

RT120Q

Operator's Manual



CMW®

Issue 1.1
Original Translation

053-2634

Overview



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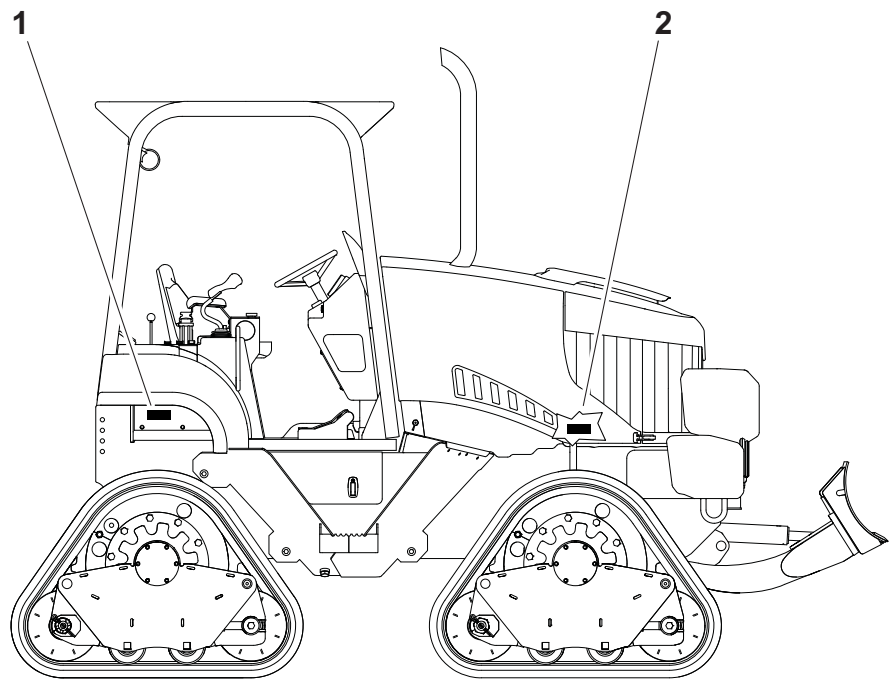
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Serial Number Location

Record serial numbers and date of purchase in spaces provided. RT120Q (1) and engine serial numbers (2) are located as shown.



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Date of manufacture	
Date of purchase	
RT120Q serial number	
Front attachment serial number	
Rear attachment serial number	
Trailer serial number	
Engine serial number	

Intended Use



The RT120Q is a riding trencher designed to install buried service lines of various sizes using a variety of Ditch Witch attachments.

Attachment	Max. width/diameter	Max. depth
H910 trencher	24" (610 mm)	96" (2.4 m)
H911 trencher	24" (610 mm)	92" (2.3 m)
H1032 plow	3" (80 mm)	42" (1.07 m)
H1052 combo	n/a	70" (1.78 m)
H1140 saw	103" (1.03 m)	40.5" (1.03 m)
RC120 reel carrier	84" (2.13 m) reel dia	n/a
A920 backhoe	24" (610 mm)	105" (2.7 m)

This 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 Ditch Witch dealer. Use in any other way is considered contrary to the intended use.

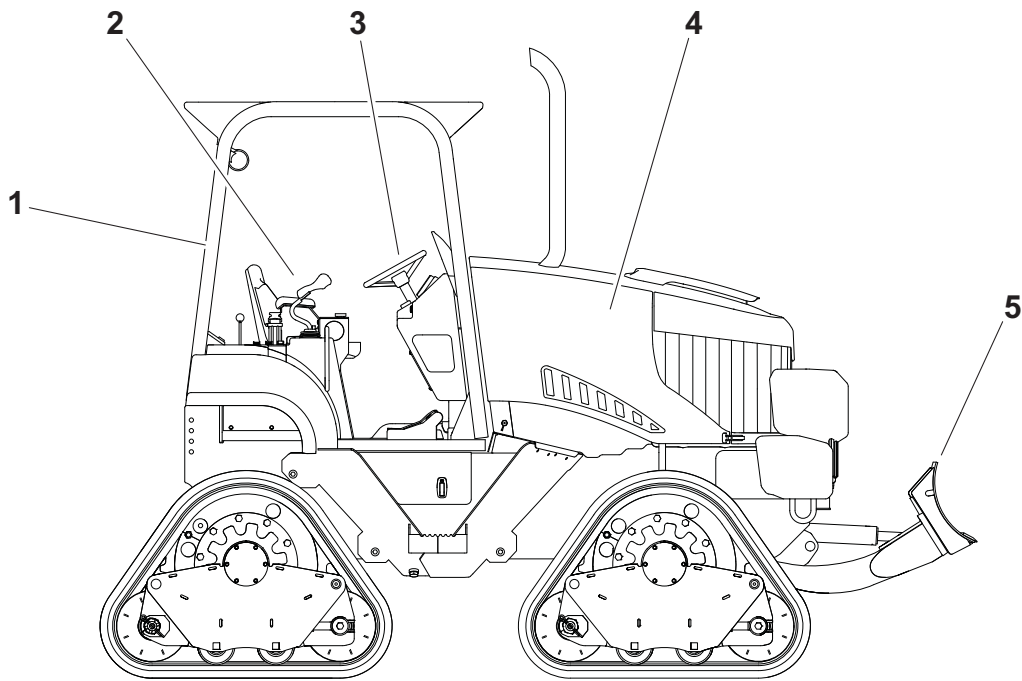
The RT120Q should be used with genuine Ditch Witch chain, teeth, and sprockets. It should be operated, serviced, and repaired only by persons familiar with their particular characteristics and acquainted with the relevant safety procedures.

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.

The protection offered by the Rollover Protective System (ROPS) will be impaired if it has been subjected to any modification, structural damage, or has been involved in an overturn accident. The ROPS must be replaced after a roll-over.

