



D100-QR

Inversion Drum

Operator's

Manual




Overview

Chapter Contents

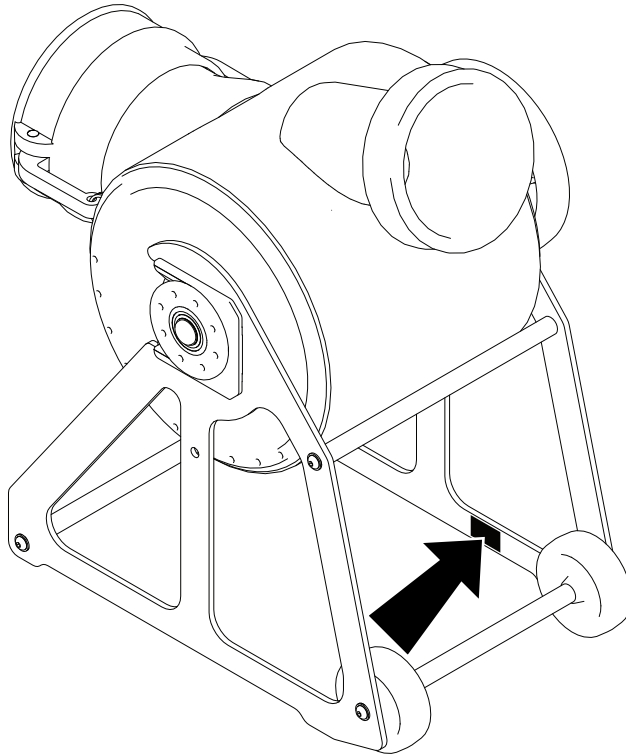
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California Proposition 65

 **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.



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Model Number	
Serial Number	
Date of purchase	

Intended Use

The D100-QR Inversion Drum is intended to install and cure liners for use in cured in place pipe (CIPP) operations. The maximum install distance for the D100-QR is 29'-100' (8.8-30.4m). Maximum product diameter is 4" (10.16cm). It is capable of BlueLight and ambient curing.

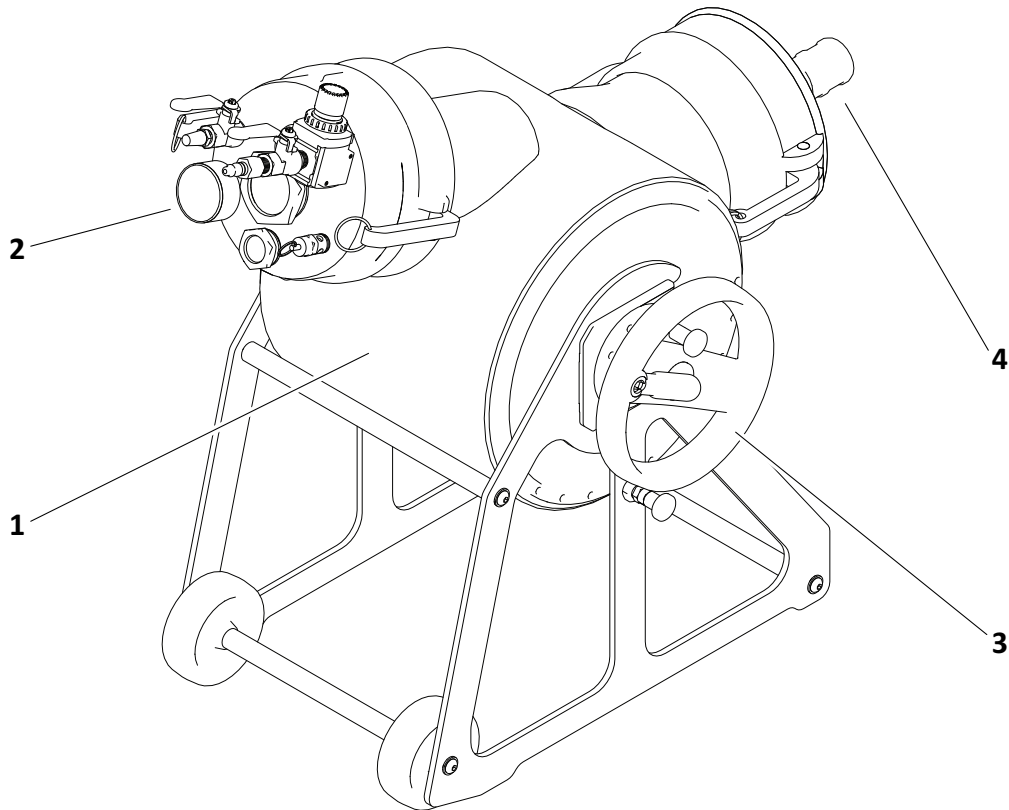
The unit is designed for operation in temperatures from 32° to 100° F (0° to 37.8° C). Contact your HammerHead® dealer for provisions required for operating in extreme temperatures. Use in any other way is considered contrary to the intended use.

The inversion drum 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.

