



TECHNICAL PUBLICATIONS


CE

Overview

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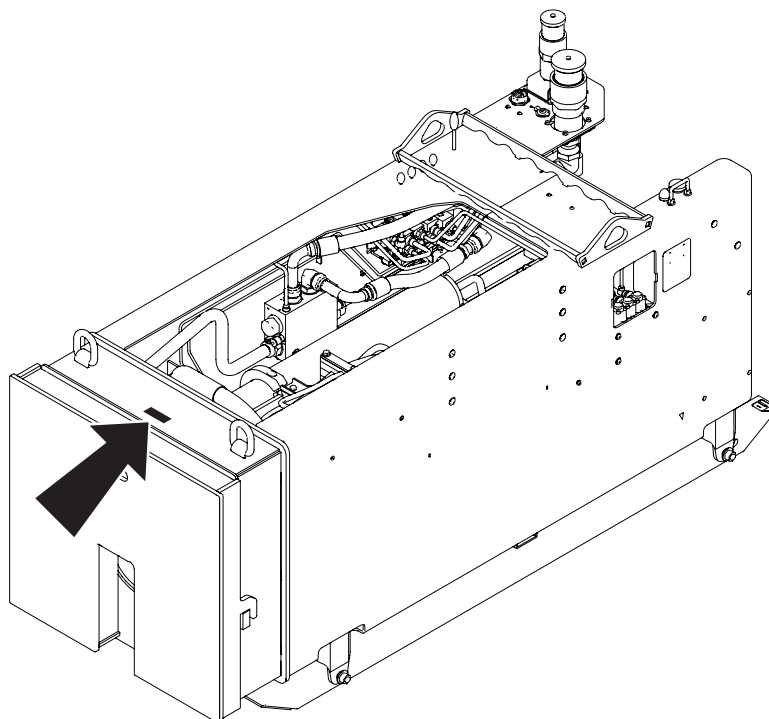
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California Proposition 65

 **WARNING** 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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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 100XTR produces 100 tons (91 t) of pullback force. A power unit provides hydraulic power to run the pipe bursting unit.

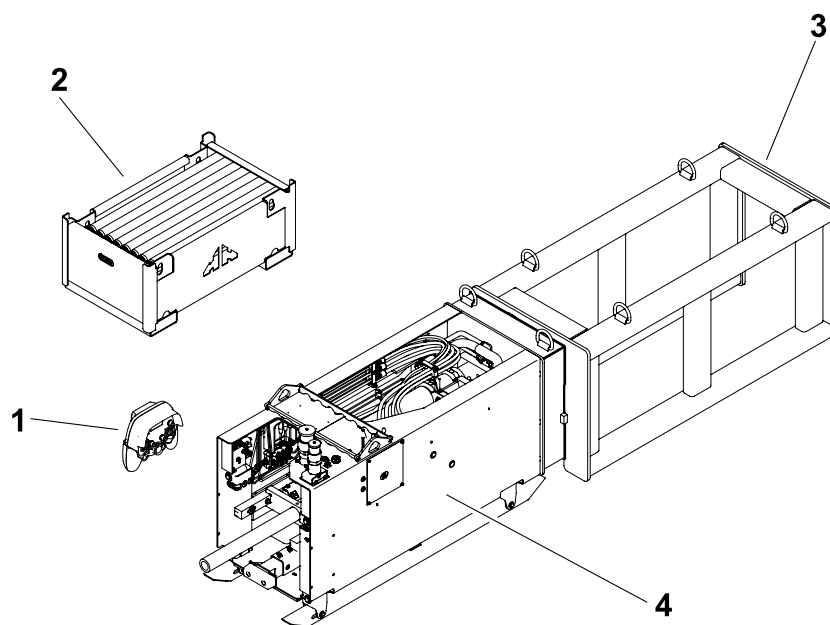
The unit is designed for operation in temperatures typically experienced in earth moving and construction work environments. Provisions may be required to operate in extreme temperatures. Contact your HammerHead dealer. Use in any other way is considered contrary to the intended use.

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.

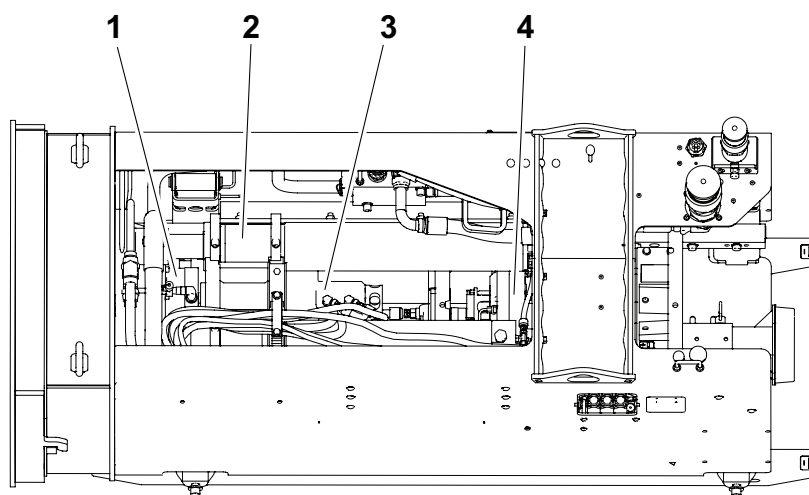
Unit Components



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- | | |
|-------------------------------|--------------------|
| 1. Wireless remote controller | 3. Extraction cage |
| 2. Rod box | 4. Bursting unit |

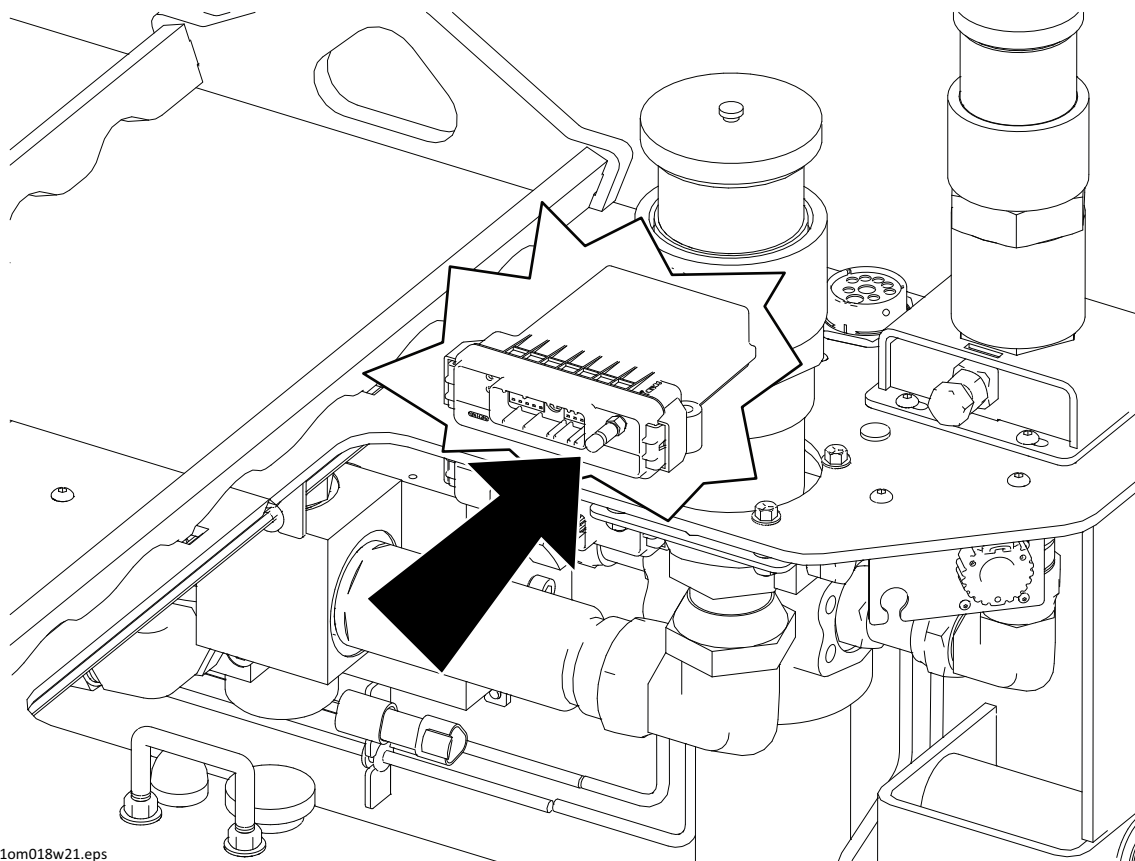
Bursting Unit Components



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- | | |
|-----------------------|--------------------|
| 1. Bungee | 3. Push/Pull clamp |
| 2. Push/Pull carriage | 4. Spinner |

Receiver Antenna



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IMPORTANT: Receiver antenna can stop working if damaged. If receiver antenna is damaged, replace with CMW approved components.

Regulatory Notices

United States

This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Changes or modifications not expressly approved by **The Charles Machine Works, Inc.** could void the user's authority to operate the equipment.

This machine has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and, if not installed and used in accordance with the instructions, can cause harmful interference to radio communications. Operation of this equipment in a residential area could cause harmful interference which the user will be required to correct at his own expense. Changes or modifications not expressly approved by The Charles Machine Works, Inc. could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Contains FCC ID: ITQ-TR2 & KQL-RM02410.

Canada

CAN ICES-2/NMB-2

This device complies with Industry Canada *license-exempt* RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Contains IC: 3598A-TR2I & 2268C-RM02410.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Contient IC: 3598A-TR2I & 2268C-RM02410.

EU Declaration of Conformity

Hereby, Charles Machine Works declares that the radio equipment type SSCRTX remote control transmitter is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available by visiting <https://subsite.com/about-us/contact-us> or by emailing a request to service@subsite.com.

RF Exposure Statement

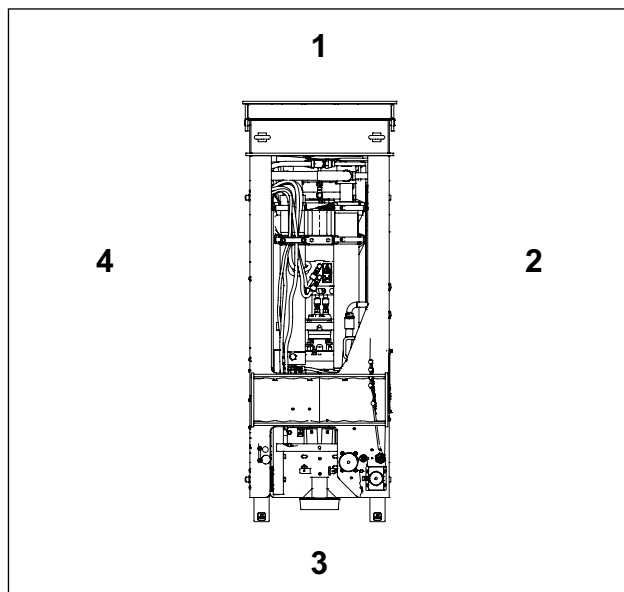
In order to comply with RF exposure requirements during normal operation, this device must be held in front of the body horizontally. The antenna must be vertical in line with the body with at least 4" (100mm) separation distance from the body.

This device complies with Health Canada's Safety Code Section 6.

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

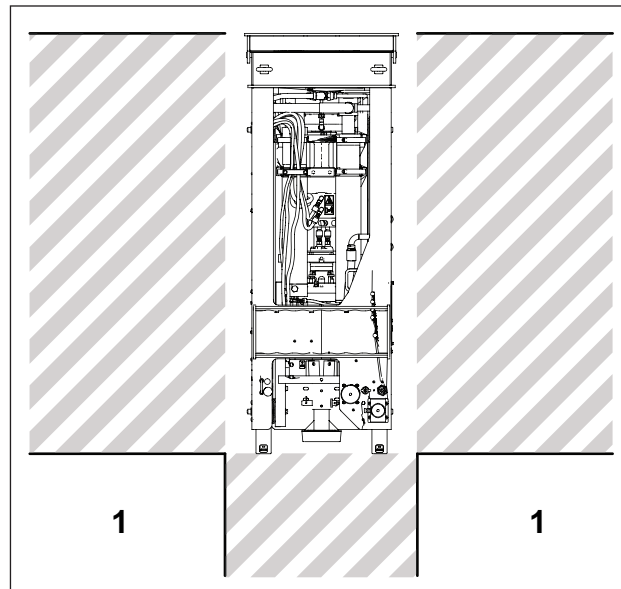


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Operating Area

IMPORTANT: Top view of unit is shown.

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



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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.

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. HammerHead Trenchless Equipment 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.

**100XTR
Operator's Manual**

Issue number 2.1

Issue Date 03/22

Part number 960-1015

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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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Support

the warranty policy for this machine, and procedures for obtaining warranty consideration and training

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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

**WARNING**

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



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.

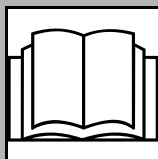
- Complete proper training and read operator's manual before using equipment.
- Mark proposed path with white paint and have underground utilities located before working. In the US or Canada, call 811 (US) or 888-258-0808 (US and Canada). Also contact any local utilities that do not participate in the 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 including long pants, hard hat, eye protection, hearing protection, and protective footwear.
- 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.
- To reduce risk of injury, close supervision is necessary when a product is used near children.
- Know how to stop the product and bleed pressures quickly.
- Stay alert — watch what you are doing.
- Do not operate product when fatigued or under the influence of alcohol or drugs.
- Do not overreach or stand on unstable support. Keep good footing and balance at all times.
- To disconnect, turn all controls to the off ("O") position, then remove plug from outlet.

