual.

Note: This unit comes equipped with a USB connection to be used to transfer and backup patient data and to grant access to service menus with service USB key.

17.2 How to Position the Patient

Enter the unit and close the doors. The patient should be centered within the unit. The torso should not be closer to any one panel than to another. Standing close to one of the sides will cause localized streaking or redness.

17.3 Patient Control Buttons

For the patient's comfort and convenience, there is a lamp start/stop and a fan control button located within the unit.

- The Yellow lamp button is indicated with the Light icon and is used to start and pause/stop the treatment.
- The Blue fan button is indicated with a fan icon and is used to turn the fan on or off, as desired.

17.4 3 Series NeoLux Lamp Removal and Replacement

Lamps may need to be replaced due to burnout or because their energy output has decreased to the point that you may no longer be receiving an effective treatment.

DO NOT REPLACE LAMPS INDIVIDUALLY. ALL LAMPS SHOULD BE REPLACED AT THE SAME TIME TO AVOID UNEVEN TREATMENTS OR ERYTHEMA. PLEASE CONTACT THE DAAVLIN SERVICE DEPARTMENT PRIOR TO REPLACING YOUR LAMPS TO OBTAIN IMPORTANT INFORMATION ON HOW THE OUTPUT OF YOUR UNIT WILL BE AFFECTED BY THE CHANGE.

Because of differences between brands, replace lamps with the same brand as originally installed.

1. Flip the circuit breaker on the device to the **OFF** position. Then, using a ¼" hex driver/socket, remove the screw from the bottom of the grid that is in front of the lamp(s) you want to remove.
2. Lift the grid out of the holes in the bottom lamp plate, pull the bottom of the grid toward you, then lower the grid out of the holes in the top of the unit and set it aside.

3. Grasp the lamp to be removed with both hands and press down until it clears the top socket, then remove the lamp. Reverse the process to install lamps and grid.

Note: Please see the Lamp Inspection section on page 11, for the correct specifications of replacement lamps and see the Recommended Maintenance Schedule section on page 48 for instructions on how to reset the lamp age monitor.

18.0 UV Series CX and UV Series CT Information

18.1 Domestic and Non-CE Electrical Requirements

Daavlin offers the UV Series Phototherapy equipment in a variety of combinations. Units are available with lamp quantities of 12, 16, 24, and 28 with various combinations of UVA, Narrowband UVB, and Broadband UVB. While the type of ultraviolet lamp (UVA or UVB) does not influence the electrical requirements, the number of lamps contained in a unit does determine the voltage, amperage, wiring, and outlet necessary to safely support operation. Table 5 Electrical Requirements and Figure 8 NEMA Outlets on page 23 define these requirements for each model variation in the UV Series. Follow these specifications and all national and local electrical codes when preparing the electrical supply prior to the installation of a UV Series Device.

Note: This unit comes equipped with a USB connection to be used to transfer and backup patient data and to grant access to service menus with service USB key.

Note: This unit should be on a dedicated circuit.

Note: Daavlin UV Series CX and UV Series CT Phototherapy equipment contain no operator replaceable parts.

Table 5 Electrical Requirements

NUMBER OF LAMPS	VOLTS	HERTZ	AMPS	WIRE GAUGE	OUTLET DIAGRAM	OUTLET
12	110/120	60	15	14 AWG	A	NEMA No. 5-15R
16	110/120	60	15	12 AWG	A	NEMA No. 5-15R
24	110/120	60	30	10 AWG	C	NEMA No. L5-30R
28	110/120	60	30	10 AWG	C	NEMA No. L5-30R
12	220/240	50	15	14 AWG	Use Local Outlet	Use Local Outlet
16	220/240	50	15	14 AWG	Use Local Outlet	Use Local Outlet
24	220/240	50	20	12 AWG	Use Local Outlet	Use Local Outlet
28	220/240	50	30	10 AWG	Use Local Outlet	Use Local Outlet

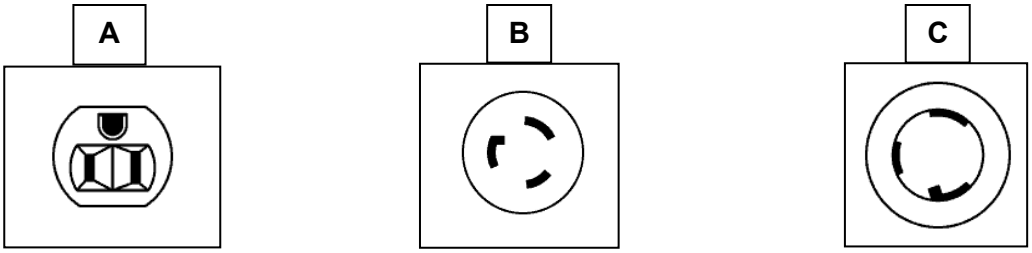


Figure 8 NEMA Outlets

18.2 European CE Electrical Requirements

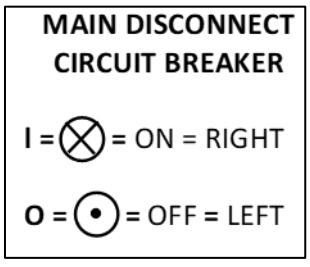
Daavlin offers the UV Series Phototherapy equipment in a variety of combinations. Units are available with lamp quantities of 12, 16, 24, and 28 with various combinations of UVA, Narrowband UVB, and Broadband UVB. While the type of ultraviolet lamp (UVA or UVB) does not influence the electrical requirements, the number of lamps contained in a unit does determine the amperage and wiring necessary to safely support operation. This device is intended for stationary use while permanently connected to mains electrical supply. This device requires a dedicated service. All wires should terminate directly at the service and must not power any other equipment. A non-dedicated service may result in invalidation of the warranty. The electrical junction box must be installed in accordance with local codes, before the unit arrives. Daavlin specifies that the junction box must be equipped with a safety disconnect switch. This enclosure should be mounted to the wall against which the unit will stand at a height of four feet from the floor. Follow these specifications and all national and local electrical codes when preparing the electrical supply prior to the installation of a UV Series Device.

Note: This unit should be on a dedicated circuit.

Note: Daavlin UV Series CX and UV Series CT Phototherapy equipment contain no operator replaceable parts.

Model	Voltage	Hertz	Amps
12 Lamp	220-240VAC	50-60Hz	15 amps
16 Lamp	220-240VAC	50-60Hz	15 amps
24 Lamp	220-240VAC	50-60Hz	15 amps
28 Lamp	220-240VAC	50-60Hz	15 amps

18.3 Circuit Breaker



Each UV Series unit is equipped with a circuit breaker that is located under the frame, at the back-right hand side of the machine. Its location is indicated by the circuit breaker label (right). When setting up your unit, ensure that the breaker is in the **ON** position.

18.4 Unpacking and Assembly

1. Using as many people as available, but a minimum of two, move the box into the area where the device will be used.

Note: The UV Series sits on top of several castors. If there are no stairs involved, it may be easier to remove the unit from its box at the earliest opportunity so that you can simply roll it into position.

2. To unpack the unit, use metal cutters to cut the banding that encircles the package. Use extreme caution as these bands are under tension and can snap outward when the tension is released.
3. Next, remove the front cardboard cover. The front cardboard cover will be secured by several shipping staples. Use a heavy-duty screwdriver to remove each staple.
   Note: Exercise caution when removing the staples as they are sharp and can cause injury.
4. Once the front cardboard cover has been removed, carefully pull the device forward on its castors until it has cleared the box. Take care not to discard the accessory package which contains important items such as your protective eyewear, user manual, time chart, and calibration output certificate.
5. Once the unit is in position, remove the shipping bars. A ¾" end wrench will be required to loosen and remove the bolts that hold the shipping bars in place. There is no further assembly required other than to plug the unit into the appropriate electrical outlet. If your device is equipped with an optional platform, place the platform inside the machine once it has been moved to its final location.

