



TECHNICAL PUBLICATIONS



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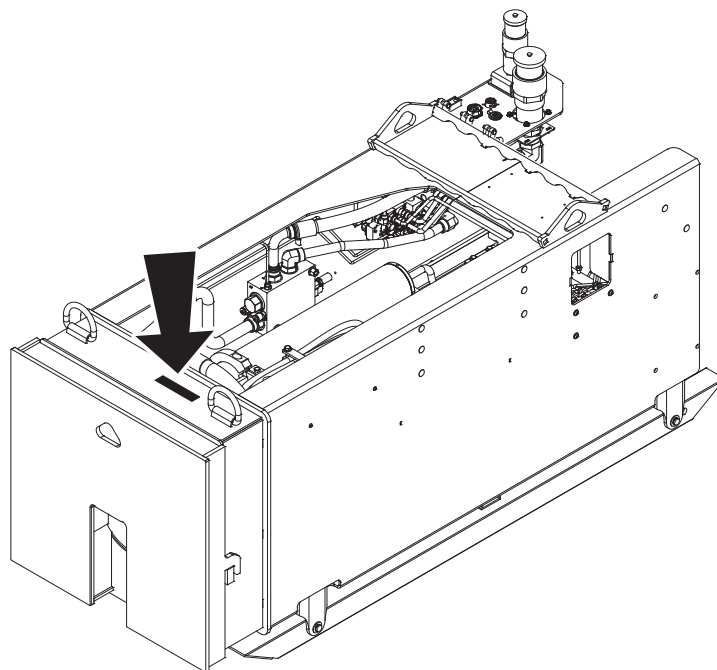
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Serial Number Location

Record serial numbers and date of purchase in spaces provided.



j51om009h.eps

Date of manufacture	
Date of purchase	

Intended Use

HammerHead® pipe bursters are intended for the replacement of 4" (10.2 cm) to 16" (40.6 cm) diameter buried pipes and conduits. The 100XT produces 100 tons (91 t) of pullback force. A power unit provides hydraulic power to run the pipe bursting unit.

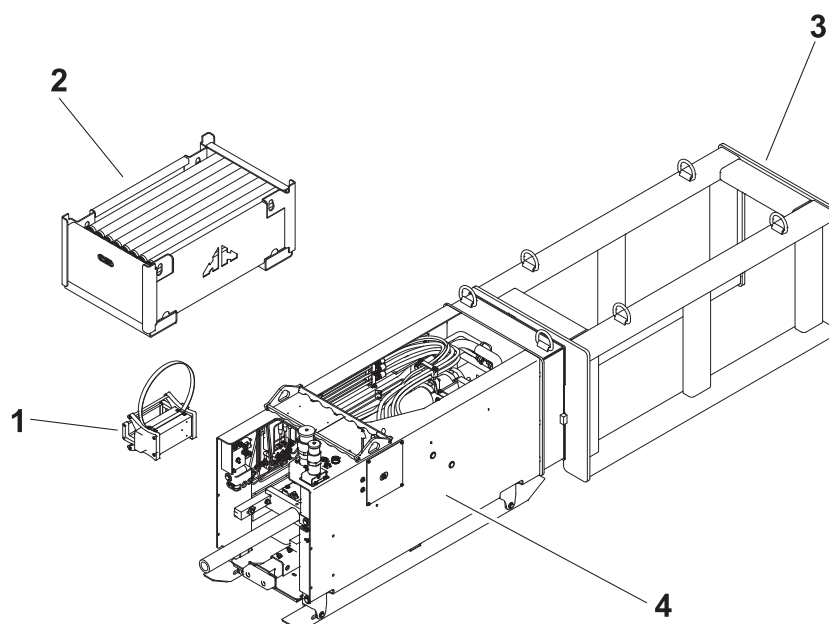
The unit is designed for operation in temperatures typically experienced in earth moving and construction work environments. Provisions may be required to operate in extreme temperatures. Contact your HammerHead dealer. Use in any other way is considered contrary to the intended use.

HammerHead pipe bursters and power units should be operated, serviced, and repaired only by persons familiar with their 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

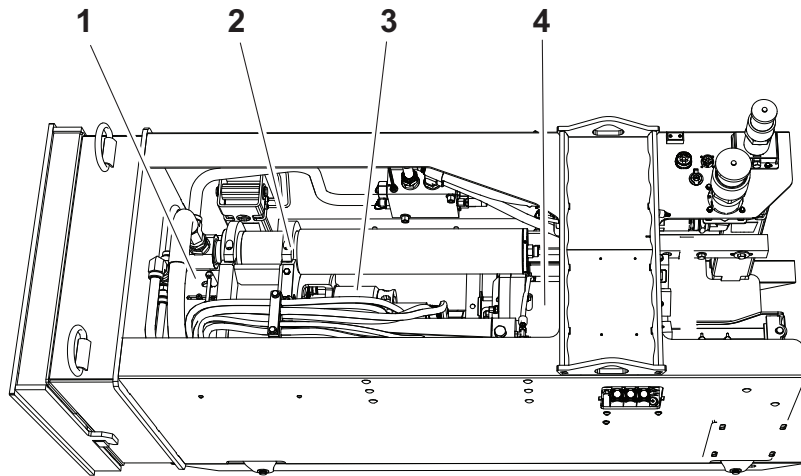


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- 1. Remote
- 2. Rod box

- 3. Extraction cage
- 4. Bursting unit

Bursting Unit Components



j51om032w.eps

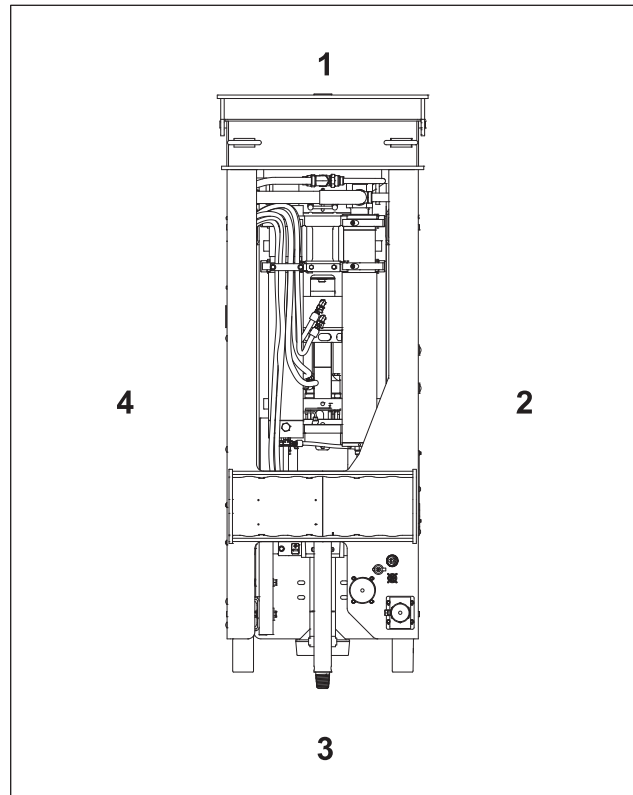
- 1. Bungee
- 2. Carriage

- 3. Clamp
- 4. Spinner

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

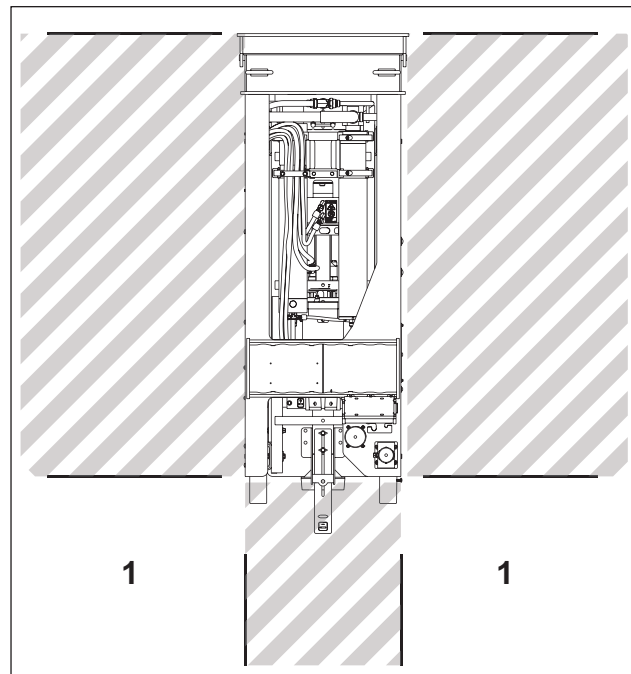


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Operating Area

IMPORTANT: Top view of unit is shown.

Operator and/or pipe loader should stand only in the locations marked by number 1.



j51om021w.eps

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.

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. Earth Tool Company LLC 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.



A CHARLES MACHINE WORKS COMPANY

**100XT
Operator's Manual**

Issue number 3.0/OM/09/19

Part number 960-1010





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HammerHead and HydroBurst are registered trademarks of Earth Tool Company LLC.

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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Guidelines



⚠ WARNING 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.

SAVE THESE INSTRUCTIONS.

Follow these guidelines before operating any jobsite equipment: **WARNING**—When using this product, basic precautions should always be followed, including the following:

- 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.
- 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 and safety signs. 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 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

Emergency Procedures

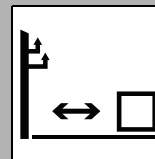
**⚠ WARNING**

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

Electric shock. Contacting electric lines will cause death or serious injury. Know location of lines and 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 and you are **in pit**, DO NOT MOVE and DO NOT TOUCH ANYTHING. Remain in pit and take the following actions. The order and degree of action will depend upon the situation.

- 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 suspect an electric line has been damaged and you are **out of pit**, DO NOT TOUCH ANYTHING. Take the following actions. The order and degree of action will depend upon the situation.

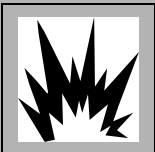
- LEAVE AREA. The ground surface may be electrified, so take small steps with feet close together to reduce the hazard of being shocked from one foot to the other.
- Contact utility company to shut off power.
- Do not return to jobsite or allow anyone into area until given permission by utility company.

If you suspect an electric line has been damaged and you are **on other piece of equipment**, DO NOT MOVE. Remain on truck or trailer and take the following actions. The order and degree of action will depend upon the situation.

- 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**⚠ WARNING**

Fire or explosion possible. Fumes could ignite and cause burns. No smoking, no flame, no spark.

**⚠ WARNING**

Explosion possible. Serious injury or equipment damage could occur. Follow directions carefully.

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.
- 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 disconnect power from outlet, if possible. Immediately move battery disconnect switch (if equipped and accessible) to disconnect position.
-
-
- 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.


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.

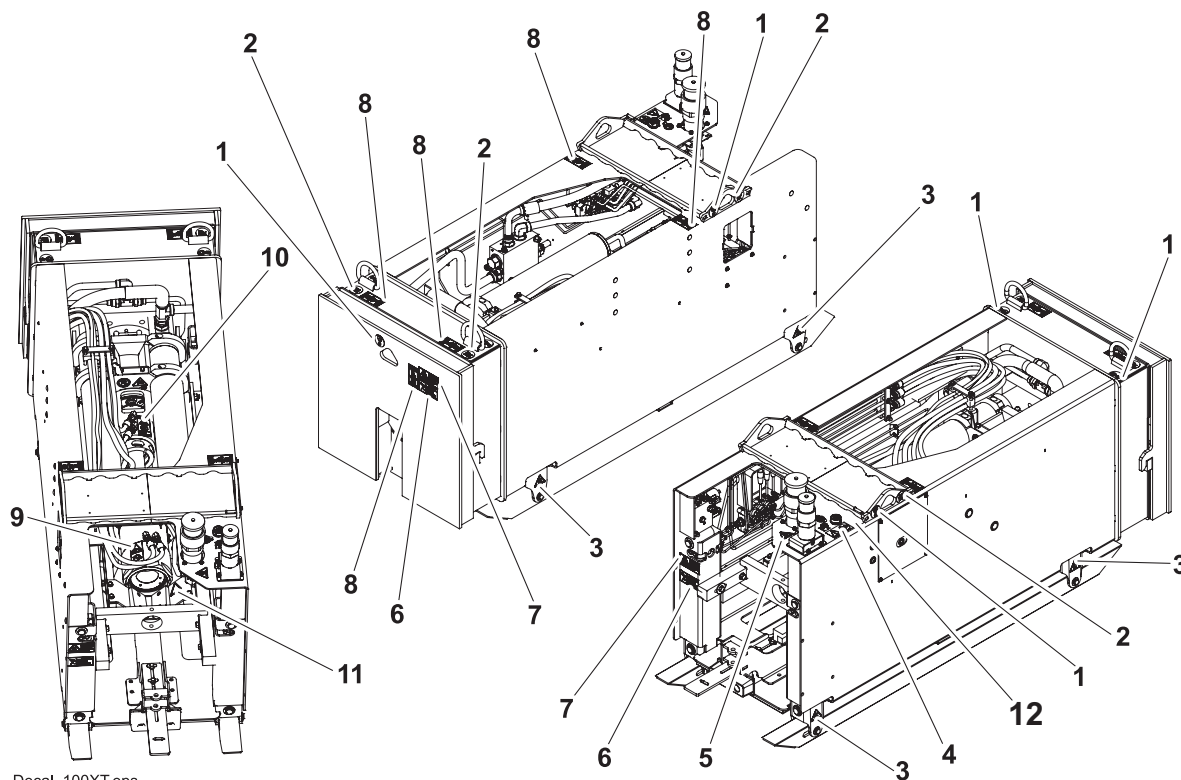
 **CAUTION** indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.