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Guidelines

- Do not unplug by pulling on cord. To unplug, grasp the plug, not the cord.
- Unplug from outlet when not in use and before servicing or cleaning.
- For a grounded appliance, connect to a properly grounded outlet only. See grounding instructions.
- Do not expose machine to rain or wet conditions. Water entering a power tool will increase the risk of electric shock.
- Store machine out of the reach of children.
- Do not allow persons unfamiliar with machine to operate.
- Do not let familiarity gained from frequent use of machine to allow you to become complacent and ignore tool safety principles.
- Remove any adjusting key or wrench before turning machine on.
- Avoid body contact with earthed or grounded surfaces, such as pipes, radiators, ranges, and refrigerators.
- Do not force the power tool. Use the correct power tool for your application.
- Do not use machine if remote shutdown switch does not turn it on and off.

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



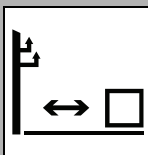
⚠ WARNING

Jobsite hazards 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 the occur, assume an electric strike has occurred.

If an Electric Line is Damaged

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

- If you are in pit:

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

If a Gas Line is Damaged

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

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

If a Fiber Optic Cable is Damaged

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

If Machine Catches on Fire

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

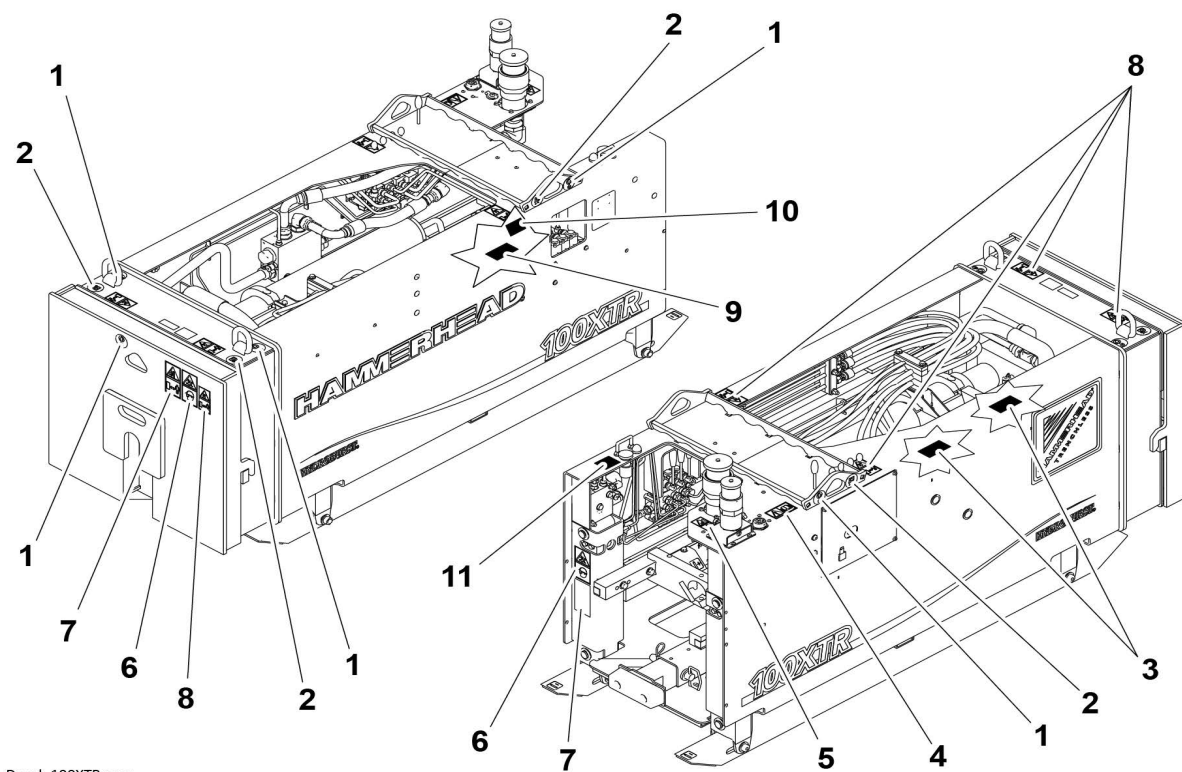
- Immediately move battery disconnect switch (if equipped and accessible) to disconnect position. If it is safe to do so, immediately unplug from A.C. power source.

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Emergency Procedures

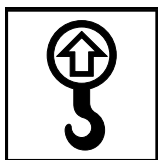
- If fire is small and fire extinguisher is available, attempt to extinguish fire.
- If fire cannot be extinguished, leave area as quickly as possible and contact emergency personnel.

Machine Safety Alerts



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1



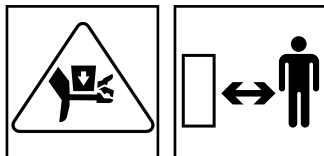
Lift point. See Transport chapter for more information.

2



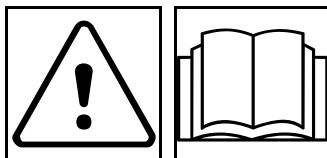
Tiedown location. See Transport chapter for more information.

3

**⚠ WARNING**

Moving parts could crush hand. Stay away.




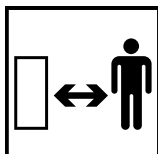




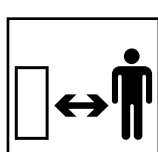
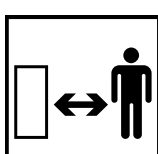
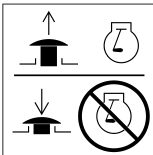
4

**⚠ WARNING**

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

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Machine Safety Alerts

5			CAUTION Hot parts may cause burns. Do not touch until cool or wear gloves.	
6			CAUTION Flying objects thrown by machine may strike people. Wear safety glasses and hard hat.	
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 crush hand. Stay away.	
11			DANGER Turning shaft will kill you or crush arm or leg. Stay away.	
12				Remote shutdown. See Controls chapter for more information.

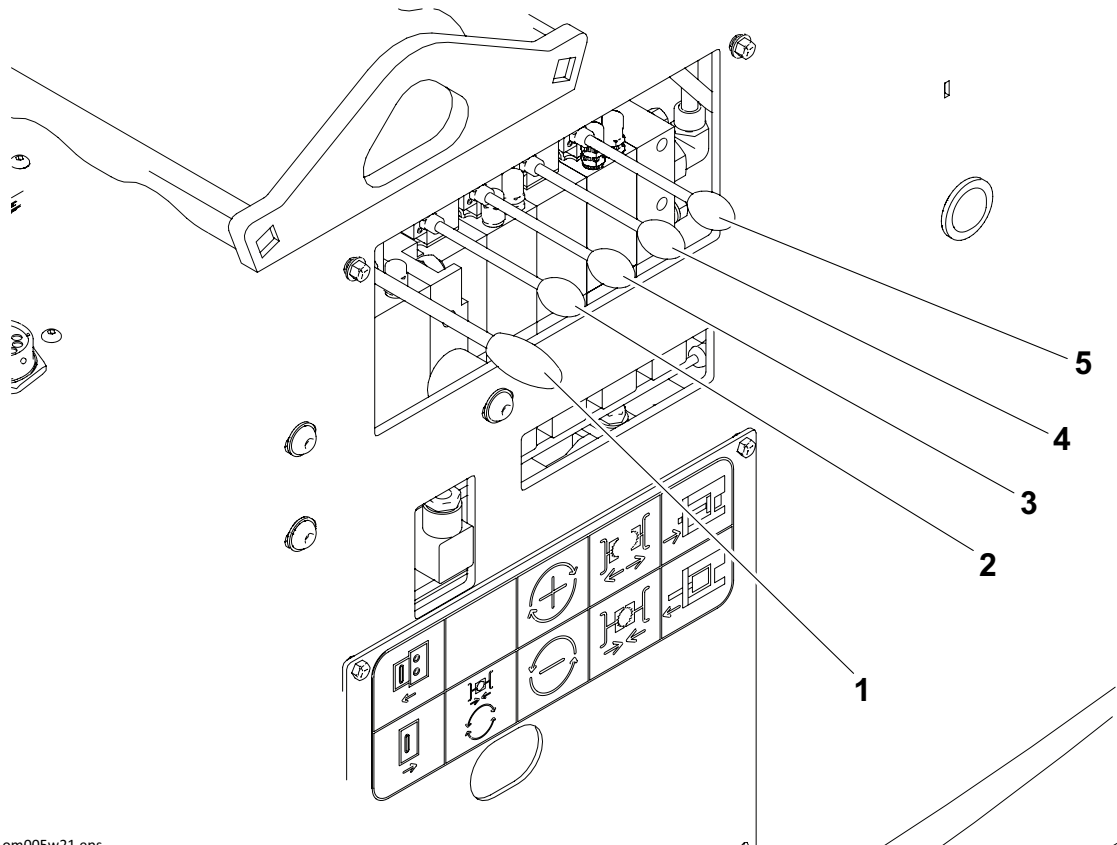
Controls

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Bursting Unit

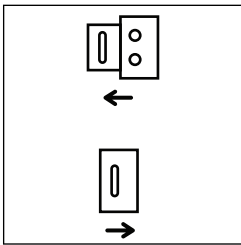
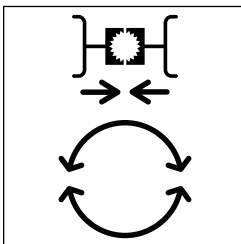
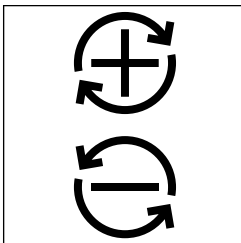
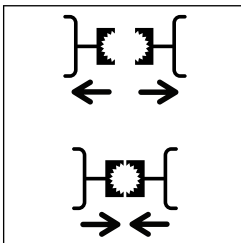
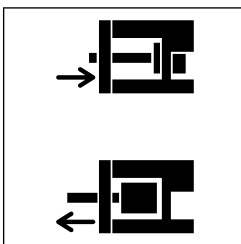
Manual Controls



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IMPORTANT: Manual controls are used as a backup in the event the remote becomes inoperable. See “Setup and Configuration” on page 56.

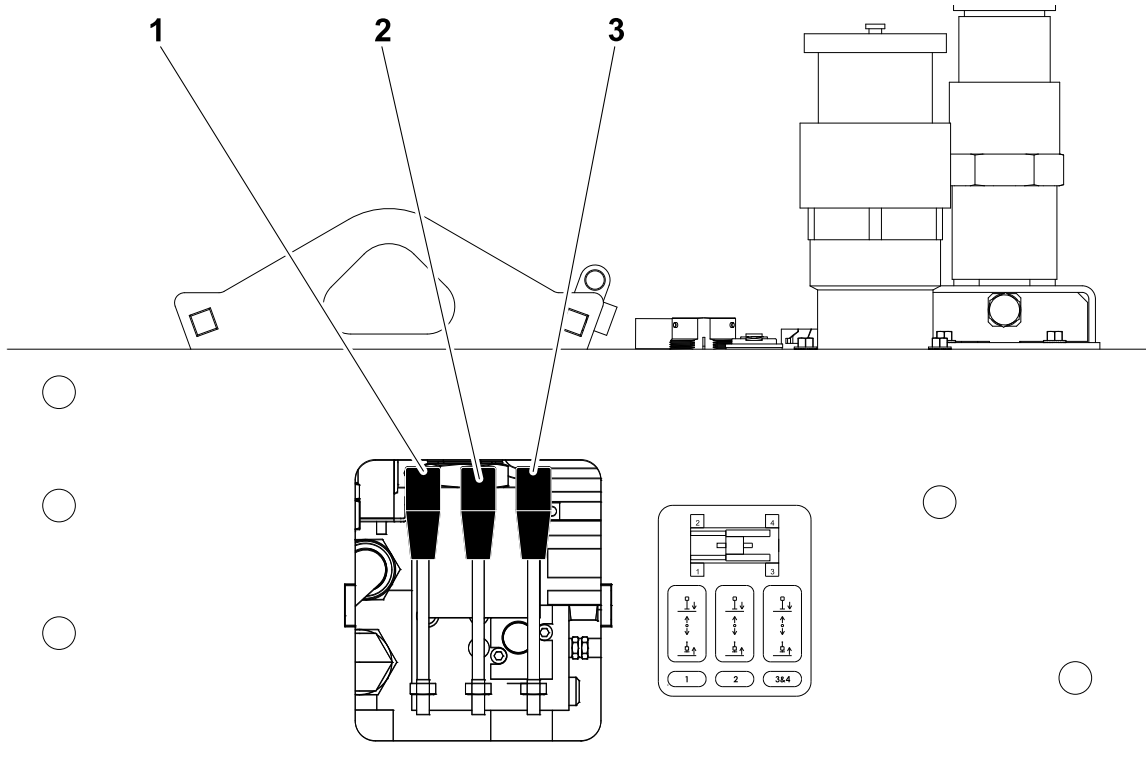
- | | |
|--------------------------|----------------------------|
| 1. Bungee clamp control | 4. Push/Pull clamp control |
| 2. Spinner clamp control | 5. Payout/Pullback control |
| 3. Spinner control | |

Item	Description	Notes
1. Bungee switch control  c00ic414w.eps	<p>To open bungee clamp, pull up.</p> <p>To close bungee clamp, push down.</p>	
2. Spinner clamp control  c00ic415w.eps	<p>To close spinner clamp, press down.</p>	
3. Spinner control  c00ic403w.eps	<p>To rotate spinner clockwise (makeup), pull up.</p> <p>To rotate spinner counterclockwise (breakout), push down.</p>	
4. Clamp control  c00ic416w.eps	<p>To open clamp, pull up.</p> <p>To close clamp, push down.</p>	
5. Payout/pullback control  c00ic417w.eps	<p>To move carriage back, pull up.</p> <p>To return to neutral, release.</p> <p>To move carriage forward, push down.</p>	

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Bursting Unit

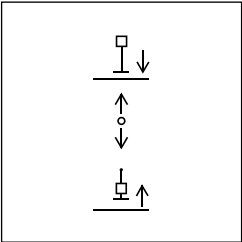
Stabilizer Controls

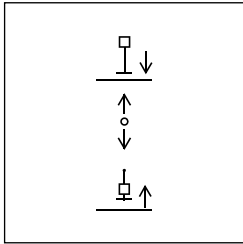
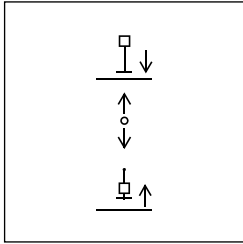


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NOTICE: Raising one side of bursting unit too much can cause the unit to tip over.