18.5 How to Position the Patient

Enter the unit and close the doors. In order to receive even and effective treatments it is important to center the patient within the unit. The patient's torso should not be closer to any one panel than to another. Standing closer to one of the sides increases the likelihood of localized streaking and redness.

18.6 UV Series Lamp Removal and Replacement

Lamps may need to be replaced due to burnout or because their energy output has decreased to the point that you may no longer be receiving an effective treatment.

DO NOT REPLACE LAMPS INDIVIDUALLY. ALL LAMPS SHOULD BE REPLACED AT THE SAME TIME TO AVOID UNEVEN TREATMENTS OR ERYTHEMA. PLEASE CONTACT THE DAAVLIN SERVICE DEPARTMENT PRIOR TO REPLACING YOUR LAMPS TO OBTAIN IMPORTANT INFORMATION ON HOW THE OUTPUT OF YOUR UNIT WILL BE AFFECTED BY THE CHANGE.

Because of differences between brands, replace lamps with the same brand as originally installed.

1. Flip the circuit breaker on the device to the **OFF** position. Then, using a ¼" hex driver/socket, remove the screw from the bottom of the grid that is in front of the lamp(s) you want to remove.
2. Lift the grid out of the holes in the bottom lamp plate, pull the bottom of the grid toward you, then lower the grid out of the holes in the top of the unit and set it aside.
3. Grasp the lamp to be removed with both hands and press down until it clears the top socket, then remove the lamp. Reverse the process to install lamps and grid.

Note: Please see the Lamp Inspection section on page 11, for the correct specifications of replacement lamps and the Recommended Maintenance Schedule section on page 48 for instructions on how to reset the lamp age monitor.

19.0 7 Series CX and 7 Series CT Information

19.1 Electrical Requirements

Daavlin offers the 7 Series CX and 7 Series CT Phototherapy equipment with lamp quantities of 4, 6, 8, 10, and 12. Units can be equipped with UVA, Narrowband UVB, Broadband UVB, and visible light lamps. While the type of lamp does not influence the electrical requirements, the number of lamps contained in a unit does determine the amperage necessary to safely support operation. The table and diagrams below define these requirements for each model variations. All domestic 120-volt 60 hertz models require a grounded, three prong electrical outlet rated for at least 15 amps and come equipped with a grounded, three-prong plug. Units designed for other voltages may be shipped with no wall plug, which would then have to be locally obtained, and require an appropriate outlet that must be installed to meet local standards and requirements. All power cords must be an approved hospital grade cord rated 300V, 1.5mm^2 minimum. The power cord is the main disconnect device. Each unit is equipped with an IEC 320 style power inlet, which incorporates two, 5x20mm fuses.

Note: This unit comes equipped with a USB connection to be used to transfer and backup patient data and to grant access to service menus with service USB key.

Note: This unit should be on a dedicated circuit and all connections for power must be grounded.

Note: Daavlin 7 Series CX and 7 Series CT Phototherapy equipment contain no operator replaceable parts.

NUMBER OF LAMPS	VOLTS/HERTZ	AMP	OUTLET
4	120/60	6.3	3 Prong Grounded
6	120/60	10	3 Prong Grounded
8	120/60	10	3 Prong Grounded
10	120/60	12.5	3 Prong Grounded
12	120/60	12.5	3 Prong Grounded
12	200-240 50/60	10	3 Prong Grounded
4	220/50	3.15	Use Local Grounded Outlet
6	220/50	6.3	Use Local Grounded Outlet
8	220/50	6.3	Use Local Grounded Outlet
10	220/50	6.3	Use Local Grounded Outlet
12	220/50	6.3	Use Local Grounded Outlet

FUSE TYPE	VOLTAGE RATING	AMP RATING	BREAKING CAPACITY
Time-Delay	250	3.15	35
Time-Delay	250	6.3	63
Time-Delay	125	10	200
Tim-Delay	250	12.5	125

19.2 Unpacking and Assembly

If possible, choose a place close to where the unit will be located to unpack it. Be careful, as fluorescent lamps can be broken if the unit is not unpacked properly.

The grid that will cover the lamps is not installed for shipping. When the box is unpacked, the grid will be on top and should be set aside so that it can be installed after the unit is standing.

1. Remove the top of the box/crate and set it aside. With as many people as possible, but a minimum of two, lift the device, including the foam shock absorbers, from the box/crate, and lay it aside. Do not remove the foam shock absorbers.
   Note: Your 7 series can weigh as much as 135 pounds. Always use two or more people when lifting your unit and make sure to practice safe lifting techniques.
2. Remove all of the packing material from the container, making sure that all parts and accessories are accounted for. You will find the following parts/accessories:
   - Backup Time Chart or Time Chart
   - Power Output Certificate
   - Protective Goggles (1 pair)
   - Feet (2) – Figure 9 Feet
   - Stabilizer Bars (2) – Figure 10 Stabilizer Bars
   - Grid
   - Power Cord

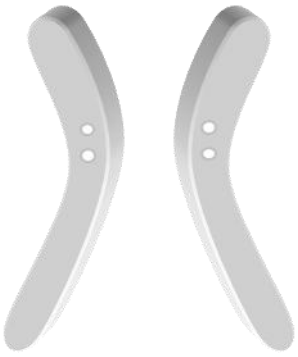


Figure 9 Feet

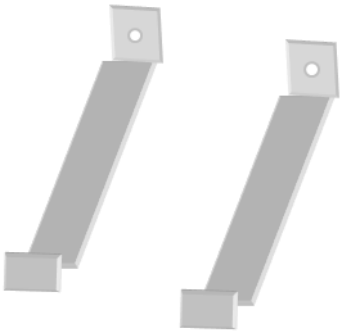


Figure 10 Stabilizer Bars

3. Turn the packing container over so that its wooden bottom can be used as a “worktable”.
4. Set the device, on its back, on top of the packing container. The bottom of the device should extend beyond the edge of the “worktable”.

5. The screws to attach the feet are pre-inserted in the bottom of the unit at the factory. Remove them, then position the first foot so that its "longer" side is toward the front. Mount it using the screws that you removed from the bottom of the device, see Figure 11 Feet Installation. Repeat the process for the second foot.

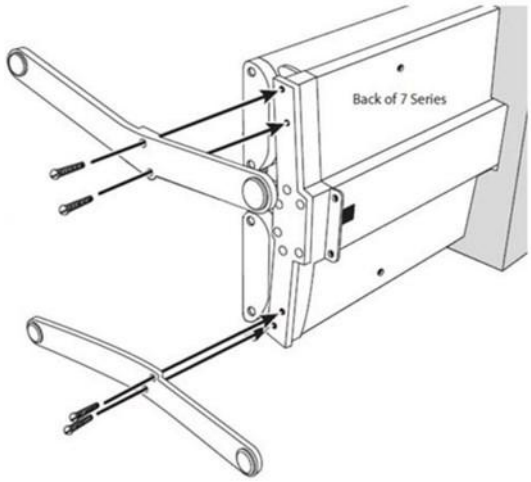


Figure 11 Feet Installation

6. Again, using two people if available, lift the device, turn it 90 degrees so that the edge of the unit is pointing up, and then set the end with the feet on the floor. Gently tip the device forward until both feet are on the ground.
7. Remove the foam shock absorbers and the plastic wrap.
8. Mount the two stabilizer brackets. The screws for mounting the brackets are pre-inserted into the unit 14" (35cm) from the bottom of the unit and in each foot. Remove the screws and then position the brackets and replace the screws.
9. Gently slide the unit into its permanent position.
10. Install the power cord by inserting the male "D" shaped plug into the "D" shaped receptacle at the back of the device. Then, plug the unit into any grounded three prong electrical receptacle. To remove the power cord simply grasp the "D" shaped plug and remove it from the 7 Series "D" Shaped Power inlet.
11. Insert the perpendicular grid wires into the two holes in the top lamp plate and push the grid all the way up. Swing the bottom of the grid in toward the lamps and insert the grid wires into the two holes in the bottom lamp plate. Then, lower the grid until the bracket touches the bottom lamp plate. Using a ¼" hex driver/socket, screw the bracket to the bottom lamp plate using one of the hex head, self-tapping screws that are provided.