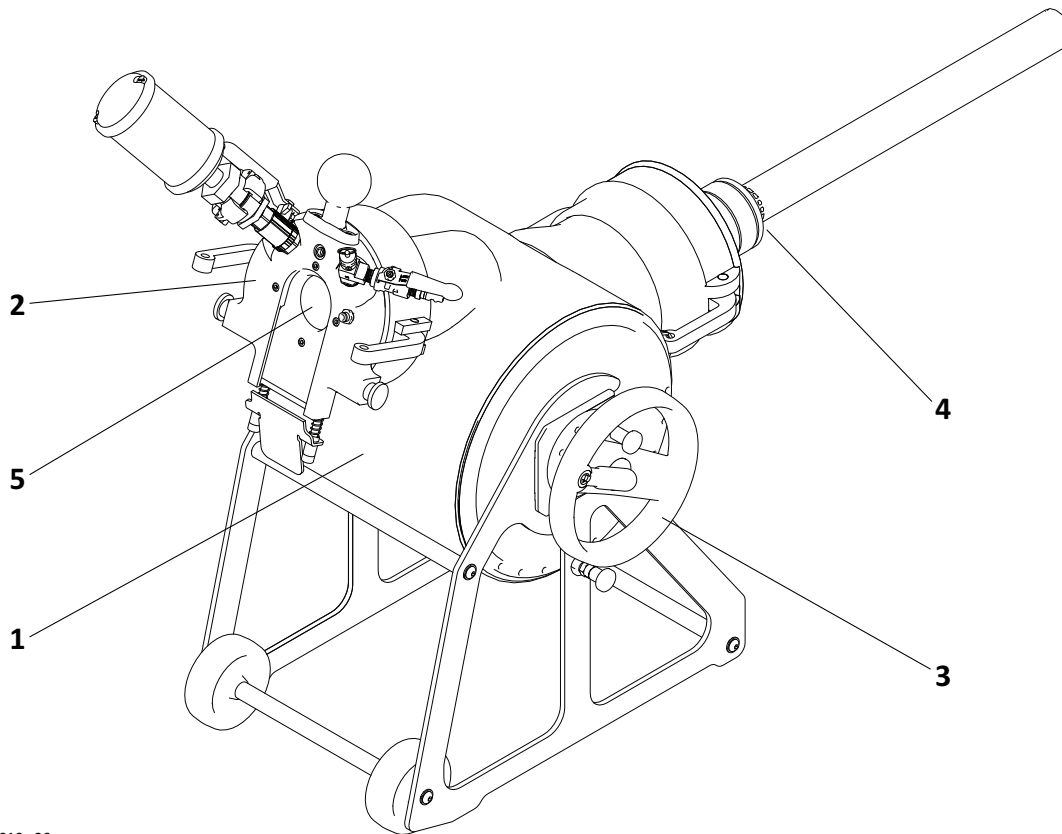
Unit Components - Ambient Curing



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- | | |
|---------------------|---------------|
| 1. Inversion drum | 3. Hand wheel |
| 2. Ambient cure cap | 4. Nozzle |

Unit Components - Bluelight Curing



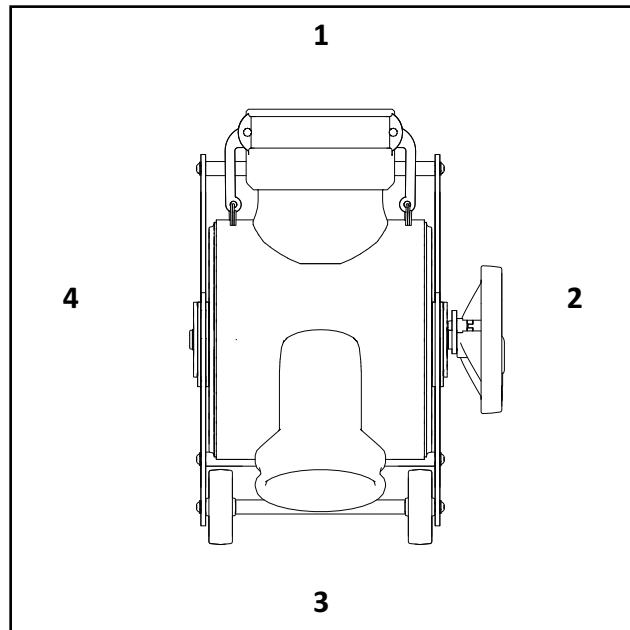
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- | | |
|------------------------|---------------|
| 1. Inversion drum | 4. Nozzle |
| 2. Propulsion terminal | 5. Guide tube |
| 3. Hand wheel | |

Operator Orientation

IMPORTANT: Top view of unit is shown.

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

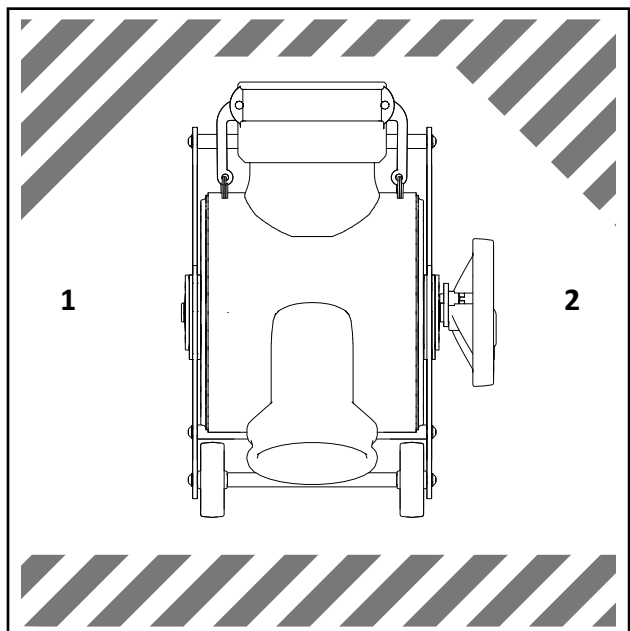


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Operating Area

IMPORTANT: Top view of unit is shown.

Operator should only stand in areas marked with numbers 1 or 2.



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About This Manual

This manual contains information for the proper use of this machine. See **Operation Overview** for basic operating procedures. 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.

D100-QR Inversion Drum Operator's Manual
About This Manual

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.