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

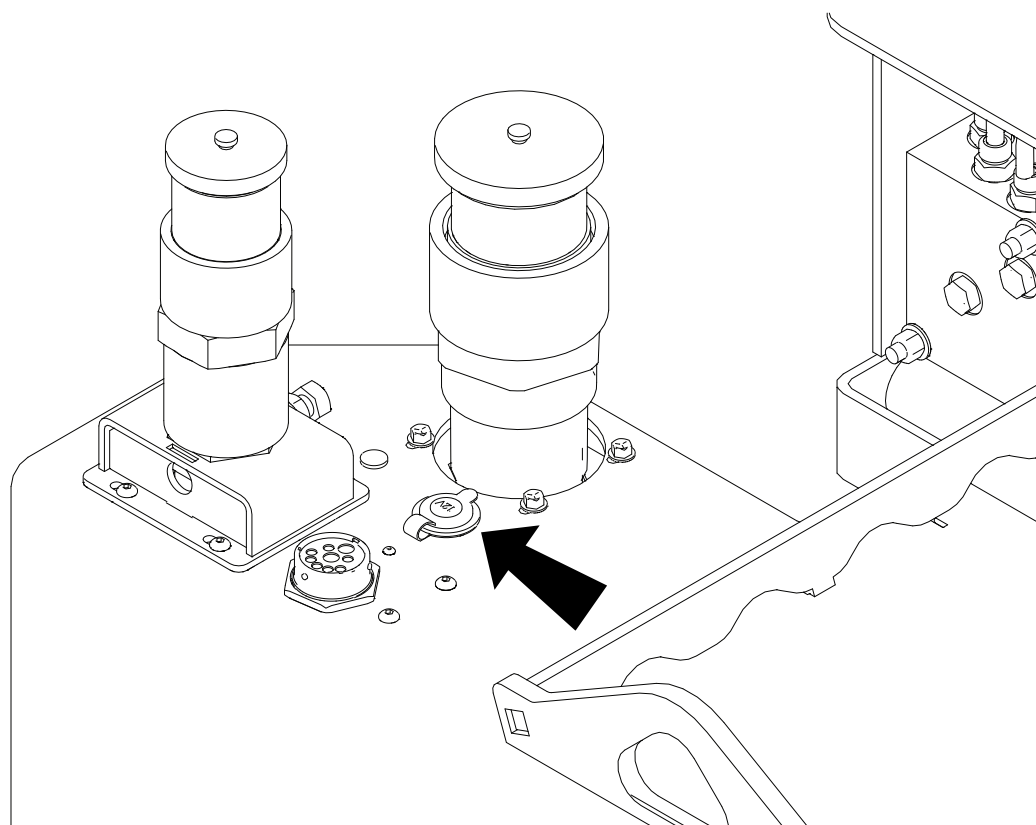
Item	Description	Notes
1. Left stabilizer control  <p>c00ic726h.eps</p>	<p>To raise, pull back.</p> <p>To lower, push forward.</p>	

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>	

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Bursting Unit

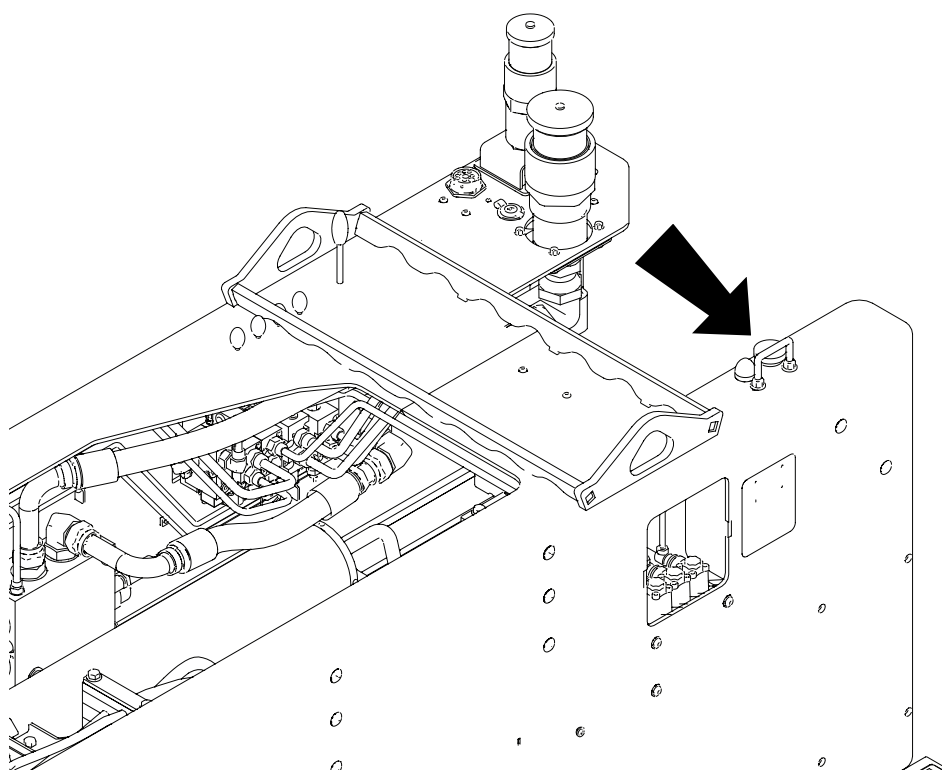
Miscellaneous Controls



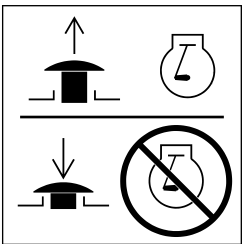
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Item	Description	Notes
Auxiliary outlet	Provides power for other equipment.	Power output is fused to 15A

Miscellaneous Controls

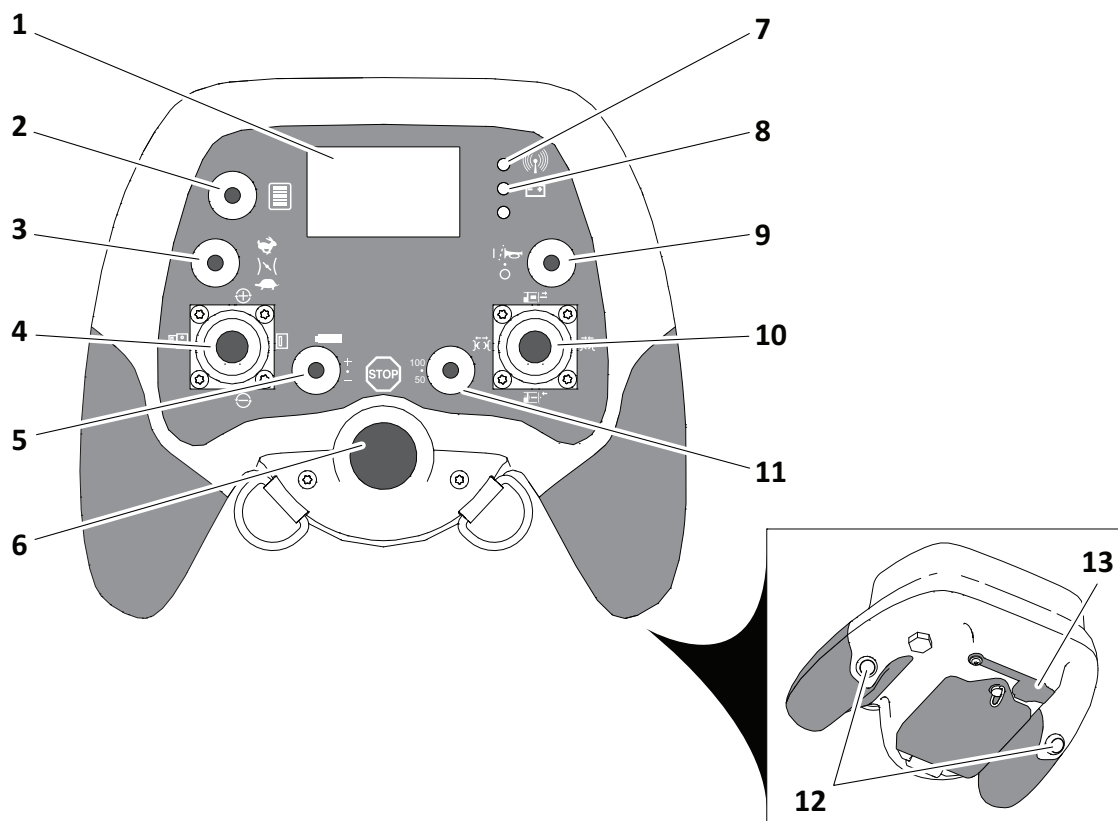


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Item	Description	Notes
Remote engine stop switch 	To stop engine, press.	Engine will not start until control is returned to neutral position.

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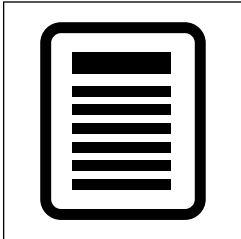
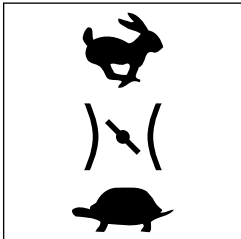
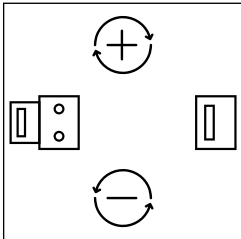
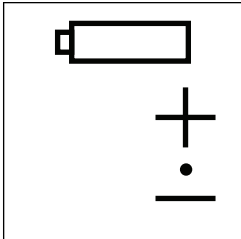
Wireless Remote Controller



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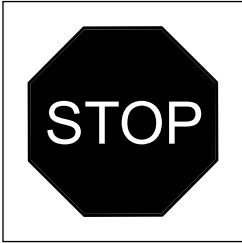

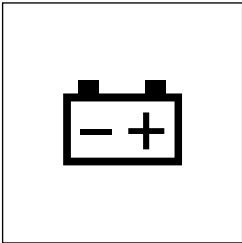
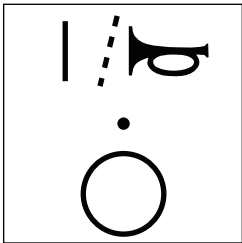
- | | |
|--|---|
| 1. LCD display | 8. Power status indicator |
| 2. Mode select | 9. Power/Horn/Start/Set |
| 3. Throttle hi/low | 10. Push/Pullback control joystick, extend/retract clamp switch |
| 4. Spinner control switch/Bungee clamp switch. - | 11. Pullback force switch |
| 5. Payout/Pullback mode switch | 12. Operator presence switches |
| 6. Stop button | 13. Remote hardwire connection |
| 7. Communication link indicator | |

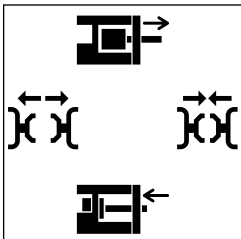
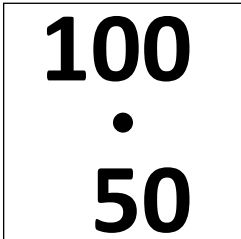
Item	Description	Notes
1. LCD display	Displays selected mode of operation.	

Item	Description	Notes
2. Mode select  c00ic399w.eps	To cycle through operating settings, press up/down.	Auto, manual, limit setting. Operation is only valid if Tx-Rx communication link is active.
3. Throttle hi/low  c00ic400w.eps	To activate throttle (hi), move switch up. To deactivate throttle (low) move switch down.	Operate machine at high throttle. Throttle switch requires start ready condition and an active operator presence switch.
4. Spinner control  c00ic394w.eps	To activate CW logic/output, move joystick up. To activate CCW logic/output, move joystick down. In manual override mode: To close bungee clamp, move joystick right. To open bungee clamp, move joystick left.	Joystick/Switch operation requires start ready condition and an active operator presence switch.
5. Payout/Pullback mode switch (auto mode)  c00ic398w.eps	Move switch up to select payout (+) mode. Move switch down to select pullback (-) mode.	During auto mode, set this switch to select between payout or pullback mode (add/remove rods from string). Switch operation does not require start ready condition or active operator presence switch.