Unit Components



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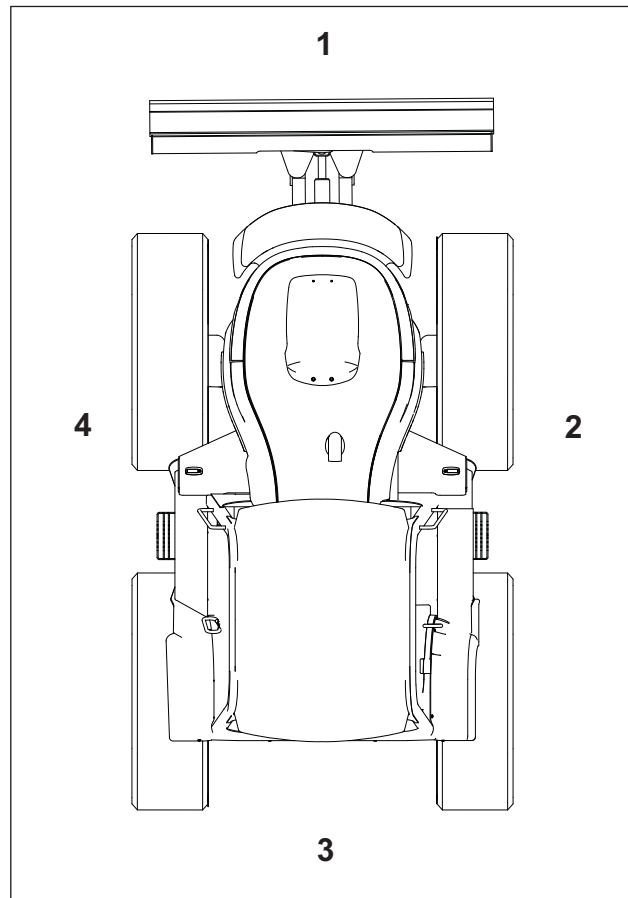
- | | |
|---|------------------------------|
| 1. Rollover Protective Structure (ROPS) | 4. Engine compartment |
| 2. Operator station | 5. Backfill blade (optional) |
| 3. Control console | |

WARNING: The protection offered by the Rollover Protective System (ROPS) will be impaired if it has been subjected to any modification, structural damage, or has been involved in an overturn accident. The ROPS must be replaced after a roll-over.

Operator Orientation

- | | |
|------------------|-----------------|
| 1. Front of unit | 3. Rear of unit |
| 2. Right of unit | 4. Left of unit |

Right and left sides of machine are determined by facing front of unit while seated at the controls.



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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 Ditch Witch 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 Ditch Witch dealer. If you need assistance in locating a dealer, visit our website at **www.ditchwitch.com** or write to the following address:

The Charles Machine Works, Inc.
Attn: Marketing Department
PO Box 66
Perry, OK 73077-0066
USA

The descriptions and specifications in this manual are subject to change without notice. The Charles Machine Works, Inc. reserves the right to improve equipment. Some product improvements may have taken place after this manual was published. For the latest information on Ditch Witch equipment, see your Ditch Witch dealer.

Thank you for buying and using Ditch Witch equipment.

**RT120 T4i
Operator's Manual**

Issue number 1.0/OM-05/13

Part number 053-2634

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Safety

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Guidelines

Follow these guidelines before operating any jobsite equipment:

- Complete proper training and read operator's manual before using equipment.
- Contact your local One-Call (811 in USA) or the One-Call referral number (888-258-0808 in USA and Canada) to have underground utilities located before digging. Also contact any utilities that do not participate in the One-Call service. Mark proposed path with white paint prior to contacting One-Call or utilities.
- Classify jobsite based on its hazards and use correct tools and machinery, safety equipment, and work methods for jobsite.
- Mark jobsite clearly and keep spectators away.
- Wear personal protective equipment.
- Review jobsite hazards, safety and emergency procedures, and individual responsibilities with all personnel before work begins. Safety videos are available from your Ditch Witch® dealer.
- Replace missing or damaged safety shields and safety signs.
- Use equipment carefully. Stop operation and investigate anything that does not look or feel right.
- Do not operate unit where flammable gas may be present.
- Contact your Ditch Witch dealer if you have any question about operation, maintenance, or equipment use.
- Complete the equipment checklist located at www.ditchwitch.com/resources/safety.

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.

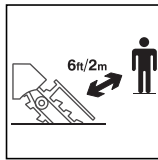
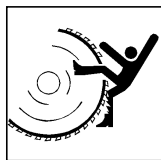
 **CAUTION** indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.

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.

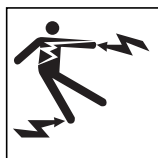
Safety Alerts



⚠ DANGER Moving digging teeth will cause death or serious injury. Trench cave-in can cause you to fall. Stay away.



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



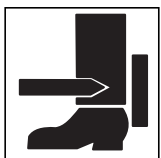
⚠ DANGER Electric shock. Contacting electric lines will cause death or serious injury. Know location of lines and stay away.



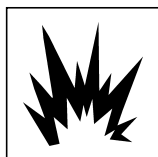
⚠ WARNING Jobsite hazards could cause death or serious injury. Use correct equipment and work methods. Use and maintain proper safety equipment.



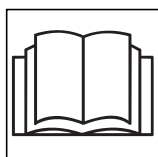
⚠ WARNING Crushing weight could cause death or serious injury. Use proper procedures and equipment or stay away.



⚠ WARNING Moving parts could cut off hand or foot. Stay away.



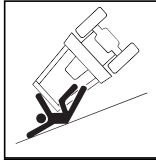
⚠ WARNING Explosion possible. Serious injury or equipment damage could occur. Follow directions carefully.