19.3 How to Position the Patient

The recommended distance from the lamps for treatment is 9 inches (22cm). We also recommend that you mark that distance on the floor in some manner. The patient's torso should not be closer to the lamps than this line. Standing closer to the lamps will cause localized streaking or erythema. Greater distances will increase the time necessary to receive a therapeutic dose.

19.4 7 Series Lamp Removal and Replacement

Lamps may need to be replaced due to burnout or because their energy output has decreased to the point that you may no longer be receiving an effective treatment.

DO NOT REPLACE LAMPS INDIVIDUALLY. ALL LAMPS SHOULD BE REPLACED AT THE SAME TIME TO AVOID UNEVEN TREATMENTS OR ERYTHEMA. PLEASE CONTACT THE DAAVLIN SERVICE DEPARTMENT PRIOR TO REPLACING YOUR LAMPS TO OBTAIN IMPORTANT INFORMATION ON HOW THE OUTPUT OF YOUR UNIT WILL BE AFFECTED BY THE CHANGE.

Because of differences between brands, replace lamps with the same brand as originally installed.

1. Unplug the machine. Then, using a ¼" hex driver/socket, remove the screw from the bottom of the grid that is in front of the lamp(s) you want to remove.
2. Lift the grid out of the holes in the bottom lamp plate, pull the bottom of the grid toward you, then lower the grid out of the holes in the top of the unit and set it aside.
3. Grasp the lamp to be removed with both hands and press down until it clears the top socket, then remove the lamp. Reverse the process to install lamps and grid.

Note: Please see the Lamp Inspection section on page 11, for the correct specifications of replacement lamps and the Recommended Maintenance Schedule section on page 48 for instructions on how to reset the lamp age monitor.

20.0 M Series CX and M Series CT Information

20.1 Electrical Requirements

Daavlin offers the M Series Phototherapy equipment in a variety of combinations. Units contain 10 lamps and can be equipped with various combinations of UVA, Narrowband UVB, Broadband UVB and visible spectrum.

Model Number	Description of Device
M Series CX 311-10	M Series ClearLink Dosimetry with 10 Narrow Band UVB / TL-01 lamps (peak 311 nm)
M Series CX 350-10	M Series ClearLink Dosimetry with 10 UVA lamps (peak 350 nm)
M Series CX 311/350 4/6	M Series ClearLink Dosimetry with 6 UVA lamps (peak 350 nm) and 4 Narrow Band UVB / TL-01 lamps (peak 311 nm)
M Series CT 311-10	M Series ClearLink Timer with 10 Narrow Band UVB / TL-01 lamps (peak 311 nm)
M Series CT 350-10	M Series ClearLink Timer with 10 UVA lamps (peak 350 nm)
M Series CT 311/350 4/6	M Series ClearLink Timer with 6 UVA lamps (peak 350 nm) and 4 Narrow Band UVB / TL-01 lamps (peak 311 nm)

All domestic 110/120-volt 60 hertz models require a grounded, three prong electrical outlet rated for at least 15 amps and comes equipped with a grounded, three-prong plug. Units designed for other voltages may be shipped with no wall plug, which would then have to be locally obtained, and require an appropriate outlet that must be installed to meet local standards and requirements. All power cords must be an approved hospital grade cord rated 300V, 1.5mm^2 minimum. The power cord is the main disconnect device. Each unit is equipped with an IEC 320 style power inlet, which incorporates two, 5x20mm fuses.

Note: This unit comes equipped with a USB connection to be used to transfer and backup patient data and to grant access to service menus with service USB key.

Note: This unit should be on a dedicated circuit.

Note: Daavlin M Series CX and M Series CT Phototherapy equipment contain no operator replaceable parts.

NUMBER OF LAMPS	VOLTS	HERTZ	AMP RATING & FUSE	OUTLET
10	110/120	60	6.3	3 Prong Grounded
10	220/240	50/60	3.15	Use Local Outlet

FUSE TYPE	VOLTAGE RATING	AMP RATING	BREAKING CAPACITY
Time-Delay	250	6.3	63
Time-Delay	110/120	6.3	63
Time-Delay	250	3.15	35
Time-Delay	220/240	3.15	35

20.2 Unpacking and Assembly

- Your M Series will arrive in two separate boxes. The larger of the two boxes will contain the base of the M Series along with all of your accessories and literature. The smaller of the two boxes will contain the hood for your M Series.
- With two people, lift the base from its box and place it wherever you intend to use the device.
  Note: Be sure to remove all of the accessories, such as the manual, power cord and eyewear before discarding the box.
- Remove the hood from the smaller box and place it on the base with the arched openings facing forward.
  Note: There is a flange on the bottom of the hood that fits over the upper edge of the fixture. The hood is designed to fit tightly, so it may take some pressure to seat it properly.

- Now you will need to electrically connect the M Series hood to the Base of the unit. To complete this step all you will need to do is locate the electrical cord, extending from the back of the hood, and plug it into the designated receptacle on the back of the base.
- The final step of the assembly process is to install the M Series power cord. The power cord is installed by inserting the male "D" shaped plug into the corresponding female receptacle located on the back of the device.
- Once you have installed the power cord, plug the unit into the appropriate wall outlet.

20.3 Special Notes

- The hood lamps have an "ON/OFF" switch so that they can be turned off if desired. When the switch is in the ON position, the hood lamps will light when the base lamps turn on.
  Note: On combination UVA and UVB units, the hood will be equipped with a single lamp type.
- With all combination units the UVA lamps will be the first four lamps in the unit. The UVB lamps will be the last four. Therefore, if you are using the UVA lamps, position your hands or feet at the front of the device. If using the UVB lamps, position your hands or feet in the back half of the unit.

20.4 How to Position the Patient

The hands, feet or elbows should be placed through the arched exposure ports in the front shield and laid directly on the acrylic guard that covers the lamps. Intensity is highest towards the horizontal center of the unit. Rings or other jewelry may cause scratching of the shield and should therefore be removed.

Note: With all combination units the UVA lamps will be the first four lamps in the unit. The UVB lamps will be the last four. Therefore, if you are using the UVA lamps, position your hands or feet at the front of the device. If using the UVB lamps, position your hands or feet in the back half of the unit.

20.5 M Series Lamp Removal and Replacement

Lamps may need to be replaced due to burnout or because their energy output has decreased to the point that you may no longer be receiving an effective treatment.

DO NOT REPLACE LAMPS INDIVIDUALLY. ALL LAMPS SHOULD BE REPLACED AT THE SAME TIME TO AVOID UNEVEN TREATMENTS OR ERYTHEMA. PLEASE CONTACT THE DAAVLIN SERVICE DEPARTMENT PRIOR TO REPLACING YOUR LAMPS TO OBTAIN IMPORTANT INFORMATION ON HOW THE OUTPUT OF YOUR UNIT WILL BE AFFECTED BY THE CHANGE.

Because of differences between brands, replace lamps with the same brand as originally installed.