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.

Machine Safety Alerts



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1



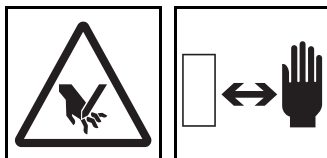
Lift point. See Transport chapter for more information.

2



Tiedown location. See Transport chapter for more information.

3



⚠ WARNING Moving parts could cut off hand. Stay away. 274-965

4



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

5			CAUTION Hot parts may cause burns. Do not touch until cool or wear gloves. 275-355 (2-P), 273-423 (2-P)
6			CAUTION Flying objects thrown by machine may strike people. Wear safety glasses and hard hat. 275-193, 270-6903
7			DANGER Crushing weight could kill or seriously injure. Stay away.
8			WARNING Crushing weight could cause death or serious injury. Stay away.
9			DANGER Moving tools will kill or injure. Never use pipe wrenches on drill string.
10			WARNING Moving parts could cut off hand. Stay away. 274-965
11			DANGER Turning shaft will kill you or crush arm or leg. Stay away.
12			WARNING Jobsite hazards could cause death or serious injury. Use correct equipment and work methods. Use and maintain proper safety equipment.

Controls

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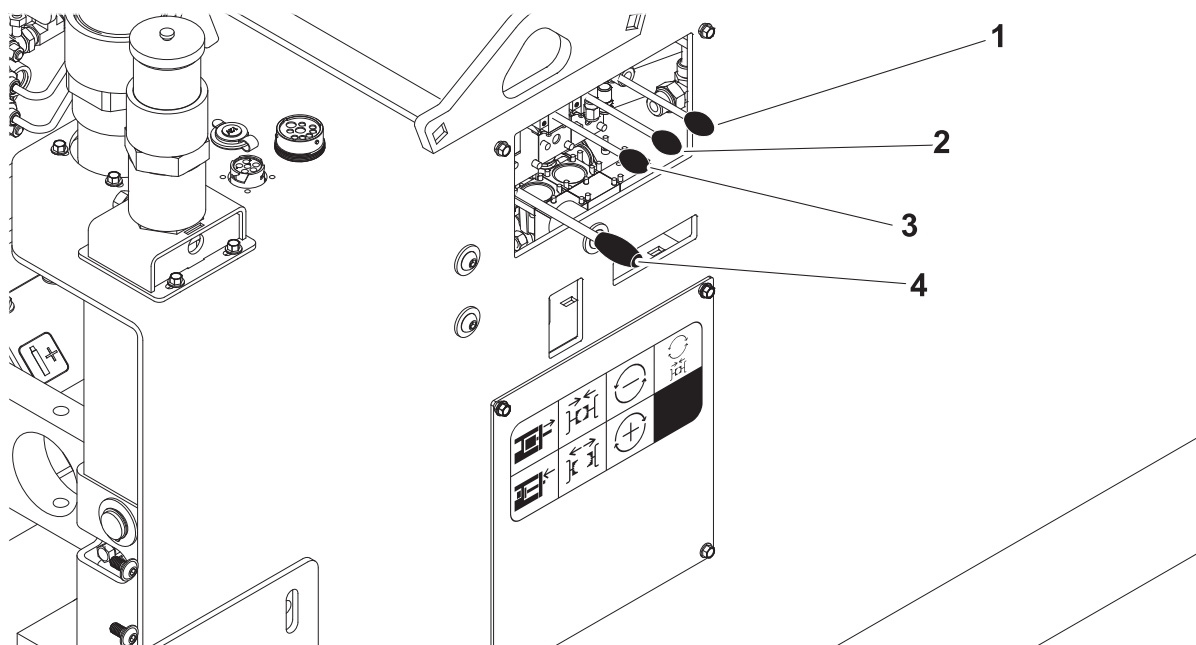
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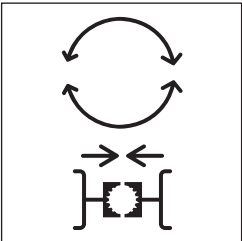
Bursting Unit

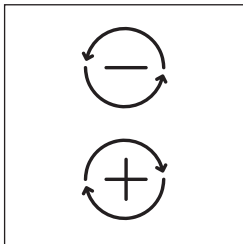
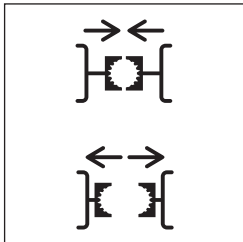
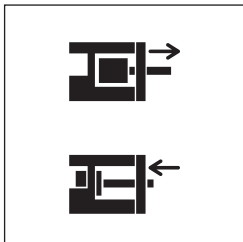
Manual Controls



IMPORTANT: Manual controls are used as a backup in the event the remote becomes inoperable. See "Setup and Configuration" on page 50.

- | | |
|--------------------------|--------------------------|
| 1. Spinner clamp control | 3. Clamp control |
| 2. Spinner control | 4. Push/Pullback control |

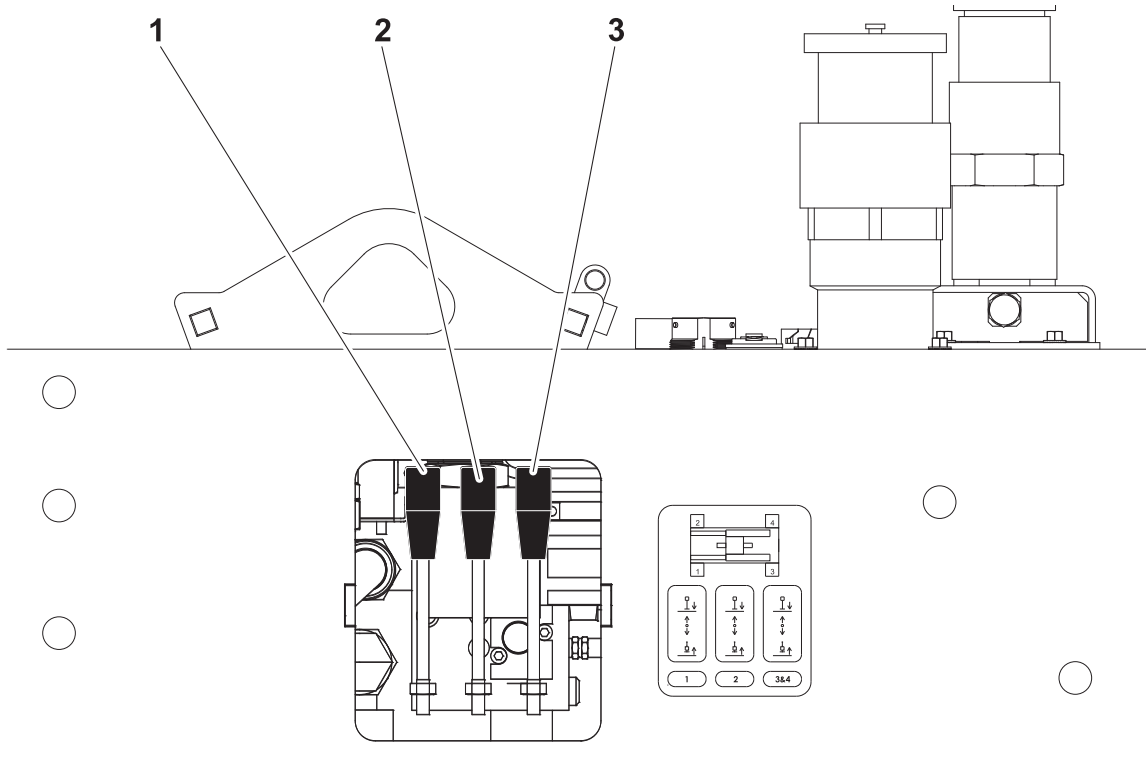
Item	Description	Notes
1. Spinner clamp control  <small>c00ic728h.eps</small>	Press up to close spinner clamp	Spinner clamp will open when lever is in the neutral position.

Item	Description	Notes
2. Spinner control  c00ic729h.eps	Press up to rotate spinner counterclockwise (breakout). Pull down to rotate spinner clockwise (makeup).	
3. Clamp control  c00ic727h.eps	Press up to close clamp. Pull down to open clamp.	
4. Push/Pullback control  c00ic717h.eps	Press up to move carriage forward. Release to return to neutral. Pull down to move carriage back.	

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Bursting Unit

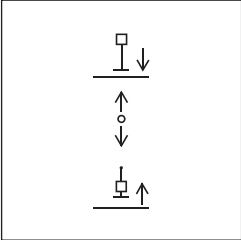
Stabilizer Controls

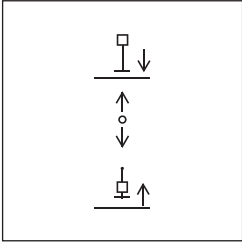
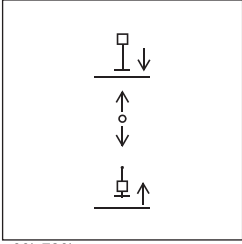


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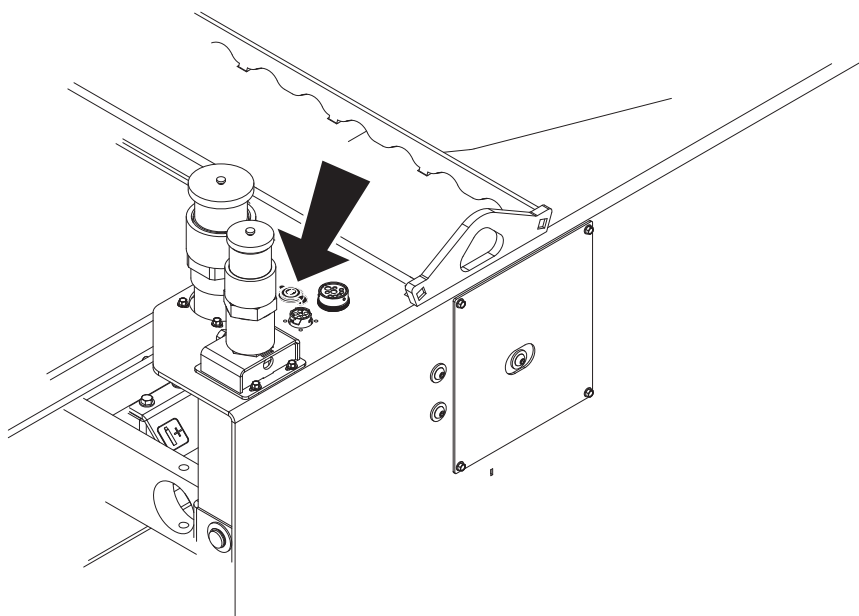
NOTICE: Raising one side of bursting unit too much can cause the unit to tip over.

1. Left stabilizer control
2. Right stabilizer control
3. Rear stabilizer control

Item	Description	Notes
1. Left stabilizer control  <p>c00ic726h.eps</p>	Pull back to raise. Push forward to lower.	

Item	Description	Notes
<p>2. Right stabilizer control</p>  <p>c00ic726h.eps</p>	<p>To raise, pull back.</p> <p>To lower, push forward.</p>	
<p>3. Rear stabilizer control</p>  <p>c00ic726h.eps</p>	<p>To raise, pull back.</p> <p>To lower, push forward.</p>	

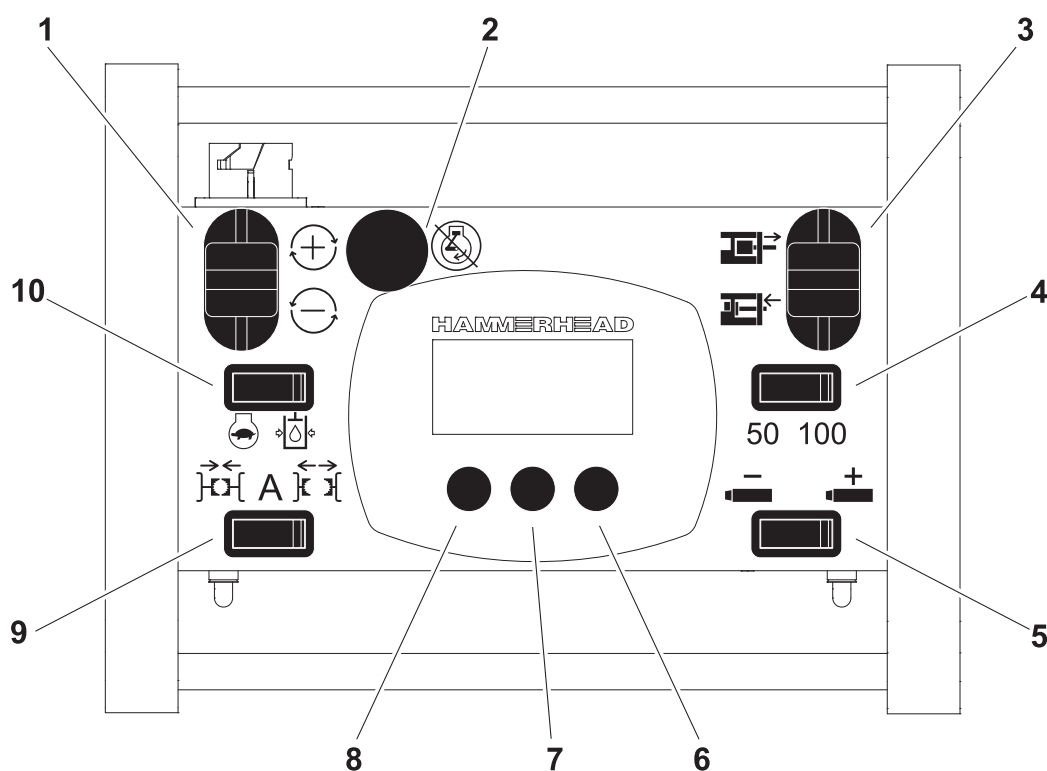
Miscellaneous Controls



j51om007h.eps

Item	Description	Notes
Auxiliary outlet	Provides power for other equipment.	Power output is fused to 15A