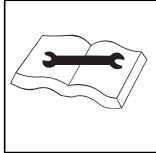
⚠ WARNING Incorrect procedures could result in death, injury, or property damage. Learn to use equipment correctly.



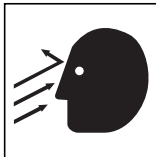
⚠ WARNING Fall possible. Riders can fall from machine and be injured or killed. Only operator is allowed on machine.



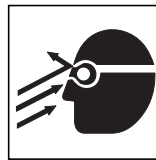
⚠ WARNING Rollover possible. If machine rolls over, you could be thrown from seat and killed or crushed. Wear seat belt.



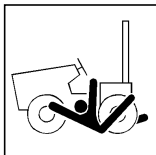
⚠ WARNING Improper control function could cause death or serious injury. If control does not work as described in instructions, stop machine and have it serviced.



⚠ WARNING Looking into fiber optic cable could result in permanent vision damage. Do not look into ends of fiber optic or unidentified cable.



⚠ WARNING Pressurized fluid or air could pierce skin and cause injury or death. Stay away.



⚠ WARNING Runaway possible. Machine could run over you or others. Learn how to use all controls. Start and operate only from operator's position.



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



⚠ WARNING Avoid static electricity when fueling. Ultra Low Sulfur Diesel (ULSD) poses a greater static ignition hazard than earlier diesel formulations. Avoid death or serious injury from fire or explosion. Consult with your fuel system supplier to ensure the delivery system is in compliance with fueling standards for proper grounding and bonding practices.





⚠ WARNING Moving traffic - hazardous situation. Death or serious injury could result. Avoid moving vehicles, wear high visibility clothing, post appropriate warning signs.



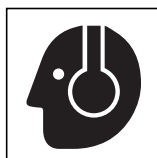
⚠ WARNING Hot pressurized cooling system fluid could cause serious burns. Allow to cool before servicing.



⚠ CAUTION Flying objects may cause injury. Wear hard hat and safety glasses.



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



⚠ CAUTION Exposure to high noise levels may cause hearing loss. Wear hearing protection.



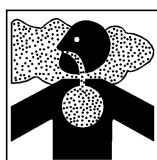
⚠ CAUTION Fall possible. Slips or trips may result in injury. Keep area clean.



⚠ CAUTION Battery acid may cause burns. Avoid contact.



⚠ CAUTION Improper handling or use of chemicals may result in illness, injury, or equipment damage. Follow instructions on labels and in material safety data sheets (MSDS).



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

Emergency Procedures



⚠ WARNING

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



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

EMERGENCY SHUTDOWN - Turn ignition switch to stop position or push remote engine stop button (if equipped).

Electric Strike Description



⚠ DANGER

Electric shock. Contacting electric lines will cause death or serious injury. Know location of lines and stay away.

When working near electric cables, remember the following:

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

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

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

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

If an Electric Line is Damaged

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

- Warn people nearby that an electric strike has occurred. Instruct them to leave the area and contact utility.
- Raise attachments and drive from immediate area.
- Contact utility company to shut off power.
- Do not return to jobsite or allow anyone into area until given permission by utility company.

If you suspect an electric line has been damaged and you are **off tractor**, DO NOT TOUCH TRACTOR. Take the following actions. The order and degree of action will depend upon the situation.

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

If a Gas Line is Damaged



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



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



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

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

If a Fiber Optic Cable is Damaged

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

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

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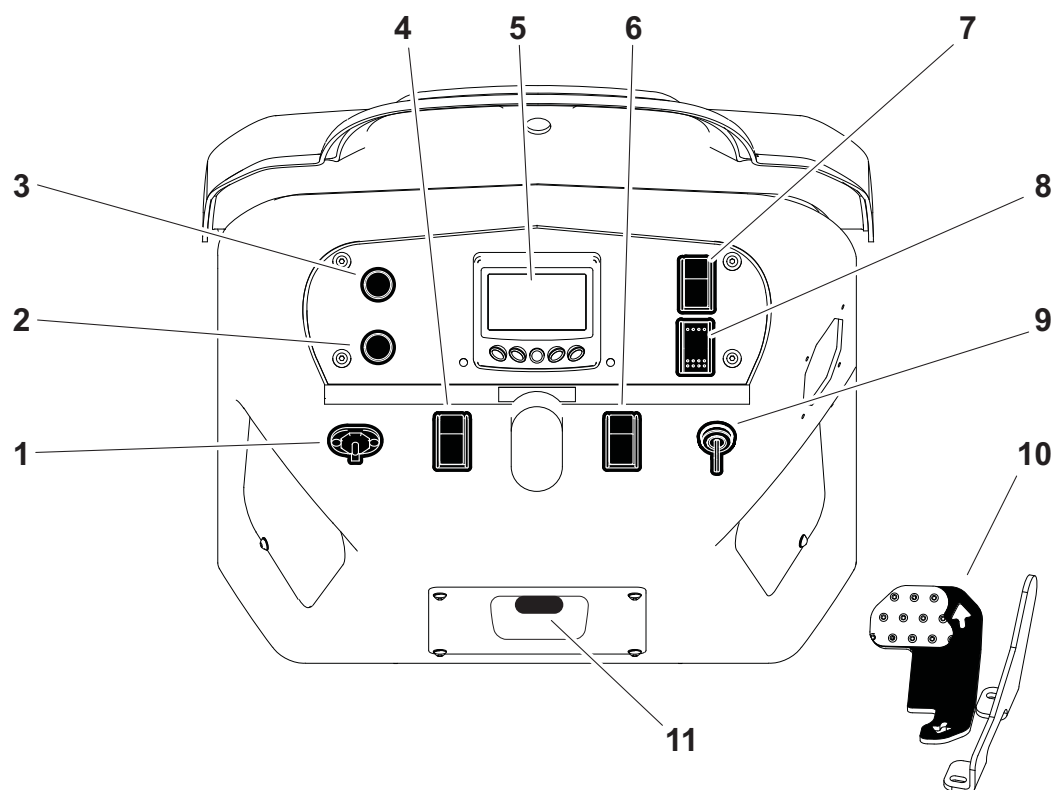
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Center Console