100XTR Operator's Manual

Wireless Remote Controller

Item	Description	Notes
6. Stop Button  <small>c00ic103w.eps</small>	To activate the stop output, press button.	<p>Activating the stop output resets control outputs to off state</p> <p>Activating the stop output cancels the start ready condition.</p> <p>Stop output will automatically turn off in about two seconds after the stop button is released.</p>
7. Communication link indicator  <small>c00ic713h.eps</small>	Indicates status of communication link between wireless remote control and bursting unit.	<p>An active communication link is required to operate wireless remote control.</p> <ul style="list-style-type: none"> Flashing yellow indicates no communication link. Flashing green indicates good communication link. Steady red indicates an internal problem. Contact your Ditch Witch® dealer.
8. Power status indicator  <small>c00ic638h.eps</small>	Indicates battery status and cable connection.	<p>Off indicates good battery level.</p> <p>Flashing red indicates low battery level.</p> <p>Solid green indicates transmitter is connected to and powered by machine.</p>
9. Power/Horn/Start/Set switch  <small>c00ic397w.eps</small>	<p>To turn on, move switch up for two seconds.</p> <p>To turn off, move switch down for one second.</p> <p>To activate horn, move switch up and hold. Release to deactivate.</p> <p>To set system to start ready mode, move switch up and release while joysticks are in neutral position.</p> <p>To save settings, press switch up after adjusting parameters in setting mode.</p>	

Item	Description	Notes
<p>10. Push/Pullback control joystick, extend/retract clamp switch (manual mode)</p>  <p>c00ic395w.eps</p>	<p>To retract cylinder, move joystick up.</p> <p>To extend cylinder, move joystick down.</p> <p>To deactivate extend/retract cylinder outputs, release joystick to neutral position.</p> <p>In manual override mode:</p> <p>To extend clamp, move joystick right.</p> <p>To retract clamp, move joystick left.</p>	<p>Joystick/switch operation requires start ready condition and an active operator presence switch.</p> <p>Activating extend or retract output will automatically deactivate the opposite output.</p>
<p>11. Set pullback force switch/ Increase/Decrease switch</p>  <p>c00ic396w.eps</p>	<p>In auto or manual mode:</p> <p>To set pullback force to 100, move switch up.</p> <p>To set pullback force to 50, move switch down.</p> <p>In limit setting mode:</p> <p>To increase/decrease setting, move switch up/down respectively.</p>	<p>In auto or manual mode:</p> <p>Start job set to 50 tons and adjust to 100 tons as needed.</p> <p>Pullback force switch operation requires start ready condition and an active operator presence switch.</p> <p>In limit setting mode:</p> <p>Continuously press the switch to increase/decrease the setting at a faster rate continuously.</p> <p>Switch operation does not require start ready condition or active operator presence switch.</p>
<p>12. Operator presence switch</p>	<p>To operate wireless remote control, press one or both switches.</p> <p>To disable controller, release.</p>	
<p>13. Remote hardwire connection</p>	<p>To connect wireless remote controller to bursting unit via cable harness, plug in.</p>	<p>IMPORTANT: Connecting the wireless remote controller to bursting unit via cable harness instead of radio signals can eliminate interference from nearby sources.</p>

100XTR Operator's Manual

Wireless Remote Controller

Item	Description	Notes
Auto power off	<p>Unit will automatically power off after 60 seconds since the last switch input or joystick movement is detected and the accelerometer input is stale.</p> <p>Unit will automatically power off after 300 seconds since the last switch input or joystick movement is detected and the accelerometer input is changed.</p>	
Auto backlight off	<p>If transmitter LCD is on and no switch or joystick movement is detected for five seconds, LCD will turn off its backlight. the backlight will turn on again when any panel switch (except throttle switch) or joystick movement is detected.</p>	

Prepare

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- Notify One-Call Services 38
- Examine Pullback Material 38
- Arrange for Traffic Control 38
- Plan for Emergency Services 38

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- Check Supplies 47
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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.

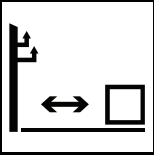
If working . . .	then classify jobsite as . . .
within 10' (3 m) of a buried electric line	electric
within 10' (3 m) of a natural gas line	natural gas
in concrete, sand, or granite which is capable of producing crystalline silica (quartz) dust	crystalline silica (quartz) dust
within 10' (3 m) of any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

		<p>⚠ DANGER Electric shock will cause death or serious injury. Stay away. 274-049</p>
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Use one or both of these methods.

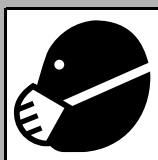
- Expose line by careful hand digging or soft excavation.
- Have service shut down while work is in progress. Have electric company test lines before returning them to service.

Natural Gas Jobsite Precautions

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

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**⚠ WARNING**

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:

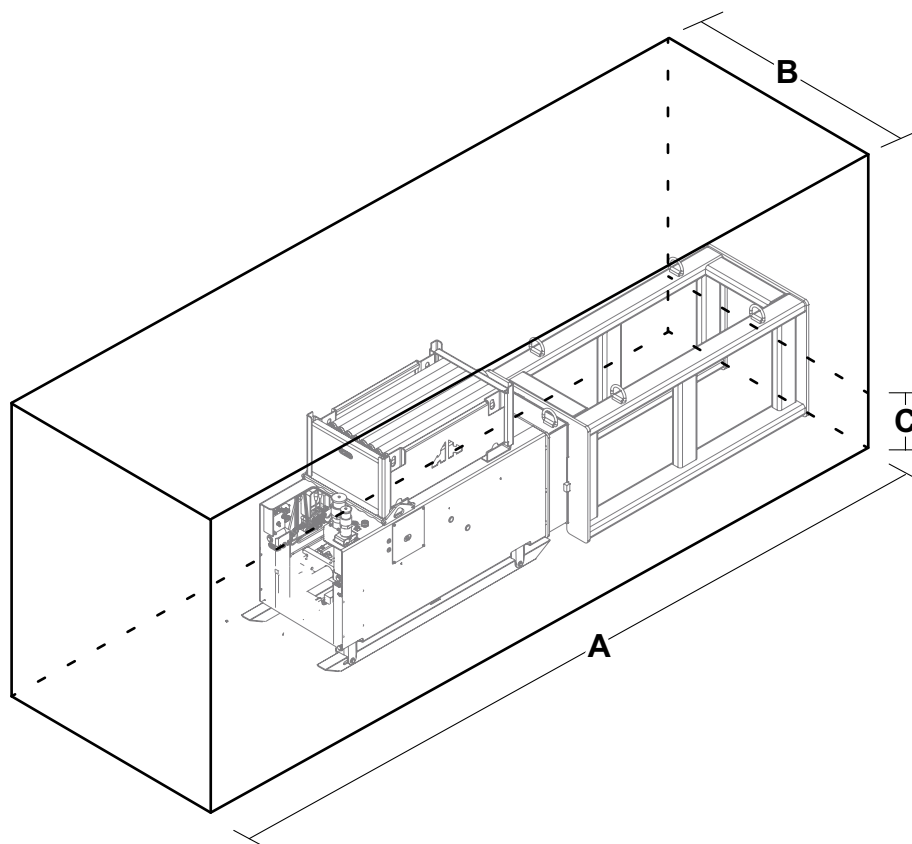
- If jobsite classification is in question or the possibility of unmarked electric utilities exists, classify jobsite as electric.
- Cutting high voltage cable can cause electrocution. Expose lines by hand before digging.
- All vegetation near operator's station must be removed. Contact with trees, shrubs,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



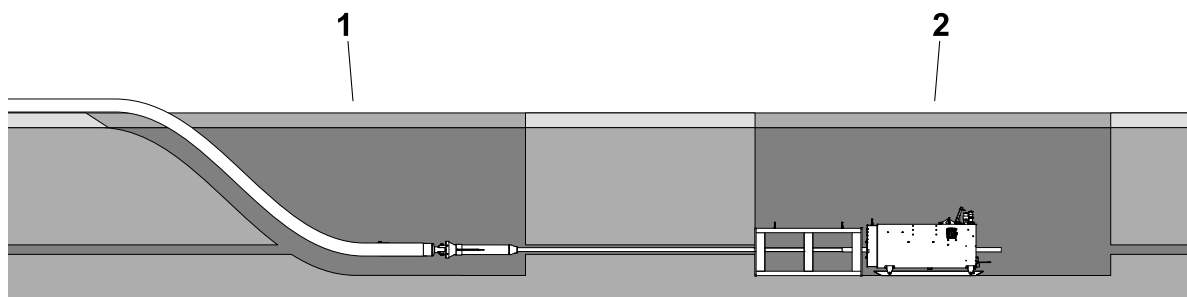
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Minimum Bursting Pit		
Length (A)	Width (B)	Depth (C)
U.S. (metric)	U.S. (metric)	U.S. (metric)
110" (2.8 m)*	48" (1.2 m)	18" (0.5 m)**
*Add 73.5" (1.9 m) of length of bursting pit if using the extraction cage.		
**Below pipe center line		

100XTR 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

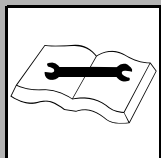
Check Supplies

- 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.

Transport

Chapter Contents

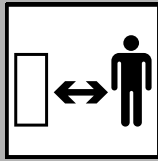
Lift 50

- Points 50
- Procedure 50

Tie Down 52

- Points 52
- Procedure 52

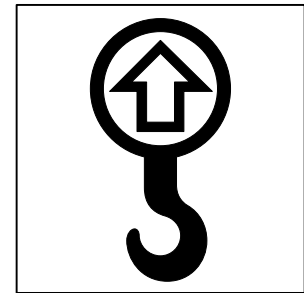
Lift



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.



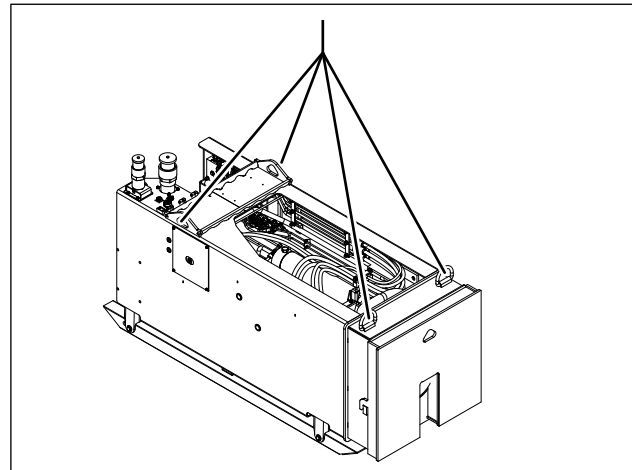
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Procedure

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.

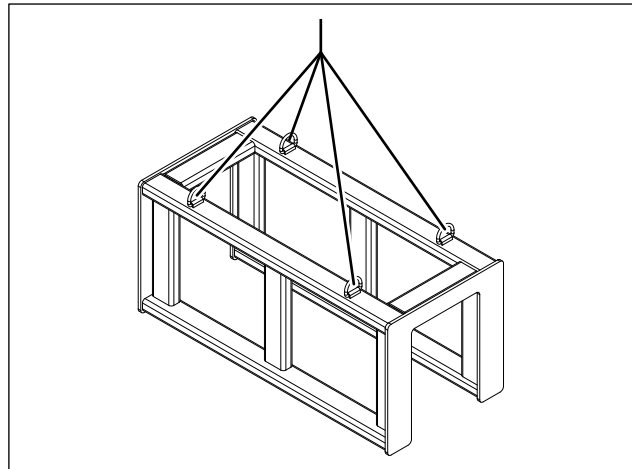
NOTICE: Do not attempt to lift rod box with bursting unit.



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Extraction Cage

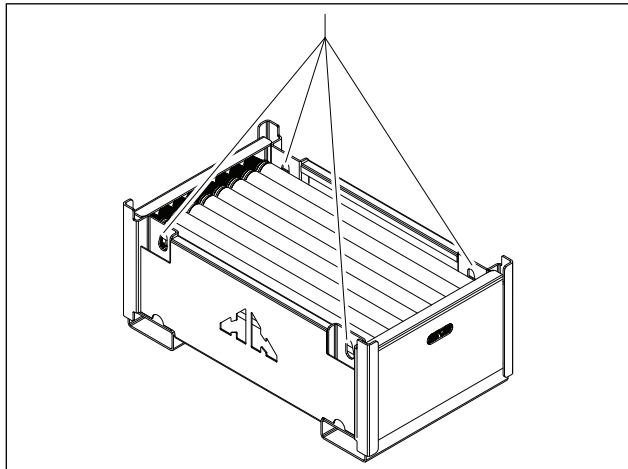
Use equipment capable of supporting the extraction cage's size and weight. See "Extraction Cage" on page 96.



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Rod Box

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

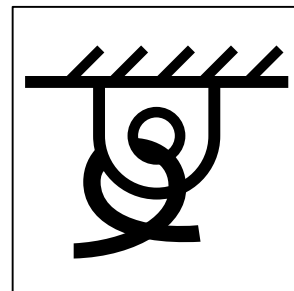


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Tie Down

Points

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



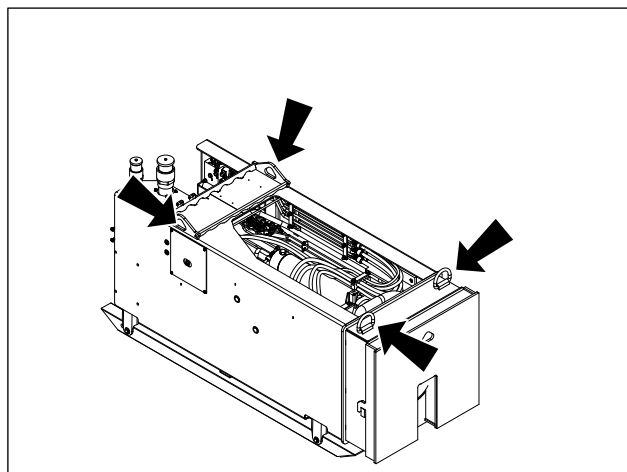
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Procedure

Bursting Unit

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

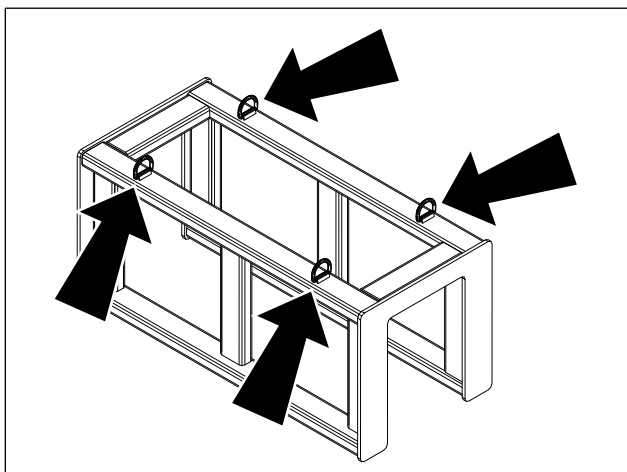
NOTICE: Do not attempt to transport rod box with bursting unit. Remove rod box before transporting.