Remote Controller



j51om004h.eps

- | | |
|------------------------------|------------------------------|
| 1. Spinner control | 6. Set pullback tons button |
| 2. Remote stop button | 7. Increase set tons button |
| 3. Push/Pullback control | 8. Decrease set tons button |
| 4. Pullback force switch | 9. Clamp control/Auto switch |
| 5. Push/Pullback mode switch | 10. Throttle switch |

Item	Description	Notes
1. Spinner control	Press forward to rotate spinner clockwise (makeup). Pull back to rotate spinner counterclockwise (breakout).	
2. Remote stop button	Press to turn pipe burster off. Turn button clockwise to reset the button	

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Remote Controller

Item	Description	Notes
3. Push/Pullback control	<p>Press forward to move carriage forward.</p> <p>Center position neutral.</p> <p>Pull back to move carriage back.</p>	
4. Pullback force switch	<p>Press left to set pullback at faster speed with less power (50).</p> <p>Press right to set pullback at lower speed with more power (100).</p>	IMPORTANT: Most jobs can be completed with pullback set at 50.
5. Push/Pullback mode switch	<p>Press left for pullback (-) mode.</p> <p>Press right for push (+) mode.</p>	
6. Set pullback tons button	Press to activate set pullback tons option.	
7. Increase set tons button	Press to increase number of set tons bursting unit will stop pulling at.	IMPORTANT: Unit will pullback at a maximum of 100 tons.
8. Decrease set tons button	Press to decrease number of set tons bursting unit will stop pulling at.	
9. Clamp control/auto switch	<p>Press left to close clamp.</p> <p>Return to center position for auto mode.</p> <p>Press right to open clamp.</p>	Auto mode clamps and unclamps pipe automatically. In auto mode the bursting unit will limit spinner functionality based on mode and position to help prevent accidentally unthreading rods.
10. Throttle switch	<p>With power unit throttle in high, press left to decrease throttle and go to standby pressure.</p> <p>With power unit throttle in high, press right to increase throttle and go to full operating pressure.</p>	IMPORTANT: Operate machine at high throttle.

Prepare

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Gather Information

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

Review Job Plan

Review blueprints or other plans and make sure you have taken enlargement during pullback into account. 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 Pullback Material

Ask for a sample of the new product material you will be pulling back. Check its weight and stiffness. Contact the manufacturer for bend radius information. Check that you have appropriate pullback devices.

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

Identify Hazards



WARNING Entering a confined space without following all required procedures and having an effective emergency rescue plan can result in serious injury or death.

To help avoid injury:

- Follow local regulations for confined space.
- Test the atmosphere in manholes and other confined spaces before entering and continuously while in the confined space.
- Have an emergency plan in place.

Inspect jobsite before transporting equipment. Check for the following:

- overall grade or slope
- changes in elevation such as hills or open trenches
- obstacles such as buildings, railroad crossings, or streams
- signs of utilities
 - “buried utility” notices
 - utility facilities without overhead lines
 - gas or water meters
 - junction boxes
 - drop boxes
 - light poles
 - manhole covers
 - sunken ground
- traffic
- access
- soil type and condition
- depths of existing pipes

Have an experienced locating equipment operator sweep area within 20' (6 m) to each side of burst path to verify previously marked line and cable locations. Mark location of all buried utilities and obstructions.

Select Installation and Bursting Pit Locations

Consider the following when selecting pit locations:

Slope

Consider how slope will affect unit setup and operation. Assess the risks on each slope to determine if factors affecting the risks create an unsafe condition for pipe bursting.

Traffic

Vehicle and pedestrian traffic must be a safe distance from pulling equipment. Allow at least 10' (3 m) buffer zone around equipment.

Space

Check that starting and ending points allow enough space for installation and bursting pits.

Check that installation area has enough space for product to be installed.

Check that there is enough space to work.

Access

Consider shade, wind, fumes, and other site features.

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



WARNING Entering a confined space without following all required procedures and having an effective emergency rescue plan can result in serious injury or death.

To help avoid injury:

- Follow local regulations for confined space.
- Test the atmosphere in manholes and other confined spaces before entering and continuously while in the confined space.
- Have an emergency plan in place.

Classify 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:

- Wear personal protective equipment including hard hat, safety eye wear, and hearing protection.
- Do not wear jewelry or loose clothing.
- Notify One-Call and companies which do not subscribe to One-Call.
- Comply with all utility notification regulations before digging or bursting.
- Verify location of previously marked underground hazards.
- Mark jobsite clearly and keep spectators away.

Select a Classification

Jobsites are classified according to underground hazards present.

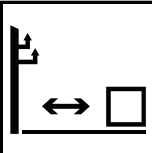

If working . . .	then classify jobsite as . . .
within 10' (3 m) of a buried electric line	electric
within 10' (3 m) of a natural gas line	natural gas
in concrete, sand, or granite which is capable of producing crystalline silica (quartz) dust	crystalline silica (quartz) dust
within 10' (3 m) of any other hazard	other

NOTICE: If you have any doubt about jobsite classification, or if jobsite might contain unmarked hazards, take steps outlined previously to identify hazards and classify jobsite before working.

Apply Precautions

Once classified, precautions appropriate for jobsite must be taken. Follow U.S. Department of Labor regulations on excavating and trenching (Part 1926, Subpart P) and other similar regulations.

Electric Jobsite Precautions




⚠ DANGER Electric shock will cause death or serious injury. Stay away. 274-049

Use one or both of these methods.

- Expose line by careful hand digging or soft excavation.
- Have service shut down while work is in progress. Have electric company test lines before returning them to service.

Natural Gas Jobsite Precautions

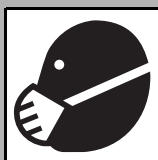


⚠ WARNING Fire or explosion possible. Fumes could ignite and cause burns. No smoking, no flame, no spark. 275-419 (2P)

Position equipment upwind from gas lines and use one or both of these methods.

- Expose lines by careful hand digging or soft excavation.
- Have gas shut off while work is in progress. Have gas company test lines before returning them to service.

Crystalline Silica (Quartz) Dust Precautions



CAUTION Breathing crystalline silica dust may cause lung disease. Cutting, drilling, or working materials such as concrete, sand, or rock containing quartz may result in exposure to silica dust. Use dust control methods or appropriate breathing protection when exposed to silica dust.

To help avoid injury:

- Use water spray or other means to control dust.
- Refer to U.S. Department of Labor Occupational Safety and Health Administration guidelines to learn more about appropriate breathing protection and permissible exposure limits.

Crystalline silica dust is a naturally occurring substance found in soil, sand, concrete, granite, and quartz. Breathing silica dust particles while cutting, drilling, or working materials may cause lung disease or cancer. To reduce exposure:

- Use water spray or other means to control dust.
- Refer to U.S. Department of Labor Occupational Safety and Health Administration guidelines to learn more about appropriate breathing protection and permissible exposure limits.

Other Jobsite Precautions

You may need to use different methods to safely avoid other underground hazards. Talk with those knowledgeable about hazards present at each site to determine which precautions should be taken or if job should be attempted.

Plan Pull Path

Plan the pull path, from entry to end, before job begins. Locate the entire route of the pipe to be replaced to ensure a straight path. Expose all crossing or parallel utilities in accordance with local regulations.

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:

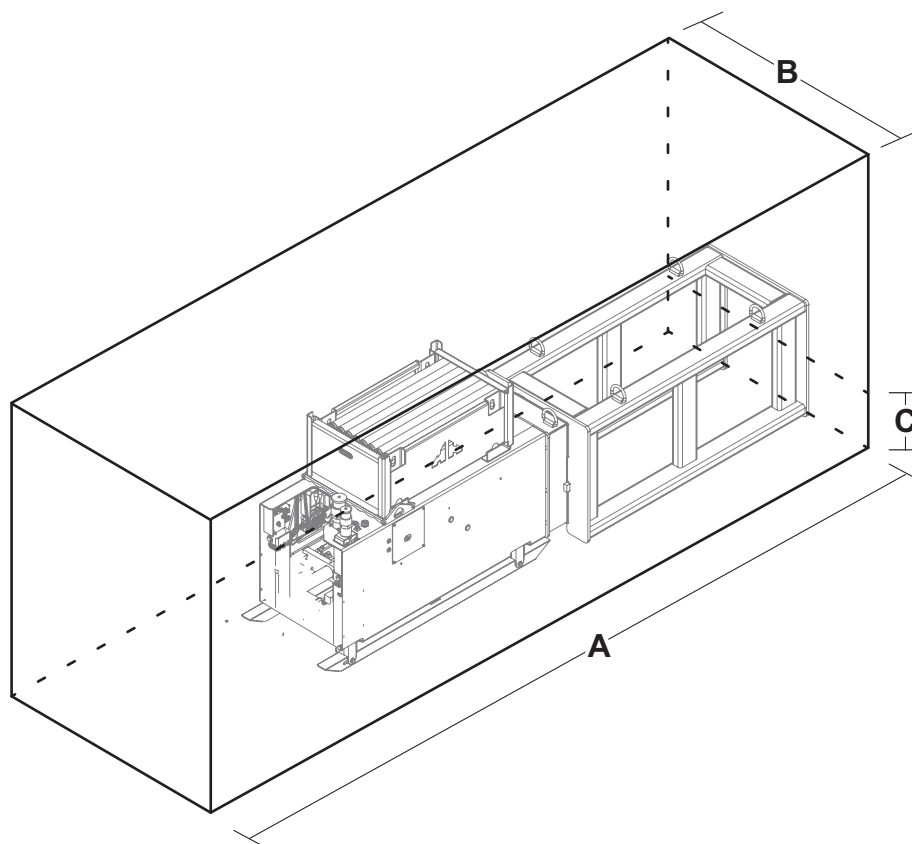
- If jobsite classification is in question or the possibility of unmarked electric utilities exists, classify jobsite as electric.
- Cutting high voltage cable can cause electrocution. Expose lines by hand before digging.
- All vegetation near operator's station must be removed. Contact with trees, shrubs, or weeds during electrical strike could result in electrocution.

Mark Pull Path

Mark your planned pull path with flags or paint.

Dig Bursting Pit

Dimensions



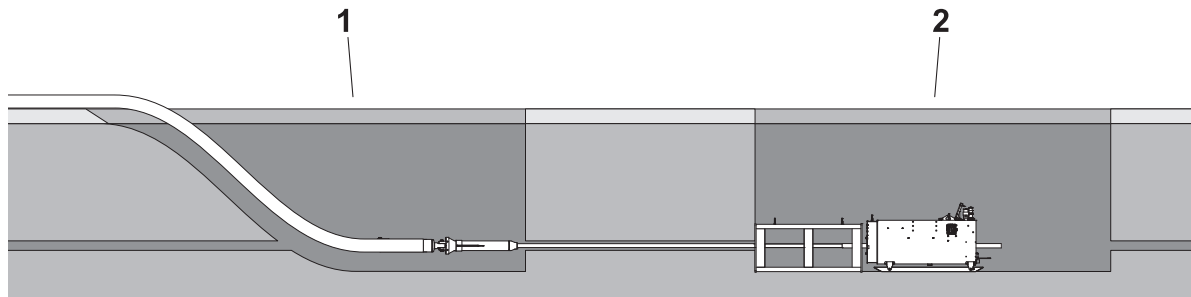
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Minimum Bursting Pit		
Length (A)	Width (B)	Depth (C)
U.S. (metric)	U.S. (metric)	U.S. (metric)
110" (2.8 m)*	48" (1.2 m)	18" (0.5 m)**
*Add 73.5" (1.9 m) of length of bursting pit if using the extraction cage.		
**Below pipe center line		

100XT Operator's Manual

Prepare Jobsite

Requirements



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Installation Pit (1)

- Pit dimensions depend on pipe depth and product being installed.
- Must be in line with existing pipe.
- Sloped back end aids new product installation. Consider new product bend radius.

Bursting Pit (2)

- Must be level to align bursting unit properly with existing pipe.
- Cover pit floor with gravel for drainage and to allow bursting unit to be level with existing pipe.
- Bottom 34" of pit wall must be square (90°) with pit floor.

NOTICE: Loose soil may need to be shored to support force of burst.

- Place steel road plate underneath bursting unit.

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



WARNING Entering a confined space without following all required procedures and having an effective emergency rescue plan can result in serious injury or death.

