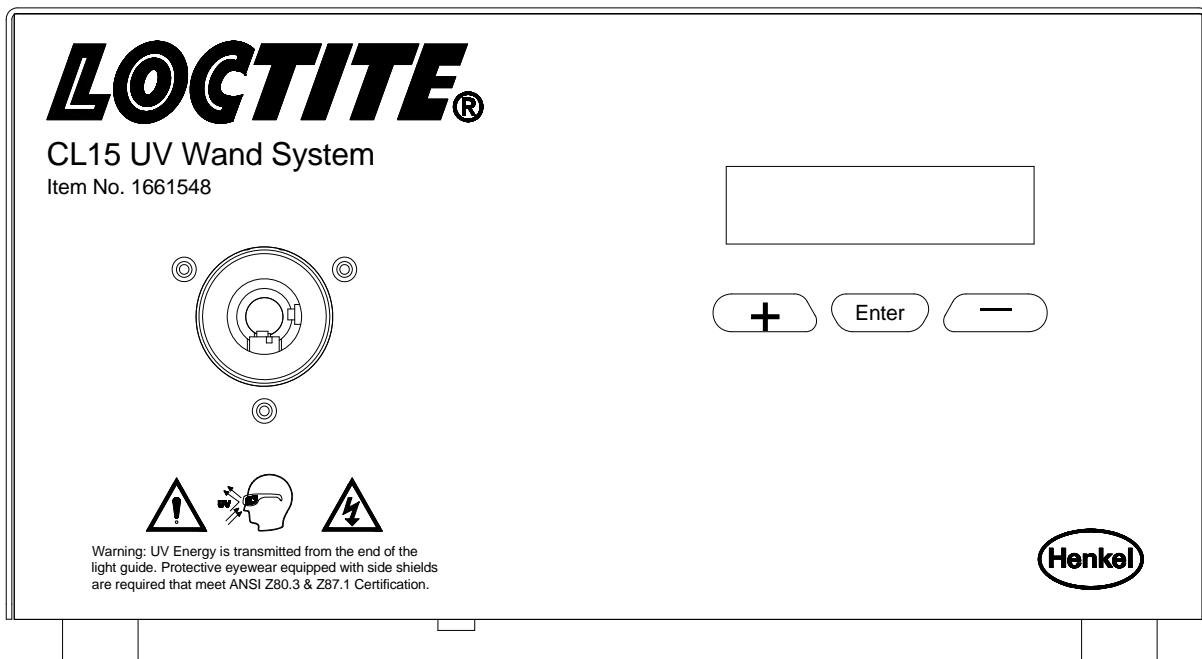


LOCTITE®

EQUIPMENT Operation Manual



Loctite® CL15 UV Curing Wand System
Part Number: 1661548

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1. Please Observe the Following

1.1 Emphasized Sections



WARNING!

Refers to safety regulations and required measures that protect the operator or other persons from injury or danger to life.



Caution!

Emphasizes what must be done or avoided so that the unit or other property is not damaged.



Notice:

Gives recommendations for better handling of the unit during operation or adjustment, as well as for service activities.

1.2 Items Supplied

Curing unit

High pressure mercury short arc bulb, (installed in curing unit)

Footswitch

UV safety glasses

Manual

Power Cord

1.3 For Your Safety

For safe and successful operation of the unit, read these instructions completely. If the instructions are not observed, the manufacturer can assume no responsibility. Be sure to retain this manual for future reference.



WARNING!

Always wear the included UV safety glasses or glasses that conform to ANSI Z87.1/CSA Z94.3 when operating the unit.



WARNING!

Always cover hands, face and other parts of the body that may be exposed to UV light.



WARNING!

Never look into the end of the light guide.



WARNING!

Never open the shutter mechanism without the light guide installed.



WARNING!

Never remove the cover of the unit without first switching the power off and unplugging the power cord.



WARNING!

Damage to the power cord or the housing can result in contact with live electrical parts. Check the power cord and housing before each use. If the power cord or unit is damaged, do not operate.

1. Please Observe the Following (continued)



Caution!

Never turn the unit on without the lamp connected to the power supply.



Caution!

The energy emitted from the end of the light guide can heat any surface that it is directed at. Care must be taken to determine the proper offset distance and exposure time.



Caution!

Turning the lamp on and off frequently will cause the UV output of the lamp to decline at a faster rate. It is recommended that the unit be left on during breaks and short down times.



Caution!