**D100-QR Inversion Drum
Operator's Manual**

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Part number 960-1161

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Hammerhead Trenchless**



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

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Service Record

a record of major service performed on the machine

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Safety


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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

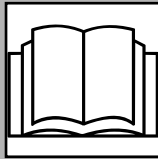


When you see this safety alert sign, carefully read and follow all instructions.
YOUR SAFETY IS AT STAKE. Read this entire section before using your equipment.

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



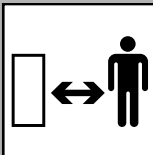
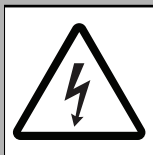
⚠ WARNING

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).

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.

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Emergency Procedures

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.

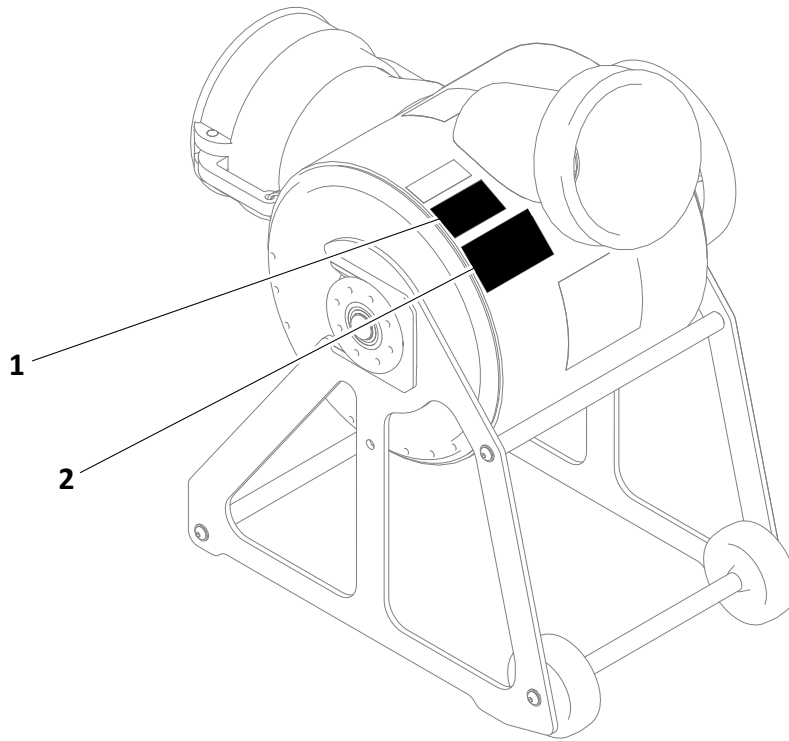
If Machine Catches on Fire

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.

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Emergency Procedures

Machine Safety Alerts



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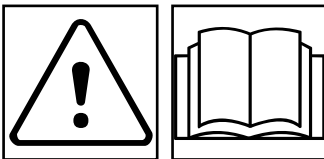
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⚠ WARNING

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

2



⚠ WARNING

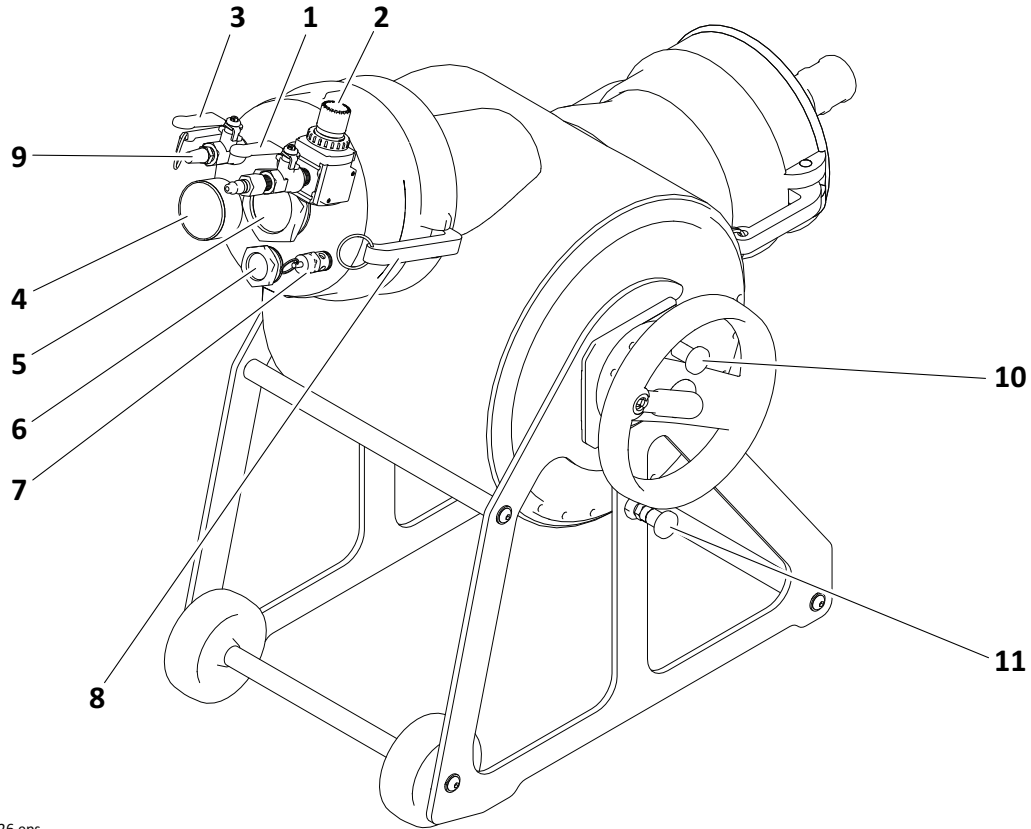
Read operator's manual. Follow safety rules and know how to use all controls. Your safety is at stake.