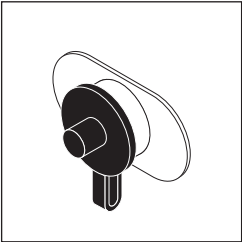
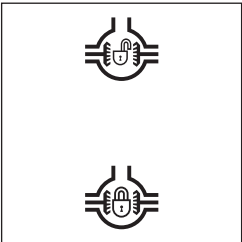


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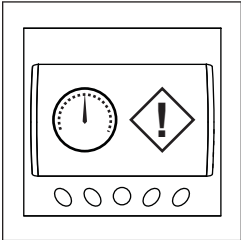
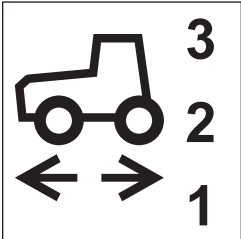
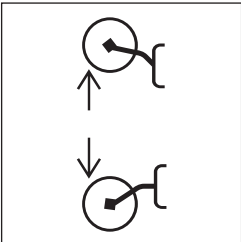
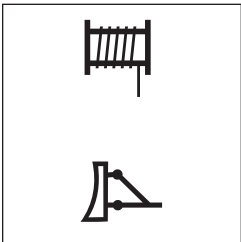
1. Auxiliary power outlet
2. Horn switch
3. Engine override switch
4. Axle lock switch
5. Graphic display
6. Ground drive speed switch

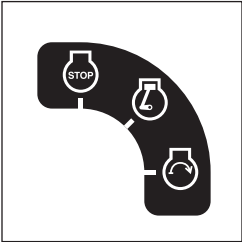
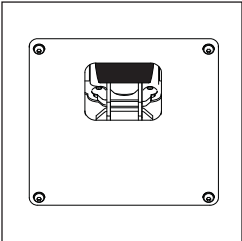
7. Reel carrier switch*
8. Reel winder mode selector switch*
9. Ignition key switch
10. Ground drive foot control
11. Steering column tilt control

* option

Item	Description	Notes
1. Auxiliary outlet  c00ic179h.eps	Provides power for other equipment.	Power output is 12V, 10A.
2. Horn  c00ic044h.eps	To sound horn, press.	
3. Engine override switch  c00ic024w.eps	For engine override, press.	
4. Axle lock switch  c00ic549h.eps	To lock rear axle, press top. To unlock rear axle, press bottom.	NOTICE: To prevent mechanical damage, stop tractor before operating axle lock switch. IMPORTANT: After pressing switch to unlock axle, it may be necessary to move tractor 6' (2 m) in reverse to fully unlock.

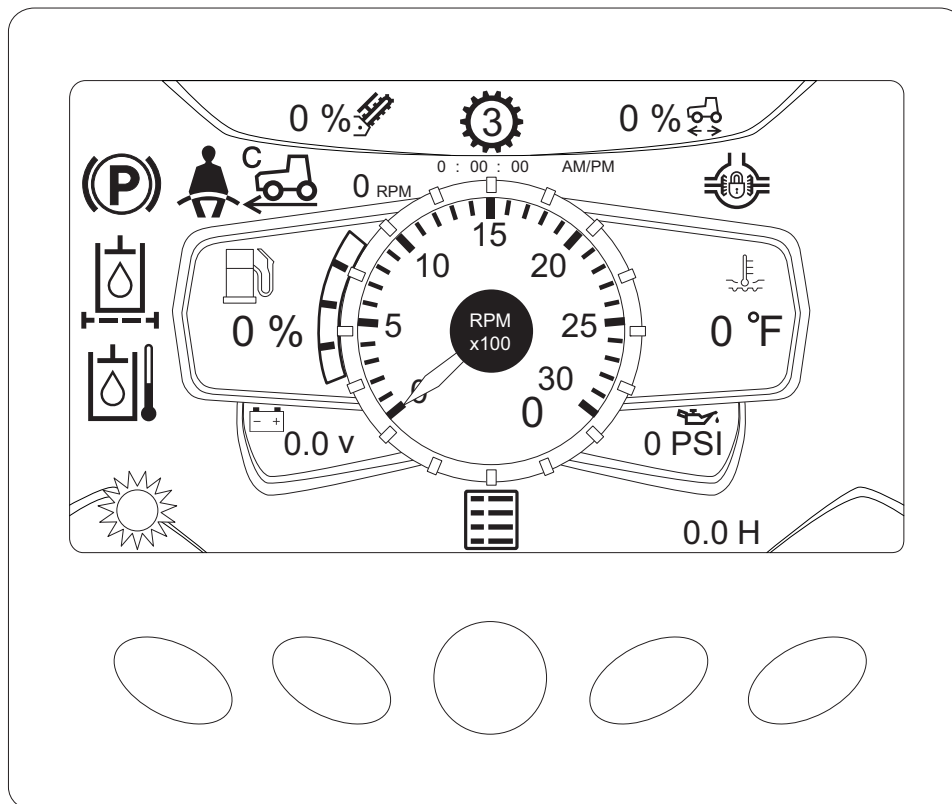


Item	Description	Notes
5. Graphic display  c00ic604w.eps	Graphic symbols are displayed for indicators and conditions previously shown with gauges.	See more information in "Graphic Display" on page 26.
6. Ground drive speed switch  c00ic602w.eps	To select High (3), Medium (2) or Low (1), press appropriate switch position.	Screen icon displays High, Medium or Low selection.
7. Reel carrier switch  c00ic205h.eps	To raise, press top. To lower, press bottom.	Optional.
8. Reel winder selector switch  c00ic642w.eps	To change backfill blade joystick to reel winder control mode, press top. To return to backfill blade mode, press bottom.	Optional.