Avoid making sharp bends in the light guide, as this will cause a loss of UV energy or possibly cause permanent damage. To prevent permanent damage, the minimum bend radii are 2.4 inches for a single light guide and 1.6 inches for a dual light guide.

The unit may be repaired only by a Loctite® authorized service technician.

1.4 Field of Application, (Intended Usage)

This Loctite® UV CL15 Wand System is designed for use with Loctite products that cure when exposed to ultraviolet light produced by the unit. The UV energy is directed towards the product through a liquid filled light guide that is ordered separately. Several configurations of light guides are available from Loctite®, including single and dual ended types. The unit is also capable of interfacing with an external relay or PLC circuit.

2. Description

2.1 Theory of Operation


When the unit is switched on, electrical power is immediately supplied to the lamp and ignition should occur within several seconds. As soon as the lamp has completed the warm up cycle, an internal relay will change state, making a closure across pins 3 and 4 of the footswitch connector, (located on the rear panel of the unit). The front panel display will indicate the progress at the warm-up period. Curing takes place when the shutter is opened, allowing UV light to be directed from the end of the liquid filled light guide to the adhesive. The curing parameters, (UV irradiance and exposure time) must be determined before use. The UV irradiance, (the strength of the UV light), at the adhesive surface can be varied by adjusting the distance of the light guide from the bond. If the light guide is moved to within ½ inch of the adhesive surface, vapors from the curing process may build up on the end of the light guide, reducing the UV intensity over time. The UV exposure time required to complete the curing process depends primarily on the UV irradiance and the properties of the adhesive product.

2. Description, (continued)

UV lamps undergo a gradual reduction in UV output over time and it is recommended that the lamp output be monitored on a regular basis. Frequently turning the main power on and off will increase the rate that the lamp degrades therefore, it is recommended that the unit be left on during short work breaks such as lunch and other idle periods.

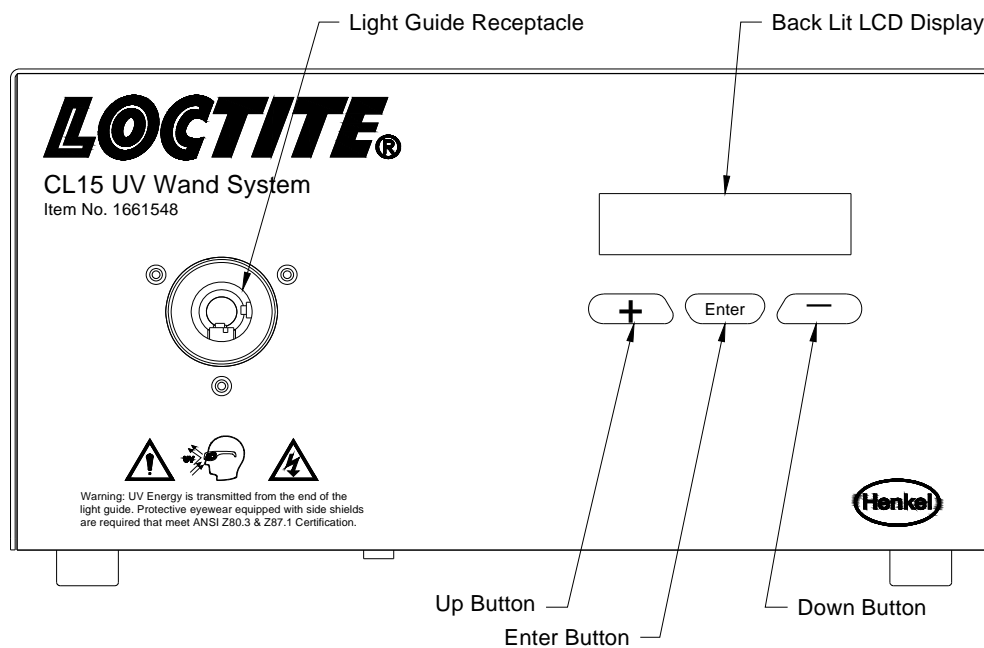
The digital display is the user interface to the system. It is used to set and view the shutter ON/OFF time, number of cycles, lamp hours, and system hours. During a cure cycle the time and duration will be shown counting down for user viewing.

The timed exposure cycle starts by momentarily engaging the footswitch or when an externally operated device such as a PLC makes a relay closure across pins 1 and 9 of the nine pin foot switch connection, XS-1, on the rear panel. In the manual operating mode, the shutter remains open for as long as the footswitch or alternate external device maintains contact between pins 1 and 9.