Controls

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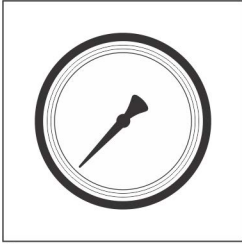
Controls - Ambient Cure Cap



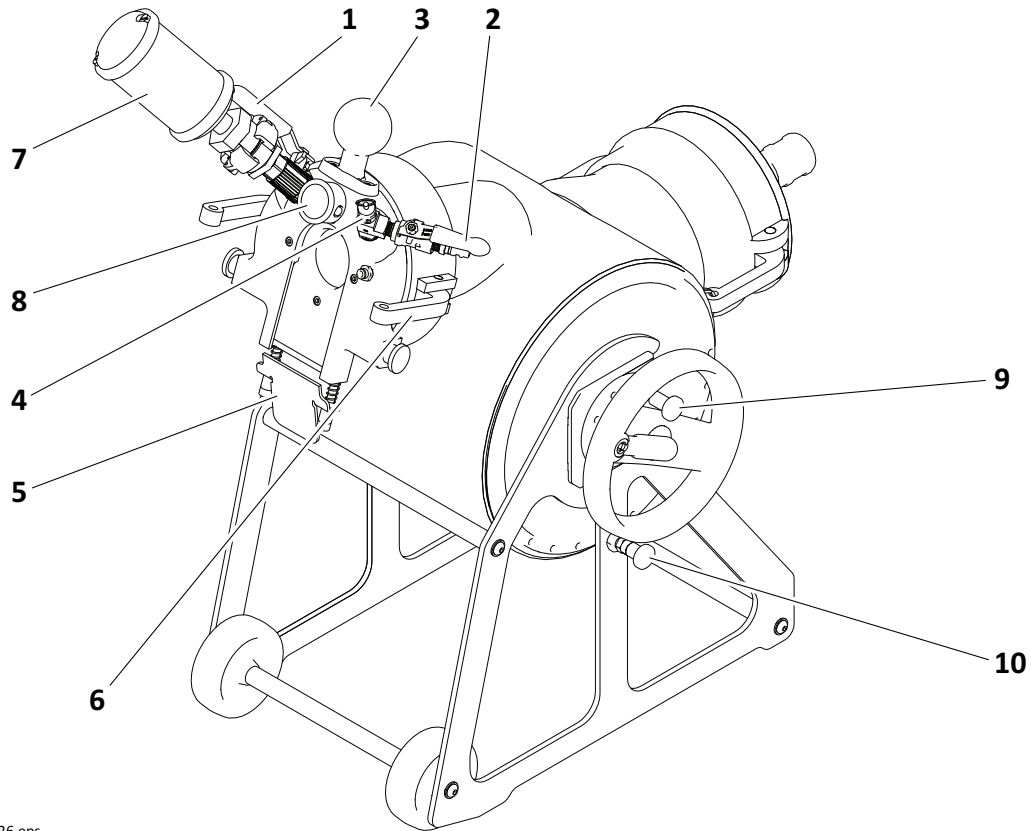
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- | | |
|------------------------|--------------------------|
| 1. Air inlet valve | 7. Pressure relief valve |
| 2. Air inlet regulator | 8. Cam lock arms |
| 3. Air outlet valve | 9. Exhaust muffler |
| 4. Pressure gauge | 10. Hand wheel lock |
| 5. Viewing portal | 11. Drum angle pin |
| 6. Light portal | |

Item	Description	Notes
1. Air inlet valve	To allow airflow to drum, turn left. To stop airflow to drum, turn right.	
2. Air inlet regulator	To increase pressure, turn right. To decrease pressure, turn left.	

Item	Description	Notes
<p>3. Air outlet valve</p>	<p>To allow airflow out of drum, turn left.</p> <p>To stop airflow out of drum, turn right.</p>	
<p>4. Pressure gauge</p>  <p>Gauge.eps</p>	<p>Displays air pressure in drum.</p>	<p>Maximum pressure is 30 psi (2.06 bar).</p>
<p>5. Viewing portal</p>	<p>Allows view of inside of drum.</p>	
<p>6. Light portal</p>	<p>Allows light into the drum for viewing.</p>	
<p>7. Pressure relief valve</p>	<p>Will automatically relieve pressure if it exceeds 30 psi (2.06 bar).</p>	
<p>8. Cam lock arms</p>	<p>Secures propulsion terminal or ambient cure cape in place.</p> <p>To lock arms, pull toward the terminal/cap.</p> <p>To unlock arms, push away from the terminal/cap.</p>	
<p>9. Exhaust muffler</p>	<p>Reduces noise level of air being released through air outlet valve.</p>	
<p>10. Hand wheel lock</p>	<p>To lock hand wheel, turn one-quarter turn right and push in.</p> <p>To unlock hand wheel, pull out and turn one-quarter turn left.</p>	
<p>11. Drum angle pin</p>	<p>To change drum angle, pull pin and turn one-quarter turn left.</p> <p>To lock drum in place, turn one quarter turn right and push in.</p>	

Controls - Bluelight Curing Propulsion Terminal



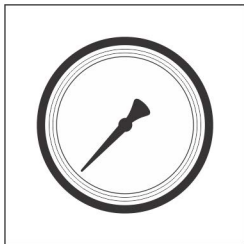
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- | | |
|---------------------------|--------------------|
| 1. Air inlet valve | 6. Cam lock arms |
| 2. Air outlet valve | 7. Exhaust muffler |
| 3. Bluelight screen mount | 8. Pressure gauge |
| 4. Pressure relief valve | 9. Hand wheel lock |
| 5. Propulsion unit latch | 10. Drum angle pin |

Item	Description	Notes
1. Air inlet valve	To allow airflow to drum, turn left. To stop airflow to drum, turn right.	
2. Air outlet valve	To allow airflow out of drum, turn left. To stop airflow out of drum, turn right.	