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Extraction Cage

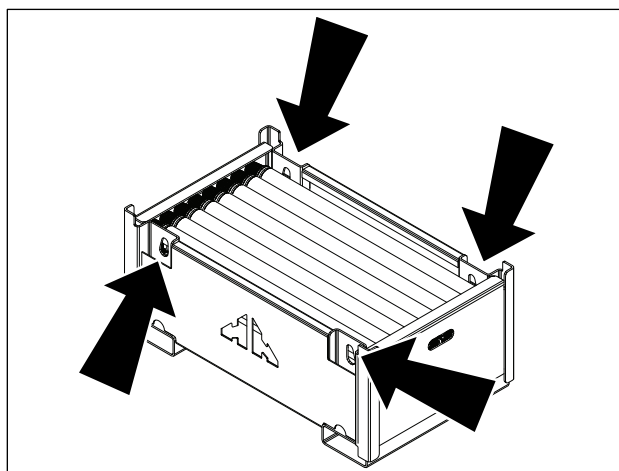
Use chain or strap to tie down and secure extraction cage. Use D-rings shown.



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Rod Box

To tie down rod box use D-rings shown.



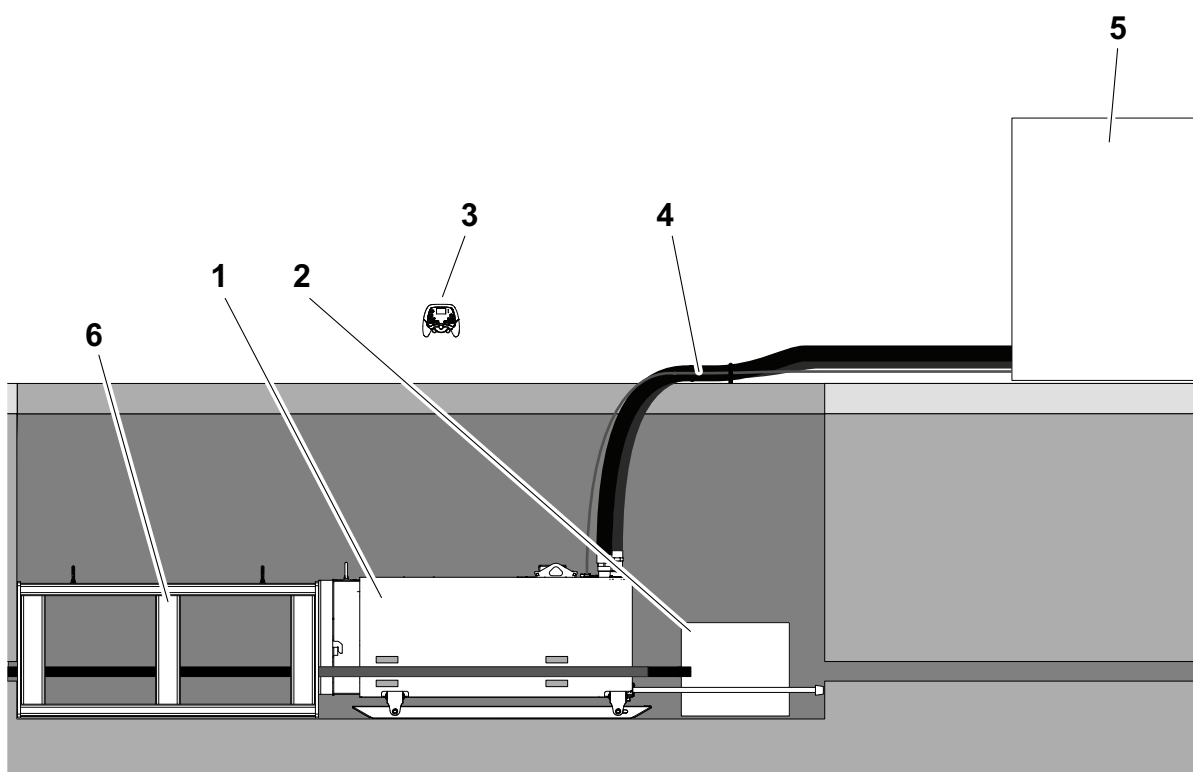
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Burst Pipe

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Open/Close Bungee	61
• Close Bungee	61
• Open Bungee	62
Push Rods	63
Connect Tooling String to Pilot Rod	65
Pull Back Rods	66
Pull New Product	68

Setup and Configuration



j510m007w21.eps

- | | |
|-------------------------------|-------------------------------|
| 1. Bursting unit | 4. Hydraulic connection hoses |
| 2. Rod box | 5. Power unit |
| 3. Wireless Remote 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.

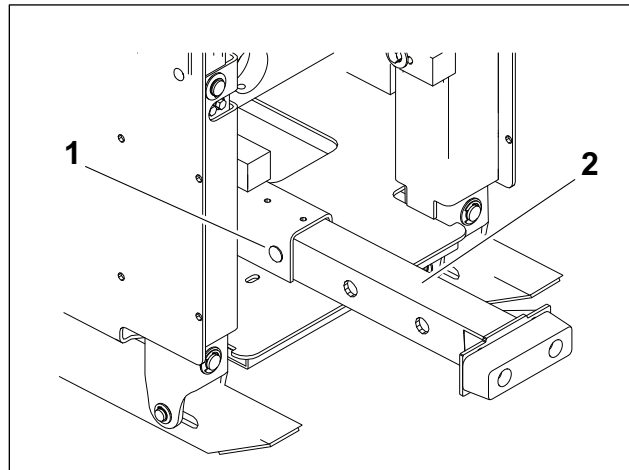
To help avoid injury:

- 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.

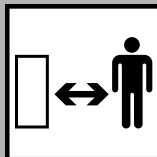
1. Use equipment capable of safely lifting and unloading power unit, bursting unit, extraction cage, and related equipment next to bursting pit.
2. Set power unit switch to OFF.
3. Position power unit outside of bursting pit, at least two feet away from the edge.
4. Place gravel as a pit floor liner 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 30.
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

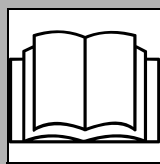
Machine can move suddenly during pullback and rods can reverse rapidly if there is a sudden release of product which could cause serious injury or death.

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.

100XTR 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.

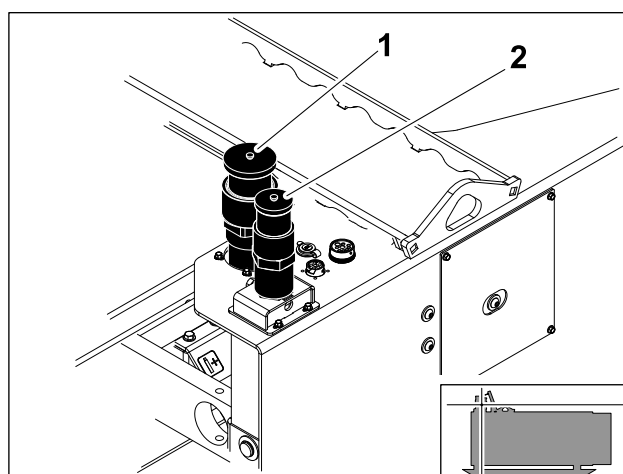
If you are injured, seek immediate medical attention from a doctor familiar with this type of injury.

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.

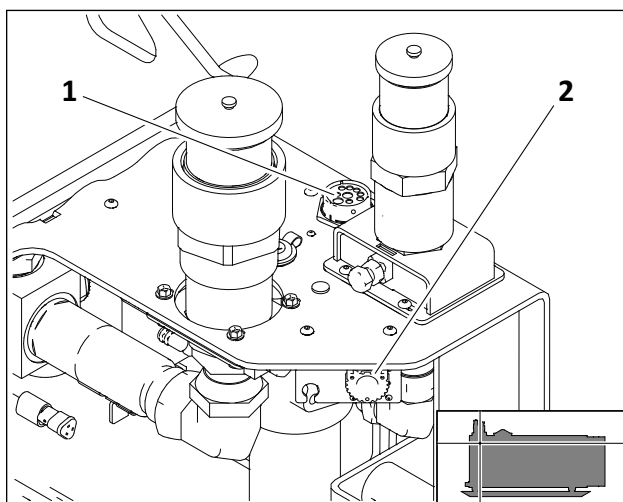
NOTICE:

- 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.



j51om014h.eps

11. Connect electrical cable from power unit to bursting unit (1).
12. Connect wireless remote controller to bursting unit. Cable harness can be connected to port (2) if wireless connection is unavailable.
13. Place rod box behind person loading rods in the safe zone. See "Operating Area" on page 9.
14. Remove end plate from rod box.
15. Keep rod joint lube available for lubricating female rod threads as needed.



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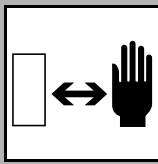
Emergency Stop Procedure

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

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

To shut down power unit from down hole unit, press remote stop switch at down hole unit operator station.

Open/Close Bungee



WARNING Pinch points can crush. Keep hands clear.

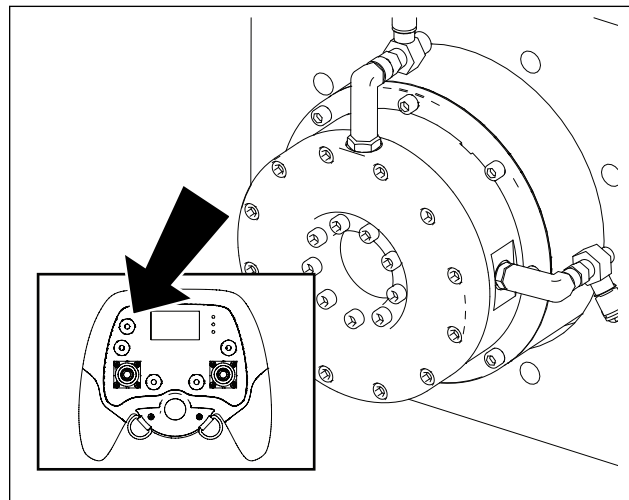
IMPORTANT: For unit components, see "Bursting Unit Components" on page 5. For controls, see "Wireless Remote Controller" on page 34.

Bungee operates automatically based on the mode set on wireless remote controller. In pullback mode, bungee prevents forward rod movement. In payout mode, the bungee is open and free to move in either direction.

Close Bungee

In manual mode, when bungee clamp is closed, rod is locked in place and cannot move forward or backward. To move rod forward, open bungee clamp.

Use wireless remote controller to close bungee clamp.



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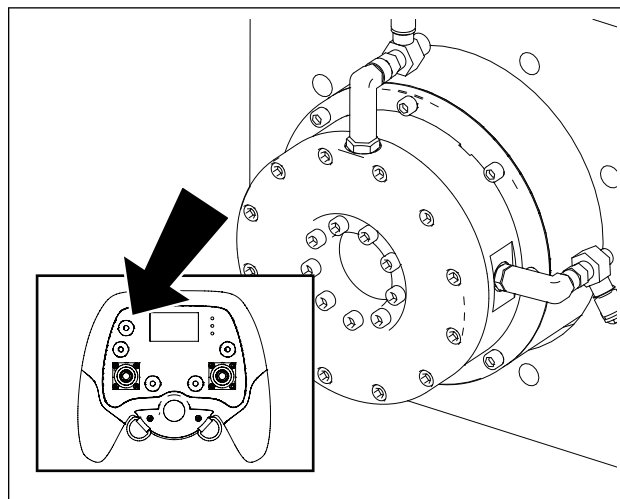
100XTR Operator's Manual

Open/Close Bungee

Open Bungee

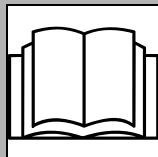
In manual mode, when bungee clamp is open, rod will move freely in either direction.

Use wireless remote controller to open bungee clamp.



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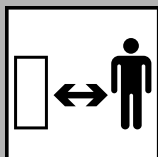
Push Rods


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 "Wireless Remote Controller" on page 34.

IMPORTANT: If using auto mode, machine will control push/pull clamp and bungee clamp automatically.

1. Place at least one operator/pipe loader in the bursting pit. Keep this person at rear of unit in operating area (page 9).
2. Start power unit engine. Set engine to high throttle.

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

3. Turn mode selector switch on wireless remote controller to push mode.
4. Ensure bungee is in the unlock position. See "Open Bungee" on page 62.
5. Open clamp.
6. Move carriage to back of unit.
7. Select pilot rod and apply lube to rod threads.