To help avoid injury:

- Follow local regulations for confined space.
- Test the atmosphere in manholes and other confined spaces before entering and continuously while in the confined space.
- Have an emergency plan in place.

Check Supplies and Prepare Equipment

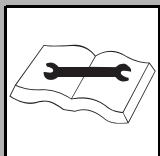
Check Supplies

- marking flags or paint
- fuel
- hydraulic oil
- keys
- cutting heads, clevis
- barrier cones and tape
- rod joint lube antiseize MIL-A-907E
- personal protective equipment, such as hard hat and safety glasses
- notepad and pencil

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.

- clean couplers
- hoses and valves
- inspect/clean jaws
- inspect/lube bowls

Assemble Accessories

Fire Extinguisher

If required, mount 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 electric fires. It should meet legal and regulatory requirements.

Chapter Contents

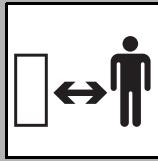
Lift 44

- Points 44
- Procedure 44

Tie Down 46

- Points 46
- Procedure 46

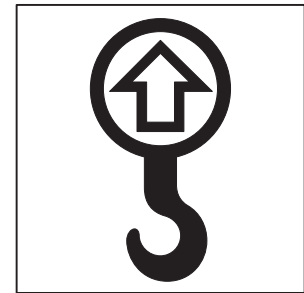
Lift



Crushing weight could cause death or serious injury. Stay away.

Points

Lifting points are identified by lifting decals. Lifting at other points is unsafe and can damage machinery.



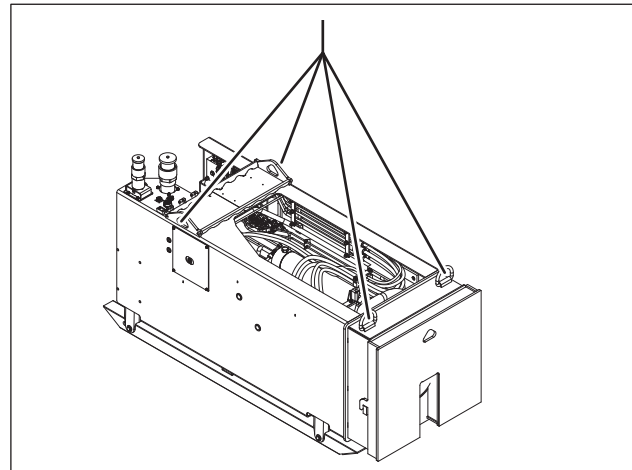
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Procedure

Bursting Unit

Use equipment capable of supporting the unit's size and weight. See "Specifications" on page 83 or measure and weigh equipment before lifting. Use supplied lift chains at lift points as shown.

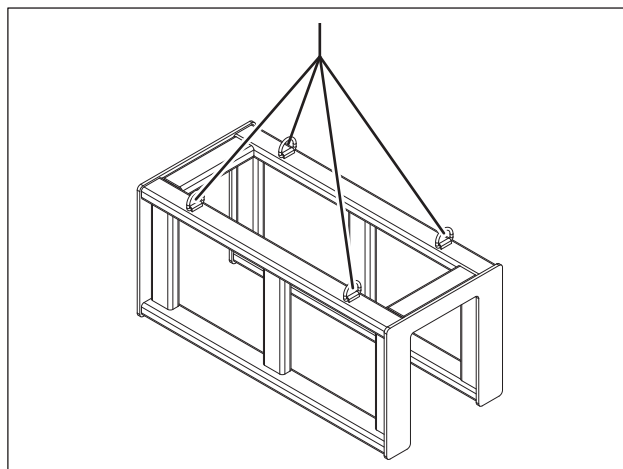
NOTICE: Do not attempt to lift rod box with bursting unit.



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Extraction Cage

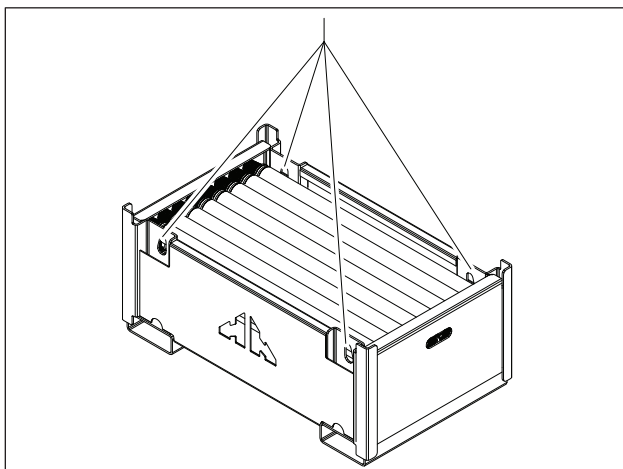
Use equipment capable of supporting the extraction cage's size and weight. See "Specifications" on page 83.



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Rod Box

Use equipment capable of supporting the rod box's size and weight.

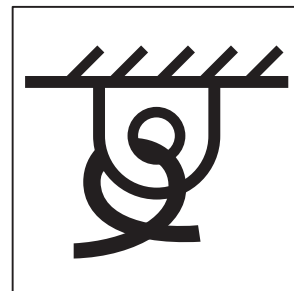


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Tie Down

Points

Tiedown points are identified by tiedown decals. Securing to trailer at other points can damage machinery.



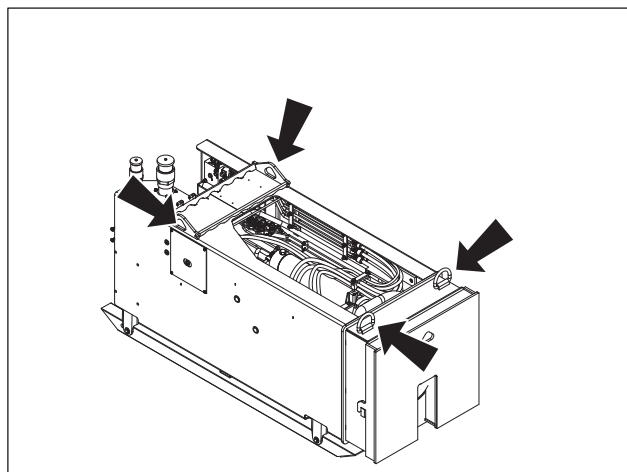
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Procedure

Bursting Unit

To tie down bursting unit, use D-rings shown.

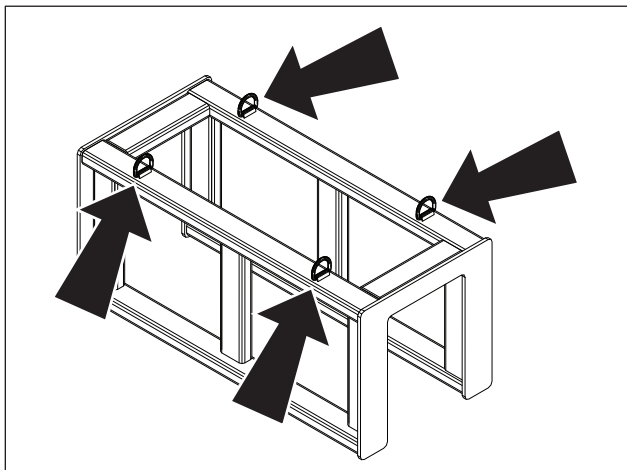
NOTICE: Do not attempt to transport rod box with bursting unit. Remove rod box before transporting.



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Extraction Cage

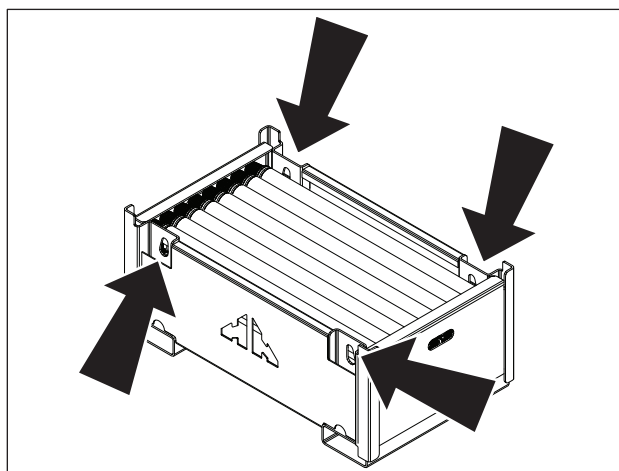
Use chain or strap to tie down and secure extraction cage. Use D-rings shown.



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Rod Box

To tie down rod box use D-rings shown.



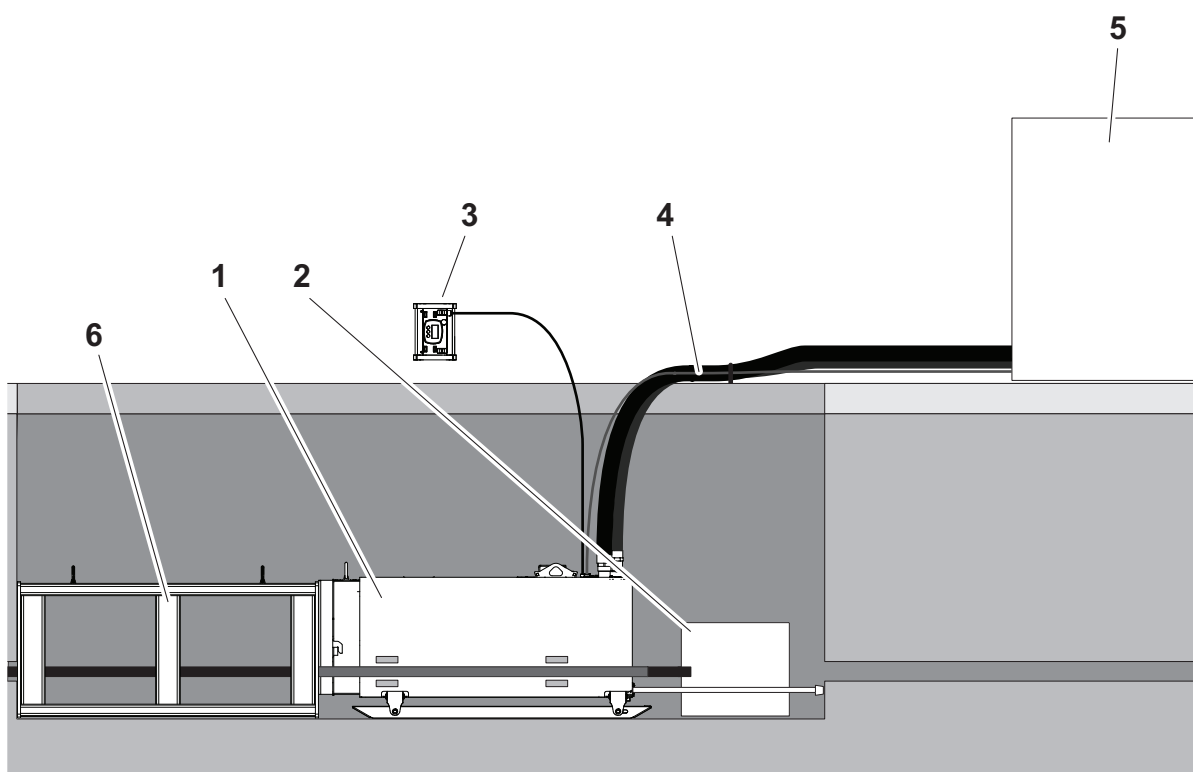
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Burst Pipe

Chapter Contents

Setup and Configuration	50
Emergency Stop Procedure	53
Lock/Unlock Bungee	53
• Lock Bungee	53
• Unlock Bungee	54
Push Rods	55
Connect Tooling String to Pilot Rod	57
Pull Back Rods	58
Pull New Product	60

Setup and Configuration



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- | | |
|------------------|-------------------------------|
| 1. Bursting unit | 4. Hydraulic connection hoses |
| 2. Rod box | 5. Power unit |
| 3. Controller | 6. Extraction cage |

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



WARNING Entering a confined space without following all required procedures and having an effective emergency rescue plan can result in serious injury or death.

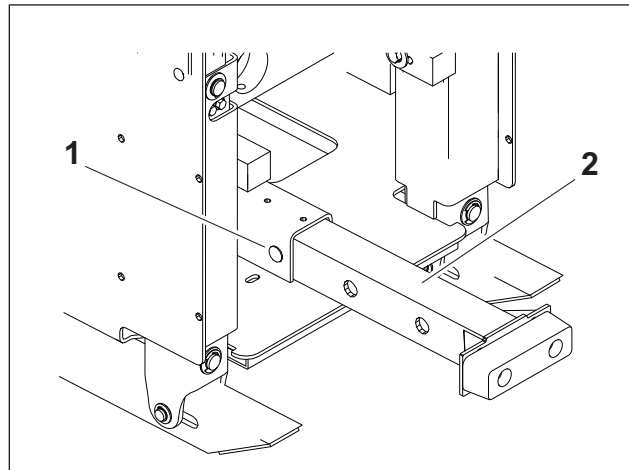
To help avoid injury:

- Follow local regulations for confined space.
- Test the atmosphere in manholes and other confined spaces before entering and continuously while in the confined space.
- Have an emergency plan in place.