 Notice: The hour meter should only be reset when a new lamp is installed.

2.2 Operating Elements and Connections

The front panel is a membrane control pad with an LCD display. The keypad controls all the major operating features.



2. Description (continued)

LCD Display

The digital display serves as the user interface. It is used to set and view the shutter ON/OFF time, number of cycles, lamp hours, and system hours. During a cure cycle the time and duration will be shown counting down for user viewing.

ENTER Button

The OK button allows the user to scroll through the levels of set-up parameters. It is also used to accept any changes that are made to the current set of parameters.

UP Button (+)

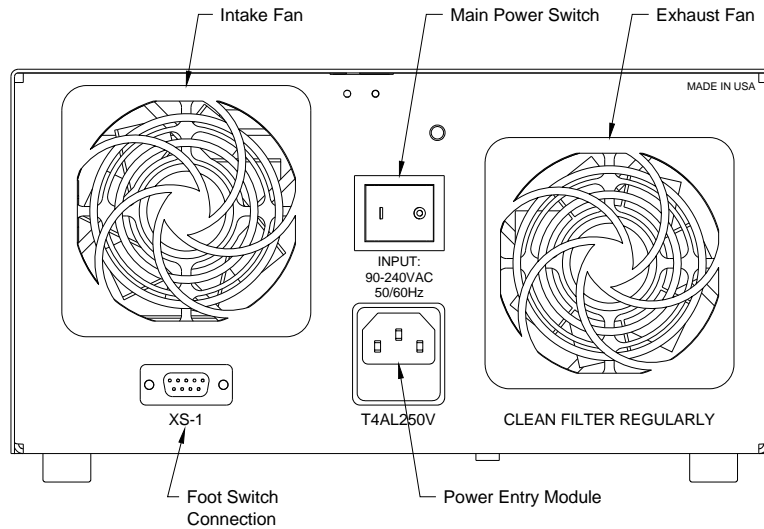
The Up Button (+) allows the user to either select options on the left hand side of the screen or increase values of set-up parameters.

Down Button (-)

The Down Button (-) allows the user to either select options on the right hand side of the screen or decrease values of set-up parameters.

2. Description (continued)

Back Panel



Cooling Fans

The fan system is used to maintain the optimum temperature of the lamp while cooling the optics and electronics. One fan is used for intake and the other fan is used for exhaust. The intake fan has a removable filter that should be cleaned regularly, depending on the environment.

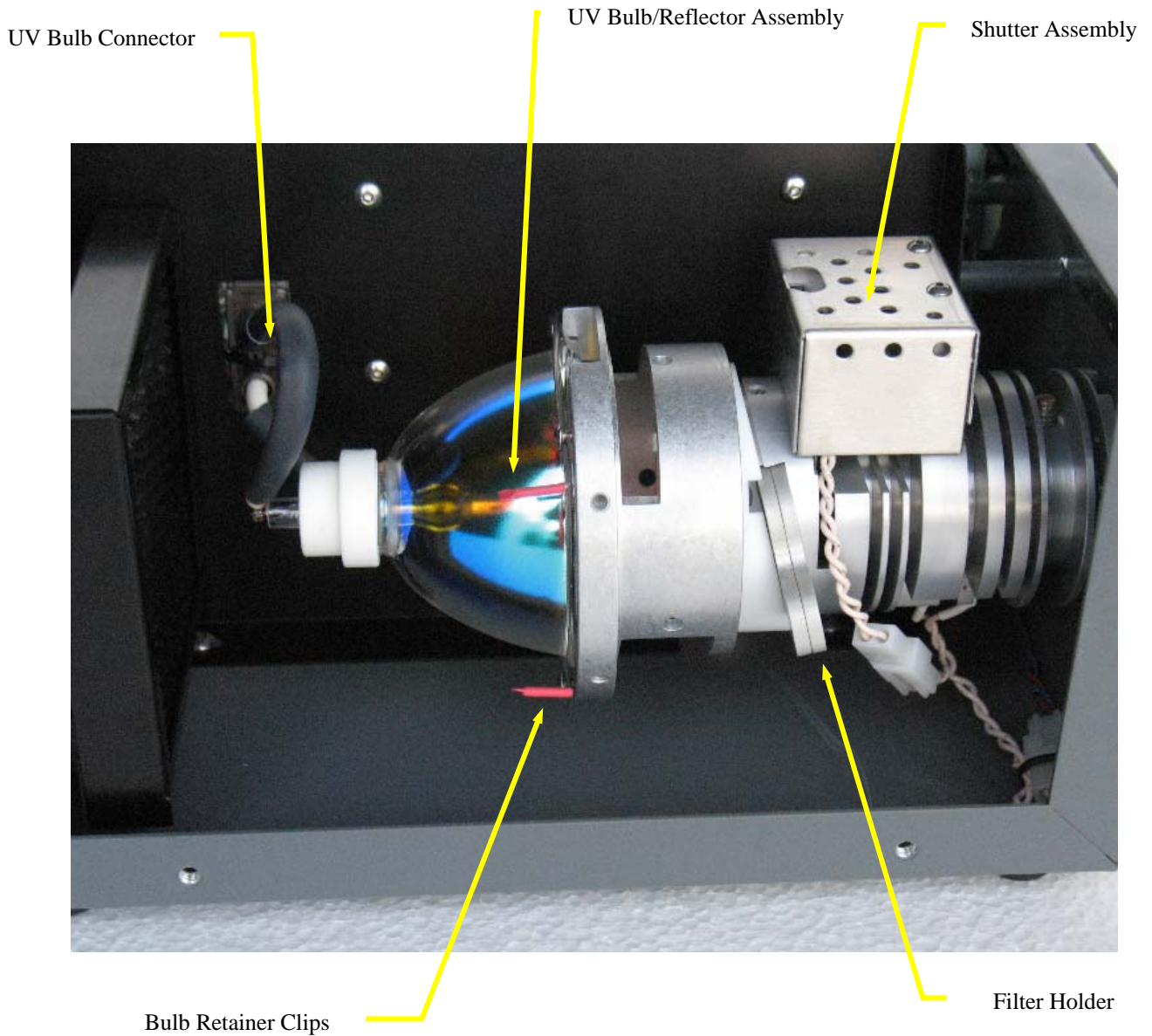
Footswitch Connector (XS-1)