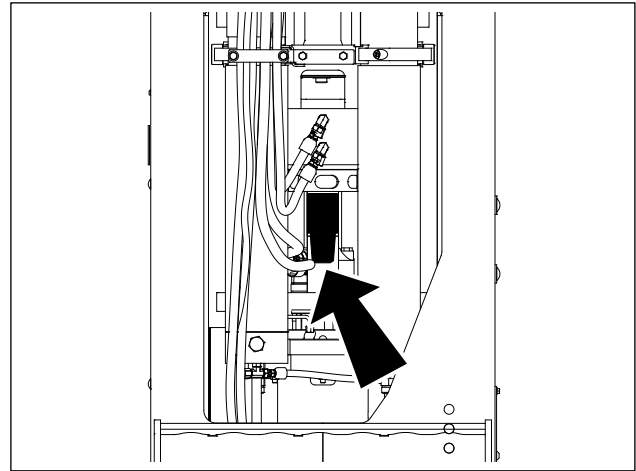
100XTR Operator's Manual

Push Rods .

8. Install push point on end of pilot rod.
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.

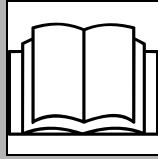
NOTICE: Tighten all threaded joints completely so shoulders touch.

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



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

Connect Tooling String to Pilot Rod



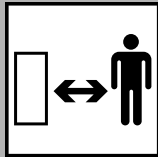
WARNING

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

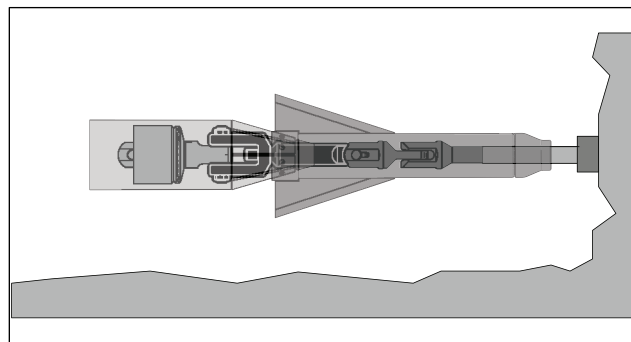
Turning shaft will kill you or crush arm or leg. Stay away.

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 76 for more information.

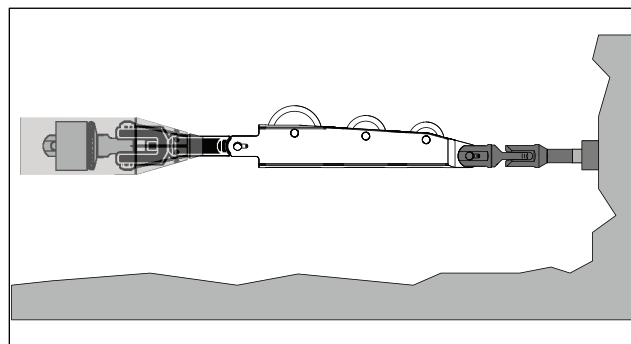
1. Push rod into installation pit.
2. Turn power unit engine off.
3. Remove push point from pilot rod.
4. Connect flex joint of bursting/slitting tooling string to pilot rod.
5. Tighten connections to 250 ft•lb (339 N•m).

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



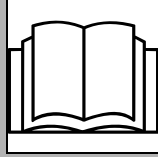
j51om014w.eps

6. Turn power unit engine on.



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Pull Back Rods

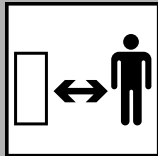


⚠ WARNING

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 9.
- 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.

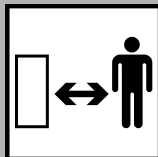


⚠ DANGER

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 "Wireless Remote Controller" on page 34.



⚠ 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:

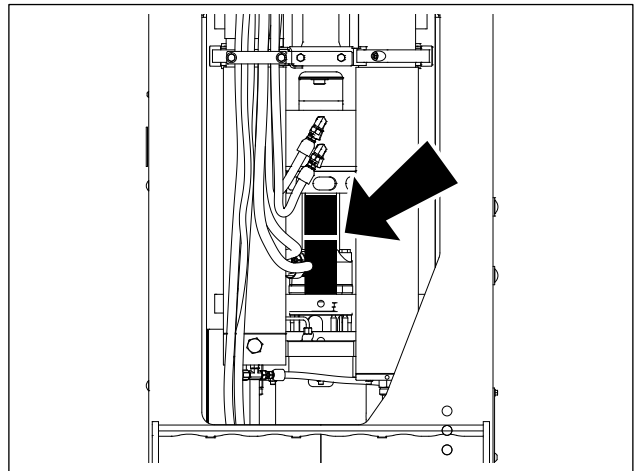
- Secure machine using proper cribbing and blocking devices in all directions during pullback.
- Operate only from designated area.
- Inspect and rotate rods.
- Replace damaged rods.
- Use proper clamping procedures.

IMPORTANT: If using auto mode, machine will control push/pull clamp and bungee clamp automatically.

1. Place at least one operator/pipe loader in the bursting pit. Keep this person at rear of unit in operating area (page 9).
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.

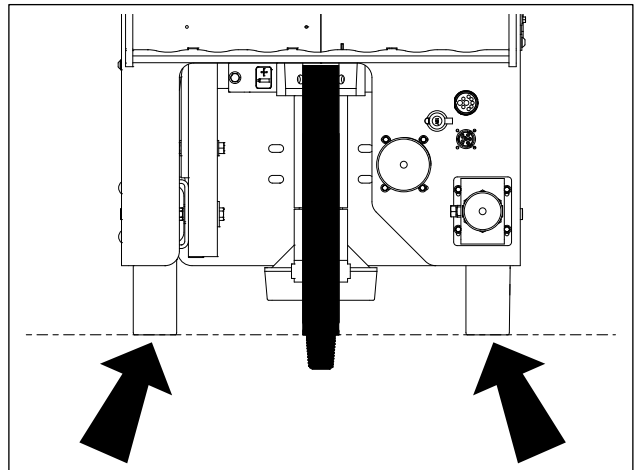
3. Turn mode selector switch on wireless remote controller to pullback mode.
4. Lock bungee. See "Close Bungee" on page 61.
5. Open clamp.
6. Pull rod into bursting unit until first joint is visible in window (shown).
7. Close clamp.



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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.

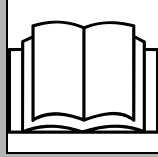
NOTICE: After first rod has been removed, carriage can be moved back while spinner is rotated to disconnect rods.



j51om034h.eps

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

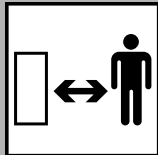


⚠ WARNING

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

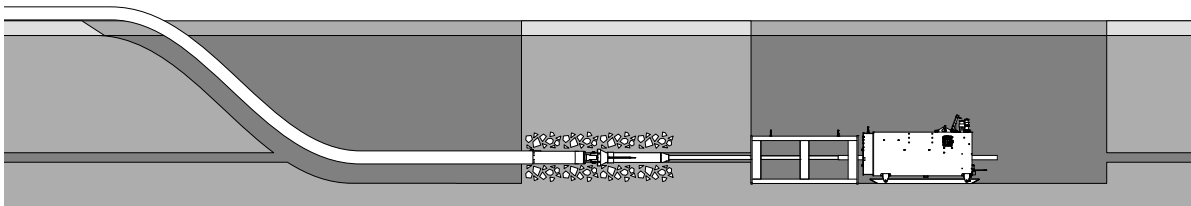
To help avoid injury:

- 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 9.
- 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

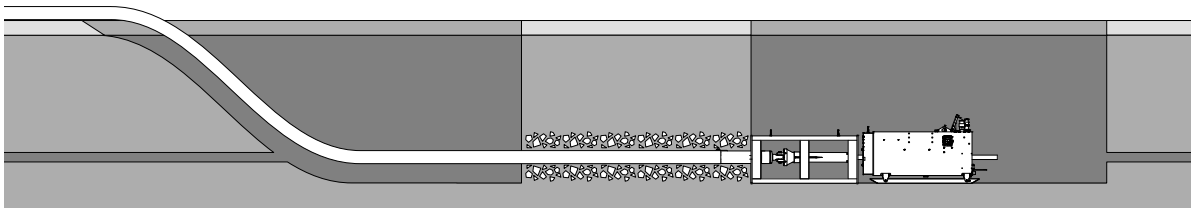
Crushing weight could kill or seriously injure. Stay away.



j510m017h.eps

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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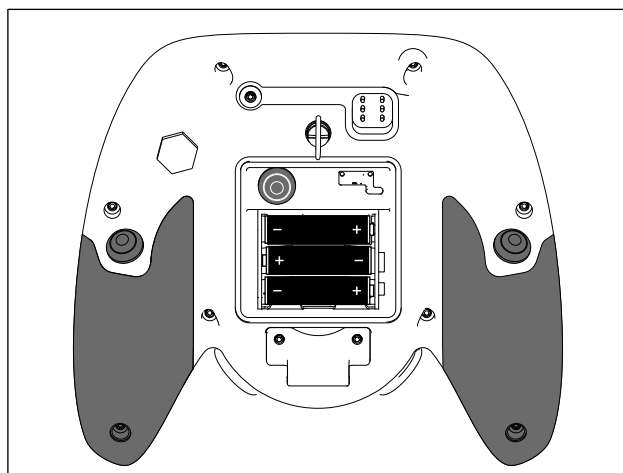
Troubleshooting

Chapter Contents

Display Does Not Turn On	72
No Connection to Down Hole Unit	73
Tooling Stuck in Pipe/Ground	74
Push/Pull Clamp Stuck Closed	74
Bungee Clamp Stuck Closed	74
Rod Slips Through Clamps	74

Display Does Not Turn On

1. Check battery levels in wireless remote control.
2. Change batteries if needed.
3. If replacement batteries are not available, connect battery back-up cable to remote.
4. Contact dealer for further assistance.



Remote_Battery.eps

No Connection to Down Hole Unit

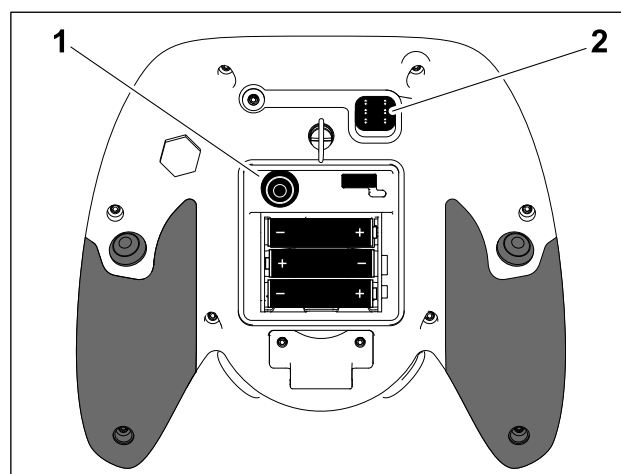
If communication link indicator is flashing yellow, communication between wireless remote control and machine has stopped. Move wireless remote control closer to machine while maintaining a safe distance. If in an area with interference, try changing the channel (see below).

If communication link indicator is red, communication has been lost. Shut down wireless remote control and restart enable communication. If wireless remote control still does not work, contact your dealer.

If battery and communication link indicators both display red for several seconds and then the wireless remote control shuts off, USB key is not installed.

To change channel:

1. Activate accessories.
2. Connect harness to backup port (2) on wireless remote control and to backup port on bursting unit, shown on page 60.
3. Ensure battery indicator is solid green.
4. Press channel switch (1) until communication link indicator begins to flash green/yellow and then release the channel switch.
 - Rapid flashing green indicator signals successful channel connection.
 - Flashing yellow indicator signals unsuccessful channel connection.



Remote_Channel.eps

Tooling Stuck in Pipe/Ground

If down hole unit tonnage reaches 100ton and rod/tooling does not move, tool string may need to be excavated.

1. Unload and release bungee to relieve all tension on rod.
2. Shut down bursting system.
3. Excavate tooling string and rectify obstruction.
4. Contact dealer for further assistance.

Push/Pull Clamp Stuck Closed

1. Switch wireless remote control to manual mode.
2. Close bungee clamp.
3. Open push/pull clamp.
4. Retract push/pull cylinders.
5. If clamp releases follow push/pull clamp slip greasing procedure.
6. If clamp remains closed contact factory for further assistance.

Bungee Clamp Stuck Closed

1. Switch wireless remote control to manual mode.
2. Close push pull clamp.
3. Open bungee clamp.
4. Extend push/pull cylinders.
5. If clamp releases follow bungee clamp slip greasing procedure.
6. If clamp remains closed contact factory for further assistance.

Rod slips through push/pull or bungee clamps

1. Unload and release bungee, and relieve all tension on rod.
2. Remove rod from unit and follow cleaning and greasing procedure for affected clamp.
3. If rod still slips, follow procedure for replacing jaws.
4. If rod continues to slip, contact dealer. for further assistance.