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Controls - Bluelight Curing Propulsion Terminal

Item	Description	Notes
3. Bluelight screen mount	Allows Bluelight Control to be mounted to propulsion terminal.	
4. Pressure relief valve	To relieve drum pressure, turn left. To close, turn right.	
5. Propulsion unit latch	Connects propulsion unit to propulsion terminal. To attach propulsion unit, slide unit into grooves of propulsion terminal until it lock in place. To remove propulsion unit, push up on latch until tension is released, then pull the bottom of latch toward the unit and slide it out of grooves.	
6. Cam lock arms	Secures propulsion terminal or ambient cure cape in place. To lock arms, pull toward the terminal/cap. To unlock arms, push away from the terminal/cap.	
7. Exhaust muffler	Reduces noise level of air being released through air outlet valve.	
8. Pressure gauge	Displays air pressure in drum.	Maximum pressure is 30 psi (2.06 bar).



Gauge.eps

D100-QR Inversion Drum Operator's Manual
Controls - Bluelight Curing Propulsion Terminal

Item	Description	Notes
9. Hand wheel lock	To lock hand wheel, turn one-quarter turn right and push in. To unlock hand wheel, pull out and turn one-quarter turn left.	
10. Drum angle pin	To change drum angle, pull pin and turn one-quarter turn left. To lock drum in place, turn one quarter turn right and push in.	

Prepare

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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.

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:

- Expose lines by hand before digging.
- 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 unit will be operated is on level and firm ground.

Check Supplies and Prepare Equipment

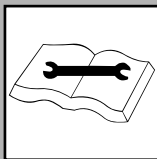
Check Supplies

- personal protective equipment, such as hard hat and safety glasses
- drum nozzles
- air compressor
- air hoses
- liner oil and applicator
- resin
- hardener
- duct tape
- rubber bands
- liner
- calibration tube
- pull tape
- hose clamps

Prepare Equipment

Condition and Function

- all controls

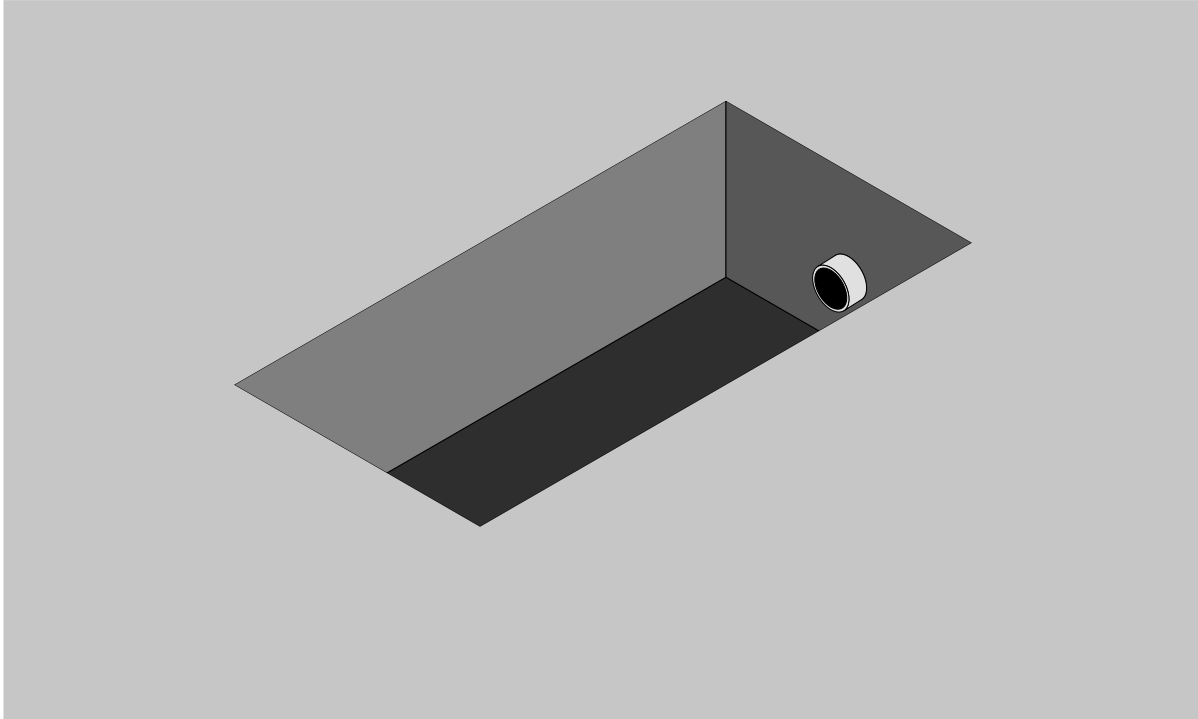


⚠ WARNING Improper control function could cause death or serious injury. If control does not work as described in instructions, stop machine and have it serviced.

- couplers and fittings
- hoses and valves

Prepare Jobsite

Dig Entry Pit



Pit.eps

NOTICE: Follow U.S. Department of Labor regulations on excavating and trenching (Part 1926, Subpart P) and other similar regulations.

Ensure length and width of the pit is long enough and wide enough to allow the liner to reach the entry point without sharp bends, and also wide enough for a worker to adjust hose clamps and connect plumbing.

Transport

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Lift

Use equipment capable of supporting the unit's size and weight. See "Specifications" on page 51 for weight of unit.