Nine pin D-sub with pins 1 and 9 being the start signal and pins 3 and 4 being the “lamp on” signal, (relay contacts closed when lamp is on).

2. Description (continued)

Lamp Housing

This area contains the optical transmission assembly, bulb, reflector and electrical lamp connections.



2. Description (continued)

Shutter Assembly

The Shutter Assembly is a shutter plate that is connected to a positive open, spring return, rotary solenoid for efficient control and safety. The shutter is also connected to an interlock switch located on the light guide receptacle where the proximal end of the light guide is inserted.

This switch disables the shutter to ensure there is no unintentional exposure if the light guide is missing or improperly inserted into the system.

Bulb/Reflector

The system uses a proprietary high-pressure short arc mercury vapor bulb designed for long life at a very high intensity. The bulb is mounted integral to the reflector for optimum performance.

Light guide Receptacle

The Light guide Receptacle is a precision mechanical assembly that aligns the bulb, bulb reflector, and light guide for optimal focal point location. It also supports the shutter assembly, light guide safety switch, and infrared filter.

Filter Holder

The filter holder is a removable unit that holds the IR filter. The filter protects the light guide from damage by blocking the UVC wavelength light that is output from the bulb. The filter must always be installed when using standard light guides (that are not compatible with UVC). If the application requires UVC wavelength, the filter must be removed and a UVC light guide must be used.