Item	Description	Notes
9. Ignition switch  c00ic027w.eps	To start engine, insert key and turn clockwise. To stop engine, turn counterclockwise.	IMPORTANT: If engine does not start on first attempt, check that all interlock requirements have been met, return switch to STOP, and try again.
10. Ground drive foot control  c00ic072c.eps	To move tractor forward, push top of pedal. To move tractor backward, push bottom of pedal. To increase speed in either direction, push pedal farther from center. To reduce speed in either direction, release pedal.	Pedal should automatically return to neutral when released.
11. Steering column tilt control  c00ic037w.eps	To adjust tilt, pull. To secure steering column in position, release.	

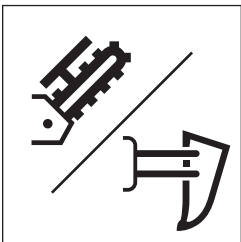


Graphic Display

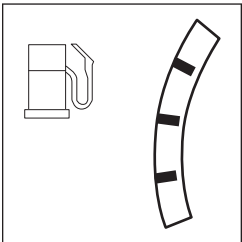
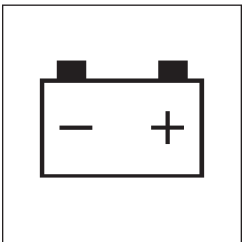
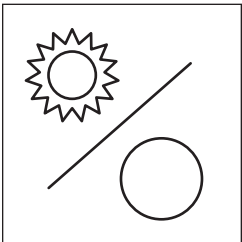


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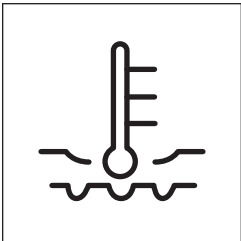
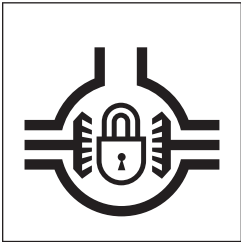
The graphic display module shows engine RPM and has icons for other functions. Soft keys allow the operator to toggle between various screens and functions.

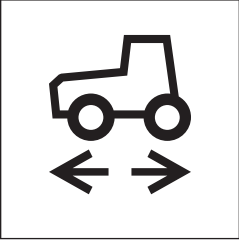
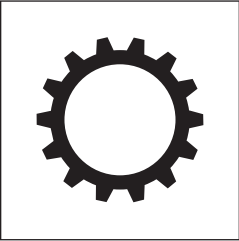
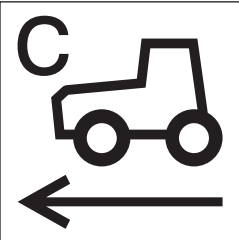
Item	Description	Notes
Attachment speed 	Displays percentage of attachment speed, and plow or trencher/saw mode.	Note: Screen icons change according to attachment being operated.

c00ic028w.eps

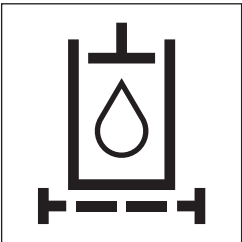
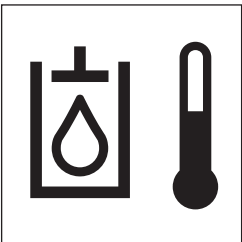
Item	Description	Notes
Operator presence  c00ic001w.eps	Idicates operator presence and start interlock condition.	
Fuel level  c00ic003w.eps	Displays fuel level and percentage.	
Batery voltage  c00ic008w.eps	Displays battery voltage.	
Day/Night mode  c00ic010w.eps	Indicates selected mode.	



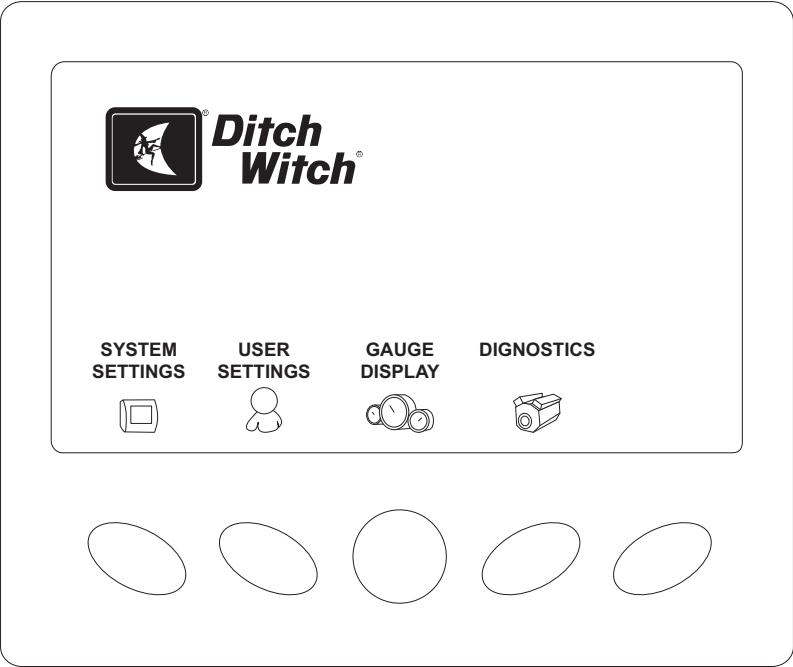
Item	Description	Notes
Engine hours  c00ic020w.eps	Displays engine hours.	
Engine oil pressure  c00ic005w.eps	Displays engine oil pressure.	
Engine coolant temperature  c00ic004w.eps	Displays coolant temperature.	
Axle lock  c00ic002w.eps	Displays status of axle differential lock.	