1. Unplug the machine, disconnect the hood cord from the base, and remove the hood. Once the hood is detached carefully set it aside.
2. Turning to the base, use a flat head screwdriver to remove the screw, located at the back of the unit, which holds the acrylic shield in place.
3. Slide the acrylic shield forward to remove it from the base.
4. On each lamp there are two clear plastic clasps that hold the lamps in position. To remove them position both thumbs on the top of the clasp and use your index fingers to pull the sides of the clasp outward until it releases, and the clasp can be removed.
5. On top of each lamp socket there will be a red button that, when pushed, will allow you to remove the base of the lamp from its corresponding lamp socket. With one hand firmly press and hold the red button down. While holding the red button down, use your other hand to carefully lift the lamp up and out of the socket.
6. With one hand near the base of the lamp and the other at the opposite end, grasp the lamp and pull both ends upward at the same time until it clears both clasps and the lamp holder/socket.
7. To replace the lamp simply reverse the removal process.
8. To replace the hood lamps simply turn the hood upside down, this will expose the hood lamps, and repeat steps 5-8.

21.0 4 Series Information

21.1 Electrical Requirements

Daavlin offers the 4 Series Phototherapy equipment with either 10 or 20 lamps. Units can be equipped with UVA, UVA-1, Blue Light, Narrowband UVB, Broadband UVB, and visible spectrum lamps. While the type of lamp does not influence the electrical requirements, the number of lamps contained in a unit does determine the amperage necessary to safely support operation. The table and diagrams below define these requirements for each model variations. All domestic 100/120-volt 60 hertz models require a grounded, three prong electrical outlet rated for at least 15 amps and comes equipped with a grounded, three prong plug. Units designed for other voltages may be shipped with no wall plug, which would then have to be locally obtained, and require an appropriate outlet that must be installed to meet local standards and requirements. All power cords must be an approved hospital grade cord rated 300V, 1.5mm^2 minimum. The power cord is the main disconnect device. Each unit is equipped with an IEC 320 style power inlet, which incorporates two, 5x20mm fuses.

Note: This unit comes equipped with a USB connection to be used to transfer and backup patient data and to grant access to service menus with service USB key.

Note: This unit should be on a dedicated circuit.

21.2 Unpacking and Assembly

1. Once you have opened the box, place your hands on each side of the device and pull the 4 series, along with the foam packers, up and out of the box. Remove the foam packers.

Note: Be sure to remove all of the accessories such as the manual, time chart, power cord, eyewear, and stability feet before discarding the box.

2. Set the unit on a table so that the lamps are facing up and the end farthest from the controller is hanging off the table.
3. On each side of the unit, you will find four thumb screws. Remove them. These thumb screws will be used to attach the two stability feet to the sides of the unit.

NUMBER OF LAMPS	VOLTS	HERTZ	AMP RATING & FUSE	OUTLET
10	100/120	60	6.3	3 Prong Grounded
20	100/120	60	10	3 Prong Grounded
10	220/240	50/60	3.15	Use Local Outlet
20	220/240	50/60	6.3	Use Local Outlet

FUSE TYPE	VOLTAGE RATING	AMP RATING	BREAKING CAPACITY
Time-Delay	250	3.15	35
Time-Delay	250	6.3	63
Time-Delay	125	10	200

4. Take one of the feet and align the four precut holes with the four holes created by removing the thumb screws.
   Note: The feet will only fit one way. Be sure that the widest part of the foot is placed near the ground and that lip of the foot is facing away from the unit. For a picture of the proper foot alignment please see the cover of this manual.
5. To secure the foot simply reinsert the four thumb screws through the holes in the foot and back into the unit. Be sure to insert all the thumb screws before fully tightening them.
   Note: Tighten the thumb screws using your thumb and pointer finger. If necessary, the screws can be tightened with a flat head screwdriver.
6. Repeat steps 4-5 to install the other foot.
7. Stand the unit up vertically and check all the screws to be sure they are tight.
8. Insert the “D” shaped male plug into the corresponding receptacle on the lower left side of the device. Plug the unit into any standard, 120-volt three prong electrical outlet. The unit is now ready for use.

21.3 How to Position the Patient

The recommended distance from the lamps for treatment is 9 inches (22cm). We also recommend that you mark that distance on the floor in some manner. The patient’s torso should not be closer to the lamps than this line. Standing closer to the lamps will cause localized streaking or erythema. Greater distances will increase the time necessary to receive a therapeutic dose.

21.4 4 Series Lamp Removal and Replacement

Lamps may need to be replaced due to burnout or because their energy output has decreased to the point that you may no longer be receiving an effective treatment.

DO NOT REPLACE LAMPS INDIVIDUALLY. ALL LAMPS SHOULD BE REPLACED AT THE SAME TIME TO AVOID UNEVEN TREATMENTS OR ERYTHEMA. PLEASE CONTACT THE DAAVLIN SERVICE DEPARTMENT PRIOR TO REPLACING YOUR LAMPS TO OBTAIN IMPORTANT INFORMATION ON HOW THE OUTPUT OF YOUR UNIT WILL BE AFFECTED BY THE CHANGE.

Because of differences between brands, replace lamps with the same brand as originally installed.

1. Unplug the unit and remove both feet by unscrewing the four thumb screws on each side. Once the feet have been removed lay the unit flat on a table with the lamps facing up
2. Using a Phillips screwdriver, remove the four screws on each side of the unit. Once removed, lift off the top of the device (like removing the top from a gift box).
3. On each lamp there are two clear plastic clasps that hold the lamps in position. To remove them, position both thumbs on the top of the clasp and use your index fingers to pull the sides of the clasp outward until it releases, and the clasp can be removed.
4. On top of each lamp socket there will be a red button that, when pushed, will allow you to remove the base of the lamp from its corresponding lamp socket. With one hand, firmly press and hold the red button down. While holding the red button down use your other hand to carefully lift the lamp up and out of the socket.
5. With one hand near the base of the lamp and the other at the opposite end, grasp the lamp and pull both ends upward at the same time until it clears both clasps and the lamp holder/socket.
6. To replace the lamp simply reverse the removal process.

Note: Please see the Lamp Inspection section on page 11, for the correct specifications of replacement lamps and the Recommended Maintenance Schedule section on page 48 for instructions on how to reset the lamp age monitor.

22.0 1 Series CX and 1 Series CT Information

22.1 Electrical Requirements

Daavlin 1 Series Phototherapy equipment can be equipped with UVA, UVA-1, Blue Light, Narrowband UVB, Broadband UVB, and visible spectrum lamps. While the type of lamp does not influence the electrical requirements, the number of lamps contained in a unit does determine the amperage necessary to safely support operation. The table and diagrams below define these requirements for each model variation. All domestic 100/125-volt 60/50 hertz models require a grounded, three prong electrical outlet rated for at least 15 amps and comes equipped with a grounded, three-prong plug. Units designed for other voltages may be shipped with no wall plug, which would then have to be locally obtained, and require an appropriate outlet that must be installed to meet local standards and requirements. All power cords must be an approved hospital

grade cord rated 300V, 1.5mm^2 minimum. The power cord is the main disconnect device. Each unit is equipped with an IEC 320 style power inlet, which incorporates two, 5x20mm fuses.

Note: This unit comes equipped with a USB connection to be used to transfer and backup patient data and to grant access to service menus with service USB key.

Note: This unit should be on a dedicated circuit and all connections for power must be grounded.

Note: Daavlin 1 Series CX and 1 Series CT Phototherapy equipment contain no operator replaceable parts.