3. Technical Data

Energy Requirements

Input Voltage Ranges: 90 to 240 VAC

Input frequency Range: 50 to 60 Hz

Auxiliary Output Voltage: 24 volts DC, nominal

Main fuse located in power module in rear of unit: 4A T/250V, 5mm

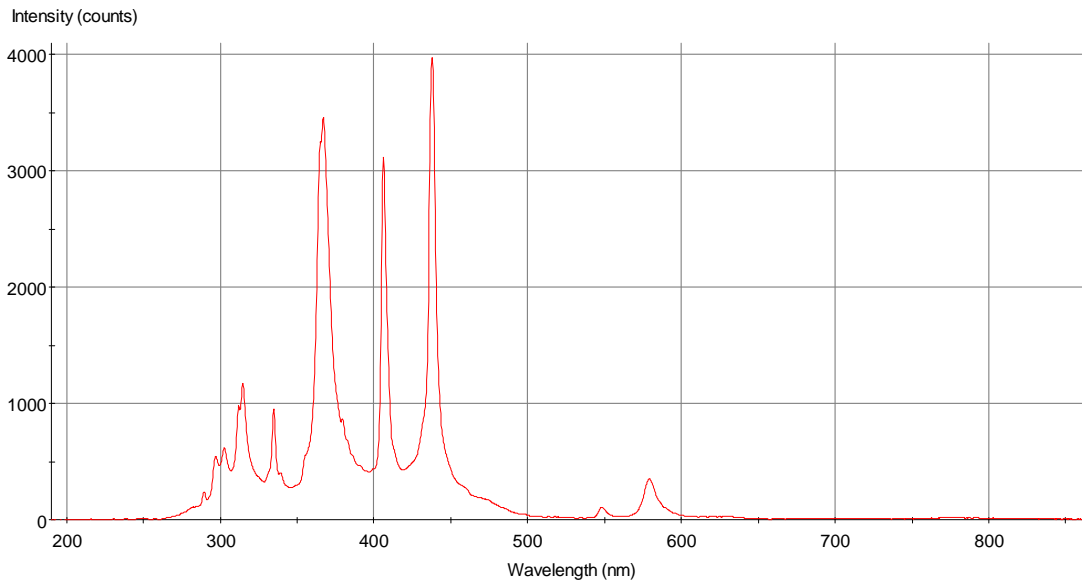
Dimensions

Housing: Approximately 12 ½ inch W x 9 ¾ inch D x 5 ½ inch H

Weight: Approximately 7 pounds

UV Output Characteristics

Initial UV output: up to 15 W/sq.cm, typical. Exact output measurement is dependent on the brand and calibration method of the meter used, as well as the condition and straightness of the light guide.



4. Installation

4.1 Space Requirements

A space of 12" wide x 16" deep x 9" height is required. It is important to have at least 8 inches of space behind the unit to insure proper airflow. Curing Wand System only needs to be connected to a 120V/60Hz outlet to operate.

Caution!

Do not block the intake and exhaust fans located on the back of the housing.

Caution!

The unit should always be operated with the rubber support feet resting on a flat surface. Do not operate with the unit resting on its side or at an angle greater than 15 degrees, front to back.

4.2 Connections

- ⚠ **WARNING!** Make sure the power switch is OFF and the unit is unplugged before proceeding.
- Plug the footswitch into the nine pin D-sub connector located on the rear panel. If the unit is being operated from an external processor, a closure across pins one and nine is required to actuate the shutter. An internal relay closure connected to pins three and four of the footswitch connector provides conformation that the curing lamp is on. When the lamp is not on, an open circuit exists across pins three and four.
 - Plug the power cord into the power module located at the bottom left of the rear panel.
 - Plug the cord into the electrical utility outlet.
 - Insert the light guide into the receptacle located on the left side of the front panel until it is fully engaged.

5. Operating the Unit

Turn on the power switch located on the rear panel, above the power cord receptacle; the system takes just over a minute to warm up. If for some reason the bulb does not ignite, turn the power off, wait ten seconds, and turn on again to start the lamp.

An internal relay will close across pins 3 and 4 of the rear panel D-sub connector, SX-1 once the lamp has warmed up. During the warm-up time, the LCD display will show a numerical percentage with an associated progress bar, to indicate the progression of the warm up sequence. During this time the shutter is disabled.

Once the system has completed the warm up cycle the text message "SYSTEM READY" will be displayed on the screen.

5. Operating the Unit, (continued)

At this time the operating parameters can be changed, or the existing parameters can be utilized. The footswitch can now be pressed or PLC output operated to initiate the operation of the curing unit.

Using Foot Switch / Remote Device

The shutter can be actuated using a foot switch or by other external devices such as a PLC. The foot switch connection is made up of a 9 pin D connector. In timed mode, making a momentary dry-contact relay closure across pins 1 and 9 will initiate cycling of the shutter. In manual mode, the shutter will remain open for as long as the pins 1 and 9 are connected.

Front Panel Controls

The system hours and lamp hours can be viewed by pressing the **ENTER** button. The system hours are a non-reset able timer that tracks the age of the unit. The lamp hour indicator is a reset able timer to aid in tracking the life of the bulb. The resetting of the lamp hours can be done in a later function, see "Lamp Hour Reset". To escape from this screen either press the **ENTER** button to cycle through the system settings or wait 7 seconds to return to the main display.

The front control panel allows access to all of the unit's functions. To access these functions and make changes press the **ENTER** button twice. The user can cycle through all the functions and parameters of the unit by continuing to press the **ENTER** button.

