



BlueLight LED Curing System Operator's Manual



Overview

Chapter Contents

Serial Number Location 2

Intended Use 3

Equipment Modification 3

Machine Components. 4

Operator Orientation. 6

About This Manual 7

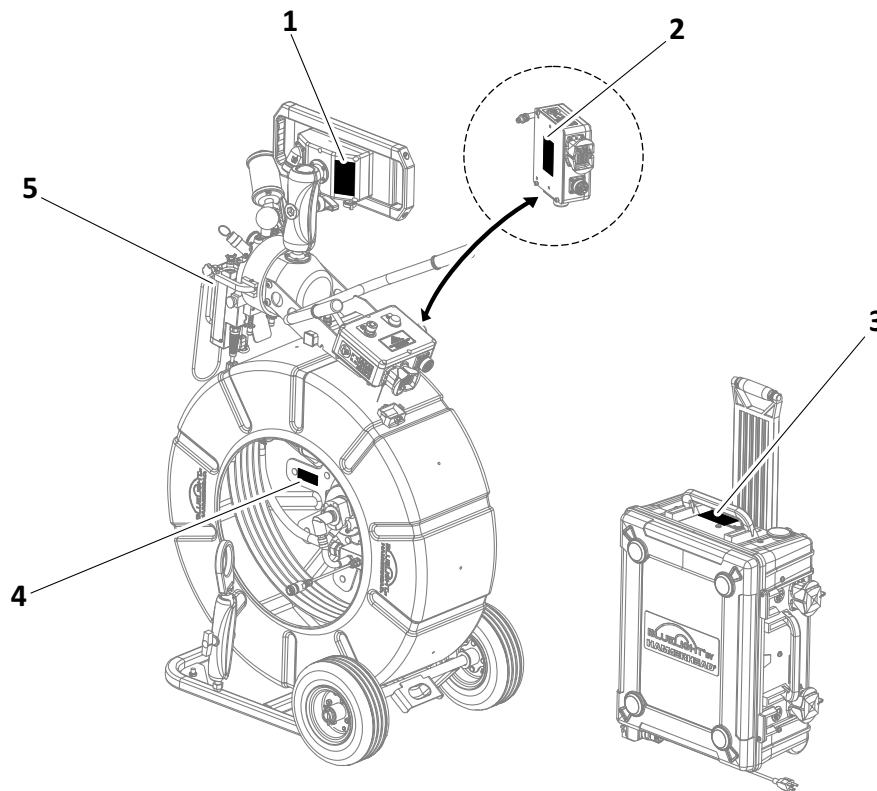
- Bulleted Lists.7
- Numbered Lists7

California Proposition 65

⚠ WARNING Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm. www.P65warnings.ca.gov.

Serial Number Location

Record serial numbers and date of purchase in spaces provided.



j78om019h21.eps

1	Display Serial Number	
2	Junction Box Serial Number	
3	Power Converter Serial Number	
4	Drum Serial Number	
5	Propulsion Unit Serial Number	

Intended Use

The BlueLight LED CIPP Lining System is intended to cure liners for use in cured in place pipe (CIPP) operations lining laterals, small wastewater pipes, and conduit. It is designed to cure liners of diameter 2-18 in (5.08-45.72 cm) for distances of up to 328 ft (100 m).

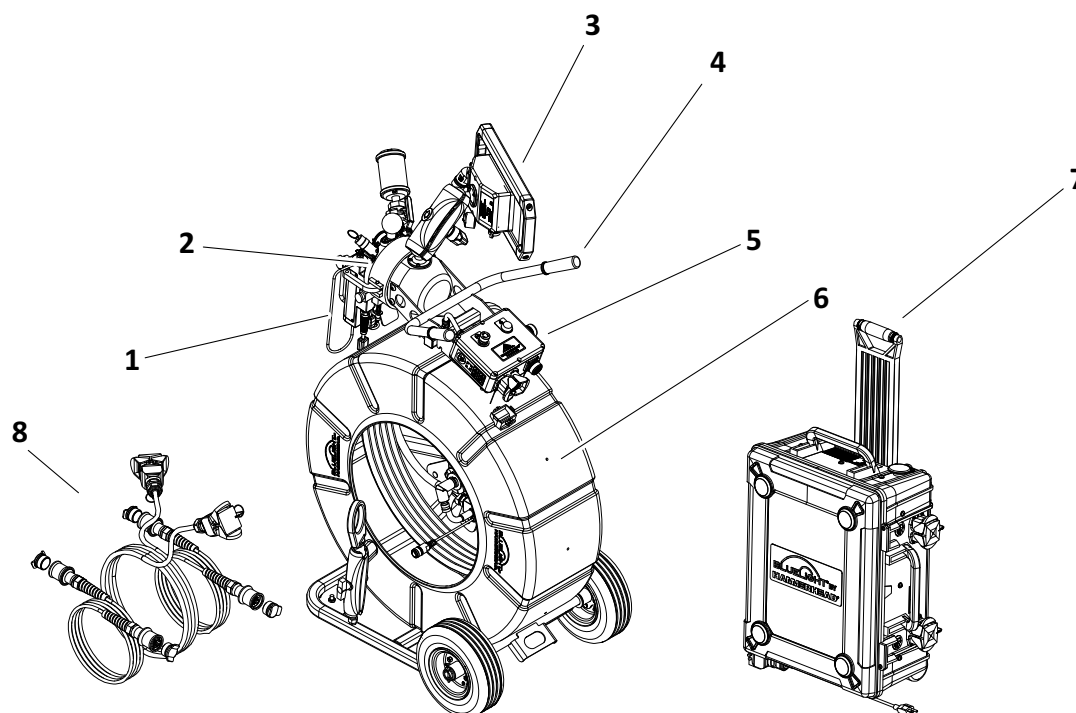
Contact your HammerHead® dealer for provisions required for operating in extreme temperatures. Use in any other way is considered contrary to the intended use.

The BlueLight system should be operated, serviced, and repaired only by persons familiar with its particular characteristics and acquainted with the relevant safety procedures.

Equipment Modification

This equipment was designed and built in accordance with applicable standards and regulations. Modification of equipment could mean that it will no longer meet regulations and may not function properly or in accordance with the operating instructions. Modification of equipment should only be made by competent personnel possessing knowledge of applicable standards, regulations, equipment design functionality/requirements and any required specialized testing.

Machine Components



j78om006h21.eps

- | | |
|------------------------------------|-----------------|
| 1. Propulsion unit | 5. Junction box |
| 2. Camlock | 6. Drum |
| 3. Display/Touch screen controller | 7. Power supply |
| 4. Handles | 8. Cables |

Electromagnetic Compatibility Statement

U.S.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by **The Charles Machine Works, Inc.** could void the user's authority to operate the equipment.

Canada

CAN ICES-3(A)/NMB-3(A)

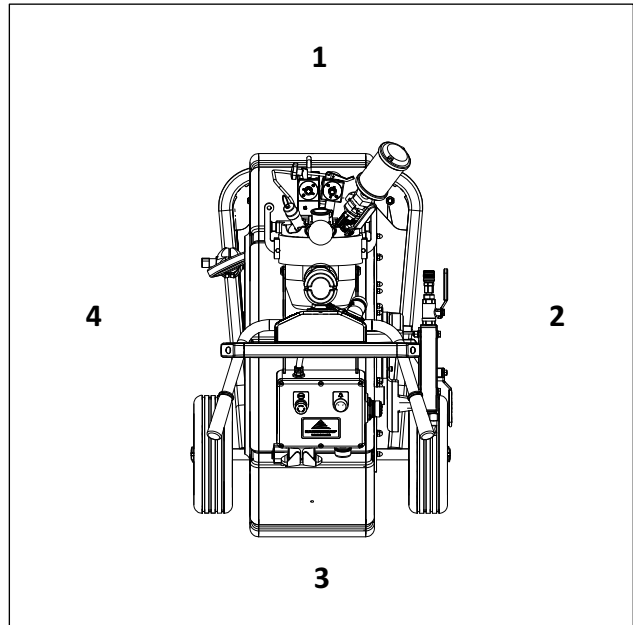
This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la class A est conforme à la norme NMB-003 du Canada.

Operator Orientation

IMPORTANT: Top view of machine is shown.

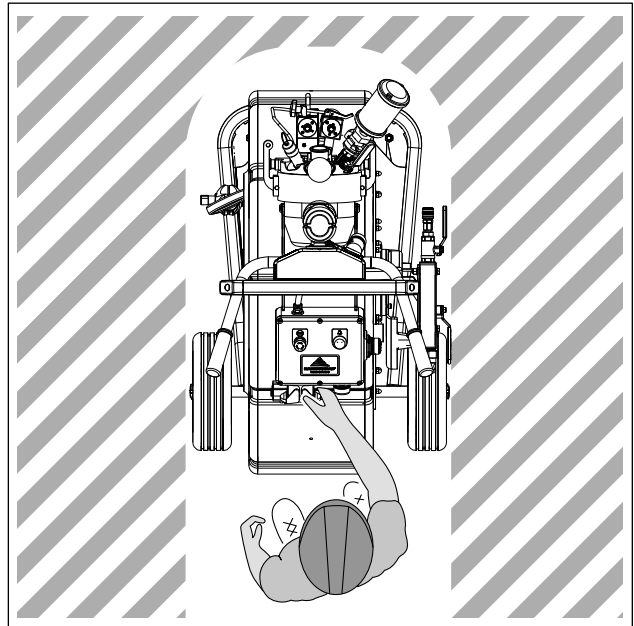
1. Front
2. Right side
3. Rear
4. Left side



j78om002h21.eps

Operating Area

Operate within easy access of controls.



j78om003h21.eps

About This Manual

This manual contains information for the proper use of this machine. Cross references such as “See page 50” will direct you to detailed procedures.