Item	Description	Notes
Ground drive speed/ direction  c00ic006w.eps	Displays ground drive direction of travel, and speed as a percentage.	
Ground drive gear indicator  c00ic009w.eps	Displays selected gear in center of icon.	
Cruise control indicator  c00ic032w.eps	Displays cruise mode status.	
Parking brake indicator  c00ic055t.eps	Displays parking brake status.	



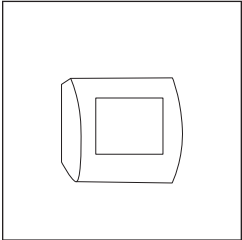
Item	Description	Notes
Hydraulic filter restriction indicator  c00ic578h.eps	Displays restriction status.	
Hydraulic fluid high temperature indicator  c00ic037l.eps	Displays hot fluid status.	
Menu indicator  c00ic031w.eps	Displays menu icon over key 3.	

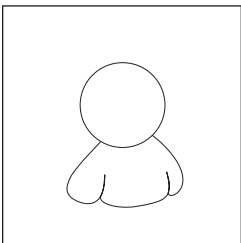
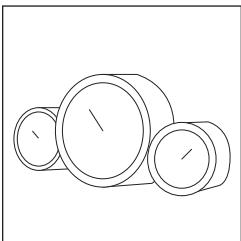
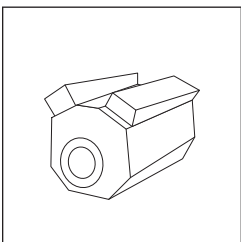
Main Menu



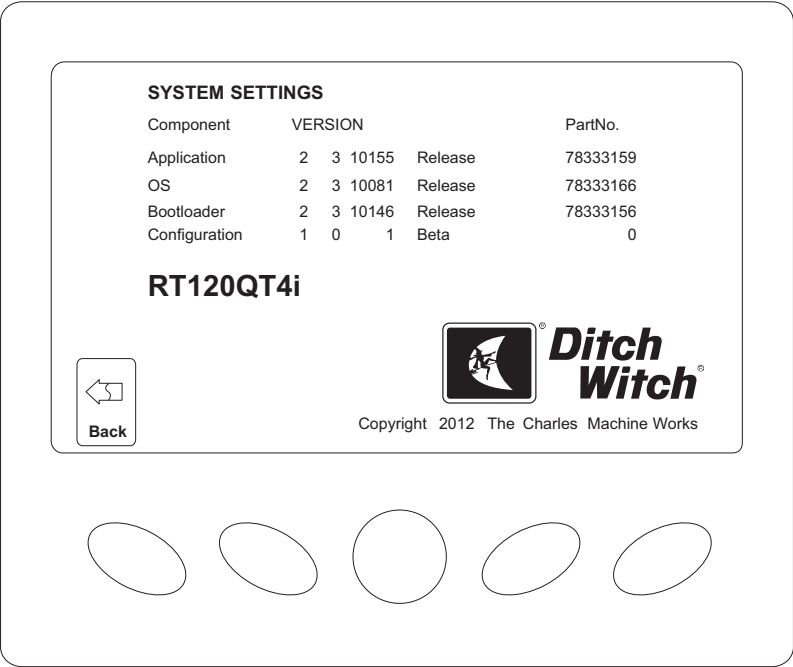
t33om093w.eps

Press the center soft key to display the main menu screen, which has icons for other functions. Soft keys below on screen icons allow the operator to toggle between various screens and functions.

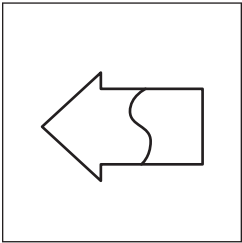
Item	Description	Notes
System Settings  c00ic015w.eps	This is an information display.	

Item	Description	Notes
User Settings  c00ic016w.eps	Allows operator to customize settings.	
Gauge Display  c00ic017w.eps	Press the soft key below this on screen icon to select.	
Diagnostics  c00ic018w.eps	Displays interlock icons and diagnostic codes, if any. Press soft key below on screen icons to return to main menu or gauge display.	Note: If diagnostic codes are displayed, contact your Ditch Witch dealer.