5. Operating the Unit, (continued)

Shutter ON Time Setting

The first parameter that can be changed is the amount of time that the shutter is open during a cycle. The time can be increased or decreased using the (+) or (-) buttons. The shutter open time can be set with the following limits:

Time Base	Min Time	Max Time
0.1 sec	.3 sec	24.9 sec
1.0 sec	25 sec	250 sec

The time base automatically changes at 25 seconds. If a user selects a time below the minimum range the unit goes to *MANUAL* mode. In *MANUAL* mode the shutter is directly operated by the footswitch. If the footswitch is pressed the shutter will open, closing as soon as it is no longer pressed. Once this parameter is set press **ENTER** to continue.

Shutter OFF Time Setting

The next parameter that can be changed is the amount of time that the shutter is closed during a cycle. The time can be increased or decreased using the (+) or (-) buttons. The shutter close time can be set with the following limits:

Time Base	Min Time	Max Time
0.1 sec	.1 sec	24.9 sec
1.0 sec	25 sec	250 sec

The time base automatically changes at 25 seconds. Once this parameter is set press **ENTER** to continue.

Cycle Count

The next parameter that can be changed is the number of cycles that will run during a single iteration. The number of cycles can be increased or decreased using the (+) or (-) buttons. The maximum number of cycles that can be run during a single iteration is 255. Once this parameter is set press **ENTER** to continue.

To interrupt the cycle sequence when the shutter is operating, press the foot switch down for approximately 2 seconds, (contact across pins 1 and 9 of XS-1).

5. Operating the Unit, (continued)

Lamp Hour Reset

The lamp hour meter is used to keep track of the time that the given bulb has been in service. Once the bulb has been changed the lamp hour meter should be reset to accurately track the service of the new bulb. Determine if you would like to reset your lamp hour meter and make your selection using the (+) or (-) button. Once this parameter is set press **ENTER** to continue. *NO* is set as the default in case the user is cycling through the functions quickly.

Save Parameter Changes

At this point all the parameters have been changed to the user's preferences. These changes have not been saved to memory, and if they are not, all parameters will revert back to the previous values. At this point the user is prompted to save the changes. Determine if you would like to save the changes to memory and make your selection using the (+) or (-) button. Once the selection has been made, press **ENTER** to continue.

 **Notice: At any time, while making changes to the parameters, if the user pauses for longer than 7 seconds, the display will return to the “System Ready” screen and no changes will be saved.**

6. Inserting and Removing the Light Guides

Caution!


Be sure to remove the plastic end caps before attempting to use the light guide.

Caution!

If the free end of the light guide is secured at a fixed location, sharp bends should be avoided since this causes a decrease in UV power.

Caution!

Never pull on the jacketing portion of the light guide. During installation or removal, grasp the light guide on the strain relief nearest the input end of the light guide.

 **Notice: If the light guide does not go all the way into the receptacle, do not attempt to force it. Adjust the set screw on the side of the receptacle until the light slides in freely.**

6.1 Installing single light guide

Insert the large end of single light guide into the light guide receptacle located on the left side of the front panel. Push light guide firmly until it is fully engaged.

Installing dual light guide – Insert the dual wand light guide into the light receptacle and rotate. See section 6.2 “Adjusting Wand for Maximum Output.”

 **Notice:**

It is important that the rotational position of a dual light guide be set to maximize the UV output for each wand. This setting is specific to each curing unit and light guide (See section 6.2- Adjusting Multi-Pole Light Guides).

 **Notice:**

Avoid shutting the main power off for brief periods of time. Frequent start-ups will cause the lamp to decay at an accelerated rate. If the system is shut down, wait a minimum of ten minutes before restarting. Once the lamp is ignited, allow it to operate for a minimum of fifteen minutes before turning it off.

6.2 Balancing Output When Using Multi-Pole Light Guides

Required - Loctite[®] 7020 UV Spot Radiometer P/N: 1406024

1. Insert the light guide into the light guide receptacle pushing it as far forward as it will go.
2. Tighten the set screw on to the light guide, (do not over tighten).
3. Set shutter timer to between 2 and 5 seconds.
4. Insert the one of the pole ends of the light guide into a Loctite[®] 7020 UV Spot Radiometer, P/N 1406024.
5. Press the radiometer start switch and actuate foot switch to open shutter.
6. Release the radiometer start switch while the shutter is still opened.
7. Record the radiometer reading.
8. Position the second light guide pole in the radiometer and repeat steps 6 though 9.
9. Compare the two radiometer readings.
10. If the lower reading is equal to or greater than 90% of the higher reading, the dual wand is balanced.
11. If the lower reading is less than 90% of the higher reading, loosen the set screw and rotate the light guide several degrees in the light guide receptacle. Use the set screw to re-secure the collar in that position.
12. Take and compare another set of radiometer readings.
13. Continue until the lowest reading pole is equal to or greater than 90% of the high reading pole.
14. Re-tighten set screw to lock the dual wand in position.