Bulleted Lists

Bulleted lists provide helpful or important information or contain procedures that do not have to be performed in a specific order.

Numbered Lists

Numbered lists contain illustration callouts or list steps that must be performed in order.

Foreword

This manual is an important part of your equipment. It provides safety information and operation instructions to help you use and maintain your HammerHead equipment.

Read this manual before using your equipment. Keep it with the equipment at all times for future reference. If you sell your equipment, be sure to give this manual to the new owner.

If you need a replacement copy, contact your HammerHead dealer. If you need assistance in locating a dealer, visit our website at **www.hammerheadtrenchless.com** or write to the following address:

HammerHead Trenchless Equipment
500 South C.P. Avenue
Lake Mills, WI 53551
USA

The descriptions and specifications in this manual are subject to change without notice.

The Charles Machine Works[®], Inc. dba HammerHead reserves the right to improve equipment. Some product improvements may have taken place after this manual was published. For the latest information on HammerHead equipment, see your HammerHead dealer.

Thank you for buying and using HammerHead equipment.

***BlueLight LED Curing System
Operator's Manual***

Issue number 3.0/OM-10/25

Part number 934-3139

Copyright 2022, 2023, 2024, 2025

**by The Charles Machine Works, Inc. dba
Hammerhead Trenchless**



HammerHead is a registered trademark of The Charles Machine Works, Inc.

This product and its use may be covered by one or more patents at <http://patents.charlesmachine.works>.

Contents

	Overview machine serial number, information about the type of work this machine is designed to perform, basic machine components, and how to use this manual	1
	Foreword part number, revision level, and publication date of this manual, and factory contact information	9
	Safety machine safety alerts and emergency procedures	13
	Controls machine controls and indicators and how to use them	23
	Prepare procedures for inspecting and classifying the jobsite, planning the installation, and preparing the jobsite for work	33
	Operate procedures for operating the equipment	37
	Systems and Equipment information about cables, drums, light sources, spacers, and troubleshooting	47
	Complete the Job procedures for restoring the jobsite and storing equipment	51
	Service service intervals and instructions for this machine including lubrication, replacement of wear items, and basic maintenance	55
	Specifications machine specifications including weights, measurements, power ratings, and fluid capacities	61
	Support the warranty policy for this machine, and procedures for obtaining warranty consideration and training	65
	Service Record a record of major service performed on the machine	69

Safety


Chapter Contents


Safety Alert Classification	14
Guidelines	15
Grounding Instructions	16
Emergency Procedures	17
• Electric Strike Description	17
• If an Electric Line is Damaged	18
• If a Gas Line is Damaged	18
• If a Fiber Optic Cable is Damaged	18
• If Machine Catches on Fire	19
Machine Safety Alerts	15


Safety Alert Classifications

These classifications and the icons defined on the following pages work together to alert you to situations which could be harmful to you, jobsite bystanders or your equipment. When you see these words and icons in the book or on the machine, carefully read and follow all instructions. **YOUR SAFETY IS AT STAKE.**

Watch for the three safety alert levels: **DANGER**, **WARNING** and **CAUTION**. Learn what each level means.

 **DANGER** indicates a hazardous situation that, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations.

 **WARNING** indicates a hazardous situation that, if not avoided, could result in death or serious injury.

 **CAUTION** indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.

Watch for two other words: **NOTICE** and **IMPORTANT**.

NOTICE indicates information considered important, but not hazard-related (e.g., messages relating to property damage).

IMPORTANT can help you do a better job or make your job easier in some way.

Guidelines



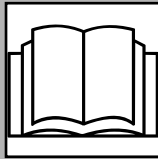
When you see this safety alert sign, carefully read and follow all instructions.

YOUR SAFETY IS AT STAKE. Read this entire section before using your equipment.

Follow these guidelines before operating any jobsite equipment.

- Complete proper training and read operator's manual before using equipment.
- Mark proposed path with white paint and have underground utilities located before working. In the US or Canada, call 811 (US) or 888-258-0808 (US and Canada). Also contact any local utilities that do not participate in the One-Call service. In countries that do not have a One-Call service, contact all local utility companies to have underground utilities located.
- Classify jobsite based on its hazards and use correct tools and machinery, safety equipment, and work methods for jobsite.
- Mark jobsite clearly and keep spectators away.
- Wear personal protective equipment.
- Do not wear jewelry or loose clothing.
- Review jobsite hazards, safety and emergency procedures, and individual responsibilities with all personnel before work begins. Safety Data Sheets (SDS) are available at www.hammerheadshop.com/resources/technical-sheets/.
- Fully inspect equipment before operating. Repair or replace any worn or damaged parts. Replace missing or damaged safety shields, safety signs, and decals. Contact your HammerHead dealer for assistance.
- Use equipment carefully. Stop operation and investigate anything that does not look or feel right.
- Do not operate unit where flammable gas, liquid, or dust may be present.
- Only operate equipment in well-ventilated areas.
- Contact your HammerHead dealer if you have any question about operation, maintenance, or equipment use.

Grounding Instructions



⚠ DANGER

Electric shock. Improper connection of equipment-grounding conductor will cause death or serious injury. Contact qualified electrician to ensure outlet is properly grounded.

To help avoid injury:

- Never modify plug provided with product. If plug will not fit outlet, have a proper outlet installed by a qualified electrician.
- Never use an adapter.
- Check with a qualified electrician or serviceman if the grounding instructions are not completely understood, or if in doubt as to whether the appliance is properly grounded.

This product must be grounded. If it should malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce risk of electric shock. This product is equipped with a cord with equipment-ground and a grounding plug (shown). The plug must be plugged into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances.

Emergency Procedures



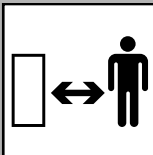
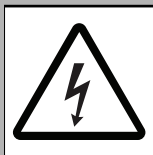
⚠ WARNING

Jobsite hazards. Exposure can cause death or serious injury. Use correct equipment and work methods. Use and maintain appropriate safety equipment.

Before operating any equipment, review emergency procedures and check that all safety precautions have been taken.

EMERGENCY SHUTDOWN - Turn ignition switch to stop position or push remote engine stop button (if equipped). Open the vent ball valves on the oilers to release air pressure as quickly as possible.

Electric Strike Description



⚠ DANGER

Buried electrical lines. Contact will cause death or serious injury. Know location of lines. Stay away.

When working near electric cables, remember the following:

- Electricity follows all paths to ground, not just path of least resistance.
- Pipes, hoses, and cables will conduct electricity back to all equipment.
- Low voltage current can injure or kill. Many work-related electrocutions result from contact with less than 440 volts.

Most electric strikes are not noticeable, but indications of a strike include:

- power outage
- smoke
- explosion
- popping noises
- arcing electricity

If any of these occur, assume an electric strike has occurred.

If an Electric Line is Damaged

If you suspect an electric line has been damaged, DO NOT MOVE. Take the following actions. The order and degree of action will depend on the situation.

- If you are in pit:
 - DO NOT TOUCH ANYTHING.
 - Remain in pit.
 - Warn people nearby that an electric strike has occurred. Instruct them to leave the area and contact utility.
 - Contact utility company to shut off power.
 - Do not leave pit until given permission by utility company.
- If you are out of pit:
 - DO NOT TOUCH ANY EQUIPMENT.
 - LEAVE AREA. The ground surface may be electrified, so take small steps with feet close together to reduce the hazard of being shocked from one foot to the other.
 - Contact utility company to shut off power.
 - Do not return to jobsite or allow anyone into area until given permission by utility company.
- If you are on another piece of equipment:
 - Warn people nearby that an electric strike has occurred. Instruct them to leave the area and contact utility.
 - Contact utility company to shut off power.
 - Do not return to area or allow anyone into area until given permission by utility company.

If a Gas Line is Damaged

If you suspect a gas line has been damaged, take the following actions. The order and degree of action will depend on the situation.

- Immediately shut off engine(s), if this can be done safely and quickly.
- Remove any ignition source(s), if this can be done safely and quickly.
- Warn others that a gas line has been cut and that they should leave the area.
- After warning others to leave the area, leave jobsite as quickly as possible.
- Immediately call your local emergency phone number and utility company.
- If jobsite is along street, stop traffic from driving near jobsite.
- Do not return to jobsite until given permission by emergency personnel and utility company.