Tie Down

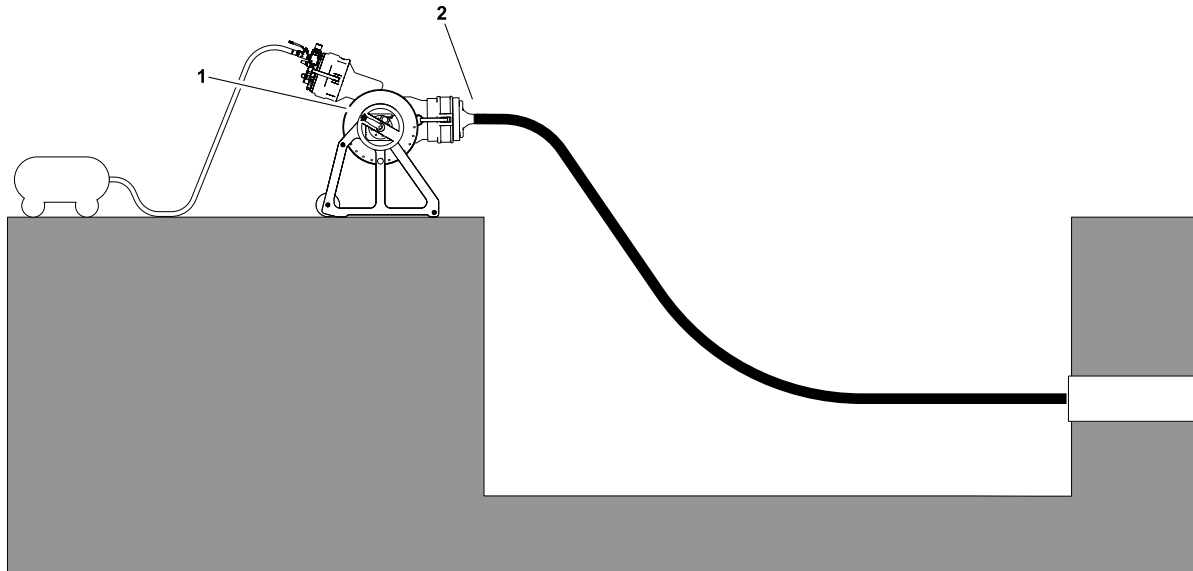
When tying down drum, use extra caution to prevent any movement during sudden take-offs and stops. Secure the system in a way that prevents movement to the system.

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Set Up and Configure

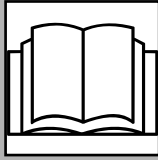
Set Up Machine



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Connect drum (1) and nozzle (2), as shown.

Prepare Drum



⚠ WARNING

Misuse of machine can cause death or serious injury. Read and understand operator's manual and all other safety instructions before use.

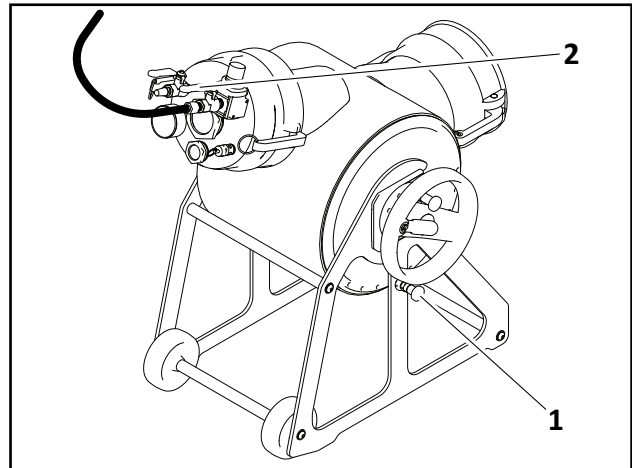
To help avoid injury:

- Wear hard hat, safety glasses, and other protective equipment required by job.
- Do not wear jewelry or loose clothing that can catch on controls.
- Clear the area around the unit of all bystanders.
- Stay 3 ft (0.91 m) away from unit during operation, unless standing in operating area.

1. Use drum angle pin on side of drum (1) to adjust angle of drum nozzle to accommodate pit angle.
2. Close all valves.
3. Connect air hose to inlet valve (2).

NOTICE: For large air compressors, use high flow adapter. See "Systems and Equipment" on page 37.

4. Wrap nozzle with duct tape, ensuring opening is not obstructed.
5. Install blocking to keep machine from moving during operation.

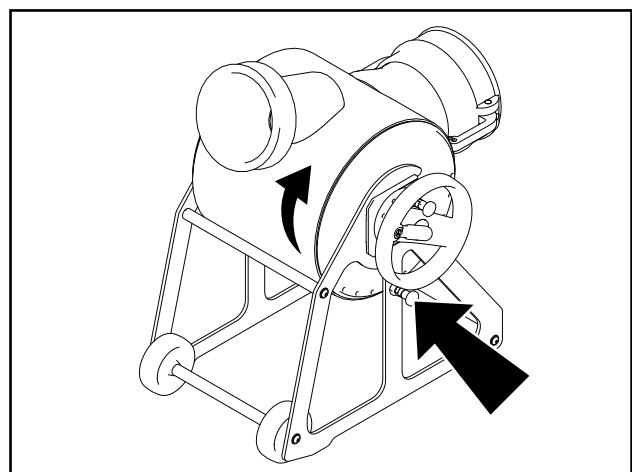


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Remove Drum from Stand

Drum can be operated without the stand.

Remove drum from frame by unblocking drum angle pin and rotating nozzle end of drum towards the ground until it slides out of the locking bushings.