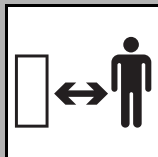
1. Use equipment capable of safely lifting and unloading power unit, bursting unit, extraction cage, and related equipment next to bursting pit.
2. Set power unit switch to OFF.
3. Position power unit outside of bursting pit, at least two feet away from the edge.
4. Place gravel as a pit floor liner with a steel road plate under the bursting unit to establish slip-free work surface and drainage, and to establish correct depth so that rod string will be level with existing pipe.
5. If using extraction cage lower into the pit and place against the pit wall.

NOTICE: Ensure no personnel are in pit as equipment is lowered.

6. Lower bursting unit into pit against extraction cage, if used. If no extraction cage is used, place against pit wall. Allow space for pipe/pipe loader behind pulling unit.
7. Use stabilizers to ensure front panel is square (90°) with pit floor or end of the extraction cage. See "Stabilizer Controls" on page 26.
8. Secure machine on all sides during pullback using proper cribbing and blocking devices.
9. Remove pin (1) and extend outrigger (2) to pit wall to ensure machine is secure during pullback. Replace pin.



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WARNING

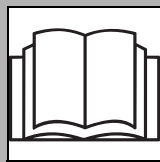
Machine can move suddenly during pullback and rods can reverse rapidly if there is a sudden release of product which could cause serious injury or death.

To help avoid injury:

- Secure machine using proper cribbing and blocking devices in all directions during pullback.
- Operate only from designated area.
- Inspect and rotate rods.
- Replace damaged rods.
- Use proper clamping procedures.

100XT Operator's Manual

Setup and Configuration



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

To help avoid injury:

- Always connect return line first and remove last.
- Before using system, check that all connections are tight and all lines are undamaged.

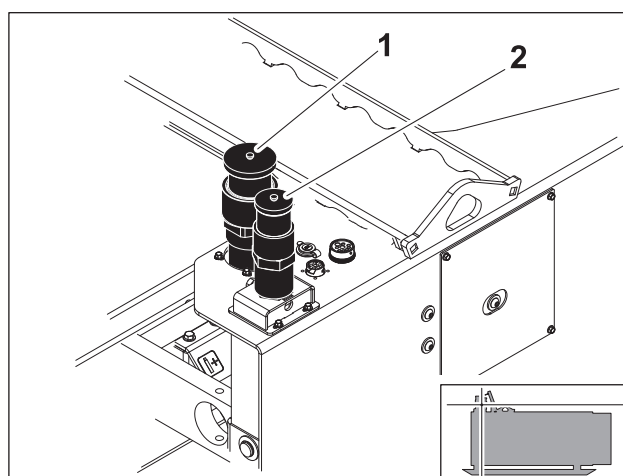
If you are injured, seek immediate medical attention from a doctor familiar with this type of injury.

10. Connect hydraulic hoses from power unit to bursting unit.

- First connect return line (1) from power unit to bursting unit by threading connection together until colored o-ring cannot be seen.
- Second connect pressure line (2) from power unit to bursting unit by threading connection together until colored o-ring cannot be seen.

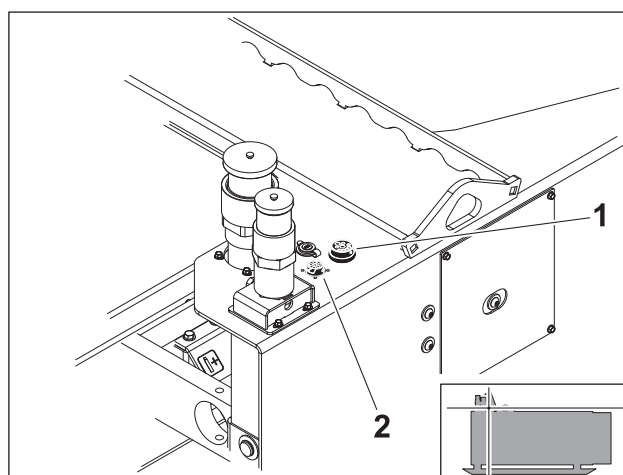
NOTICE:

- Ensure all hose is removed from all hooks on the power unit while operating machine.
- Ensure hoses are properly supported and secured outside of pit to keep them from moving while machine is in use.



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11. Connect electrical cable from power unit to bursting unit (1).
12. Connect electrical cable from remote controller to bursting unit (2).
13. Place rod box behind person loading rods in the safe zone. See "Operating Area" on page 6.
14. Remove end plate from rod box.
15. Keep rod joint lube available for lubricating female rod threads as needed.



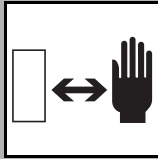
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Emergency Stop Procedure

To shut down power unit engine under normal conditions, use key switch or emergency stop on power unit.

To shut down power unit using remote controller, press the remote stop switch on remote controller.

Lock/Unlock Bungee



Pinch points can crush. Keep hands clear.

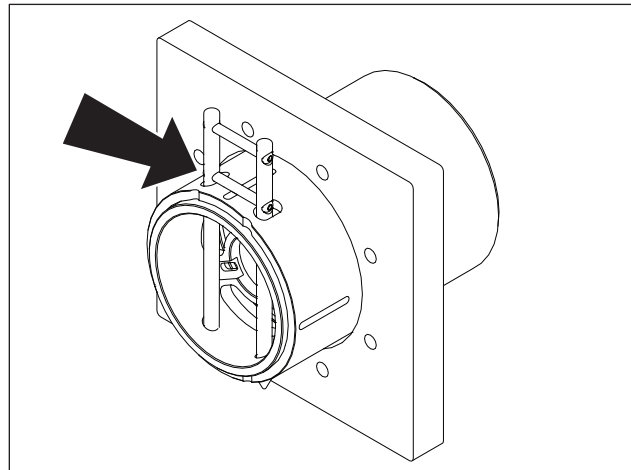
To help avoid injury: Turn power unit off before handling bungee fork.

IMPORTANT: For unit components, see “Bursting Unit Components” on page 5. For controls, see “Remote Controller” on page 29.

Lock Bungee

When bungee is locked, rod will only move backward. To move rod forward, unlock bungee.

1. Open clamp.
2. Remove bungee fork from unlock position.
3. Move carriage to front of unit to compress bungee.
4. Insert bungee fork in the lock position (shown).

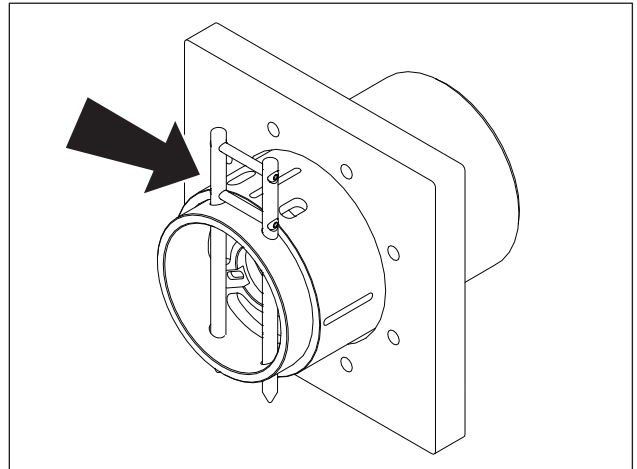


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Unlock Bungee

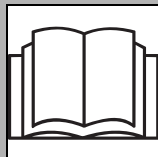
When bungee is unlocked, rod will move freely forward and backward.

1. Open clamp.
2. Move carriage to front of unit to compress bungee.
3. Remove bungee fork.
4. Move carriage to back of unit.
5. Insert fork in the unlock position (shown).



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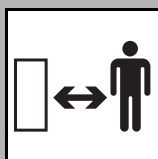
Push Rods

**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:

- Maintain 2-way communication between bursting pit and all other personnel.
- Ensure operator has good visibility of rods entering/exiting bursting unit.
- Make sure all personnel are clear of moving parts.
- Keep personnel at the proper operating area. See "Operating Area" on page 6.
- Bursting unit may raise off pit floor under load. Keep hands and feet away.
- Ensure that hoses are secured outside of pit.
- Do not attempt to use any part of body to assist rods or product entering/exiting pipe or bursting unit.

**DANGER**

Turning shaft will kill you or crush arm or leg. Stay away.

To help avoid injury: Do not hold rod while turning. Burrs and slight imperfections on rods can catch skin, clothing, etc.

IMPORTANT: For unit components, see "Bursting Unit Components" on page 5. For controls, see "Remote Controller" on page 29.

1. Place at least one operator/pipe loader in the bursting pit. Keep this person at rear of unit in operating area (page 6).
2. Start power unit engine. Set engine to high throttle.

NOTICE: To shut down power unit when using remote controller, press the remote stop switch on remote controller. If not using remote controller, turn engine off at the power unit.

3. Turn mode selector switch on remote controller to push mode.
4. Ensure bungee is in the unlock position. See "Unlock Bungee" on page 54.
5. Open clamp.
6. Move carriage to back of unit.
7. Select pilot rod and apply lube to rod threads.
8. Install push point on end of pilot rod.

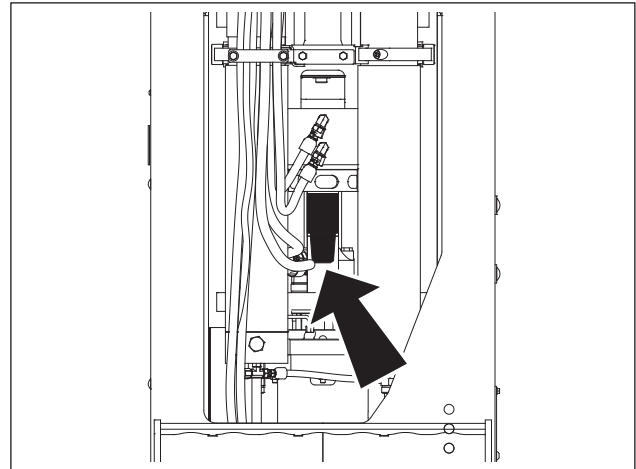
100XT Operator's Manual

Push Rods

9. Insert rod into bursting unit through open clamp until joint is visible in window (shown).
10. Close clamp.
11. Install rod.
12. To connect rods, rotate spinner clockwise.

NOTICE: Tighten all threaded joints completely so shoulders touch.

IMPORTANT: After first rod has been connected, carriage can be moved forward while spinner is rotated to connect rods.

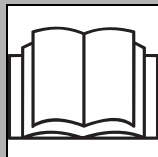


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13. Move carriage to front of unit.
14. Open clamp.
15. Move carriage to back of unit.
16. Close clamp.
17. Move carriage to back of unit.
18. Open clamp.
19. Move carriage to back of unit until joint is visible in window.
20. Repeat steps 10-19 as needed to complete job.

IMPORTANT: If using auto mode, machine will open and close clamps automatically.

Connect Tooling String to Pilot Rod



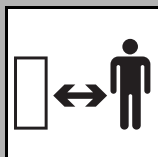
WARNING

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:

- Maintain 2-way communication between bursting pit and all other personnel.
- Make sure all personnel are clear of moving parts.
- Do not attempt to use any part of body to assist rods or product entering/exiting pipe or bursting unit.



DANGER

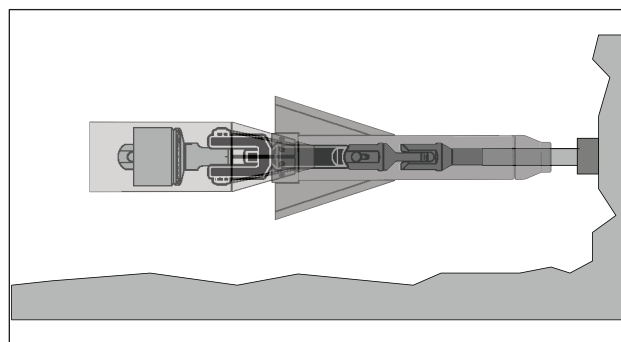
Turning shaft will kill you or crush arm or leg. Stay away.

To help avoid injury: Do not hold rod while turning. Burrs and slight imperfections on rods can catch skin, clothing, etc.

IMPORTANT: See "Tooling String" on page 72 for more information.

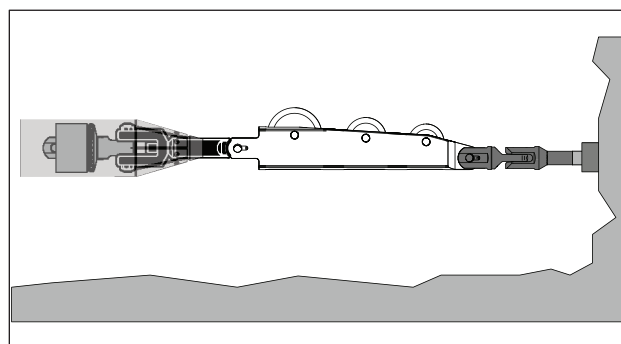
1. Push rod into installation pit.
2. Turn power unit engine off.
3. Remove push point from pilot rod.
4. Connect flex joint of bursting/slitting tooling string to pilot rod.
5. Torque the connections to 250 ft•lb (339 N•m).

NOTICE: Use a wrench to hold the rod string while torquing to prevent over-tightening rod string joints.



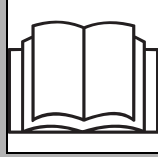
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6. Turn power unit engine on.