If a Fiber Optic Cable is Damaged

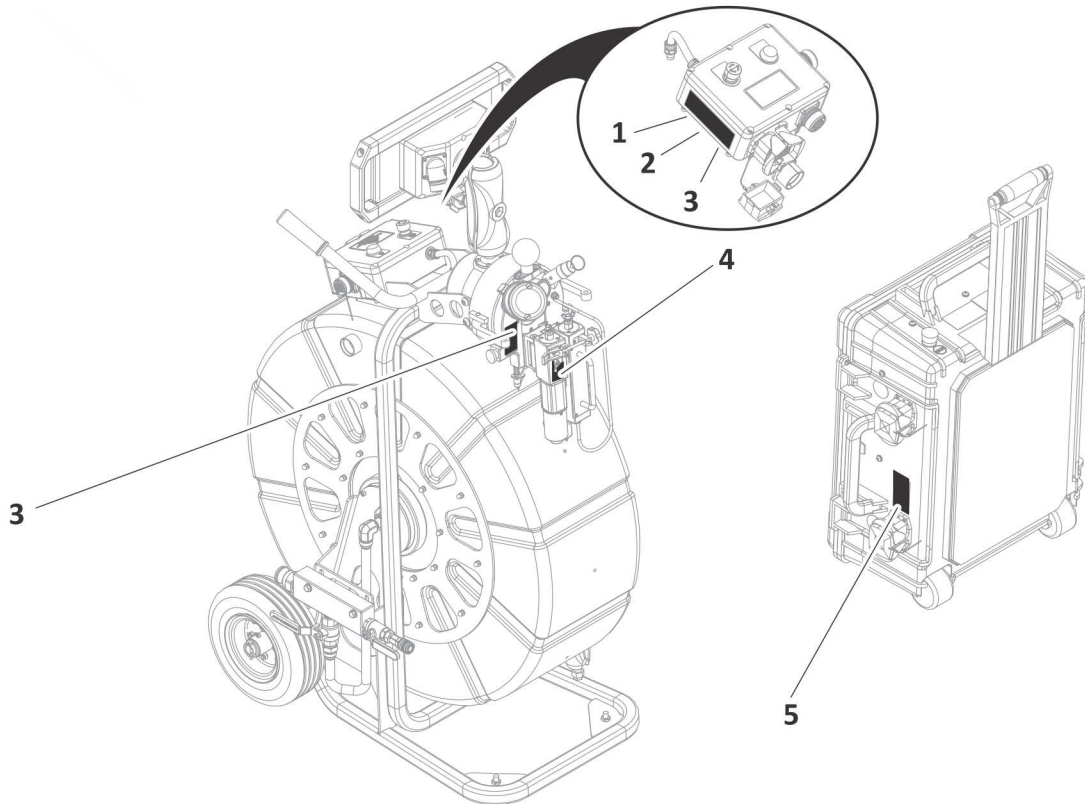
Do not look into cut ends of fiber optic or unidentified cable. Vision damage can occur. Contact utility company.

If Machine Catches on Fire

Perform emergency shutdown procedure and then take the following actions. The order and degree of action will depend on the situation.

- Immediately move battery disconnect switch (if equipped and accessible) to disconnect position. If it is safe to do so, immediately unplug from A.C. power source.
- If fire is small and fire extinguisher is available, attempt to extinguish fire.
- If fire cannot be extinguished, leave area as quickly as possible and contact emergency personnel.

Machine Safety Alerts



Decal_HH_BlueLight.png

1



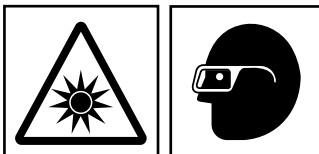
Read operator's manual. Follow safety rules and know how to use all controls. Your safety is at stake.

2



CAUTION High noise levels. Exposure can cause hearing loss. Wear hearing protection.

3

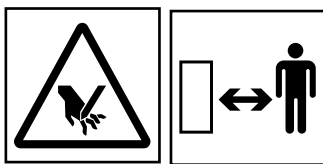


WARNING Visible radiation. Exposure can cause serious injury. Do not look at operating lamp. Wear proper personal protective equipment.

BlueLight LED Curing System Operator's Manual

Machine Safety Alerts

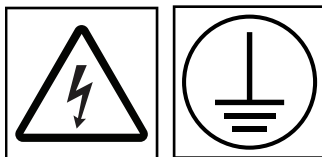
4



⚠ WARNING

Moving parts. Contact can cause serious injury.
Stay away.

5



⚠ DANGER

Connected electrical equipment. Contact will
cause death or serious injury. Only use in a dry and protected
environment with a properly grounded power source.

Controls

Chapter Contents

Display 24

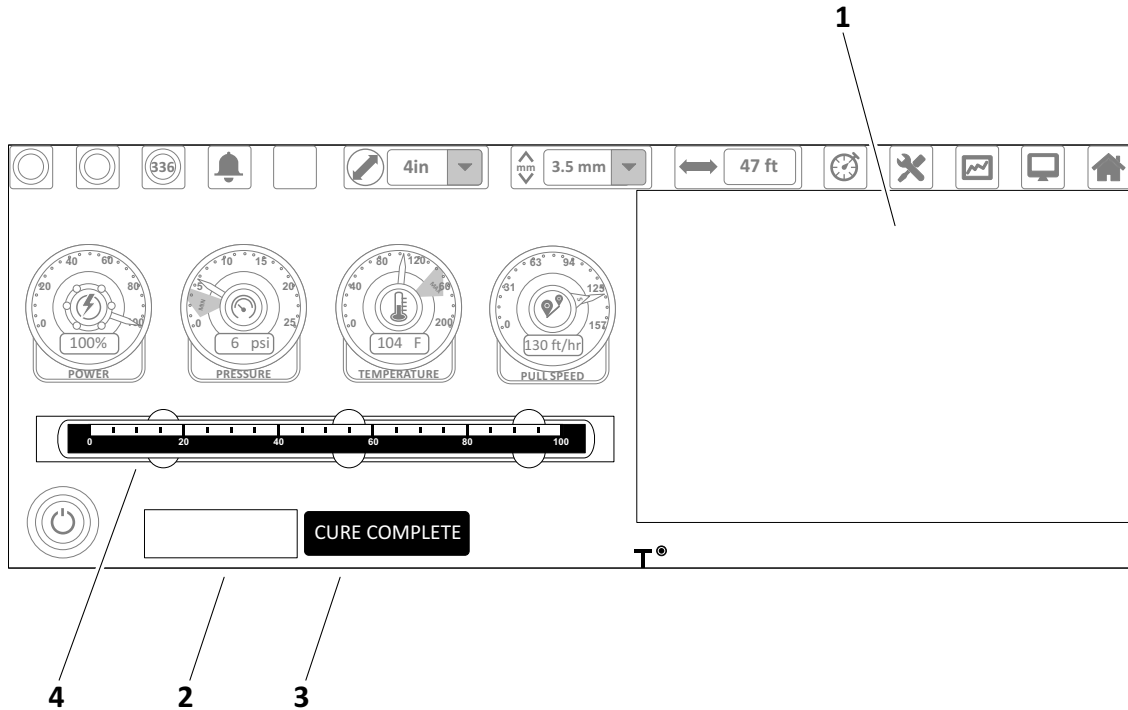
- Alternate View 24
- Display Commands 25
- Indicators 27

Power Supply 29

Trolley 30

Display

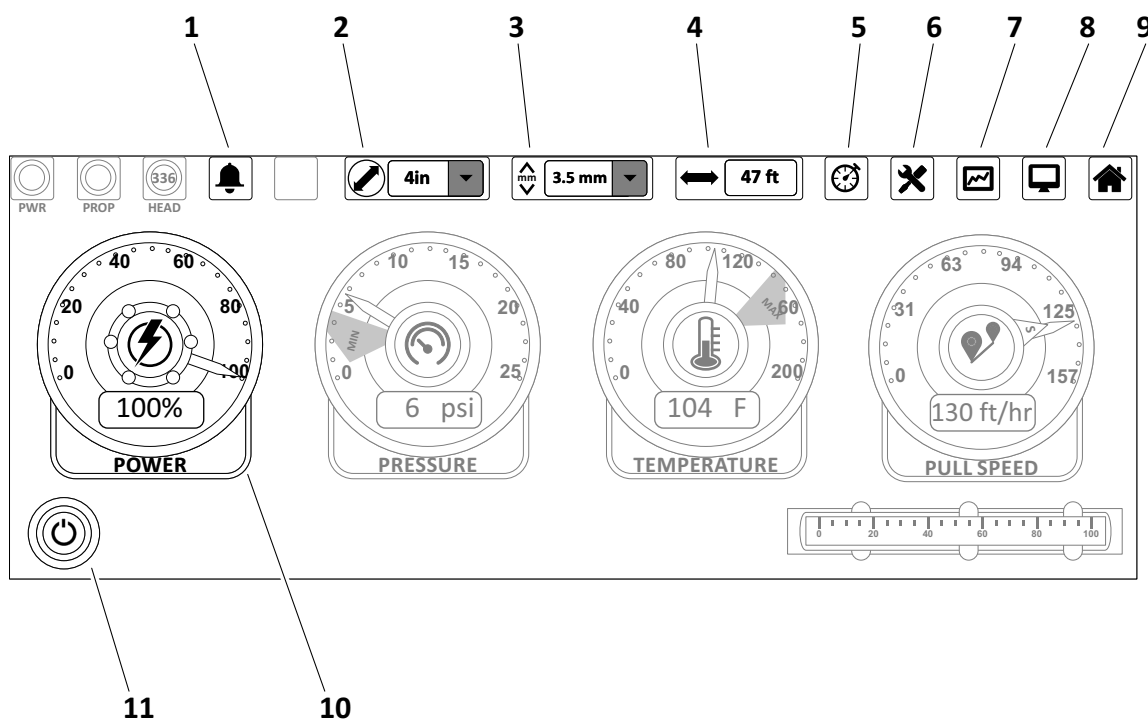
Alternate View



j78om010h21.eps

Item	Description	Notes
1. Camera/Plot view	Displays camera or plot of curing process.	When in camera view, camera can be made full screen.
2. Message view	Displays alert messages.	
3. Cure complete	To end cure after pausing, press.	Button appears when curing process is paused. See "Power/Pause" on page 26.
4. Progress bar	Displays percentage of job completed.	