NUMBER OF LAMPS	VOLTS/HERTZ	AMP RATING & FUSE	OUTLET
4	100/125V 60/50Hz	2	3 Prong Grounded
4	200/240V 60/50Hz	1	Use Local Outlet

FUSE TYPE	VOLTAGE RATING	AMP RATING	BREAKING CAPACITY
Time-Delay	250V	2	35
Time-Delay	250V	1	35

22.2 Unpacking and Assembly

Open the top of the Box. Once open, place two hands on each side of the device and pull the 1 Series, including the foam packers on each end, out of the box. Remove the foam packers.

Note: Be sure to remove all of the accessories, such as the manual, calibration output certificate, power cord and eyewear before discarding the box.

Plug the "D" shape male fixture into the corresponding receptacle on the lower left-hand side of the device. Plug the unit into any grounded, three prong, electrical outlet. The unit is now ready for use. To remove the power cord simply grasp the "D" shaped plug and remove it from the 1 Series "D" shaped power inlet.

22.3 How to Position the Patient

22.3.1 Hand and Foot Treatments:

Position the device on a flat surface with the lamps facing up. Place the patient's hands or feet directly on top of the plastic lamp guard. For best results you should position the patient's hands, or feet, as close as possible to the center of the fixture.

Note: When treating your hands and feet be careful to not place too much weight or pressure on the acrylic surface. Excess pressure can cause the acrylic surface to crack and break.

22.3.2 Larger Area Treatment:

Position the 1 Series so that the lamps are perpendicular to the surface on which the device is standing on. Position the part of the patient's body that you wish to treat 9 inches (22cm) away from the lamps.

22.4 1 Series Lamp Removal and Replacement

Lamps may need to be replaced due to burnout or because their energy output has decreased to the point that you may no longer be receiving an effective treatment.

DO NOT REPLACE LAMPS INDIVIDUALLY. ALL LAMPS SHOULD BE REPLACED AT THE SAME TIME TO AVOID UNEVEN TREATMENTS OR ERYTHEMA. PLEASE CONTACT THE DAAVLIN SERVICE DEPARTMENT PRIOR TO REPLACING YOUR LAMPS TO OBTAIN IMPORTANT INFORMATION ON HOW THE OUTPUT OF YOUR UNIT WILL BE AFFECTED BY THE CHANGE.

Because of differences between brands, replace lamps with the same brand as originally installed.

1. Unplug the unit and using a Phillips screwdriver, remove the two screws on each side of the unit. Once removed, lift off the top of the device (like removing the top from a gift box).
2. On each lamp there are two clear plastic clasps that hold the lamps in position. To remove them, position both thumbs on the top of the clasp and use your index fingers to pull the sides of the clasp outward until it releases, and the clasp can be removed.
3. On top of each lamp socket there will be a red button that, when pushed, will allow you to remove the base of the lamp from its corresponding lamp socket. With one hand, firmly press and hold the red button down. While holding the red button down use your other hand to carefully lift the lamp up and out of the socket.
4. With one hand near the base of the lamp and the other at the opposite end, grasp the lamp and pull both ends upward at the same time until it clears both clasps and the lamp holder/socket.
5. To replace the lamp simply reverse the removal process.

Note: Please see the Lamp Inspection section on page 11, for the correct specifications of replacement lamps and the Recommended Maintenance Schedule section on page 48 for instructions on how to reset the lamp age monitor.

22.5 Special Notes for 1 Series Units Equipped with Integrated Dosimetry

22.5.1 Treatment Distance

Your 1 Series has been equipped with our Integrated Dosimetry Control System. Your unit has a built-in light sensor that reads the light output of your unit. While a treatment is in progress the sensor is constantly evaluating how much light has been administered and will stop the treatment once the programed dose has been delivered or the safety backup time has elapsed.

Note: More information about the 1 Series Integrated Dosimetry Control System can be found on page 17 under “Dosimeter Instructions: 1 Series”.

Your 1 Series has been specifically designed to deliver accurate and effective treatments from two distinct treatment distances. Treatments can be administered directly on the acrylic surface (0 in) or at a distance of 9 inches (22cm) away. Due to the inherent nature of phototherapy, the light intensity will be much greater when treating directly on the acrylic surface (0 in) versus treating from 9 inches (22cm) away. For this reason, it is necessary to select your desired treatment distance before administering a treatment. By selecting your treatment distance, 0 in or 9 in, you are informing the sensor how it should be evaluating and calculating the light output.

After unlocking your Integrated Dosimetry Control System (See “Unlocking the Device” on page 15) you will need to select a treatment distance of either “0 in” or “9 in”. Pressing the “Power” button will allow you to toggle between these two options and pressing “Enter” will lock in your desired treatment distance.

22.5.2 Calibration Output Certificate

Here at Daavlin we measure the power output of each and every unit that we manufacture before allowing it to leave our facilities. Included with your literature you will also find a “*Calibration Output Certificate*” that contains your device’s factory measured power output. Since your 1 Series has been designed to deliver treatments from two specific distances, 0 inches and 9 inches (22cm), your 1 Series will have two outputs noted in the “Current Value” box of your certificate. The higher of the two output values corresponds to the “0 in” setting and the lower of the two values corresponds to the “9 in” setting.

Note: When calculating your treatment backup time, be sure to use the correct output value for the distance that you wish to treat from. More information about calculating backup times can be found on page 17 under “Dosimeter Instructions: 1 Series”.

22.6 Special Notes for 1 Series Units Equipped with the Digital Timer

22.6.1 Treatment Distances and Your Calibration Output Certificate

Your Daavlin 1 Series has been designed to administer treatments at two distinct treatment distances. Treatments can be administered directly on the acrylic surface, making the treatment of hands and feet comfortable and easy, or from a distance of 9 inches (22cm) away for conveniently treating the face or other localized areas of the body.

Due to the inherent nature of phototherapy, the intensity of the ultraviolet light will be greater when treating directly on the acrylic surface versus treating from 9 inches (22cm) away. In order to insure accurate and effective treatments it is very important that you calculate your treatment times using the power output that is appropriate to your desired treatment distance.

Here at Daavlin we measure the power output of each and every unit that we manufacture before allowing it to leave our facilities. Included with your literature you will also find a “*Calibration Output Certificate*” that contains your device’s factory measured power output. Since your 1 Series has been designed to deliver treatments from two specific distances, directly on the acrylic and 9 inches (22cm) away, you will have two outputs noted in the “Current Value” box of your

certificate. The higher of the two output measurements was taken from directly on the acrylic surface while the lower of the two was measured from 9 inches (22cm) away.

Note: For hand and foot treatments, or any other treatment that will be administered directly on the acrylic surface, always use the higher output value to calculate your treatment times.

Note: For treatments conducted 9 inches (22cm) away, such as the face or other localized areas of the body, always use the lower output value to calculate your treatment times.