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Pull Back Rods

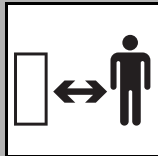


⚠ WARNING

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:

- Maintain 2-way communication between bursting pit and all other personnel.
- Ensure operator has good visibility of rods entering/exiting bursting unit.
- Make sure all personnel are clear of moving parts.
- Keep personnel at the proper operating area. See "Operating Area" on page 6.
- Bursting unit may raise off pit floor under load. Keep hands and feet away.
- Do not attempt to use any part of body to assist rods or product entering/exiting pipe or bursting unit.

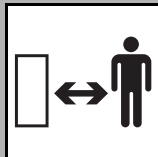


⚠ DANGER

Turning shaft will kill you or crush arm or leg. Stay away.

To help avoid injury: Do not hold rod while turning. Burrs and slight imperfections on rods can catch skin, clothing, etc.

IMPORTANT: For unit components, see "Bursting Unit Components" on page 5. For controls, see "Remote Controller" on page 29.



⚠ WARNING

Machine can move suddenly during pullback and rods can reverse rapidly if there is a sudden release of product which could cause serious injury or death.

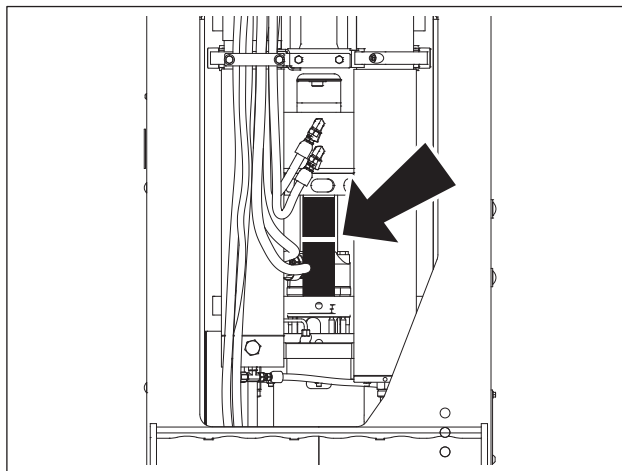
To help avoid injury:

- Secure machine using proper cribbing and blocking devices in all directions during pullback.
- Operate only from designated area.
- Inspect and rotate rods.
- Replace damaged rods.
- Use proper clamping procedures.

1. Place at least one operator/pipe loader in the bursting pit. Keep this person at rear of unit in operating area (page 6).
2. Start power unit engine. Set engine to high throttle.

NOTICE: To shut down power unit when using remote controller, press the remote stop switch on remote controller. If not using remote controller, turn engine off at the power unit.

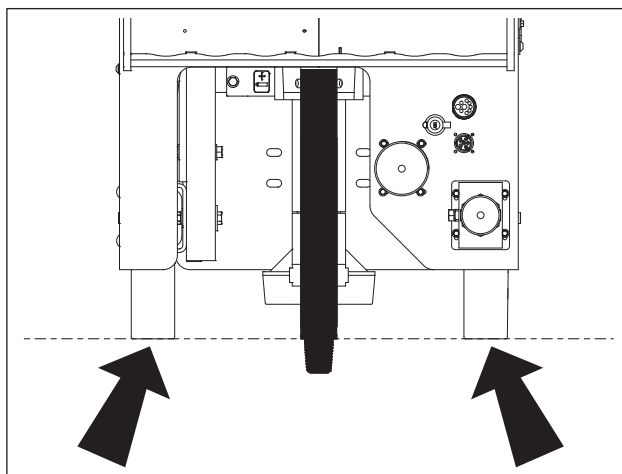
3. Turn mode selector switch on remote controller to pullback mode.
4. Lock bungee. See "Lock Bungee" on page 53.
5. Open clamp.
6. Pull rod into bursting unit until first joint is visible in window (shown).
7. Close clamp.



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8. Move carriage back until rod lines up with end of skis (shown).
9. To disconnect rods rotate spinner control counterclockwise.

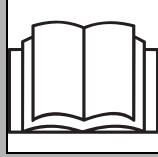
NOTICE: After first rod has been removed, carriage can be moved back while spinner is rotated to disconnect rods.



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10. Remove rod.
11. Open clamp.
12. Move carriage to front of machine.
13. Close clamp.
14. Move carriage to back of machine.
15. Open clamp.
16. Move carriage to front of machine.
17. Repeat steps 7-16 to complete job.

Pull New Product

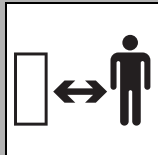


⚠ WARNING

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

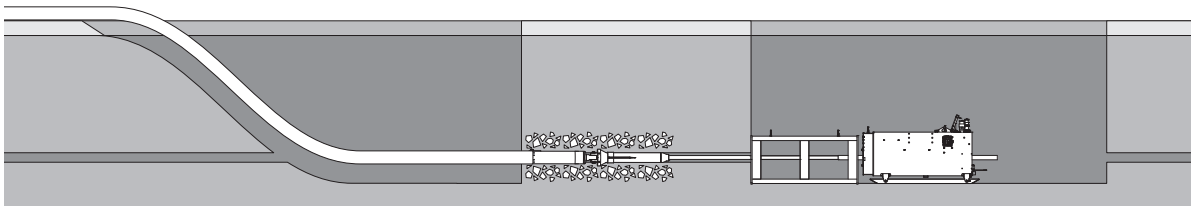
To help avoid injury:

- Maintain 2-way communication between bursting pit and all other personnel.
- Ensure operator has good visibility of rods entering/exiting bursting unit.
- Make sure all personnel are clear of moving parts.
- Keep personnel at the proper operating area during operation. See "Operating Area" on page 6.
- Bursting unit may raise off pit floor under load. Keep hands and feet away.
- Do not attempt to use any part of body to assist rods or product entering/exiting pipe or bursting unit.



⚠ DANGER

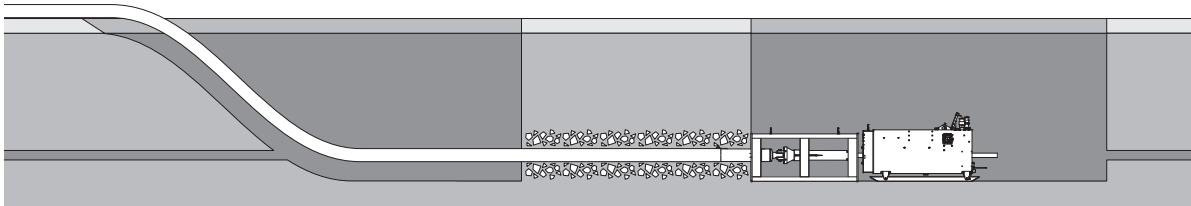
Crushing weight could kill or seriously injure. Stay away.



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1. Disconnect rod and place in rod box.

2. Continue pulling back rod string until bursting/splitting assembly reaches pit.

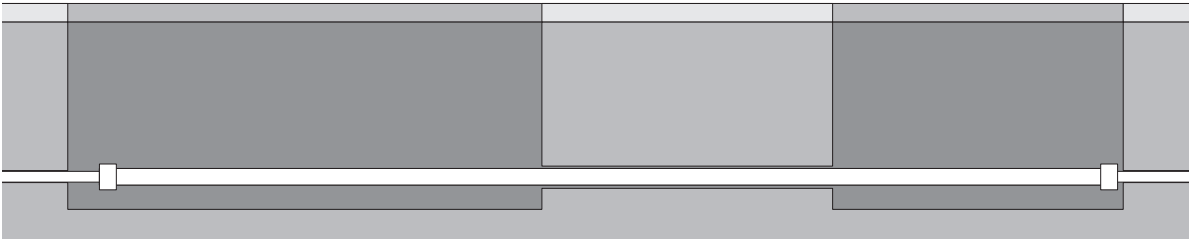


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3. Connect one rod onto rod in bursting unit.
4. If not already in place, move bursting unit back in pit and position extraction cage between bursting unit and existing pipe and pit wall.

IMPORTANT: Ensure extraction cage is level and centered. Move bursting unit forward until it is firmly against extraction cage.

5. Put bursting unit in pull mode and pull bursting/splitting system into extraction cage.
6. Remove extraction cage.
7. Disconnect and remove bursting/splitting system.
8. Remove bursting unit from pit.
9. Connect both ends of new product to existing pipe to complete job.



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Systems and Equipment

Chapter Contents

Tooling String 64

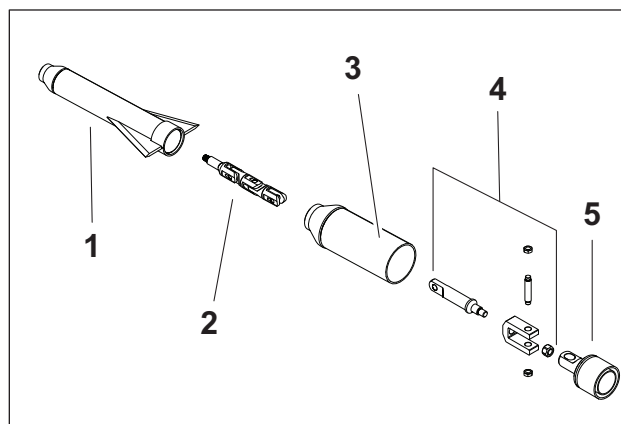
- Bursting String 64
- Slitter String. 64
- Bursting/Splitting Heads 65

Extraction Cage 65

Tooling String

Bursting String

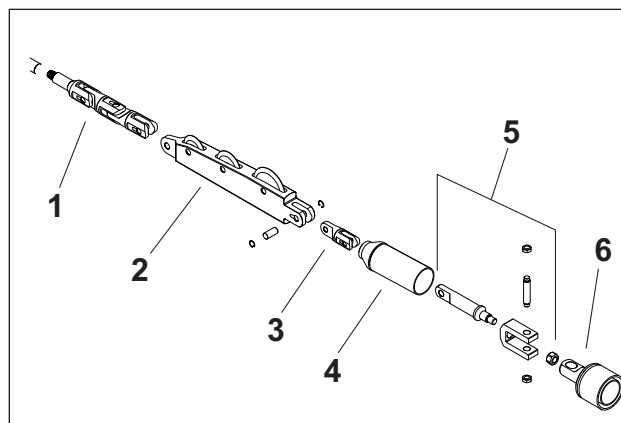
Ref.	Description
1	pipe pilot
2	flex joint
3	expander
4	expander rod assembly
5	pipe puller



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Slitter String

Ref.	Description
1	flex joint
2	slitter assembly
3	trailing pivot rod assembly
4	expander
5	expander rod assembly
6	pipe puller

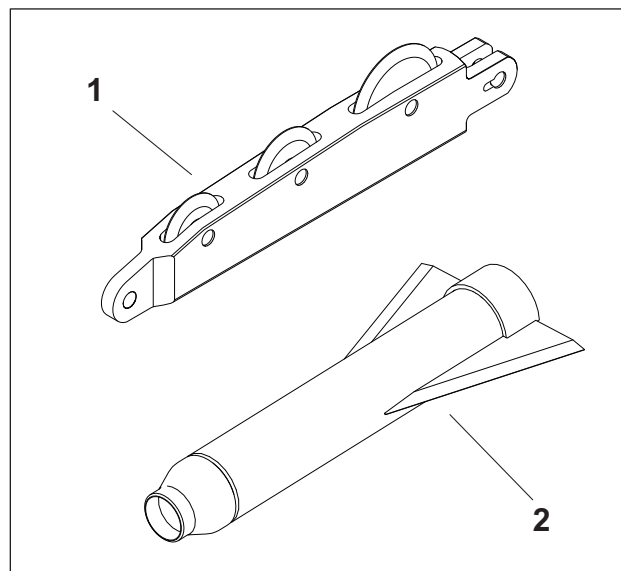


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Bursting/Splitting Heads

Identification and Uses

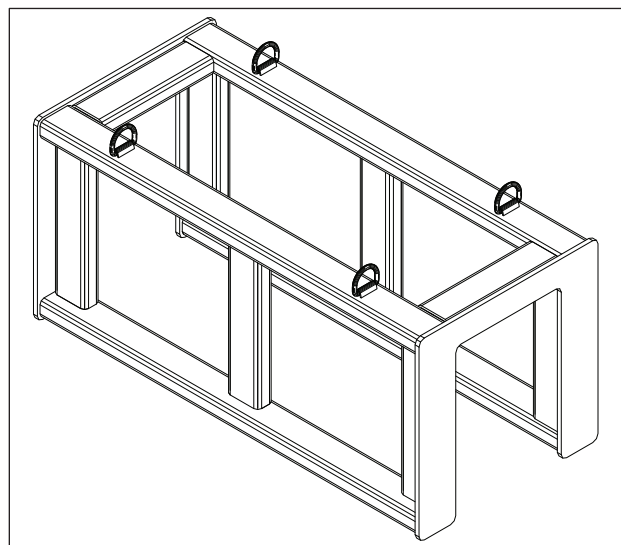
Ref.	Type	Uses
1	slitter	ductile iron, steel, cast iron with repairs
2	pipe pilot	clay, asbestos cement, PVC, PE, cast iron



j51om008w.eps

Extraction Cage

The extraction cage allows room to remove the bursting/splitting assembly from the new product after it enters the bursting pit.



j51om010w.eps

Complete the Job

Chapter Contents

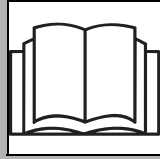
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Restore Jobsite 69

Stow Tools 69

Disconnect Hoses

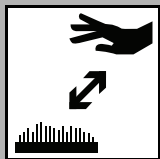


⚠ WARNING Pressurized fluid or air could pierce skin and cause severe injury. Refer to operator's manual for proper use.