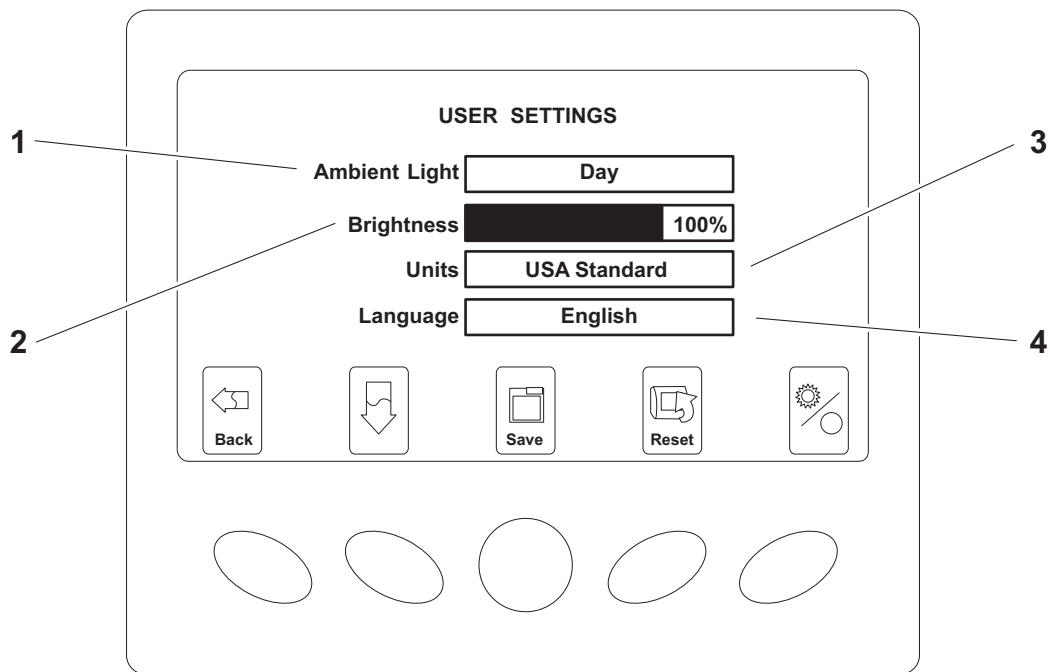
System Settings



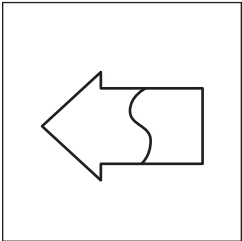
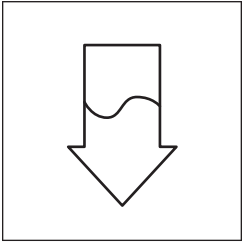
t37om043w.eps

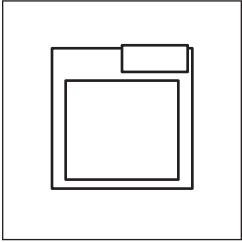
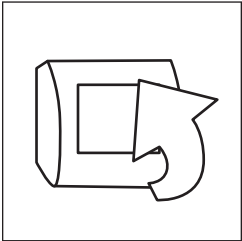
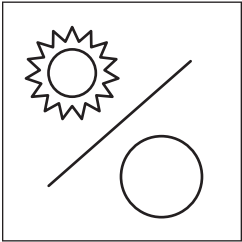
Item	Description	Notes
Back  c00ic011w.eps	Press soft key below this icon to return to previous screen.	Press center soft key to display gauge screen.

User Settings



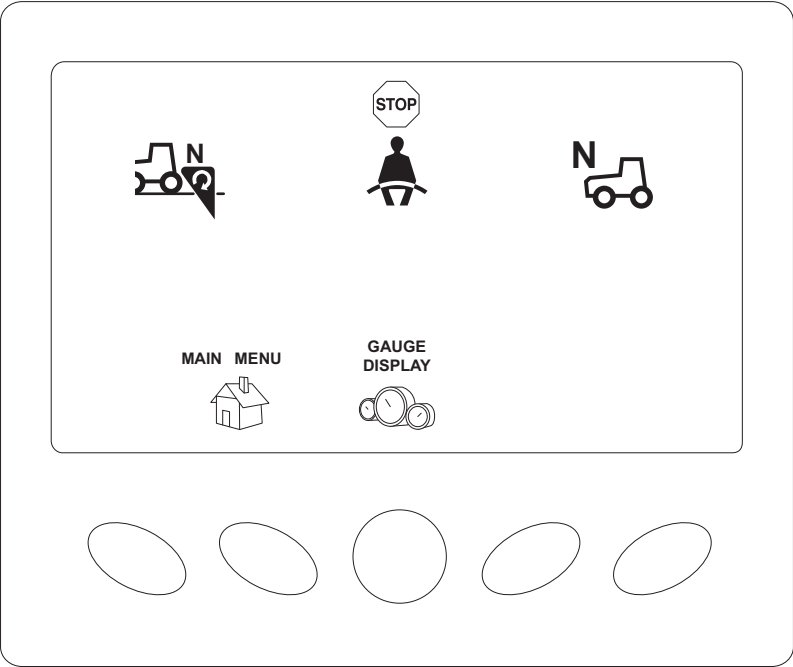
t33om092w.eps

Item	Description	Notes
Back  c00ic011w.eps	Press soft key below this icon to return to previous screen.	Press center soft key to display gauge screen.
Down  c00ic012w.eps	Press soft key below this icon to toggle through selections 1-4.	Press center soft key to display gauge screen.

Item	Description	Notes
Save  c00ic013w.eps	Press soft key below this icon to save settings.	
Reset  c00ic014w.eps	Press soft key below this icon to return to default settings.	
Day/Night  c00ic010w.eps	Press soft key below this icon to select day or night mode.	



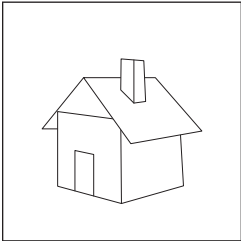
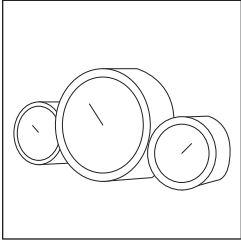
Diagnostics



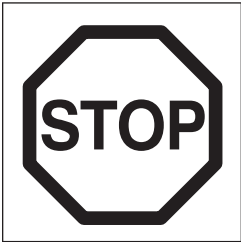
t37om044w.eps

Note: If diagnostic codes are displayed, contact your Ditch Witch dealer.