23.0 Treatment Protocols

23.1 UVA Clearing Phase Protocols (Skin Types I - III)

Maximum Number of Treatments = 25

UVA, Skin Type I, 11011

TREATMENT #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
PRIMARY DOSE (JOULES)	0.5	0.5	1.0	1.0	1.5	1.5	2.0	2.0	2.5	2.5	3.0	3.0	3.5	3.5	4.0	4.0	4.5	4.5	5.0	5.0	5.0	5.0	5.0	5.0	5.0
SECONDARY DOSE (JOULES)	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0

UVA, Skin Type I, 3/week

TREATMENT #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
PRIMARY DOSE (JOULES)	1.5	1.5	1.5	2.0	2.0	2.0	2.5	2.5	2.5	3.0	3.0	3.0	3.5	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5	5.0	5.0	5.0	5.0
SECONDARY DOSE (JOULES)	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0

UVA, Skin Type I, 2/week

TREATMENT #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
PRIMARY DOSE (JOULES)	1.5	1.5	1.5	2.0	2.0	2.0	2.5	2.5	2.5	3.0	3.0	3.0	3.5	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5	5.0	5.0	5.0	5.0
SECONDARY DOSE (JOULES)	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0

UVA, Skin Type II, 11011

TREATMENT #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
PRIMARY DOSE (JOULES)	1.5	1.5	2.0	2.0	2.5	2.5	3.0	3.0	3.5	3.5	4.0	4.0	4.5	4.5	5.0	5.0	5.5	5.5	6.0	6.0	6.5	6.5	7.0	7.0	7.5
SECONDARY DOSE (JOULES)	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0

UVA, Skin Type II, 3/week

TREATMENT #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
PRIMARY DOSE (JOULES)	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
SECONDARY DOSE (JOULES)	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0

UVA, Skin Type II, 2/week

TREATMENT #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
PRIMARY DOSE (JOULES)	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
SECONDARY DOSE (JOULES)	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0

UVA, Skin Type III, 11011

TREATMENT #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
PRIMARY DOSE (JOULES)	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	10.5	11.0	11.5	12.0	12.0	12.0	12.0	12.0	12.0
SECONDARY DOSE (JOULES)	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	10.5	11.0	11.5	12.0	12.0	12.0	12.0	12.0

UVA, Skin Type III, 3/week

TREATMENT #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
PRIMARY DOSE (JOULES)	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	10.5	11.0	11.5	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
SECONDARY DOSE (JOULES)	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	10.5	11.0	11.5	12.0	12.0	12.0	12.0	12.0

UVA, Skin Type III, 2/week

TREATMENT #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
PRIMARY DOSE (JOULES)	3.5	5.0	6.5	8.0	9.5	11.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
SECONDARY DOSE (JOULES)	2.0	3.0	4.0	5.0	5.5	6.0	6.50	7.0	7.5	8.0	8.5	9.0	9.5	10.0	10.5	11.0	11.5	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0

23.2 UVA Clearing Phase Protocols (Skin Types IV - VI)

Maximum Number of Treatments = 25

UVA, Skin Type IV, 11011

TREATMENT #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
PRIMARY DOSE (JOULES)	3.5	3.5	4.5	4.5	5.5	5.5	6.5	6.5	7.5	7.5	8.5	8.5	9.5	9.5	10.5	10.5	11.5	11.5	12.5	12.5	13.5	13.5	14.0	14.0	14.0
SECONDARY DOSE (JOULES)	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0

UVA, Skin Type IV, 3/week

TREATMENT #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
PRIMARY DOSE (JOULES)	4.5	5.5	6.5	7.5	8.5	9.5	10.5	11.5	12.5	13.5	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
SECONDARY DOSE (JOULES)	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0

UVA, Skin Type IV, 2/week

TREATMENT #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
PRIMARY DOSE (JOULES)	4.5	5.5	6.5	7.5	8.5	9.5	10.5	11.5	12.5	13.5	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
SECONDARY DOSE (JOULES)	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0

UVA, Skin Type V, 11011

TREATMENT #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
PRIMARY DOSE (JOULES)	4.5	4.5	5.5	5.5	6.5	6.5	7.5	7.5	8.5	8.5	9.5	9.5	10.5	10.5	11.5	11.5	12.5	12.5	13.5	13.5	14.5	14.5	15.5	15.5	16.0
SECONDARY DOSE (JOULES)	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0

UVA, Skin Type V, 3/week

TREATMENT #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
PRIMARY DOSE (JOULES)	6.5	7.5	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
SECONDARY DOSE (JOULES)	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0

UVA, Skin Type V, 2/week

TREATMENT #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
PRIMARY DOSE (JOULES)	5.5	6.5	7.5	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
SECONDARY DOSE (JOULES)	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0

UVA, Skin Type VI, 11011

TREATMENT #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
PRIMARY DOSE (JOULES)	5.5	5.5	7.0	7.0	8.5	8.5	10.0	10.0	11.5	11.5	13.0	13.0	14.5	14.5	16.0	16.0	17.5	17.5	19.0	19.0	20.0	20.0	20.0	20.0	20.0
SECONDARY DOSE (JOULES)	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0

UVA, Skin Type VI, 3/week

TREATMENT #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
PRIMARY DOSE (JOULES)	6.5	7.5	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5	16.5	17.5	18.5	19.5	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
SECONDARY DOSE (JOULES)	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0

UVA, Skin Type VI, 2/week

TREATMENT #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
PRIMARY DOSE (JOULES)	6.5	8.0	9.5	11.0	12.5	14.0	15.5	17.0	18.5	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
SECONDARY DOSE (JOULES)	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0

23.3 UVA Maintenance Phase Protocols:

1/week, 3/month, 2/month, 1/month

Maximum Number of Treatments = 4

ALL SKIN TYPES: Dose should be held steady at last clearance phase dose.

23.4 UVA Treatment Limits for Maintenance & As Required Protocols

Skin Type	I	II	III	IV	V	VI
DOSE LIMITS with WARNING	5 J	8 J	12 J	14 J	16 J	20 J
SYSTEM DOSE LIMITS	8 J	12 J	16 J	20 J	24 J	28 J

23.5 LO Dose Broad Band UVB Clearing Phase Protocols:

11011, 3/week, 2/week

Maximum Number of Treatments = 29

ALL SKIN TYPES, ALL SCHEDULES

	% of MED	% INCREASE OVER PREVIOUS DOSE																											
TREATMENT #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
PRIMARY DOSE (MILLIJOULES)	30	50	40	30	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	0	0	0	0
		% OF PRIMARY DOSE																											
SECONDARY DOSE (MILLIJOULES)	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50

23.6 LO Dose Broad Band UVB Maintenance Phase Protocols:

1/WEEK

Maximum Number of Treatments = 4

ALL SKIN TYPES: Dose should be held steady at last clearance phase dose.

23.7 LO Dose Broad Band UVB Treatment Limits for Maintenance & As Required Protocols

Skin Type	I	II	III	IV	V	VI
MED RANGE	20-60 mJ	30-75 mJ	40-90 mJ	50-110 mJ	60-120 mJ	70-140 mJ
DOSE LIMITS with WARNING	320 mJ	400 mJ	500 mJ	610 mJ	680 mJ	800 mJ
SYSTEM DOSE LIMITS	400 mJ	500 mJ	600 mJ	700 mJ	800 mJ	900 mJ

23.8 HI Dose Broad Band UVB Clearing Phase Protocols: 11011, 3/week, 2/week

Maximum Number of Treatments = 29

SKIN TYPES I & II, ALL SCHEDULES

	% of MED	% INCREASE OVER PREVIOUS DOSE																											
TREATMENT #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
PRIMARY DOSE (MILLIJOULES)	70	17	17	17	17	17	17	17	17	17	17	17	17	17	17	10	10	10	10	10	10	10	10	10	10	10	10	10	10
		% OF PRIMARY DOSE																											
SECONDARY DOSE (MILLIJOULES)	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50

SKIN TYPES III-VI, ALL SCHEDULES

	% of MED	% INCREASE OVER PREVIOUS DOSE																											
TREATMENT #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
PRIMARY DOSE (MILLIJOULES)	100	50	40	30	20	20	15	15	15	15	15	15	15	15	15	10	10	10	10	10	0	0	0	0	0	0	0	0	0
		% OF PRIMARY DOSE																											
SECONDARY DOSE (MILLIJOULES)	10	20	30	40	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	0	0	0	0	0	0	0	0	0

23.9 HI Dose Broad Band UVB Maintenance Phase Protocols: 1/week

Maximum Number of Treatments = 4

ALL SKIN TYPES: Dose should be held steady at last clearance phase dose.