To help avoid injury:

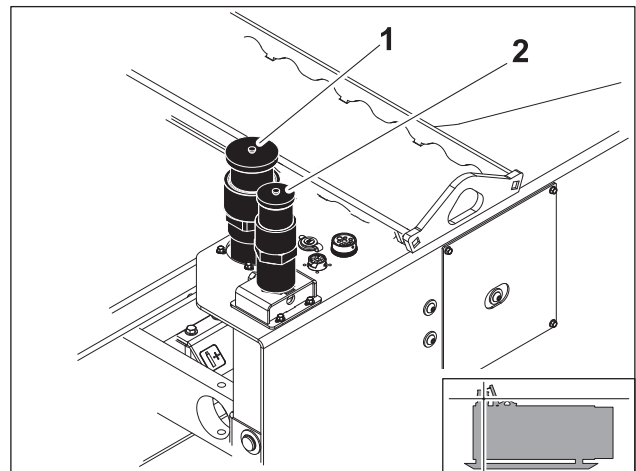
- Always connect return line first and remove last.
- Before using system, check that all connections are tight and all lines are undamaged.

If you are injured, seek immediate medical attention from a doctor familiar with this type of injury.



⚠ CAUTION Hot parts may cause burns. Do not touch until cool or wear gloves.

1. Disconnect the pressure line (2) from the bursting unit.
2. Disconnect the return line (1) from the bursting unit.
3. Wrap hoses around the hooks on the power unit.



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Stow Components

1. Install all covers.
2. Load components onto trailer.
3. Secure all components on trailer.

Restore Jobsite

Fill in installation, bursting and service connection pits.

Stow Tools

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

Service

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- Remove/Install Front Panel. 72

Recommended Lubricants/Service Key 73

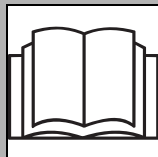
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Service Precautions

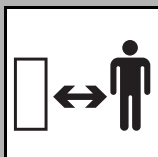


⚠ WARNING Misuse of machine can cause death or serious injury. Read and understand operator's manual and all other safety instructions before use. 273-475

To help avoid injury:

- Unless otherwise instructed, all service should be performed with engine off.
- Refer to engine manufacturer's manual for engine maintenance instructions.

Remove/Install Front Panel



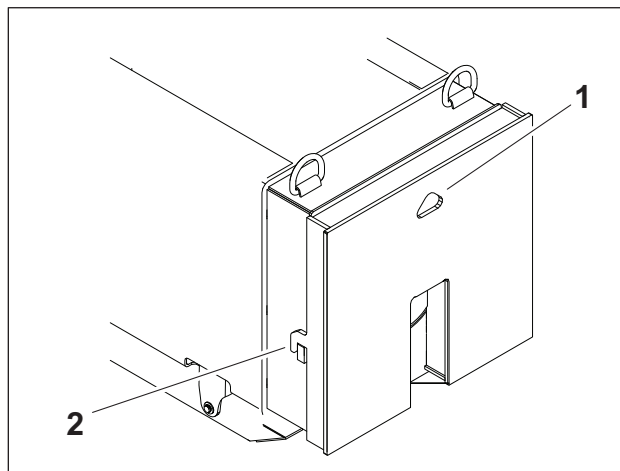
⚠ WARNING Crushing weight could cause death or serious injury. Stay away.

Remove

1. Attach lifting chain to front panel (1).
2. Use equipment capable of supporting the front panel size and weight to lift panel off the front of the unit.





Install

1. Lower front panel near front of bursting unit.
2. Guide front panel over side tabs (2) to set in place.
3. Remove lifting chain.



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Recommended Lubricants/Service Key

Item	Description
EPRG	Extreme-Pressure Grease - high temperature red D4950-07 LB-GC
RJL	Rod Joint Grease - Antiseize MIL-A-907E
	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 89 to record all required service to your machine.

Each Use

Tasks	Notes
Inspect rods/pipes	after each use
Clean jaw	after each use
Clean rod wipers	after each use

Inspect Rods/Pipes

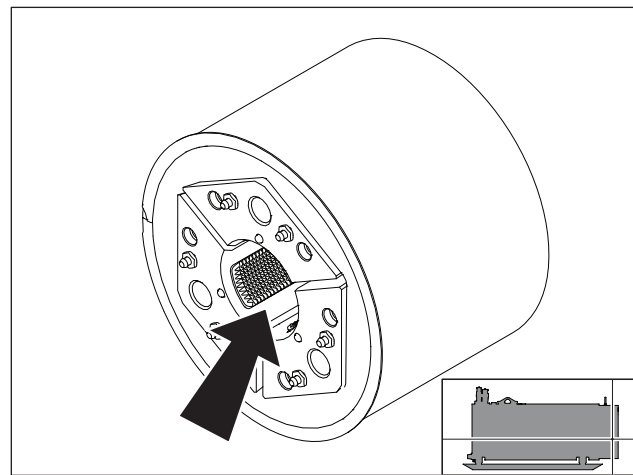
Inspect rods/pipes after each use. Ensure rods/pipes are not:

- severely bent
- gouged more than 1/8" (3.2 mm) on hollow sections
- cracked

NOTICE: If rods/pipes are damaged, replace immediately.

Clean Jaw

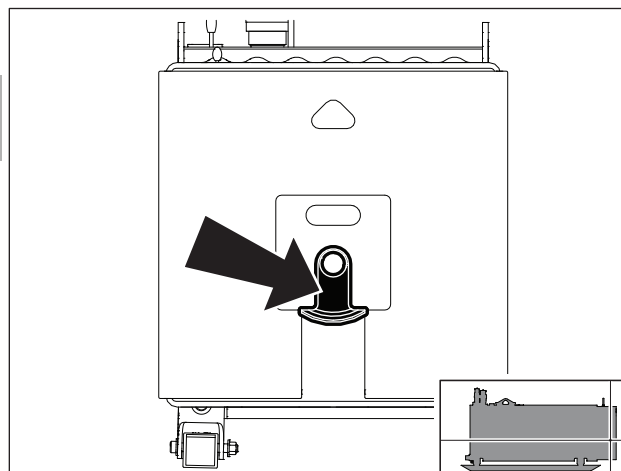
Clean spinner, carriage and bungee jaw with high-pressure water after each job. Brush jaws with wire brush to remove debris.



Clean Rod Wiper

IMPORTANT: Replace rod wiper if damaged or worn.

Clean rod wiper with high-pressure water after each use.

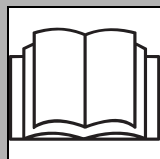


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50 Hour

Task	Notes
Check hydraulic hoses	
Change hydraulic pressure filter	initial change

Check Hydraulic Hoses



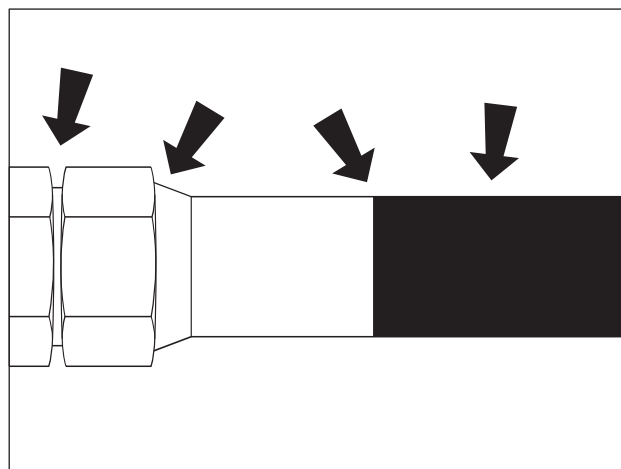
⚠ WARNING Pressurized fluid or air could pierce skin and cause severe injury. Refer to operator's manual for proper use.

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 disconnecting a hydraulic line, turn engine off and operate all controls to relieve pressure.
- Lower, block, or support any raised component with a hoist.
- Cover connection with heavy cloth and loosen connector nut slightly to relieve residual pressure. Catch all fluid in a container.
- Before using system, check that all connections are tight and all lines are undamaged.

If you are injured, seek immediate medical attention from a doctor familiar with this type of injury.

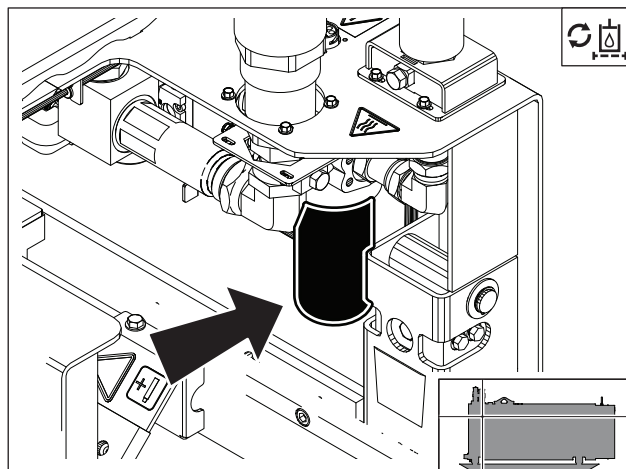
Check hydraulic hoses for leaks.



CheckHoses.eps

Change Hydraulic Pressure Filter (initial)

Change hydraulic pressure filter after 50 hours initially, and every 200 hours thereafter.



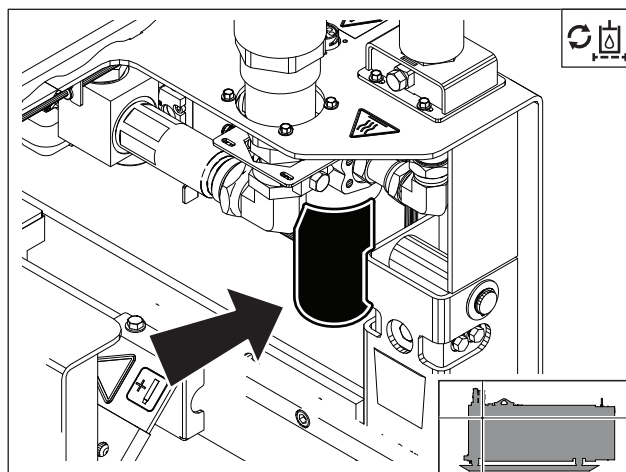
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200 Hour

Task	Notes
Change hydraulic pressure filter	

Change Hydraulic Pressure Filter

Change hydraulic pressure filter every 200 hours.



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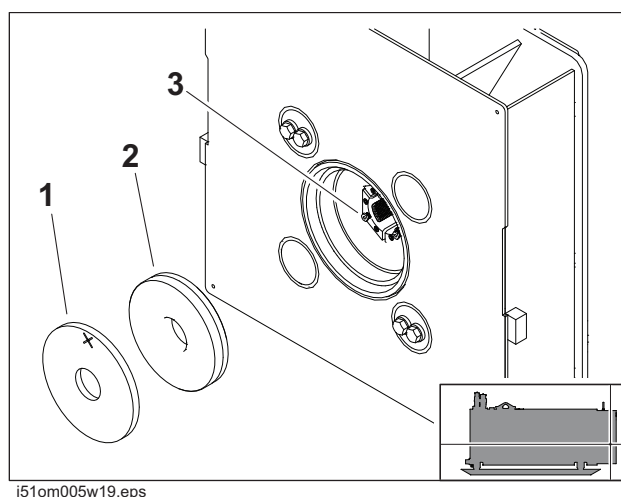
As Needed

Task	Notes
Replace jaws	carriage and bungee
Replace spinner and carriage guides	
Replace rod wiper	
Replace carriage wheels	
Lube rod/pipe threads	RJL
Lube bowls	bungee vise and carriage vise, EPRG

Replace Jaws

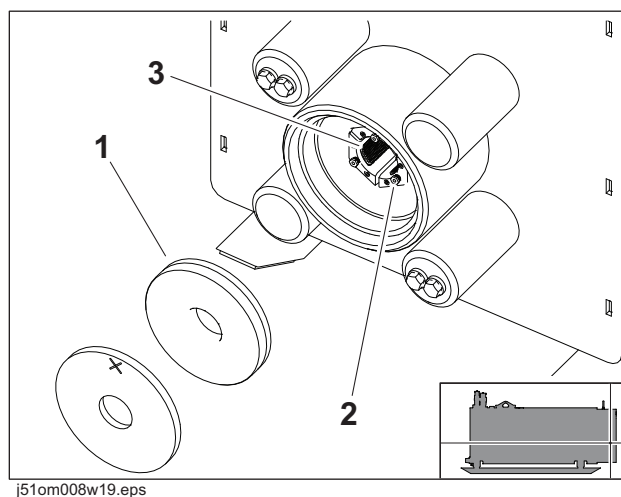
Bungee

1. Lift off front of machine. See "Remove/Install Front Panel" on page 72.
2. Remove rod wiper (1, shown).
3. Remove rod guide (2, shown).
4. Remove three bolts (3, shown) to remove jaws.
5. Replace jaws.
6. Reinstall bolts, rod guide, and rod wiper.
7. Lower front of machine down into place. See "Remove/Install Front Panel" on page 72.