Display Commands



j78om009h21.eps

- | | |
|--------------------|-------------------------------|
| 1. Alarm | 7. Plots |
| 2. Liner size | 8. Camera |
| 3. Liner thickness | 9. Home |
| 4. Liner length | 10. Power level control/gauge |
| 5. Timer | 11. Power/Pause |
| 6. Tools | |

Item	Description	Notes
1. Alarm	To show alarm information, press.	
2. Liner size	To enter liner size, press.	
3. Liner thickness	To enter liner weight, press.	
4. Liner length	To enter liner length, press.	
5. Timer	To display timer function, press.	Display will show timer options. Set as needed.
6. Tools	To access tools screen, press.	See "Tools Menu" on page 26.

BlueLight LED Curing System Operator's Manual

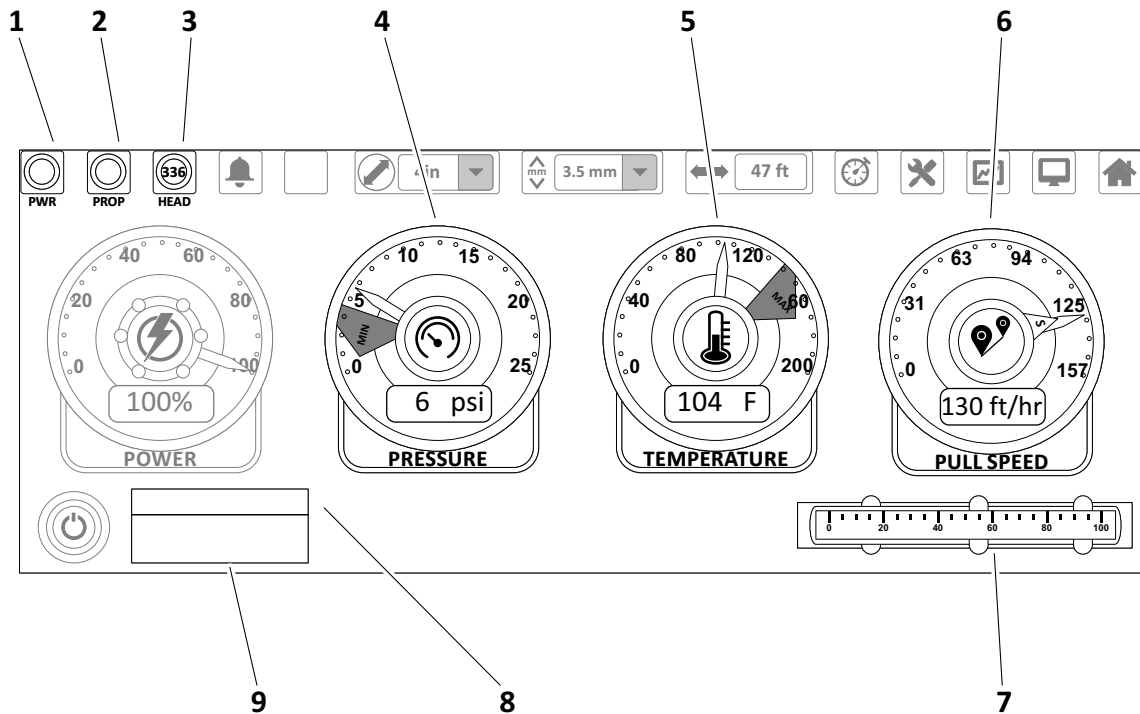
Display

Item	Description	Notes
7. Plot	To access plot view, press.	
8. Camera	To access camera view, press.	
9. Home	To return to home view, press.	
10. Power level control/gauge	To set power level, press percentage. Displays power level.	When using the 15A/120Vac power plug and 696 light head, power will be limited to 85%.
11. Power/Pause	To power the light head, press. To pause cure, press. To continue, press.	

Tools Menu

Item	Description	Notes
Setup	To customize settings, select.	Language, units of measurement, time, dwell time entry, software update function, and pressure bypass can be adjusted in this screen.
Fix	To monitor and turn off light banks, select.	Displays troubleshooting information.
Alarm	To view alarm information, select.	
Help	To access help information, press.	Contact information, software version, and other help information can be accessed in this menu.
Advanced	For use only by qualified technicians.	

Indicators



j78om008h21.eps

- | | |
|----------------------------------|------------------|
| 1. Power unit communication | 6. Pull speed |
| 2. Propulsion unit communication | 7. Progress bar |
| 3. Light head communication | 8. System status |
| 4. Pressure | 9. Cure status |
| 5. Temperature | |

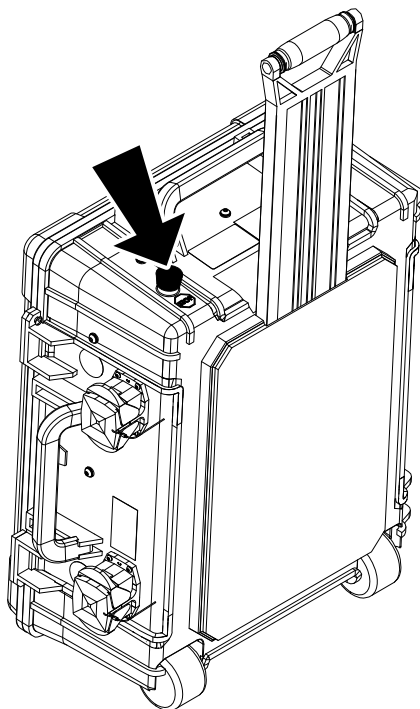
Item	Description	Notes
1. Power unit communication	Lights when power converter communication link is active.	If indicator does not light after 30 seconds: <ul style="list-style-type: none"> • Unplug the system. • Ensure control cables are connected. • Plug in system.
2. Propulsion unit communication	Lights when propulsion unit communication link is active.	If indicator does not light after 30 seconds, check cable between trolley junction box and propulsion unit.

BlueLight LED Curing System Operator's Manual

Display

Item	Description	Notes
3. Light head communication	Lights when light head communication link is active.	Displays light head model number. If indicator does not light after 30 seconds, check connection at trolley hub.
4. Pressure	Displays air pressure in liner.	<p>NOTICE: Pressure must be kept at a minimum of 4.5psi (0.31bar).</p> <p>Green center indicates pressure OK.</p> <p>Red center indicates high or low pressure.</p> <p>See "Air pressure gauge" on page 30.</p>
5. Temperature	Displays light head temperature.	<p>Maximum light head temperature is 170°F (76.7°C).</p> <p>Green center indicates system is functioning as expected.</p> <p>Red center indicates high temperature. System will shut down when temperature limit is exceeded.</p>
6. Pull speed	Displays pull speed.	<p>Green arrow displays set speed.</p> <p>Orange needle indicates actual speed.</p> <p>Green center indicates system is functioning as expected.</p> <p>Flashing red center indicates system is checking speed.</p> <p>Red center indicates system error. System will shut down after 5 seconds.</p>
7. Progress bar	Displays percentage of job completed.	
8. System status	Displays messages for system status.	See "Troubleshoot System" on page 49.
9. Cure status	Displays time and remaining distance of cure.	

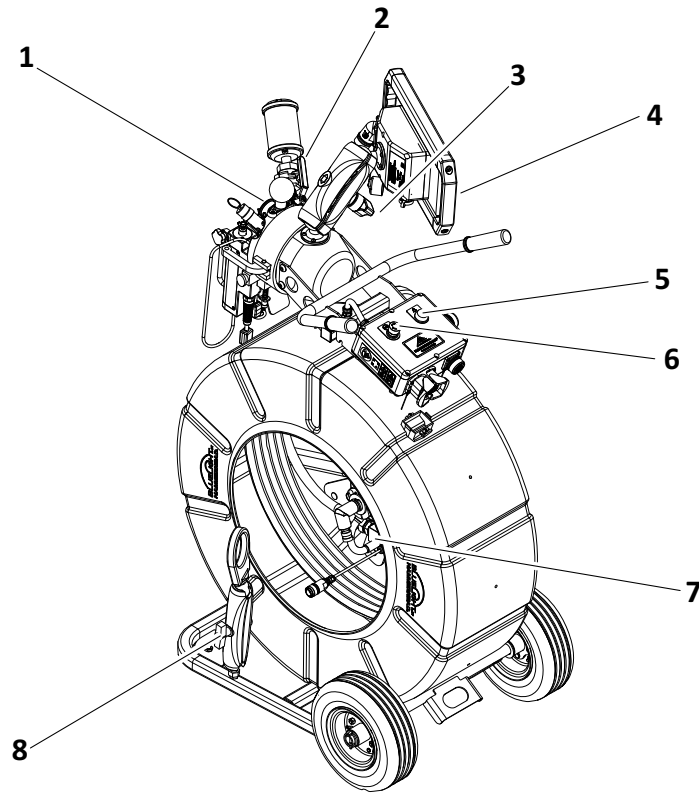
Power Converter



j78om018h21.eps

Item	Description	Notes
Remote stop button	To stop power to light head and motor movement, press.	