Systems and Equipment

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Tooling String 76

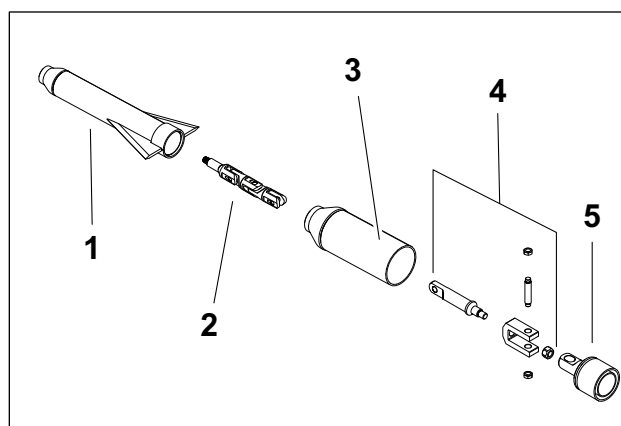
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- Slitter String.76
- Bursting/Splitting Heads77

Extraction Cage 77

Tooling String

Bursting String

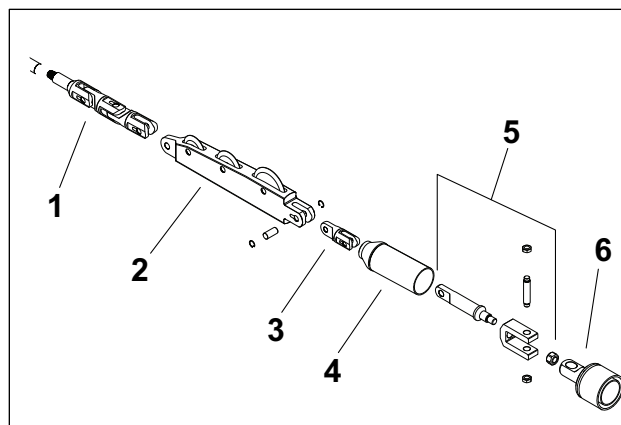
Ref.	Description
1	pipe pilot
2	flex joint
3	expander
4	expander rod assembly
5	pipe puller



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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

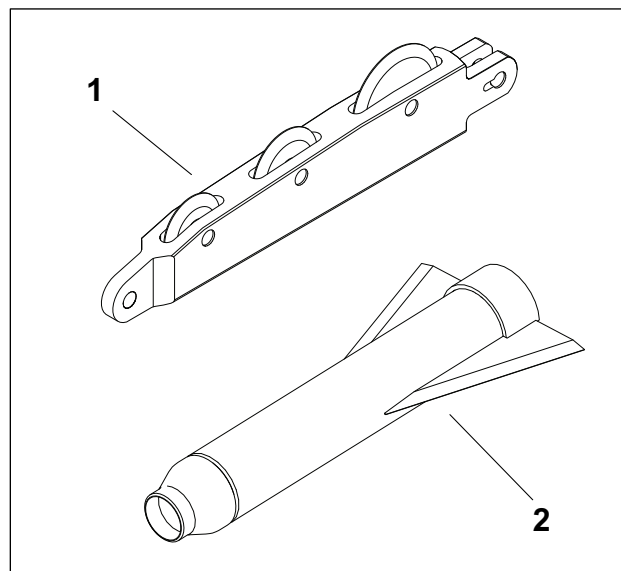


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Bursting/Splitting Heads

Identification and Uses

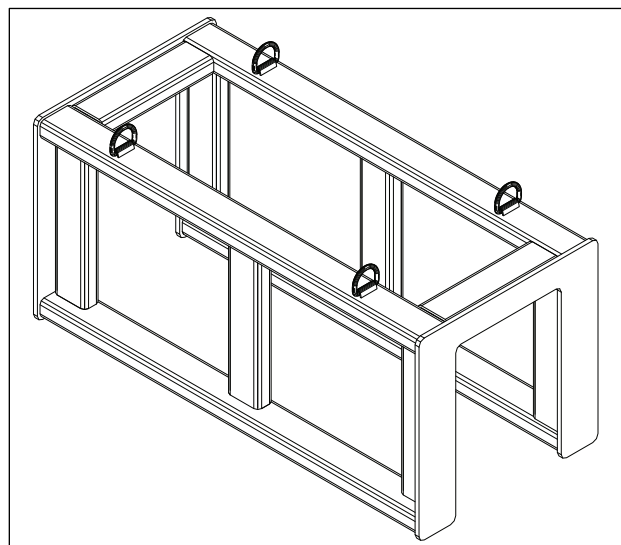
Ref.	Type	Uses
1	slitter	ductile iron, steel, cast iron with repairs
2	pipe pilot	clay, asbestos cement, PVC, PE, cast iron



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Extraction Cage

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



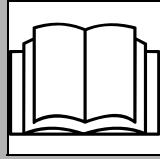
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Complete the Job

Chapter Contents

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Stow Components	81
Restore Jobsite	81
Stow Tools	81
Store Machine	81
Decommission Machine	81

Disconnect Hoses

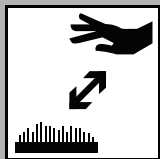


⚠ WARNING Pressurized fluid or air could pierce skin and cause severe injury. Refer to operator's manual for proper use.

To help avoid injury:

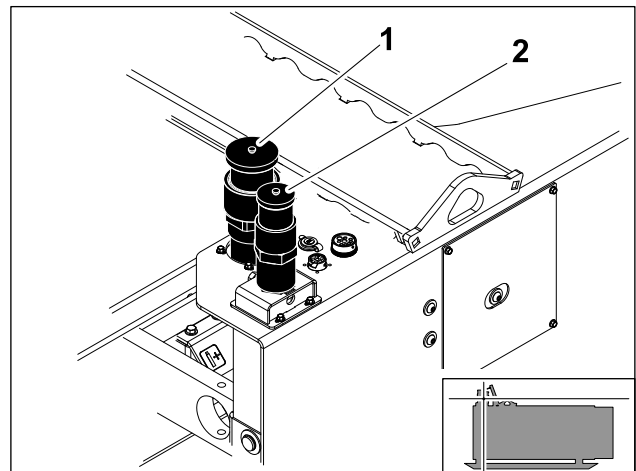
- Always connect return line first and remove last.
- Before using system, check that all connections are tight and all lines are undamaged.

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.



j51om014h.eps

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.

Store Machine

IMPORTANT: For periods of time exceeding two months:

- Ensure exposed parts are treated with anti-rust agent.
- Touch up paint as needed to prevent rusting.
- Lubricate machine and apply grease to unpainted surfaces.

To store, ensure equipment is stowed, machine is properly rinsed, and all fluids are at appropriate levels. For more information on filling fluids, see Maintenance chapter.

Decommission Machine

Before decommissioning machine, follow local regulations for disposing of hazardous substances.

Service

Chapter Contents

Service Precautions 82

- Remove/Install Front Panel. 82

Recommended Lubricants/Service Key 83

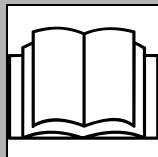
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Service Precautions

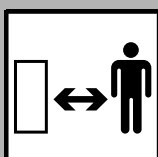


⚠ WARNING Misuse of machine can cause death or serious injury. Read and understand operator's manual and all other safety instructions before use. 273-475

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.
- Refer to US Occupational Safety and Health Administration (OSHA) guidelines for appropriate lockout-tagout procedures.

Remove/Install Front Panel



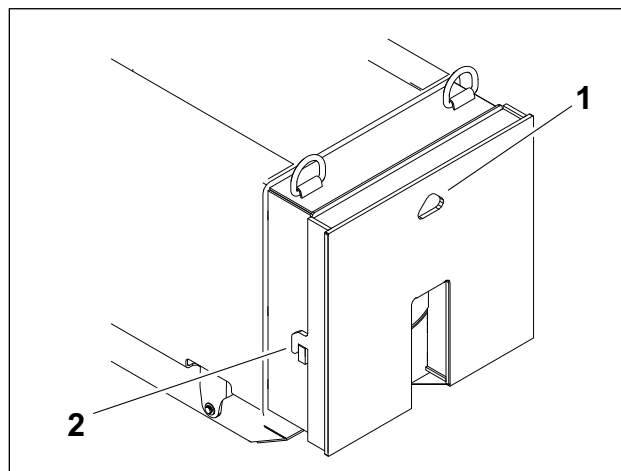
⚠ WARNING Crushing weight could cause death or serious injury. Stay away.

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.



j510m022w.eps

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 101 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

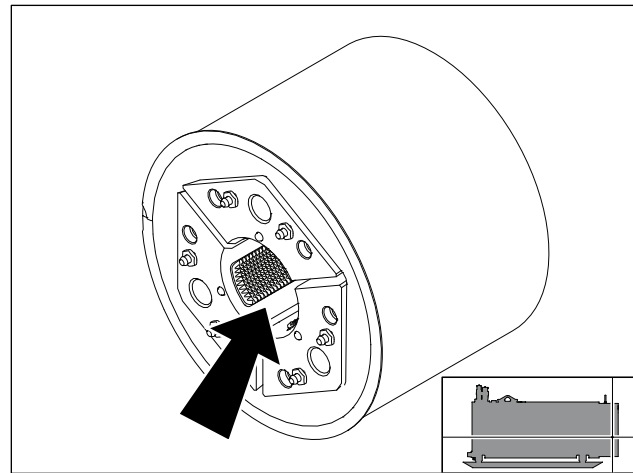
Inspect rods/pipes after each use. Ensure rods/pipes are not:

- 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.

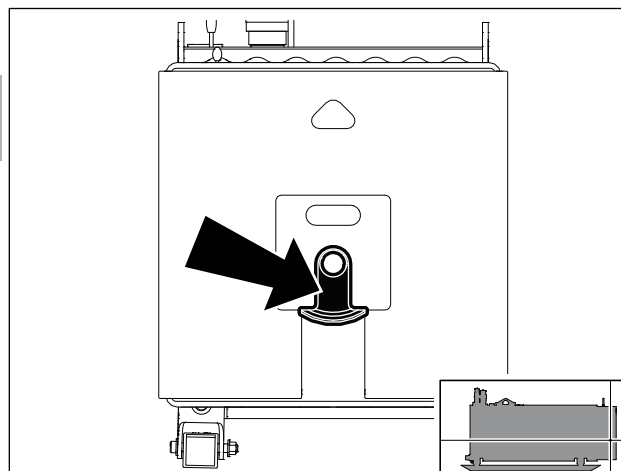


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Clean Rod Wiper

IMPORTANT: Replace rod wiper if damaged or worn.

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

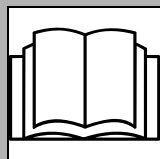


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50 Hour

Task	Notes
Check hydraulic hoses	
Change hydraulic pressure filter	initial change

Check Hydraulic Hoses



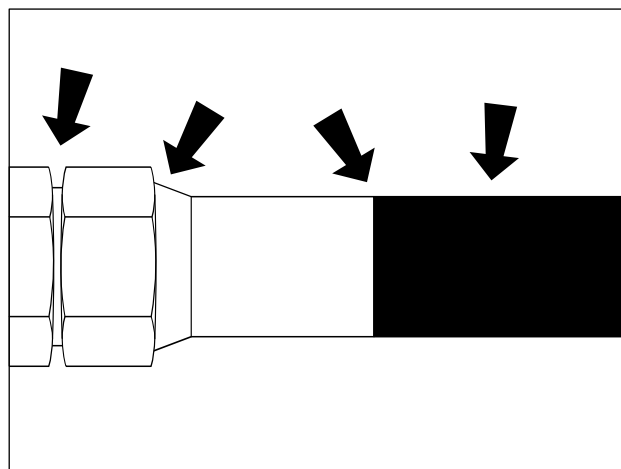
⚠ WARNING Pressurized fluid or air could pierce skin and cause severe injury. Refer to operator's manual for proper use.

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.

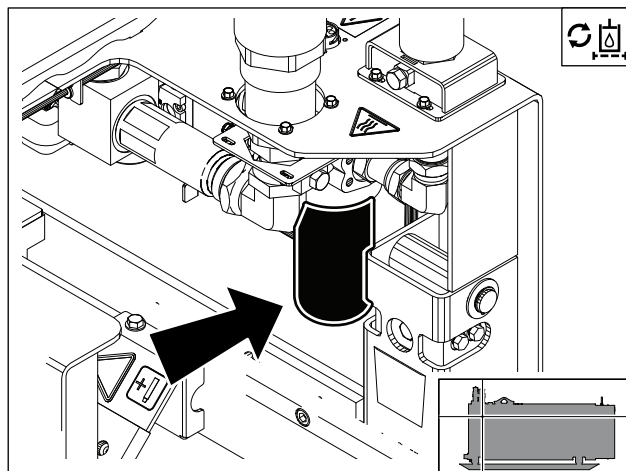
Check hydraulic hoses for leaks.



CheckHoses.eps

Change Hydraulic Pressure Filter (initial)

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



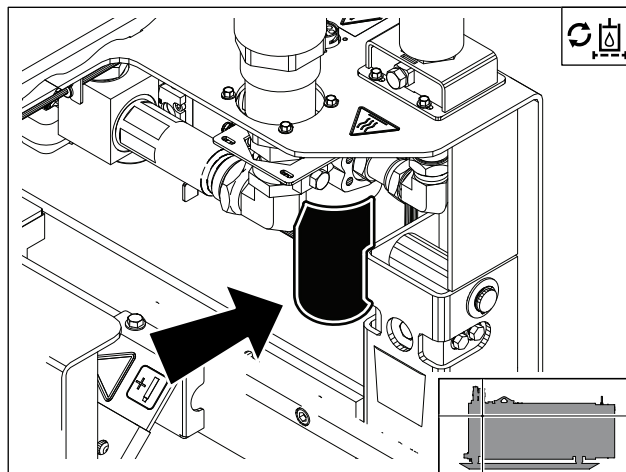
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200 Hour

Task	Notes
Change hydraulic pressure filter	

Change Hydraulic Pressure Filter

Change hydraulic pressure filter every 200 hours.