Skin Type	I	II	III	IV	V	VI
MED RANGE	20-60 mJ	30-75 mJ	40-90 mJ	50-110 mJ	60-120 mJ	70-140 mJ
DOSE LIMITS with WARNING	1400 mJ	1700 mJ	2000 mJ	2500 mJ	2700 mJ	3100 mJ
SYSTEM DOSE LIMITS	1600 mJ	1900 mJ	2200 mJ	2700 mJ	3000 mJ	3400 mJ

23.10 LO Dose Narrow Band UVB Clearing Phase Protocols: 11011, 3/week, 2/week

Maximum Number of Treatments = 29

ALL SKIN TYPES, ALL SCHEDULES

	% of MED	% INCREASE OVER PREVIOUS DOSE																										
TREATMENT #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
PRIMARY DOSE (MILLIJOULES)	30	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	0	0	0	0	0	0	0
		% OF PRIMARY DOSE																											
SECONDARY DOSE (MILLIJOULES)	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50

23.11 LO Dose Narrow Band UVB Maintenance Phase Protocols: 1/WEEK

Maximum Number of Treatments = 4

ALL SKIN TYPES: Dose should be held steady at last clearance phase dose.

23.12 LO Dose Narrow Band UVB Treatment Limits for Maintenance & As Required Protocols

Skin Type	I	II	III	IV	V	VI
MED RANGE	50-300 mJ	100-400 mJ	150-500 mJ	200-600 mJ	250-700 mJ	300-800 mJ
DOSE LIMITS with WARNING	800 mJ	1100 mJ	1300 mJ	1600 mJ	1800 mJ	2100 mJ
SYSTEM DOSE LIMITS	1000 mJ	1400 mJ	1700 mJ	2000 mJ	2300 mJ	2700 mJ

23.13 HI Dose Narrow Band UVB Clearing Phase Protocols:

11011, 3/week, 2/week

Maximum Number of Treatments = 29

SKIN TYPES I & II, ALL SCHEDULES

	% of MED	% INCREASE OVER PREVIOUS DOSE																											
TREATMENT #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
PRIMARY DOSE (MILLIJOULES)	70	10	10	10	10	10	10	10	10	10	10	10	10	10	9	8	7	6	5	4	3	2	1	0	0	0	0	0	0
		% OF PRIMARY DOSE																											
SECONDARY DOSE (MILLIJOULES)	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50

SKIN TYPES III & IV, ALL SCHEDULES

	% of MED	% INCREASE OVER PREVIOUS DOSE																											
TREATMENT #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
PRIMARY DOSE (MILLIJOULES)	70	15	15	15	15	15	15	15	15	15	15	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	0	0
		% OF PRIMARY DOSE																											
SECONDARY DOSE (MILLIJOULES)	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50

SKIN TYPES V & VI, ALL SCHEDULES

	% of MED	% INCREASE OVER PREVIOUS DOSE																											
TREATMENT #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
PRIMARY DOSE (MILLIJOULES)	70	15	15	15	15	15	15	15	15	15	15	15	15	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
		% OF PRIMARY DOSE																											
SECONDARY DOSE (MILLIJOULES)	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50

23.14 HI Dose Narrow Band UVB Maintenance Phase Protocols:

1/WEEK

Maximum Number of Treatments = 4

ALL SKIN TYPES: Dose should be held steady at last clearance phase dose.

23.15 HI Dose Narrow Band UVB Treatment Limits for Maintenance & As Required Protocols

Skin Type	I	II	III	IV	V	VI
MED RANGE	50-300 mJ	100-400 mJ	150-500 mJ	200-600 mJ	250-700 mJ	300-800 mJ
DOSE LIMITS with WARNING	1100 mJ	2000 mJ	4400 mJ	6000 mJ	8200 mJ	9400 mJ
SYSTEM DOSE LIMITS	1500 mJ	3000 mJ	5500 mJ	8000 mJ	10500 mJ	12000 mJ

24.0 Care of Your Phototherapy Unit

24.1 Recommended Maintenance Schedule

Action	Frequency
Dusting of the unit and lamps	Once a month
Fully clean all internal reflectors, lamps, and protective acrylic	Annually
Unit calibration (Dosimetry Only)	Every 100 hours of use or once a year, whichever occurs first and when lamps are replaced. (Meters can be rented or purchased through Daavlin)
Power Output Measurement (Timer Only)	Every 100 hours of use and when lamps are replaced. (Meters can be rented or purchased through Daavlin)
Replace lamps	*UVB –Approximately Every 300 hours of use. *UVA – Approximately Every 500 hours of use. *Blue – Approximately Every 500 hours of use

* Lamp life will vary significantly depending on average treatment time and other environmental conditions.

24.2 Cleaning/Disinfection

24.2.1 General Cleaning

For general use, use a clean non-abrasive cloth, not paper towels, and a mild cleaning solution such as Dawn Liquid Dishwashing Soap to gently wipe down the exterior of the device.

24.2.2 Low-Level Disinfection

To reduce micro-organisms on the patient-contacting surfaces, disinfect these surfaces between uses of the device, including when the same patient has the device for use. For disinfection while the same patient uses the device, we have tested several cleaners that do not degrade the Acrylic and can be seen in Table 6 Daavlin Tested Cleaners.

Cleaner/Solution	Contact Time
Monk brand Wipes	Follow the contact time instructions provided with the Monk brand Wipes
70% Isopropyl Alcohol	3 min

Table 6 Daavlin Tested Cleaners

1. Thoroughly wipe down the surfaces and allow contact time listed in Table 6 Daavlin Tested Cleaners.
2. Allow to air dry and inspect for visible contaminants.
3. If contaminants remain repeat until no visible containments remain repeat steps 0 and 2.

24.2.3 High-Level Disinfection

Follow a high-level disinfection protocol between the use of the device on different patients. Use a high-level disinfectant, such as Steris Corporation's Resert XL-HLD, and follow the manufactures guidelines. See also "FDA-Cleared Sterilants and High Level Disinfectants with General Claims for Processing Reusable Medical and Dental Devices" available at: https://www.fda.gov/medical-devices/reprocessing-reusable-medical-devices-information-manufacturers/fda-cleared-sterilants-and-high-level-disinfectants-general-claims-processing-reusable-medical-and

24.3 Resetting Your Lamp Hours

Whenever the lamps are changed in your device, it is important to reset the lamp age to zero and perform calibration.

If you need to reset lamp hours and/or perform calibration, please contact the Daavlin service department at 1-800-322-8546 for step-by-step instructions.

25.0 EMC Guidelines

Table 7 Electromagnetic Emissions

Emissions Test	Compliance	EMC Environment Guide
RF Emission Following CISPR 11 (EN 55011)	Not Applicable	
RF Emission Following CISPR 11 (EN 55011)	Not Applicable	
Limits for Harmonic Current Emissions Following IEC 61000-3-2	Class A	The device is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network
Limitation of Voltage Changes, Voltage Fluctuations, and Flicker Following IEC 61000-3-3	Complies	The device is suitable for healthcare environment operation in hospitals and clinic

Table 8 Electromagnetic Immunity

Emissions Test	IEC 60601 Test Level	Actual Level
Electrostatic discharge immunity test following IEC 61000-4-2	+/- 8kV (conductive surfaces, coupling planes) +/- 2kV, +/- 4kV, +/- 8kV, and +/- 15kV (non-conductive surfaces)	+/- 8kV (conductive surfaces, coupling planes) +/- 2kV, +/- 4kV, +/- 8kV, and +/- 15kV (non-conductive surfaces)