Trolley



j780m004h21.eps

- | | |
|------------------------------------|--------------------------------|
| 1. Air pressure gauge | 5. Alarm |
| 2. Air valve | 6. Stop button |
| 3. Display position control | 7. Drum brake |
| 4. Display/Touch screen controller | 8. Guide ring position control |

Item	Description	Notes
1. Air pressure gauge	Displays pressure.	
2. Air valve	To open, move left. To close, move right.	
3. Display position control	To loosen and remove display, move left. To secure display, move right.	

Item	Description	Notes
4. Display/Touch screen controller	Displays graphic symbols for indicators and conditions. Allows access to machine controls.	See "Display" on page 24. See "Display Commands" on page 25.
5. Alarm	Sounds when 3ft (0.9m) remains in job. Sounds when timer function is used. Sounds when an error occurs.	Alarm will sound for 1 minute.
6. Stop button	To stop machine, press.	
7. Drum brake	To prevent drum rotation, turn right. To enable rotation, turn left.	
8. Guide ring position control	To adjust position, move left. To lock in place, move right.	

Prepare

Chapter Contents

Gather Information 34

- Review Job Plan 34
- Notify One-Call Services 34
- Arrange for Traffic Control 34
- Plan for Emergency Services 34

Inspect Site 35

Prepare Jobsite 35

Prepare Equipment 36

- Check Supplies 36
- Check Equipment 36
- Assemble Accessories 36

Gather Information

A successful job begins before you dig. The first step in planning is reviewing information already available about the job and jobsite.

Review Job Plan

Review blueprints or other plans. Check for information about existing or planned structures, elevations, or proposed work that may be taking place at the same time.

Notify One-Call Services

Mark proposed path with white paint and have underground utilities located before working.

- In the US or Canada, call 811 (US) or 888-258-0808 (US and Canada). Also contact any local utilities that do not participate in the One-Call service.
- In countries that do not have a One-Call service, contact all local utility companies to have underground utilities located.

Examine Product Material

Ask for a sample of the new product material you will be installing. Check its weight and stiffness.

Arrange for Traffic Control

If working near a road or other traffic area, contact local authorities about safety procedures and regulations.

Plan for Emergency Services

Have the telephone numbers for local emergency and medical facilities on hand. Check that you will have access to a telephone.

Inspect Site

- Follow U.S. Department of Labor regulations on excavating and trenching (Part 1926, Subpart P) and other similar regulations.
- Mark proposed path with white paint and have underground utilities located before working. In the US or Canada, call 811 (US) or 888-258-0808 (US and Canada). Also contact any local utilities that do not participate in the One-Call service. In countries that do not have a One-Call service, contact all local utility companies to have underground utilities located.
- Inspect jobsite and perimeter for evidence of underground hazards, such as:
 - “Buried utility” notices
 - Utility facilities without overhead lines
 - Gas or water meters
 - Junction boxes
 - Drop boxes
 - Light poles
 - Manhole covers
 - Sunken ground
- Mark location of all buried utilities and obstructions.

Prepare Jobsite



⚠ WARNING Jobsite hazards could cause death or serious injury. Use correct equipment and work methods. Use and maintain proper safety equipment.

To help avoid injury: All vegetation near operator's station must be removed. Contact with trees, shrubs, or weeds during electrical strike could result in electrocution.

- Ensure area where machine will be operated is on level and firm ground.
- Clear selected area 3' (0.9 m) around and 20' (6.1 m) above unit.
- Ensure work area is clean and well lit. Cluttered or dark areas invite accidents.

Prepare Equipment

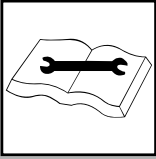

Check Supplies

- personal protective equipment, such as hard hat and safety glasses appropriate for protection against High Energy Visible (HEV) blue light
- resin
- portable generator/on site electrical supply
- hoses
- 60ft³/min (1.7m³/min) dried and chilled air supply

Check Equipment

Condition and Function

- all controls



WARNING Improper control function could cause death or serious injury. If control does not work as described in instructions, stop machine and have it serviced.

- couplers and fittings
- hoses and valves
- rollers

Assemble Accessories

Fire Extinguisher

If required, keep a fire extinguisher near the power unit but away from possible points of ignition. The fire extinguisher should always be classified for both oil and electrical fires. It should meet legal and regulatory requirements.

Operate

Chapter Contents

Move Machine 38

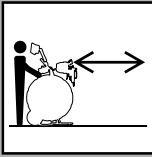
Set Up and Configure 39

- Install Drum40
- Connect Electrical Cables41
- Connect Air Hoses42
- Attach Light Head42
- Check Connections42
- Connect Liner42

Operate 44

Shut Down 45

Move Machine



⚠ WARNING

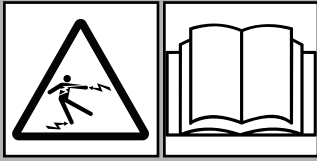
Tipover possible. Machine can tip over and crush you.

To help avoid injury:

- Move at slow speed.
- Use both hands.
- Do not tip unit back past 20°.
- Keep handles and grasping surfaces dry, clean, and free from oil and grease.
- For machine weight, see “Specifications” on page 61.

To move machine, place foot on footpad at axle of trolley and pull back on handles at top of unit.

Set Up and Configure

**⚠ DANGER**

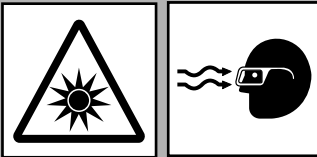
Electrical supply. Shock will cause death or serious injury. Only use in a dry and protected environment with a properly grounded power source.

**⚠ WARNING**

Jobsite hazards. Exposure can cause death or serious injury. Use correct equipment and work methods. Use and maintain appropriate safety equipment.

To help avoid injury:

- Wear personal protective equipment including hard hat, safety eye wear, foot protection, hearing protection, and gloves (except when near rotating equipment).
- Remove jewelry.
- Wear close-fitting, high visibility clothing.
- Have other personal protective equipment, such as insulated boots and gloves, breathing protection, and face shield, etc. available for use depending on jobsite hazards or requirements.

**⚠ WARNING**

Visible radiation. Exposure can cause serious injury. Do not look at operating lamp. Wear proper personal protective equipment.

To help avoid injury:

- Wear protective glasses or goggles rated for High Energy Visible (HEV) blue light.
- Cover windows on inversion drum while light is in use.

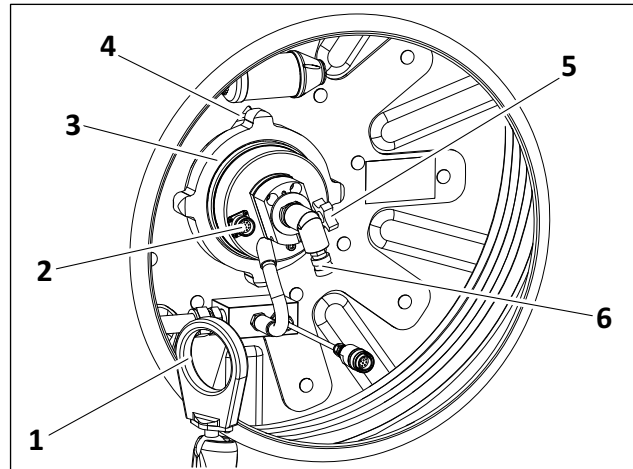
BlueLight LED Curing System Operator's Manual

Set Up and Configure

Install Drum

1. Set brake (3).
2. Remove guide ring (1).
3. Rotate drum until triangular notch (5) faces upward.
4. Ensure locating screw is facing up.
5. Slide drum onto hub.

NOTICE: Ensure electrical cable is clear of drum and hub.



j78om017h21.eps

6. Place locking nut (6) on hub. Ensure nut is fully seated.
7. Blue air hose from drum to hub connector (4).

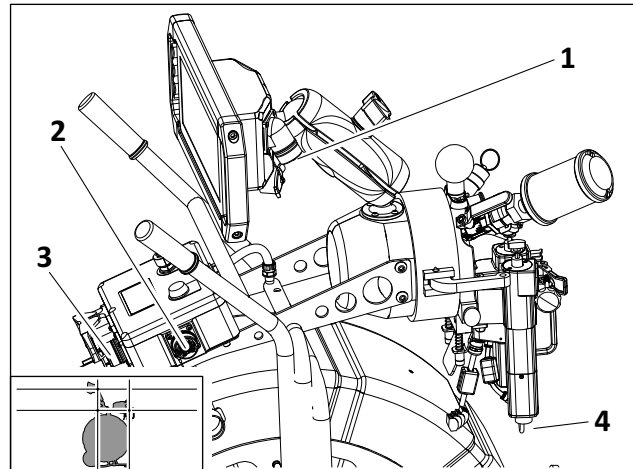
IMPORTANT: Coupling will click when fully seated.