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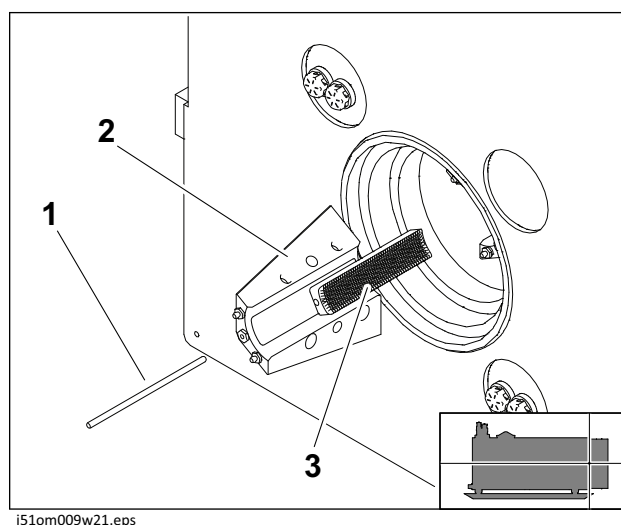
As Needed

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
Clean and lube spinner	

Replace Jaws

Bungee

1. Lift off front of machine. See "Remove/Install Front Panel" on page 82.
2. Remove rod wiper and rod guide.
3. Remove pin (1) from slip (2).
4. Remove jaw insert (3).
5. Install replacement jaw insert.
6. Reinstall pin.
7. Reinstall rod wiper and rod guide.
8. Lower front of machine down into place. See "Remove/Install Front Panel" on page 82.



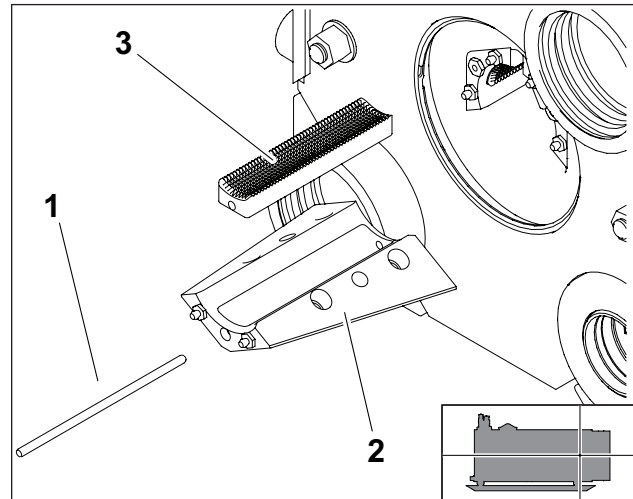
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100XTR Operator's Manual

As Needed

Push/Pull

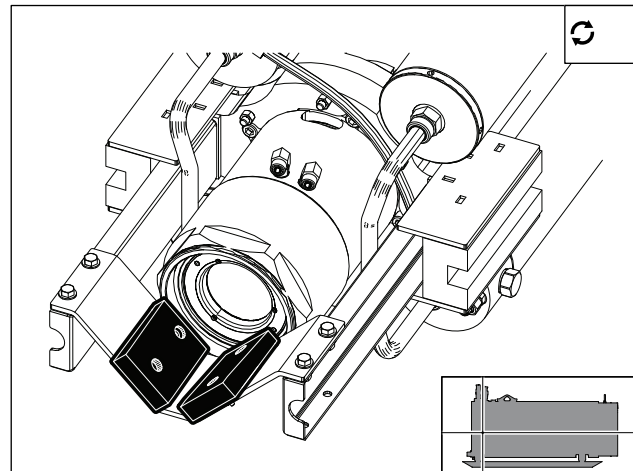
1. Extend push/pull cylinders to end of travel.
2. Remove snap ring and rod guide.
3. Remove pin (1) from slip (2).
4. Remove remove jaw insert (3).
5. Install replacement jaw insert.
6. Reinstall pin.
7. Reinstall snap ring and rod guide.



j51om016w21.eps

Replace Rod Catcher

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

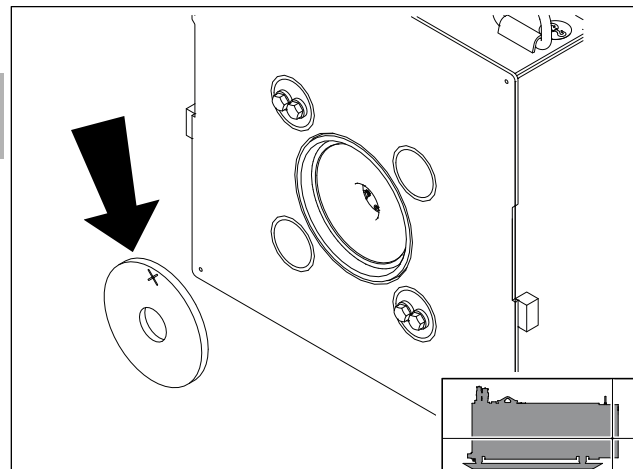


j51om005w.eps

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 82.
2. Remove rod wiper (shown).
3. Lower front panel down into place.



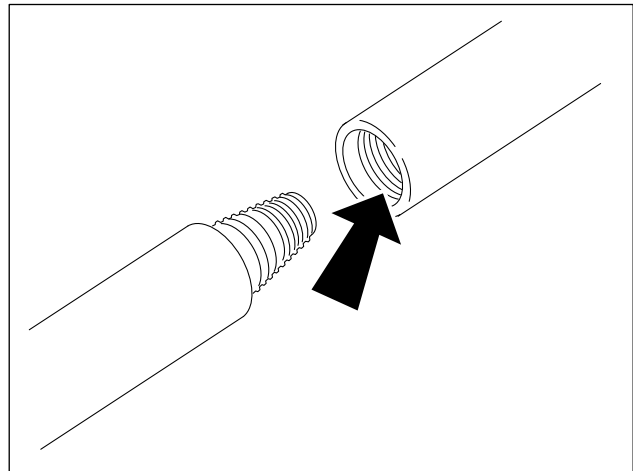
j51om006w19.eps

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.



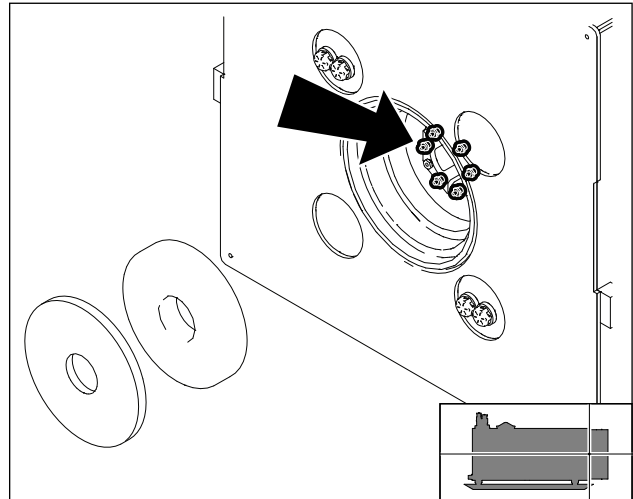
DrillPipe_CleanF.eps

Lube Bowls

Lube bowls as needed.

Bungee Vise

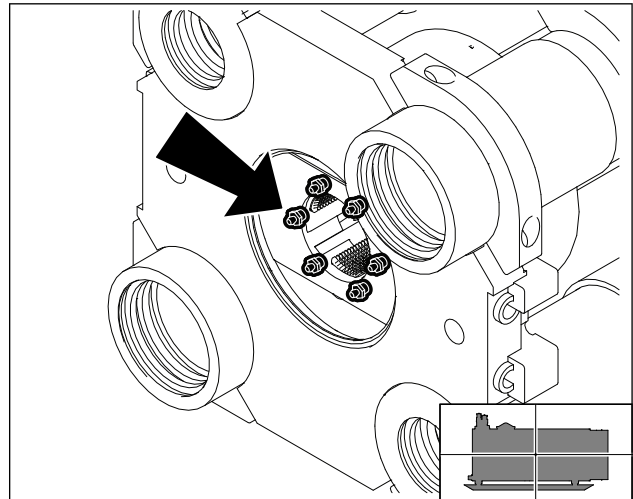
1. Remove front plate.
2. Remove rod wiper.
3. Remove rod guide.
4. Apply five pumps of EPRG to each grease zerk (shown) on each slip.



j51om010w21.eps

Carriage Vise

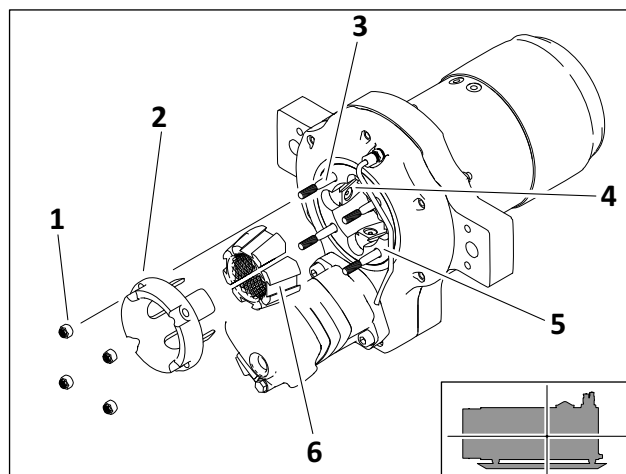
1. Move carriage to rear of machine.
2. Remove snap ring and rod guide.
3. Apply five pumps of EPRG to each grease zerk on each slip.



j51om012w21.eps

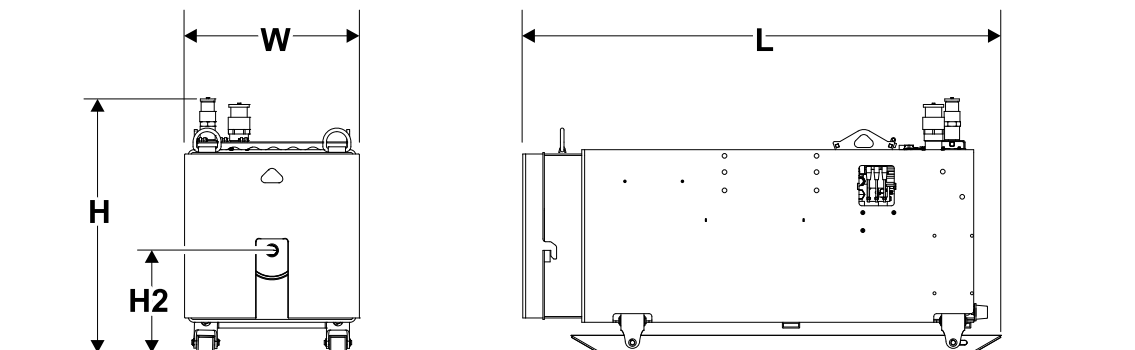
Clean and Lube Spinner

1. Remove disengagement flange (2), flex-top lock nut (1), and spinner jaw.
2. Remove all debris from around dovetail ramp (4).
3. Remove any scale, rust, or build up from:
 - dovetail ramp (4)
 - spinning slip bowl (5)
 - spinner jaw (6)
4. Apply a light layer of RJL to:
 - dovetail ramp (4)
 - spinning slip bowl (5)
 - surfaces that make contact with spinner jaw (6)
 - bottom of spinner jaw (6)
5. Reinstall spinner jaw (6).
6. Install disengagement flange (2) onto studs (3).
7. Secure with flex-top nuts (1).
8. Loosen each nut three flats. Disengagement flange (2) should slide freely on studs (3).



Specifications

Bursting Unit



j51om003h.eps

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

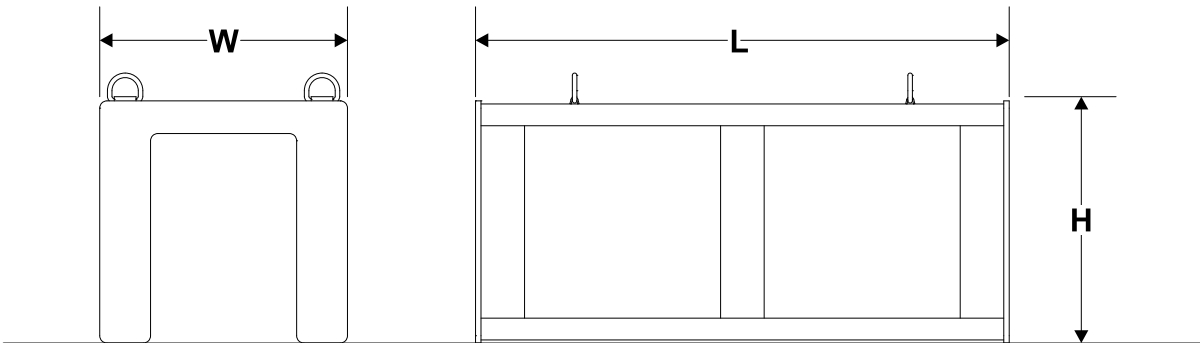
Operational	U.S.	Metric
Push force	10 ton	9.1 tonne
Pullback force	100 ton	91 tonne
Working pressure	4450-4550 psi	307-314 bar
Working flow rate	41-43 gpm	155-163 L/min

Hydraulic fluid requirements:

	Fluid must meet ISO 32.
	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

Wireless Remote Controller

Dimensions	U.S.	Metric
L, length	9.0 in	22.9 cm
W, width	7.9 in	20.1 cm
H, height	4.75 in	12.1 cm
Weight, mass	2.6 lb	1.2 kg

Environmental	U.S.	Metric
Operating temperature	-4 to 158°F	-20 to 70°C
Storage temperature	-40 to 185°F	-40 to 85°C
IP rating	IP65	

Electrical	
Internal supply	Primary: 9VDC 6-AA Alkaline batteries
External supply	9-30VDC via backup harness
Current consumption	<500 mA

Wireless Interface	
Radio module	RM024, Laird Connectivity
Frequency band	2400-2483.5
RF data rate	280 kbps
RF technology	Frequency hopping spread spectrum (FHSS)
Receiver sensitivity	-92 dBm (1% PER0)
Modulation	MSK
Maximum output power conducted	10 dBm
Host interface	Serial - 115200 bps

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]

100XTR Operator's Manual

[illegible]