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Deploy Liner

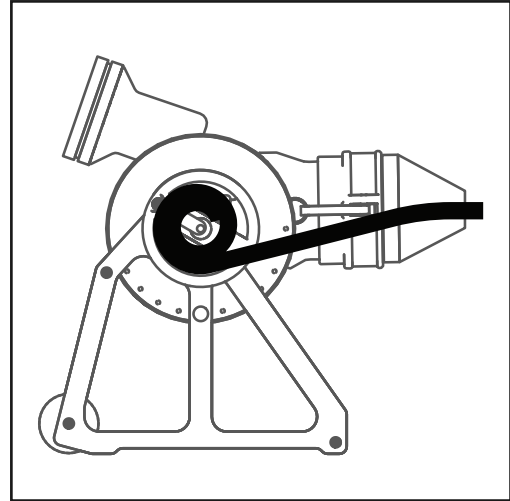
IMPORTANT: For information on preparing liner, see Installation and Procedures Guide.

1. Seal end of liner closest to spindle with rubber bands.
2. Wrap liner so it comes off the bottom of spindle, spraying with mineral oil through the process.

IMPORTANT:

- Wrap with seam facing ground.
- Do not use vegetable oil or equivalent.

3. Feed end of liner through nozzle so 3" (7.62 cm) sticks out.
4. Fold liner over nozzle and secure with hose clamps.
5. Ensure drum wheel is unlocked. See "Hand wheel lock" on page 25.
6. Unfold drum wheel handle.



IMPORTANT: Stow handle when not in use.

7. Open air valve slowly, increasing pressure to liner inversion pressure. Liner will begin to invert. See "Air inlet valve" on page 24.



⚠ WARNING Pressurized fluid or air. Contact can cause death or serious injury. Refer to operator's manual for correct use. 270-6035

To help avoid injury: Keep pressure below 30 psi (2.06 bar).

8. Control process using drum wheel. When wheel begins to spin freely, stow handle.
9. Monitor using a camera. If wrinkles are present in liner, increase pressure slightly. If target pipe has elbows, more pressure may be required for those sections.

NOTICE: Keep pressure below 30 psi (2.06 bar).

10. When liner is fully extended, pressure should read zero.
11. Turn air inlet valve to off position.
12. Depressurize drum. See "Air outlet valve" on page 25.
13. Disconnect liner from drum nozzle.

Calibration Tube

Calibration tube is for use with closed end inversion jobs.

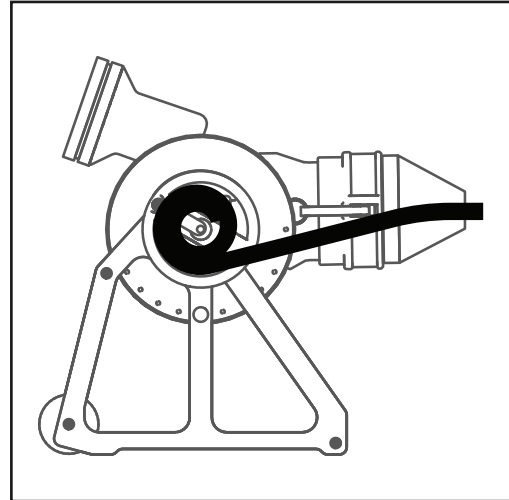
IMPORTANT: For information on curing methods, see Installation and Procedures Guide.

Wrap

1. Connect pull tape to calibration hose.

IMPORTANT: For preparation instructions for calibration tube and pull tape, see Installation and Procedures Guide.

2. Securely tie pull tape to spindle.
3. Wrap calibration tube so it comes off the bottom of the spindle, spraying with mineral oil. Ensure seam will be on top when deployed.



Deploy

1. Feed end of calibration tube through nozzle so 4" (10.16 cm) sticks out.
2. Fold calibration tube over nozzle and secure with hose clamps.
3. Ensure drum wheel is unlocked.
4. Open air valve slowly.

NOTICE: Keep pressure below 30 psi (2.06 bar).

5. Control process using drum wheel. When wheel begins to spin freely, stow handle.

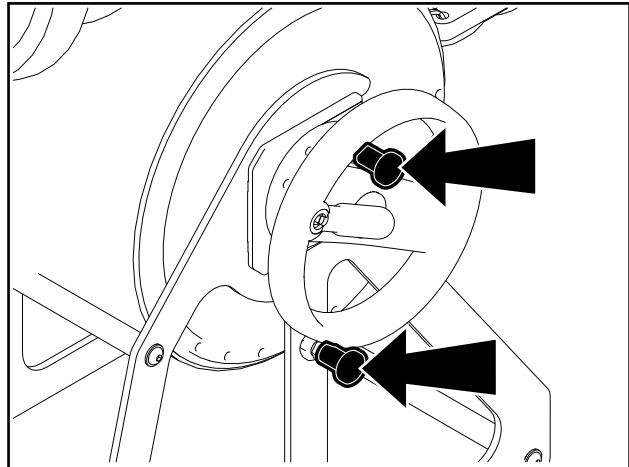
IMPORTANT: Stow wheel handle when not in use.

6. Monitor using a camera. If bends are present, increase pressure. If target pipe has elbows, more pressure may be required for those sections.

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Shut Down

7. When calibration tube is fully extended, turn wheel so there is slight tension on pull tape. Lock in place using wheel lock (shown).
8. Set regulator and let cure.
9. Turn air inlet valve to off position.
10. Depressurize drum. See "Air outlet valve" on page 25.



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Shut Down

1. Open air inlet valve. See "Air inlet valve" on page 24.
2. Set regulator to 2-3 psi (.14-.20 bar). See "Air inlet regulator" on page 24.

NOTICE: Failure to maintain 2-3 psi (.14-.20 bar) when reeling in the calibration tube can cause the calibration tube to bunch up and get stuck.

3. Unfold drum wheel handle.

IMPORTANT: Stow handle when not in use.