8. Connect electrical cable to hub connection (2) and secure threaded connection.
9. Release brake.

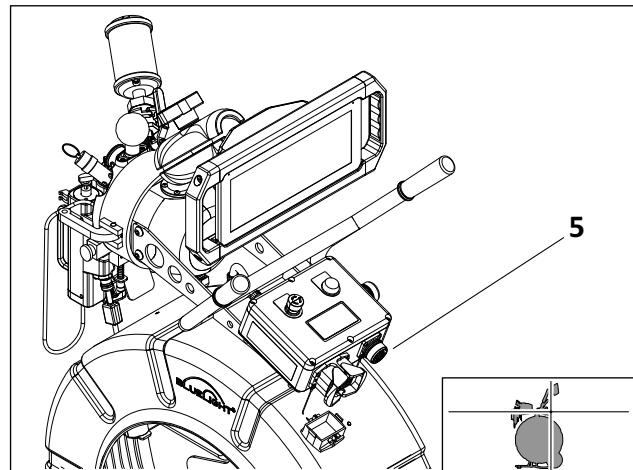
Connect Electrical Cables

NOTICE: Connect all interconnect cables before connecting AC power.

1. Connect control unit (1) to trolley junction box connector (2) using gray cable with black connectors.
2. Connect power converter (6) to trolley junction box connector (3) with blue cable with black connectors.
3. Connect propulsion unit (4) to trolley junction box connector (5) using gray cable with blue connectors.



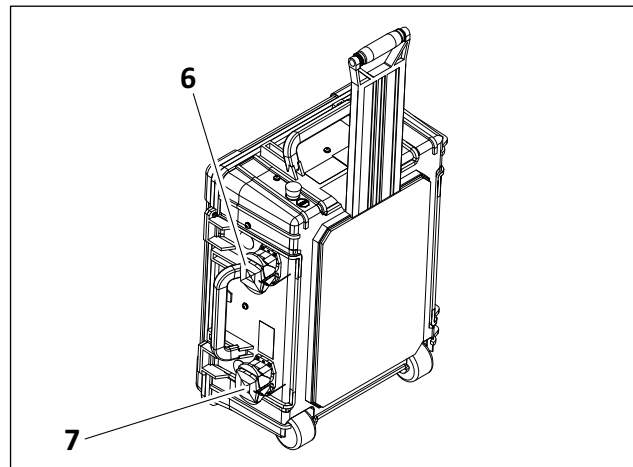
j78om022h21.eps



j78om023h21.eps

4. Connect AC power to power converter (7).

NOTICE: Power converter can be powered from either 120V_{AC} or 240V_{AC} circuits. See "Specifications" on page 61.



j78om024h21.eps

BlueLight LED Curing System Operator's Manual

Set Up and Configure

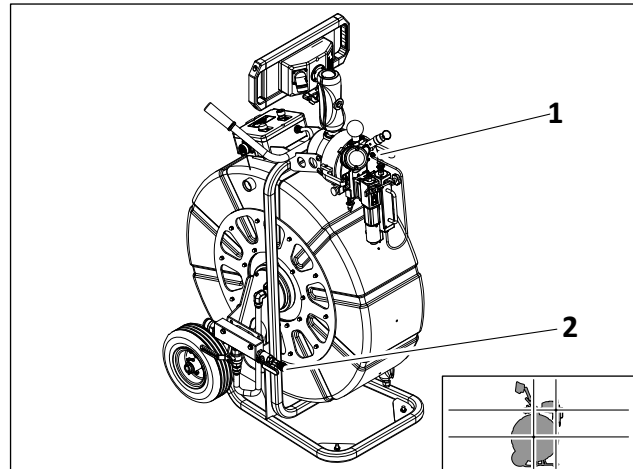
Connect Air Hoses

1. Connect air to trolley at back of hub (2).

NOTICE: Compressed air supply should be chilled and dried and capable of flowing at 70CFM (1.98m³/min).

2. Connect light head to camlock (1).
3. Remove light from case.

NOTICE: Only touch light with clean gloves. Clean light surface before use.



j78om025h21.eps

Attach Light Head

NOTICE:

- Only touch light with clean gloves.
- Clean light surface before operation.

1. Pass light head through guide ring.
2. Insert into camlock.
3. Tighten sluice fitting into camlock. Ensure there is a tight seal around tubing.

Check Connections

1. Once all connections are made, control panel will start.
2. Touch panel.
3. All indicators in top left of display will light green.
4. System status box will display "Ready to Cure".

Connect Liner

1. Deploy liner following instructions in drum manual.

NOTICE: Ensure no water can access liner.

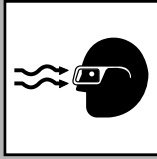
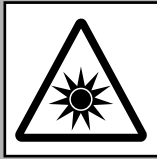
IMPORTANT: For information on inverting liner, see Installation and Procedures Guide.

2. Connect propulsion unit to side entry valve.

3. Remove air pressure from inversion drum.

IMPORTANT: For information, see inversion drum manual.

4. Connect air pressure to trolley.
5. Adjust air pressure to 4.5-10psi (0.31-0.69bar).

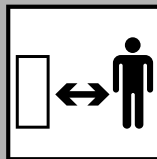


⚠ WARNING

Hazardous optical radiation. Exposure can cause serious injury. Do not look at operating lamp. Wear proper personal protective equipment.

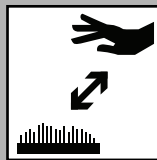
To help avoid injury:

- Wear protective goggles rated for High Energy Visible (HEV) blue light wavelength such as 3M 2846 or equivalent.
- Cover windows on inversion drum while light is in use.



⚠ WARNING

Moving parts. Contact can cause serious injury. Stay away.



⚠ CAUTION

Hot parts. Contact can cause burns. Do not touch until cool. Wear gloves. 275-355 (2-P), 273-423 (2-P)

1. Set pipe diameter, thickness, and length..

IMPORTANT: If exact dimension is not available, select the closest larger width.

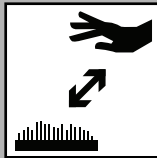
2. Power light head.
3. System will begin pull.
4. Clean light tube as it is reeled in.
5. Monitor gauges and plot.

NOTICE: Do not allow system to continue pull past end of liner.

6. When light head nears end of liner, alarm will sound.
7. Monitor light head location. Add distance and restart system or stop pull early as needed.
8. When pull is complete, retract light head fully into camlock fitting.

Shut Down

1. Ensure pipe is depressurized.
2. Disconnect camlock unit from side entry valve.
3. Store camlock unit in trolley garage.
4. Unscrew light head from sluice fitting.
5. Remove light head from camlock.
6. Inspect light head and clean as needed. See “Clean Light Head” on page 57.



CAUTION Hot parts. Contact can cause burns. Do not touch until cool. Wear gloves.

NOTICE: Only touch light with clean gloves.

7. Store light head in case.
8. Ensure system is depressurized.
9. Shut down air supply.
10. Disconnect air hoses.
11. Unplug machine.
12. Disconnect cables.

Systems and Equipment

Chapter Contents

Customizable Cable 48

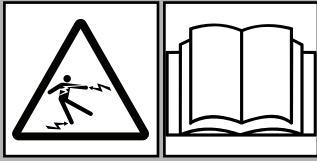
Drums 48

Light Sources 49

Spacers 49

Troubleshoot System 49

Customizable Cable



⚠ DANGER

Electrical supply. Shock will cause death or serious injury. Only use in a dry and protected environment with a properly grounded power source.

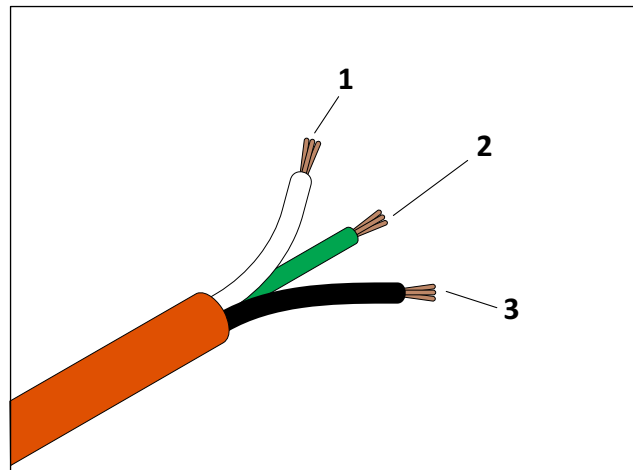
To help avoid injury:

- Installation of connector must meet all national and local codes.
- Ensure only qualified personnel install plug.
- Ensure power supply is rated to listed current for a given supply voltage.
- Only operate on a supply with appropriately sized fuse or circuit breaker.
- Disconnect supply cord before installing connector.
- Always connect green or green/yellow conductor to supply grounding terminal first and never to a line terminal.
- Securely connect all wires and terminals.

Customizable cable can be connected to a variety of connectors depending on your power supply. System automatically adjusts to input voltages between 115V and 277V.

Voltage 50/60Hz Single Phase	Input Current at Rated Output
120V	14A
230V	7A
277V	6A

1. Connect green wire (2) to connector grounding terminal.
2. Connect white wire (1) to connector neutral terminal.
3. Connect black wire (3) to connector line/supply terminal.
4. Attach connector strain relief to outer jacket of supply cable.



j78om014h21.eps

Drums

Several drum sizes are available. Contact your HammerHead dealer for more information.

Light Sources

Three light source styles are available. Contact your HammerHead dealer for more information.

Light Head	Liner Size
064	2" (51mm)
144	3"-6" (75-152 mm)
336*	4-8" (100-203 mm)
696	4"-18" (100-457 mm)
*3" (76.2 mm) can be completed in straight shots.	

Spacers

Spacers for use with the light sources are available in a variety of sizes. Contact your HammerHead dealer for more information.