Notice:

If a radiometer is not available, it is recommended that Loctite® Service be contacted at 1-800-LOCTITE (1-800-562-8483) to insure optimum performance when installing a new multi-pole light guide.

7. Care and Maintenance

 **Notice:**

It is recommended that the UV output from the lamp be monitored regularly using a Loctite® 7020 UV Spot Radiometer P/N: 1406024. If a radiometer is not used to monitor the lamp, it is recommended that the lamp be replaced when the LCD display indicates 1,000 hours of operating time has elapsed. It is normal for the lamp output to slowly decline over operating time however, the effective life of the lamp will decrease significantly faster if it is turned on and off frequently.



Caution!

It is recommended that the end of the light guide be positioned no closer than ½ inch from the Loctite® product being cured. The heat transmitted by the lamp can adversely affect the properties of the cured product or possibly cause damaged to the part surface.

 **Notice:**

Vapors from some products may gradually accumulate on the end of the light guide, reducing the UV output. It should be inspected regularly and cleaned as necessary using isopropyl alcohol and a soft, clean cloth.




Caution!

Avoid placing sharp bends in the light guide. This reduces the UV output and may permanently damage the light guide. If the light guide is mounted on a fixture, secure it by the metal exit fitting and not the flexible plastic section.




Caution!

Be sure to remove the plastic end caps before attempting to use the light guide.

 **Notice:** The intake and exhaust fan filter elements should be replaced as needed to insure proper cooling of the power supply and UV lamp assembly. They should be inspected routinely.

7.1 Replacing the Lamp

 **Caution!** Do not touch the inside surface of the lamp reflector or the bulb . Contaminants from hands will create “hot spots” and cause the module to fail prematurely. If either one is accidentally touched, carefully wipe clean using soft cloth and isopropyl alcohol.

1. Switch the power off and unplug the unit.
2. Allow several minutes for the installed lamp to cool.

3. Using a 3/32" Allen wrench, loosen the four button head screws that are on the sides of the top cover.
4. Lift the cover straight up off of the chassis. This will allow access to the bulb reflector assembly.
5. Unplug the lamp from the power supply (see photo #1)

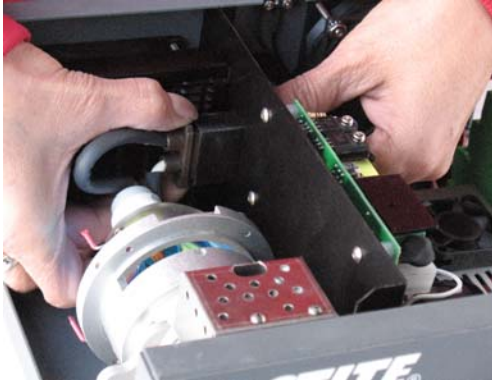


Photo #1



Photo #2

6. Remove the bulb/reflector assembly by lifting the retainer clips off the reflector holder

(See photo #2)

7. Lift the bulb/reflector assembly from nosepiece (see photo #3 & #4).



Photo #3

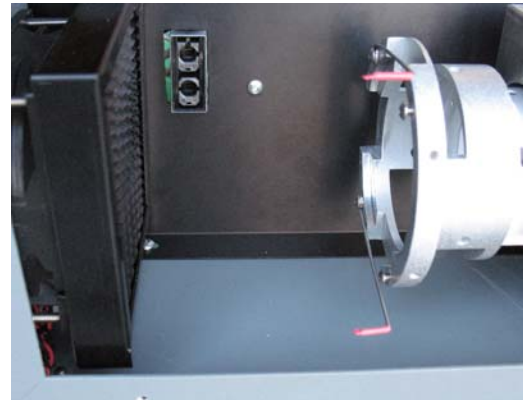


Photo #4

8. Replace the bulb/reflector assembly by remounting retaining clips to the assembly.
9. Plug the lamp into the power supply.
10. Re-attach cover and connect the power cord to the rear of the CL15 Wand System
11. Insert the light guide into the receptacle located on the left section of the front control panel of the CL15 Wand System.

⚠ WARNING!

The UV lamp used in this unit contains a very small amount of mercury. Disposal of lamps should be done in accordance with state and local regulations.