4. Reel in calibration tube.
5. Close air inlet valve when calibration tube is fully retracted.
6. Depressurize drum. See "Pressure relief valve" on page 19.
7. Disconnect air compressor.
8. Remove clamp from nozzle.
9. Remove calibration tube from drum spindle and untie pull tape.

Systems and Equipment

Chapter Contents

Nozzles 44

Nozzles

Evaluate jobsite to determine nozzle size necessary for job. Nozzles available for use with pipe between 2" (5.08 cm) and 4" (10.16 cm). For options, contact your HammerHead dealer.

Complete the Job

Chapter Contents

Stow Components 46

Restore Jobsite 46

Stow Tools 46

Stow Components

Load unit as specified to transport. See "Transport" on page 27 for more information.

Restore Jobsite

Fill in installation, bursting and service connection pits.

Stow Tools

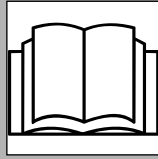
Make sure all accessories and tools are loaded and properly secured.

Service

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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.

Recommended Lubricants/Service Key

Item	Description		
	Check level of fluid or lubricant		Check condition
	Filter		Change, replace, adjust, service or test

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.

NOTICE:

- Use only genuine HammerHead parts and approved lubricants to maintain warranty.
- Use the "Service Record" on page 57 to record all required service to your machine.

As Needed

Tasks	Notes
Check valves and hoses	

Check Valves and Hoses



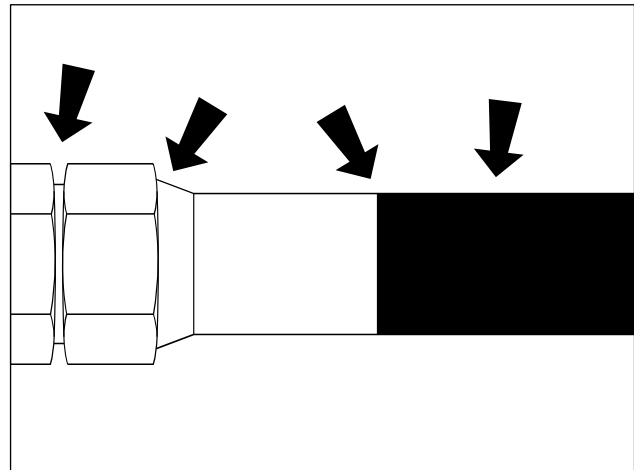
⚠ WARNING

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:

- Use a piece of cardboard or wood, rather than hands, to search for leaks.
- Wear protective clothing, including gloves and eye protection.
- Before using system, check that all connections are tight and all lines are undamaged.

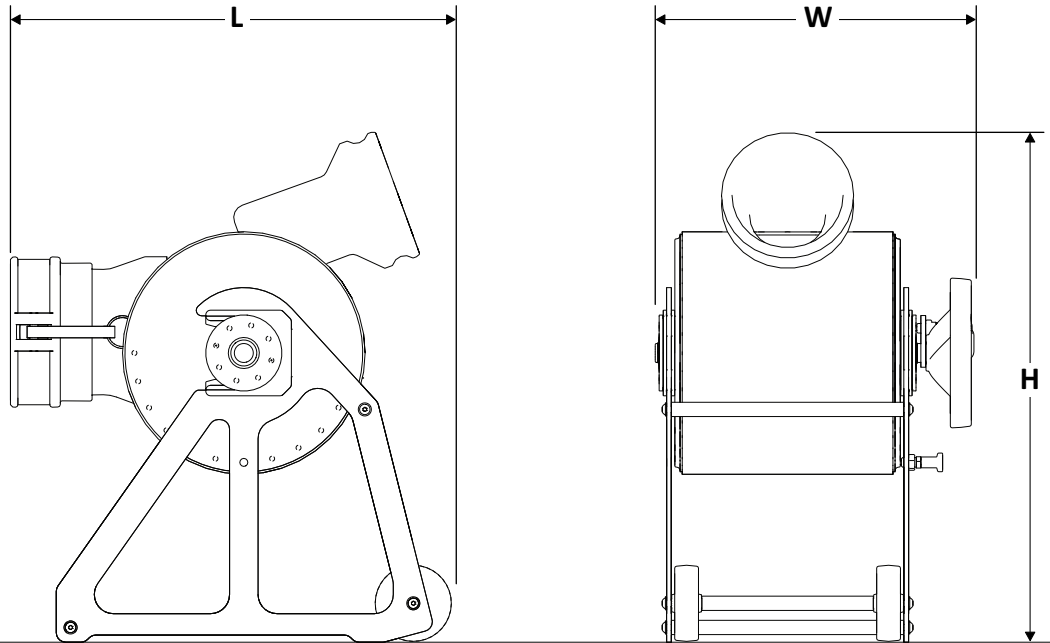
Check valves and hoses as needed for leaks, loose fittings, unusual noise or vibration. Repair or replace if needed.



CheckHoses.eps

Specifications

D100-QR



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Dimensions	U.S.	Metric
L, length	21.5 in	0.55 m
W, width	16.8 in	0.69 m
H, height with frame	26.8 in	0.68 m
Height without frame	18 in	0.46 m
Weight with frame	44 lb	20 kg
Weight without frame	34.8 lb	15.8 kg
Max Pressure	30 psi	2.1 bar
Nozzle connection	6 in	152 mm

Curing methods: Bluelight, Ambient

Noise Levels

This machine can generate sound levels exceeding 80 dBA. Always wear appropriate hearing protection when operating machine. Find sound power and pressure information at www.ditchwitch.com, or contact customersupport@ditchwitch.com.

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

D100-QR Inversion Drum 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

Service Performed	Date	Hours

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Service Performed	Date	Hours