Troubleshoot System

When system detects a problem, a message will be displayed. If this happens, stop operation and review chart below.

Item	Description	Notes
Alarm! Pressure too high/low	Check air pressure to propulsion unit. Verify pressure readings on display and trolley match.	
Alarm! Temperature too high	Ensure air flow is sufficient. Ensure air is chilled and dried.	Light head cannot be operated. System will shut down when temperature limit is exceeded.

Complete the Job

Chapter Contents

Disassemble Machine. 52

- Clean Equipment. 52
- Procedure 52
- Secure Components 53

Restore Jobsite 53

Decommission Machine 53

Disassemble Machine

Clean Equipment

NOTICE: Water can damage electronics. When cleaning equipment, do not spray electrical components with water.

Wipe down equipment to remove dirt and debris.

Procedure

1. Store light head in case and secure inside hose reel.
2. Lock hose reel.
3. Remove guide ring.
4. Rotate drum to upright position. Ensure notch is pointing up.
5. Engage brake by turning drum clockwise.
6. Disconnect air and electrical connections.

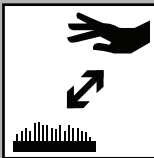
NOTICE: Ensure air and electrical supply are disconnected at junction box and back of hub before disconnecting drum connections.

IMPORTANT:

- Pull sleeve on air fitting to disconnect.
- Rotate blue collar on electrical fitting to disconnect.

7. Remove locking nut from hub.
8. Remove drum from hub.
9. Cover electrical connector.
10. Load components onto transport vehicle. See "Specifications" on page 61 or measure and weigh equipment before lifting.

Clean Light



CAUTION

Hot parts. Contact can cause burns. Do not touch until cool. Wear gloves.

To help avoid injury: Only clean light when it is cool.

See "Service" on page 55 for light cleaning procedures.

Secure Components

When securing components, use extra caution to prevent any movement during sudden takeoffs and stops. Secure the components in a way that prevents movement. Make sure all accessories and tools are loaded and properly secured.

Restore Jobsite

Fill in installation and service connection pits.

Decommission Machine

Before decommissioning machine, follow local regulations for disposing of hazardous substances. For more information on draining fluids, see "Service" on page 55 or contact your dealer.

Service

Chapter Contents

Service Precautions 56

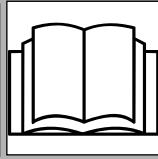
Recommended Lubricants 56

• Washing Precaution56

50 Hours. 58

As Needed 60

Service Precautions

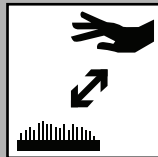


⚠ WARNING

Read operator's manual. Know how to use all controls. Your safety is at stake.

To help avoid injury:

- Wear personal protective equipment.
- Use only approved service parts.
- Only service with unit unplugged unless otherwise stated.



⚠ CAUTION

Hot parts. Contact can cause burns. Do not touch until cool. Wear gloves.

To help avoid injury: Only clean light when it is cool.

NOTICE:

- Use only genuine HammerHead parts and approved lubricants to maintain warranty.
- Use the "Service Record" on page 69 to record all required service to your machine.

Proper lubrication and maintenance protects HammerHead equipment from damage and failure. Service intervals listed are minimum requirements. In extreme conditions, service machine more frequently. Use only recommended lubricants.

Recommended Lubricants

Item	Description
EPG	Extreme-Pressure Grease

Washing Precaution

NOTICE: Water can damage electronics. When cleaning equipment, do not spray electrical components with water.

Each Use

Tasks	Notes
Clean light head	
Clean glass	

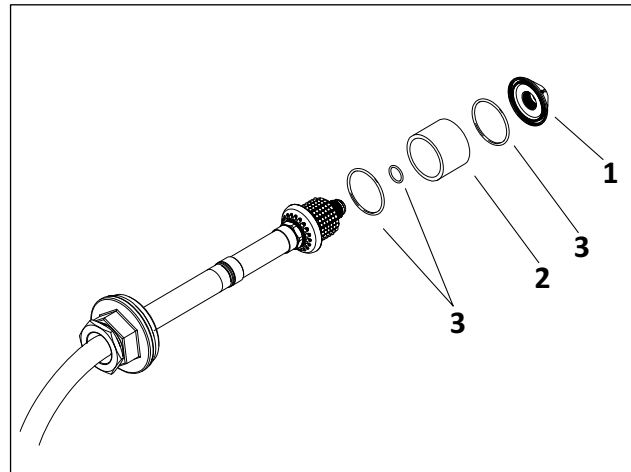
Clean Light Head

NOTICE: Only handle light head and glass with clean gloves.

Clean light source after each use or every 100ft (30m).

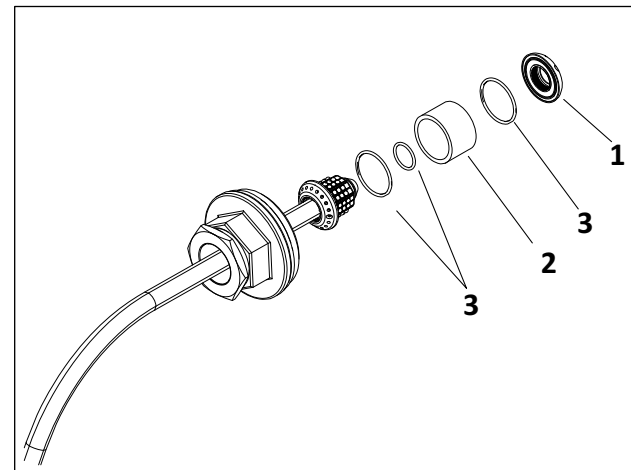
Components

1. Remove front cover glass retainer (1) and glass (2) with provided pin spanner wrench.
2. Inspect LEDs for moisture, and clean with electronics grade compressed air as needed.
3. Clean LEDs with soft bristle acid brush and isopropyl alcohol of 90% alcohol content or higher.
4. Inspect LEDs with UV light. If specks are visible, repeat step 3 until no specks are visible.
5. Clean camera with lint free rags or paper towels and isopropyl alcohol.
6. Dry with electronics grade compressed air.
7. Scrape any deposits from edge of glass retainers.
8. Clean glass. See "Glass" on page 58.
9. Inspect seal rings (3) and replace as needed.
10. Install seal rings.
11. Install glass and front glass retainer. Tighten retainer until bottom gasket is compressed.



j78om002h25.eps

144/336/696



j78om003h25.eps

064

NOTICE: Only reattach glass after isopropyl alcohol has dried.

BlueLight LED Curing System Operator's Manual

50 Hours

Glass

NOTICE: Only handle glass with clean gloves.

Clean glass after each use or every 100ft (30m).

1. Inspect glass for resin or residue.
2. Coat glass with isopropyl alcohol of 90% alcohol content or higher and wipe with lint free towel.
3. If residue remains, use razor blade to remove.
4. Clean with isopropyl alcohol of 90% alcohol content or higher.
5. Repeat steps 3 and 4 until glass is free of residue.
6. Use compressed air to remove dust or lint from glass.
7. Install glass. See "Clean Light Head" on page 57.

50 Hours

Tasks	Notes
Inspect and clean drive wheels	

Inspect and Clean Drive Wheels

Drive Wheels

Inspect and clean drive wheels after first 50 hours and every 150 hours thereafter.

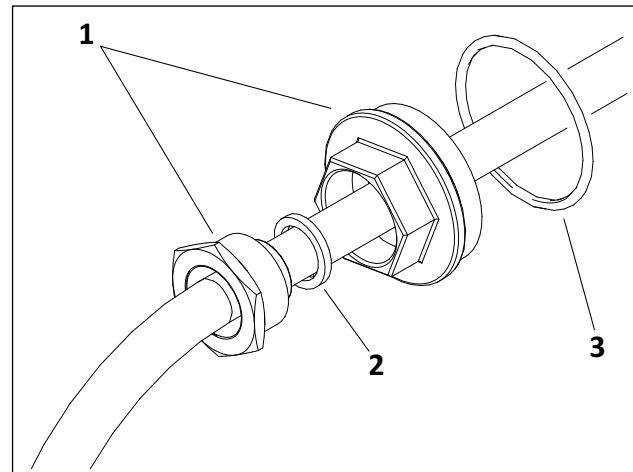
4000 Hours

Tasks	Notes
Replace packing seal	
Replace drive wheels	

Replace Packing Seal

Replace motor rollers every 4000 hours.

1. Unscrew sluice fittings (1).
2. Replace o-ring (3) as needed.
3. Discard old packing seal (2).
4. Cut packing to length as needed and coil in inner diameter of the sluice fitting as shown.
5. Re-connect sluice fitting. Tighten until finger tight.
6. Start machine.
7. If air escapes from fitting, shut down machine and tighten.



j78om021h21.eps

Replace Propulsion Wheels

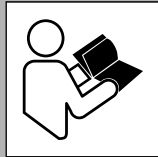
Replace propulsion wheels every 4000 hours.