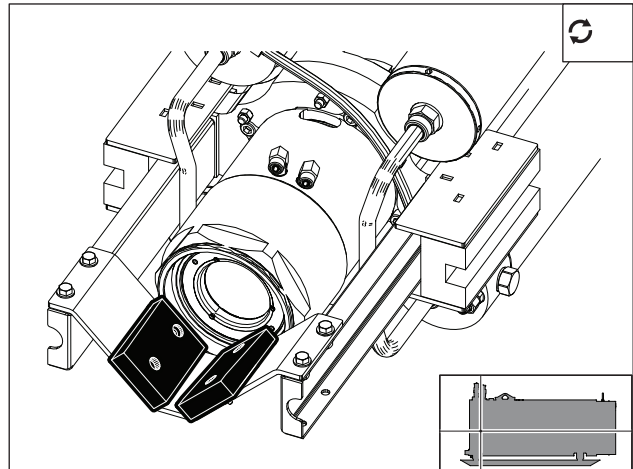
Carriage

1. Remove snap ring on carriage (1).
2. Remove rod guide (2).
3. Remove three bolts (3) to remove jaws (4).
4. Replace jaws.
5. Reinstall bolts, rod guide, and snap ring.



Replace Rod Catcher

1. Remove bolts holding plastic guides in place.
2. Remove worn guides.
3. Reinstall new guides using existing hardware.

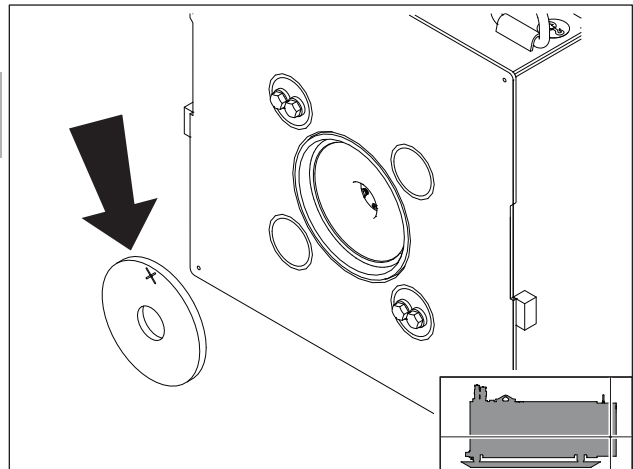


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Replace Rod Wiper

IMPORTANT: Install rod wiper with X facing outward and at top center.

1. Lift off front of machine. See "Remove/Install Front Panel" on page 72.
2. Remove rod wiper (shown).
3. Lower front panel down into place.



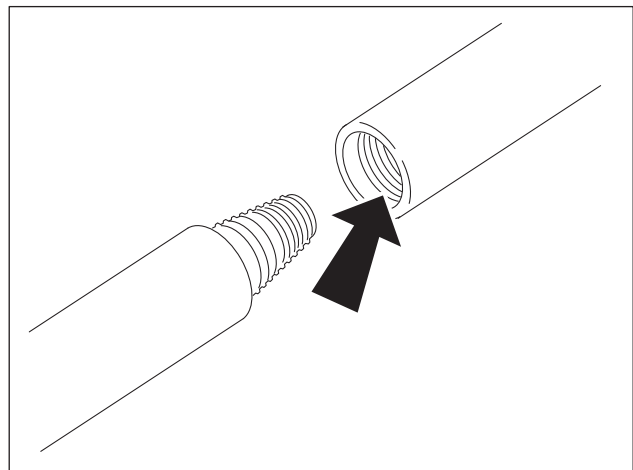
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Lube Rod/Pipe Threads

Lube with RJL antiseize lubricant as needed.

NOTICE:

- Apply lubricant to female threads only.
- If rod/pipe threads are damaged, replace immediately.
- Ensure rods/pipes are free from any dirt or debris.



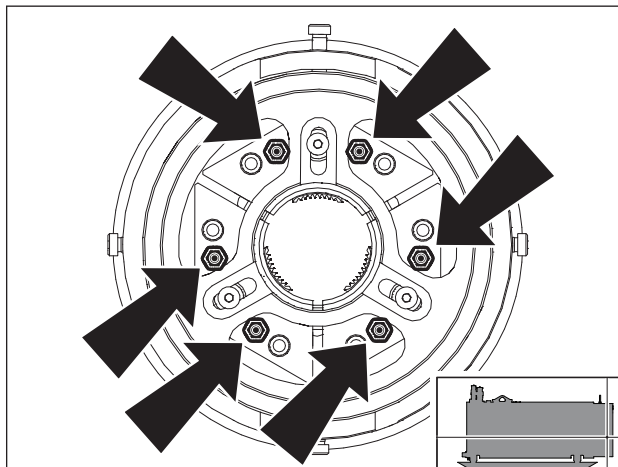
DrillPipe_CleanF.eps

Lube Bowls

Lube bowls as needed.

Bungee Vise

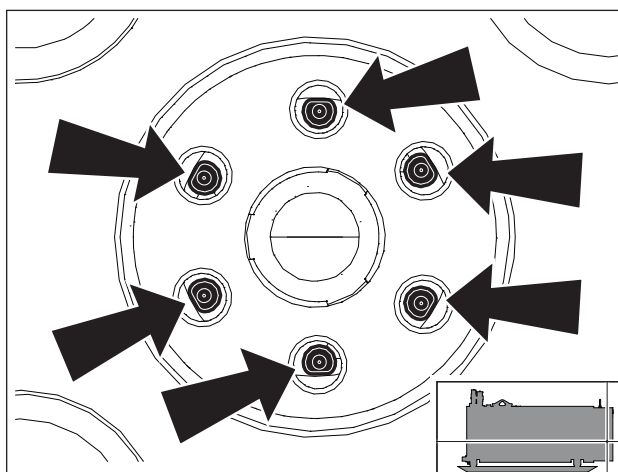
1. Move carriage to rear of machine.
2. Through access holes in bungee plate (shown), apply five pumps of EPRG to each grease zerk on each slip.



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Carriage Vise

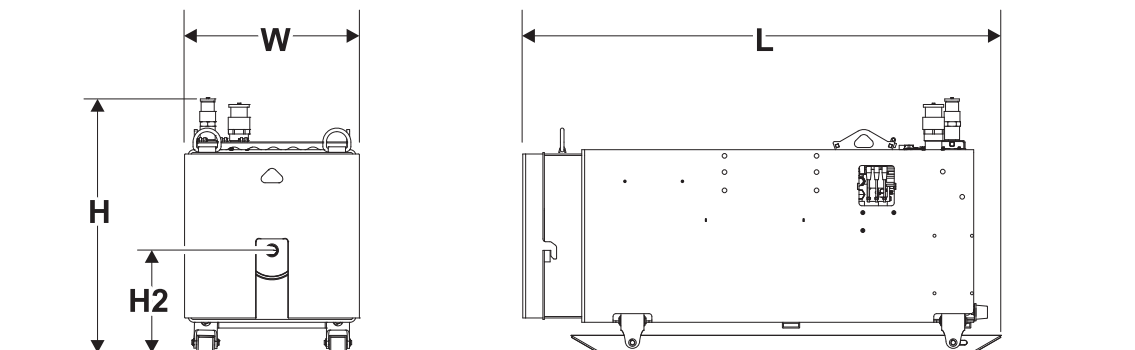
1. Move carriage to rear of machine.
2. Rotate rod guide so that access holes align with grease zerks (shown).
3. Apply five pumps of EPRG to each grease zerk on each slip.



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Specifications

Bursting Unit



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Dimensions	U.S.	Metric
L, length	83 in	2.1 m
W, width	30 in	762 mm
H, height	39 in	990 mm
H2, rod height	18 in	457 mm
Weight, mass	3200 lb	1452 kg

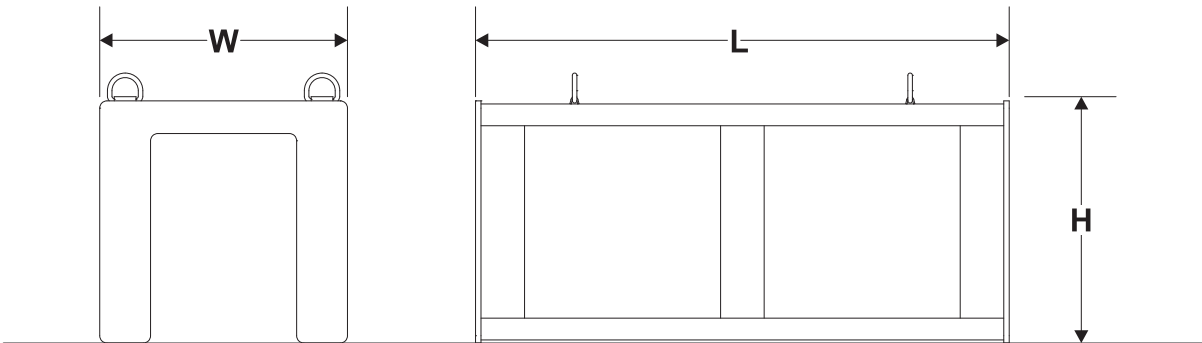
Operational	U.S.	Metric
Push force	10 ton	9.1 tonne
Pullback force	100 ton	91 tonne
Working pressure	4450-4550 psi	307-314 bar
Working flow rate	41-43 gpm	155-163 L/min

Hydraulic fluid requirements:

	Fluid must meet ISO 46.
	Cleanliness level must meet ISO 18/15/13.

Rod	U.S.	Metric
Length	39.3 in	1 m
Diameter	2.5 in	63.5 mm
Weight, mass	34 lb	16 kg

Extraction Cage



j51om033h.eps

Dimensions	U.S.	Metric
L, length	73.5 in	1.9 m
W, width	34 in	864 mm
H, height	34 in	864 mm
Weight, mass	1045 lb	474 kg

Declaration of Conformity Information

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

Earth Tool Company, LLC.
500 South C.P. Avenue
Lake Mills, Wisconsin, 53545
Phone: 920 648 4848
FAX: 920 648 1780

Declares that the product:

Model: **HammerHead® XXXX**
Type: **(machine type)**
Engine Power: **xxx kW**
Serial Number: **(model) XXXXX**

Conforms to the requirements of:

2006/42/EC Machinery Directive
2004/108/EC Electromagnetic Compatibility Directive
2000/14/EC Noise Emission Directive

Measured sound power level (Annex V): **xxx dBA**
Guaranteed sound power level (Annex V): **xxx dBA**

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

The manufacturer's European representative is:

Ditch Witch Barcelona
International Underground Systems, S.L.
C/EL PLA, 130 * Poligon Industrial El Pla
08980 Sant Feliu De Llobregat * Spain
Phone: +34 93 632 7344
FAX: +34 93 632 7343

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

Limited Warranty Policy

Earth Tool Company LLC, hereinafter sometimes referred to as ETC warrants each new industrial product of its own manufacture to be free from defects in material and workmanship, under normal use and service for one full year after delivery to the owner or 1000 operating hours, whichever occurs first. During the warranty period, the authorized selling HammerHead® Dealer shall furnish parts without charge for any HammerHead product that fails because of defects in material and workmanship. Warranty is void unless warranty registration card is returned within ten days from the date of purchase. This warranty and any possible liability of Earth Tool Company LLC here under is in lieu of all other warranties, express, implied, or statutory, including, but not limited to any warranties of merchantability or fitness for a particular purpose.

The parties agree that the Buyer's SOLE AND EXCLUSIVE REMEDY against ETC, whether in contract or arising out of warranties, representations, or defects shall be for the replacement or repair of defective parts as provided herein. In no event shall ETC's liability exceed the purchase price of the product. The Buyer agrees that no other remedy (including, but not limited to, incidental or consequential loss) shall be available to him. If, during the warranty period, any product becomes defective by reason of material or workmanship and Buyer immediately notifies ETC of such defect, ETC shall, at its option, supply a replacement part or request the return of the product to its plant in Lake Mills, Wisconsin. No part shall be returned without prior written authorization from ETC, and this warranty does not obligate ETC to bear any transportation charges in connection with the repair or replacement of defective parts. Earth Tool Company LLC will not accept any charges for labor and/or parts incidental to the removal or remounting of parts repaired or replaced under this Warranty.

This Warranty shall not apply to any part or product which shall have been installed or operated in a manner not recommended by ETC nor to any part or product which shall have been neglected, or used in any way which, in ETC's opinion, adversely affects its performance; nor negligence of proper maintenance or other negligence, fire or other accident; nor with respect to wear items; nor if the unit has been repaired or altered outside of an ETC authorized dealership in a manner of which, in the sole judgment of ETC affects its performance, stability or reliability; nor with respect to batteries which are covered under a separate adjustment warranty; nor to any product in which parts not manufactured or approved by ETC have been used, nor to normal maintenance services or replacement of normal service items. Equipment and accessories not of our manufacture are warranted only to the extent of the original Manufacturer's Warranty and subject to their allowance to us, if found defective by them. ETC reserves the right to modify, alter, and improve any product or parts without incurring any obligation to replace any product or parts previously sold with such modified, altered, or improved product or part. No person is authorized to give any other Warranty, or to assume any additional obligation on ETC's behalf unless made in writing, and signed by an officer of ETC.

EARTH TOOL COMPANY LLC

Lake Mills, Wisconsin

Service Record

[illegible]

100XT Operator's Manual

[illegible]



A CHARLES MACHINE WORKS COMPANY