Emissions Test	IEC 60601 Test Level	Actual Level
Radiated, radio-frequency, electromagnetic field immunity test following IEC 61000-4-3	80 MHz to 2.7GHz @ 10.0 V/m	80 MHz to 2.7GHz @ 10.0 V/m
Electrical fast transient/burst immunity test following IEC 61000-4-4	+/- 2kV	+/- 2kV
Surge immunity test following IEC 61000-4-5	+/- 0.5 kV, +/- 1.0 kV, +/- 2kV	+/- 0.5 kV, +/- 1.0 kV, +/- 2kV
Conducted Immunity test following IEC 61000-4-6	0.15 MHz to 80 MHz @ 3.0 Vrms 6.765 MHz to 6.795 MHz @6.0 Vrms 13.553 MHz to 13.567 MHz @ 6.0 Vrms 26.057 MHz to 27.283 MHz @ 6.0 Vrms 40.66 MHz to 40.70 MHz @ 6.0 Vrms	0.15 MHz to 80 MHz @ 3.0 Vrms 6.765 MHz to 6.795 MHz @6.0 Vrms 13.553 MHz to 13.567 MHz @ 6.0 Vrms 26.057 MHz to 27.283 MHz @ 6.0 Vrms 40.66 MHz to 40.70 MHz @ 6.0 Vrms
Power frequency magnetic field immunity test following IEC 61000-4-8	50 Hz, 30 A/m	50 Hz, 30 A/m
Voltage dips and interruptions immunity test following IEC 61000-4-11	30% Reduction for 500 mS at 0 degrees, 100% Interruption for 10 mS at 0, 45, 90, 135, 180, 225, 270,315 degrees, 100% Interruption at 5000 mS at 0 degrees	30% Reduction for 500 mS at 0 degrees, 100% Interruption for 10 mS at 0, 45, 90, 135, 180, 225, 270,315 degrees, 100% Interruption at 5000 mS at 0 degrees

Table 9 Electromagnetic Immunity

The device is intended for use in the electromagnetic environment specified below. The customer or the user of the device should assure that it is used in such an environment.

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment - guidance
Conducted RF IEC 61000-4-6 Radiated RF IEC 61000-4-3	3 Vrms 150 kHz to 80 MHz 3 V/m 80 MHz to 2.5 GHz	3 Vrms 3 V/m	Portable and mobile RF communications equipment should be used no closer to any part of the device, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. **Recommended separation distance** $d = 1.2\sqrt{P}$ $d = 1.2\sqrt{P}$ 80 MHZ to 800 MHz $d = 2.3\sqrt{P}$ 800 MHz to 2.5 GHz where **P** is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and **d** is the recommended separation distance in meters (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, should be less than the compliance level in each frequency range. [a] Interference may occur in the vicinity of equipment marked with the following symbol:

NOTE 1: At 80 MHz and 800 MHz, the higher frequency range applies.
NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people

a. Field strength from fixed transmitters, such as base stations for radio (cellular / cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the device is used exceeds the applicable RF compliance level above, the device should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the device. Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3V/m

Table 10 Recommended separation distances between portable and mobile RF communication equipment and the ClearLink Controlled Phototherapy Equipment

The device is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the device can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the device as recommended below, according to the maximum output power of the communications equipment			
Rated maximum output power of transmitter (W)	Separation distance according to frequency of transmitter (m)		
	150 kHz to 80 MHz $d = 1.2\sqrt{P}$	80 MHz to 800 MHz $d = 1.2\sqrt{P}$	800 MHz to 2.5 GHz $d = 2.3\sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23
For transmitters rated at a maximum output power not listed above, the recommended separation distance d in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer. **NOTE 1**: At 80MHz and 800MHz, the separation distance for the higher frequency range applies. **NOTE 2**: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			

26.0 Warranty and Contact Information

26.1 Limited Warranty Policy

This Limited Warranty is provided to the original purchaser (the "Purchaser") of the Daavlin device (the "Equipment"). Daavlin warrants Equipment to conform with the Equipment specifications and be free from defects in material and workmanship during the device Warranty Period. No warranty is made as to useful lamp life or as to reduction in ultraviolet output due to any cause. DAAVLIN MAKES NO OTHER WARRANTIES OF ANY KIND WHATSOEVER TO PURCHASER OR ANY THIRD PARTIES WITH RESPECT TO THE EQUIPMENT AND HEREBY EXPRESSLY DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Product	**Warranty Period**
New Equipment	1 Year
Remanufactured Equipment	90 Days
Lamps	90 Days

26.2 Warranty Coverage

This Limited Warranty applies only to Equipment or components found to be defective due to materials and workmanship. This Limited Warranty does not apply when Equipment is purchased for the purposes of renting commercially to customers for home use. This Warranty does not apply to any Equipment which has been used, repaired or altered outside the factory in any way so as to affect the design, or operated in any way other than in accordance with our operating instructions. The Limited Warranty does not apply to Equipment failure or damage caused by shipping or customer abuse, misuse, or accident, incorrect customer installation, improper electrical service, lack of proper maintenance, and Acts of God. This Limited Warranty does not extend to repairs made necessary by use of parts or accessories not recommended by the manufacturer. Daavlin shall not be responsible for any indirect, incidental, special, punitive, or consequential damages of Purchaser. Daavlin does not provide end support for Microsoft Windows software installed on PCs that are part of a Daavlin phototherapy system. PURCHASER'S SOLE REMEDY UNDER THIS LIMITED WARRANTY IS REPAIR OR REPELACMENT OF THE EQUIPMENT.

26.3 Customer Responsibility

In the event that warranty service is requested, the Purchaser must reasonably cooperate with Daavlin to verify the warranty claim of the Purchaser, including conducting minor diagnostic work. Failure to participate in diagnostic work may result in being charged for on-site service calls. The Purchaser must allow Daavlin, at Daavlin's option, to inspect the Equipment or component parts on request.

26.4 Warranty Service

During the warranty period, Daavlin will, at Daavlin's option, repair or replace any Equipment or components that appear to have been defective in material or workmanship, with new or remanufactured materials. Daavlin may require the return of merchandise claimed to be defective for its examination and shall be the sole judge as to whether material is in fact defective under the terms of this Limited Warranty. In such situations, Daavlin will cover freight expenses in the continental USA to ship products covered under warranty both to and from Daavlin's servicing center if the product fails during the first three months. If the product fails after three months during the warranty period, the customer is responsible for in-bound freight charges while Daavlin pays freight charges back to the Purchaser. All Equipment ships ground unless the Purchaser covers costs for expedited shipping. Daavlin is not responsible for any delays occurring during transport of the Equipment.

During the term of the Limited Warranty, Daavlin will, at Daavlin's option, arrange for a qualified service technician to repair or replace any defective systems or components as covered in accordance with the terms and conditions of this Limited Warranty. It will be at Daavlin's sole discretion whether subcontractors or Daavlin employed technicians will perform the required warranty service work. However, this Limited Warranty will be declared null and void if non-qualified technicians perform any repair or maintenance on the Equipment unless prior written authorization has been obtained from Daavlin. Even with Daavlin's authorization, Daavlin shall not be responsible or liable for any such work (in or out of warranty). Daavlin reserves the right to bill for labor, expenses, and services for requested "warranty" service trips which result in

work not covered by this Limited Warranty. This may include, but is not limited to, a tripped circuit breaker, an unplugged machine, or a blown fuse.

26.5 Disposal

Please visit www.daavlin.com and search our FAQ section for disposal instructions for the unit and/or all accessories.

26.6 Other Services

Extended warranties are available and may be purchased from Daavlin's aftermarket sales department.

In the event that this Limited Warranty conflicts with other warranties included in Daavlin's Equipment manual, the terms and conditions of this Limited Warranty shall prevail.

26.7 Contact Information

USA & Canada:	1-800-322-8546
Overseas:	1-419-636-6304
Fax:	1-419-636-1739
E-Mail:	service@daavlin.com
Website:	www.daavlin.com

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