1. Loosen wing screws.
2. Remove drive wheel.
3. Replace.

As Needed

Tasks	Notes
Check valves and hoses	
Grease wheels	EPG

Check Valves and Hoses

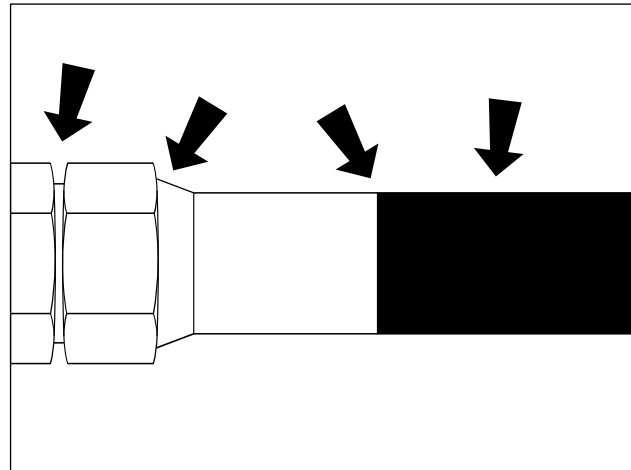


WARNING Pressurized fluid or air could pierce skin and cause severe injury. Refer to operator's manual for proper use. 270-6035

To help avoid injury:

- Before using system, check that all connections are tight and all lines and hoses are undamaged.
- Wear protective clothing, including gloves and eye protection.

Check valves and hoses as needed for leaks, loose fittings, unusual noise or vibration. Repair or replace if needed.

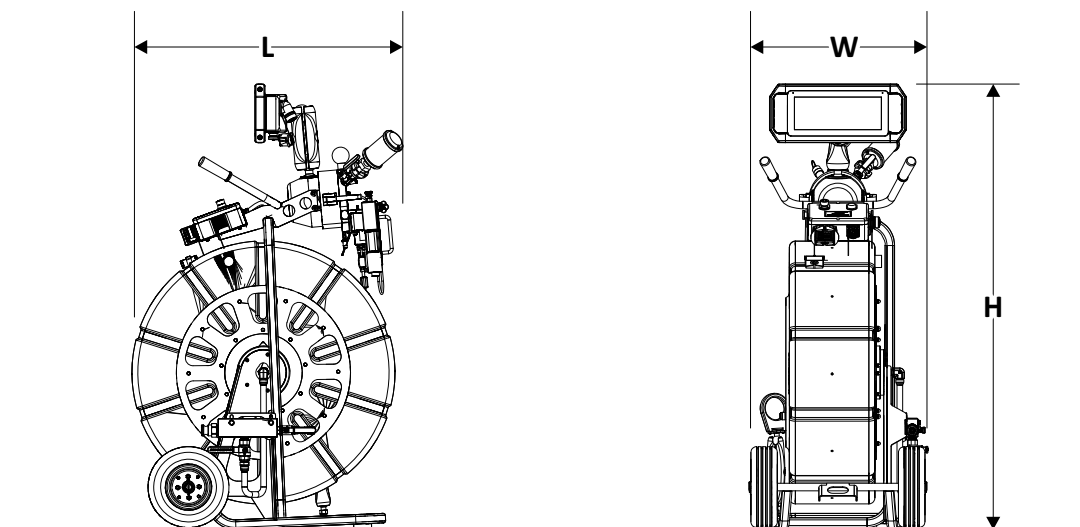


CheckHoses.eps

Grease Wheels

Grease wheels with EPG at zerks as needed.

Specifications



j780m005h21.eps

Dimensions		U.S.	Metric
L, length		34 in	86.4 cm
W, width		24 in	61cm
H, height		59 in	149.9 cm
Weight		227-257 lb	103-117 kg
	Trolley	106 lb	48 kg
	Display	15lb	6.8 kg
	Intelligent power converter	77lb	35 kg
	Drum	29-59 lb	13.2-26.8 kg

Power	
Cables	
	120V _{AC} /60Hz, 14A*
	220V _{AC} /50Hz, 7A
	240V _{AC} /60Hz, 6A

*Power is limited to less than 15A when using the 120V_{AC} cable. It may be necessary to reduce applied power further if supply voltage is low.

BlueLight LED Curing System Operator's Manual

Noise Levels

Overall sound power of this machine is 78dBA. Auxiliary support equipment can generate sound levels exceeding 80dBA. Always wear appropriate hearing protection when operating machine.

Risk Group 3 Statement

WARNING. Possibly hazardous optical radiation emitted from this product. Do not look at operating lamp. Eye injury may result. *Product tested against IEC62471.*

EU Declaration of Conformity

Countries in the European Union should have received a Declaration of Conformity (DOC) with this machine similar to the example below.

The Charles Machine Works dba HammerHead, 500 South C.P. Avenue, Lake Mills, Wisconsin, 53551, USA, declares that the following unit(s):

Model	Serial Number	Description
XXXXXX	(Model)XXXXXX	(Product Description)

Conform(s) to the following directives:

2006/42/EC (Machinery Directive)

Conformity Assessment: XXXXX

The Technical Construction File is maintained at the manufacturer's location.

Each model listed has been evaluated with the following standards and/or other normative documents:

EN ISO XXXXX, ISO XXXXX

Support

Procedure

Notify your dealer immediately of any malfunction or failure of HammerHead equipment.

Always give model, serial number, and approximate date of your equipment purchase. This information should be recorded and placed on file by the owner at the time of purchase.

Return damaged parts to dealer for inspection and warranty consideration if in warranty time frame.

Order genuine HammerHead replacement or repair parts from your authorized HammerHead dealer. Use of another manufacturer's parts may void warranty consideration.

Resources

Publications

Contact your HammerHead dealer for publications and videos covering safety, operation, service, and repair of your equipment.

HammerHead Training

For information about on-site, individualized training, contact your HammerHead dealer.

Warranty

The Charles Machine Works, Inc. dba HammerHead Trenchless ("HammerHead") warrants that all new products it manufactures (with the exception of cured in place pipe consumable materials, which are covered by a separate warranty) will be free from defects in materials, under normal use and service, for one year after delivery to the purchaser (or such other party as the purchaser may direct) or 1000 operating hours, whichever occurs first. The warranty period for any item repaired or replaced pursuant to this warranty shall be the remainder, if any, of the original, defective Product's warranty period.

For any covered issue during the warranty period, Buyer must timely notify HammerHead in writing of such defect, and HammerHead shall, at its option, supply a functionally equivalent replacement product or request the return of the product to its plant in Lake Mills, Wisconsin so that HammerHead may repair it, each without charge. Such repair or replacement is the purchaser's sole and exclusive remedy against Hammerhead, whether in contract or arising out of warranties, representations, or defects. Hammerhead reserves the right to use remanufactured replacement parts under this warranty as it deems appropriate.

No item may be returned without prior written authorization from HammerHead.

This warranty does not cover:

- CIPP Consumables
- Defects other than those in materials (including but not limited to workmanship and design defects)
- Transportation expenses in connection with the repair or replacement of covered products
- Failures caused due to a product that has been installed or used in a manner inconsistent with written warnings, instructions, or recommendations by HammerHead, including but not limited to in product decals or in the owner's guide/user manual; or installed in a manner inconsistent with applicable law or standard industry practices
- Any product that has been neglected, altered, misused, abused, or used in any way which, in HammerHead's opinion, adversely affects its performance
- Failures caused by improper storage; handling installation or maintenance; use of non-HammerHead approved parts or materials; unapproved modifications or alterations; or use of unapproved accessories
- Failures caused by outside influence, including but not limited to Acts of God, fire, or other accident
- Wear items or components failing due to normal wear
- Items that are not manufactured by us (which are warranted only to the extent of the original manufacturer's warranty and subject to their allowance to us, if found defective by them)
- Any additional training or consulting services which may be provided by HammerHead or its representatives or agents (nor shall such training or services extend any product warranty period)
- Damages that arose in whole or in part due to HammerHead's reliance upon drawings, specifications, samples, descriptions, documentation, requirements, requests, or instructions received from the customer, the installer, or either of their agents
- Charges for labor and/or parts beyond those needed to complete the warranted repair or replacement

BlueLight LED Curing System Operator's Manual

Resources

HammerHead reserves the right to modify, alter, and improve any product without incurring any obligation to replace any product previously sold without such modification, alteration, or improvement. No person is authorized to give any other warranty, or to assume any additional obligation on HammerHead's behalf unless made in writing, and signed by an officer of HammerHead.

THIS WARRANTY AND ANY POSSIBLE LIABILITY OF HAMMERHEAD HEREUNDER IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS, IMPLIED, OR STATUTORY, INCLUDING, BUT NOT LIMITED TO ANY WARRANTIES OF MERCHANTABILITY, NON-INFRINGEMENT, OR FITNESS FOR A PARTICULAR PURPOSE. HAMMERHEAD IS NOT LIABLE FOR LOST REVENUE, LOST PROFITS, LOSS OF BUSINESS OPPORTUNITY, OR ANY INDIRECT, INCIDENTAL, PUNITIVE, SPECIAL, OR CONSEQUENTIAL DAMAGES IN CONNECTION WITH THE USE OF A PRODUCT COVERED BY THIS WARRANTY, INCLUDING ANY EXPENSE OF OBTAINING SUBSTITUTE EQUIPMENT OR SERVICE DURING PERIODS OF NONUSE. IN NO EVENT SHALL HAMMERHEAD'S LIABILITY EXCEED THE PURCHASE PRICE OF THE PRODUCT.

NO ACTION AGAINST HAMMERHEAD ARISING OUT OF OR RELATED TO THIS WARRANTY MAY BE FILED NO MORE THAN ONE (1) YEAR AFTER THE CLAIM ARISES.

Service Record - 69

BlueLight LED Curing System Operator's Manual

[illegible]