8. Trouble Shooting

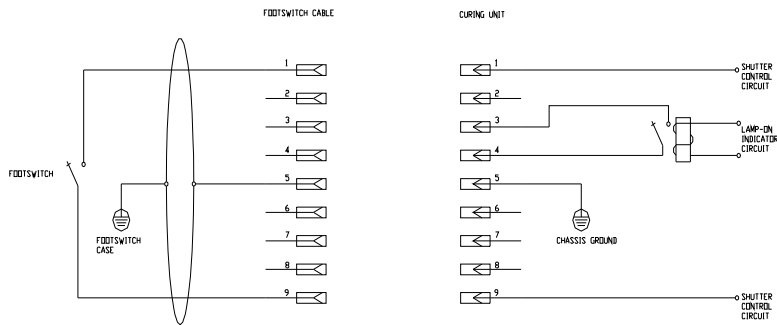
⚠ WARNING!

Parts may be hot. If unit was running, allow time for adequate cool down. Exercise caution when touching internal parts.

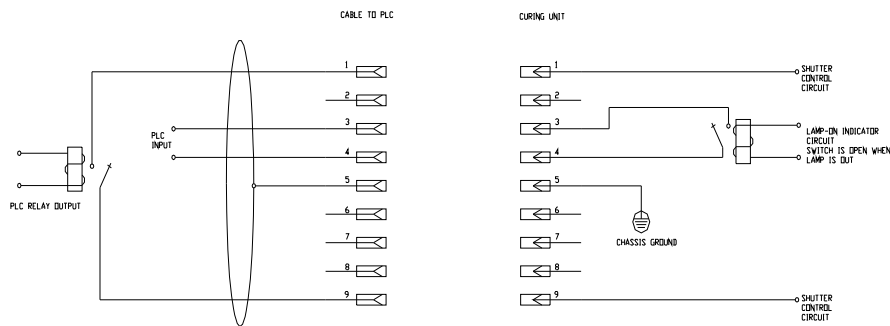
Condition	Correction
Unit Does Not Turn On	Check power at wall. Check condition of line cord. Check line cord connections. Check fuse.
Unit blows fuses	Check fuse for proper rating.
Lamp fails to ignite	Check hours on lamp. Replace if necessary. Check lamp power connections.
Shutter does not open	Confirm footswitch is plugged in. Verify PLC is wired correctly. Verify that the shutter is mechanically free. Verify that the light guide is properly seated so the safety interlock switch is engaged.
Low UV output	Check hours of use on lamp. Replace if necessary. Check end of light guide for polymer build-up. Clean with isopropyl alcohol. Verify that the light guide is completely inserted into the light guide receptacle.
Cannot fully insert light guide into light guide receptacle	Back off set screw on side of light guide receptacle.

9. Pin Connections

MANUALLY OPERATED SYSTEM



PLC OPERATED SYSTEM



10. Replacement Parts and Accessories

Loctite® Part Number	Description
1664246	Replacement Lamp Module
983677	Single End Light Guide (5 mm x 1M)
983684	2 Pole Light Guide (3 mm x 1M)
951681	Single Light Guide (5 mm x 1.5M)
98596	3 Pole Light Guide (3 mm x 1M)
97210	UV Safety Glasses
97201	Foot Switch Assembly
1406024	Loctite® 7020 UV Spot Radiometer

11. Warranty

Henkel expressly warrants that all products referred to in this Instruction Manual for the CL15 UV Curing Wand System, (hereafter called "Product"), shall be free from defects in materials and workmanship. Liability for Henkel shall be limited, as its option, to replacing those Products which are shown to be defective in either materials or workmanship or to credit the purchaser the amount of the purchase price thereof (plus freight and insurance charges paid therefore by the user). The purchaser's sole and exclusive remedy for breach of warranty shall be such replacement or credit.

A claim of defect in materials or workmanship in any Product shall be allowed only when it is submitted in writing within one month after discovery of the defect or after the time the defect should reasonably have been discovered and in any event, within 1 year after the delivery of the Products to the purchaser. This warranty does not apply to perishable items, such as fuses and fan filters. The lamp is fully warranted for 500 hours of operation for failure to ignite. The lamp is also warranted to produce 60% of the minimum rated initial output at 500 hours of operating time. No such claim shall be allowed in respect of products which have been neglected or improperly stored, transported, handled, installed, connected, operated, used or maintained. In the event of unauthorized modification of the Products including, where products, parts or attachments for use in connection with the Products are available from Henkel, the use of products, parts or attachments which are not manufactured by Henkel, no claim shall be allowed.

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