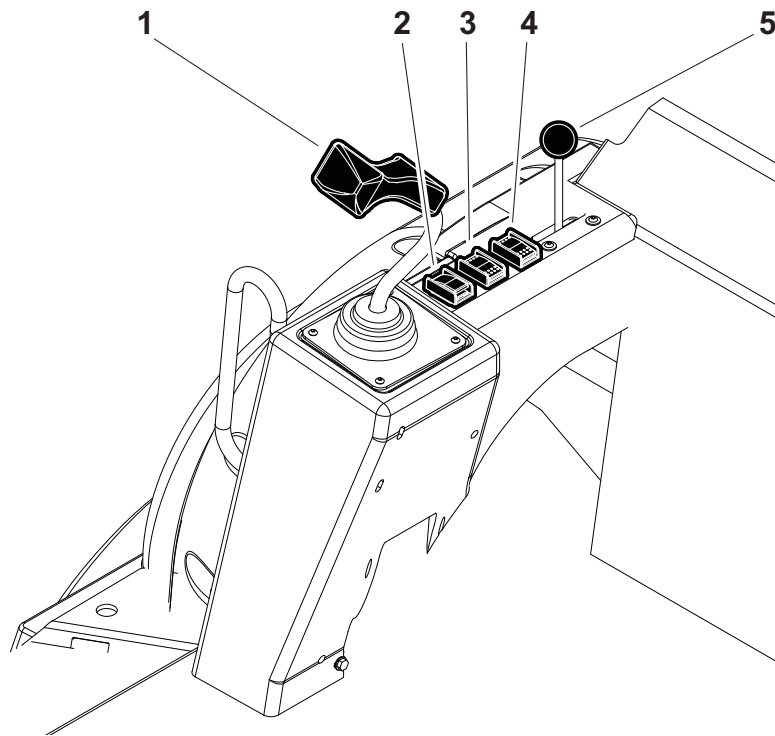
Item	Description	Notes
Attachment Neutral  c00ic021w.eps	Indicates attachment controls in neutral position.	

Item	Description	Notes
Operator Presence  c00ic001w.eps	Indicates operator presence for start interlock status.	
Ground Drive Neutral  c00ic022w.eps	Indicates ground drive controls in neutral position.	
Main Menu  c00ic019w.eps	Press soft key below this icon to return to previous screen.	Press center soft key to display gauge screen.
Gauge Display  c00ic017w.eps	Press the soft key below this on screen icon to select.	



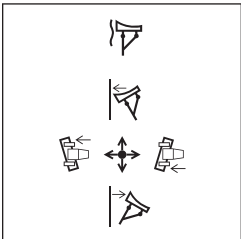
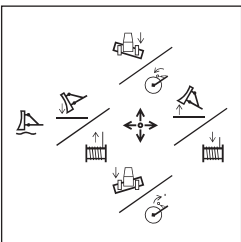
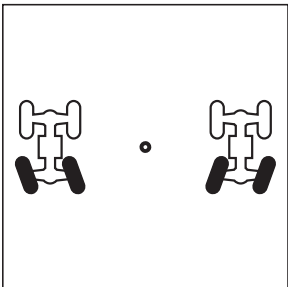
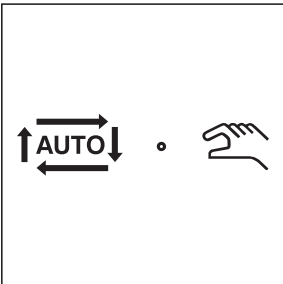
Item	Description	Notes
Engine stop  c00ic649w.eps	Press to stop engine from backhoe operator's station.	Switch must be raised (reset) to allow engine starting.

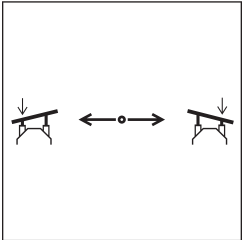
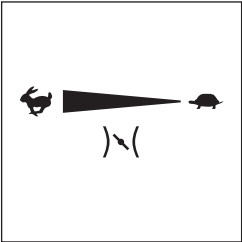
Right Console



t37om005w.eps

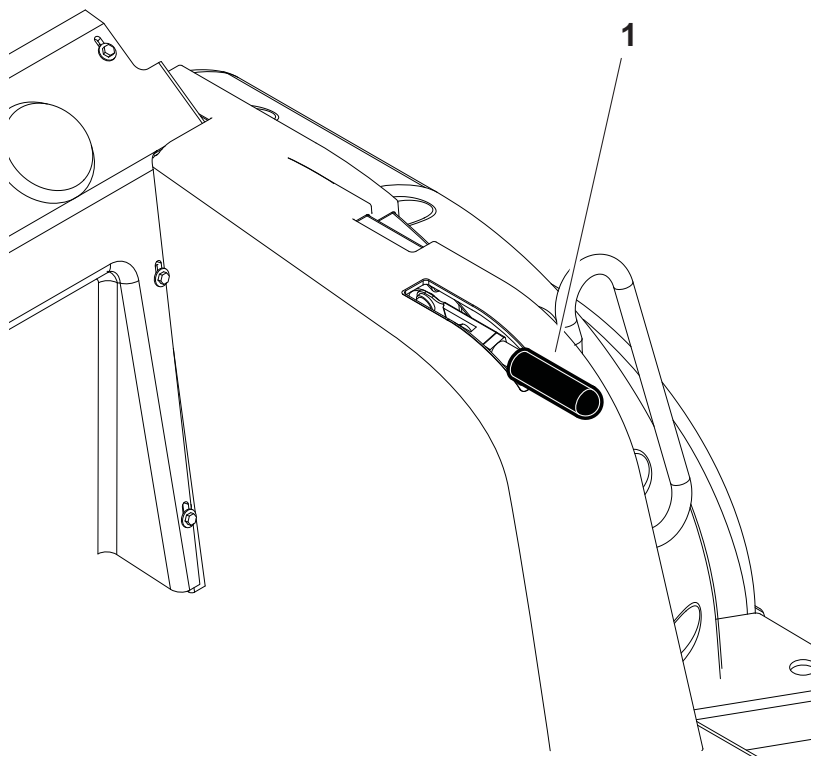
- | | |
|--|-----------------------|
| 1. Backfill blade lift/tilt or reel winder control | 4. Frame tilt control |
| 2. Rear steer control* | 5. Throttle |
| 3. Rear steer manual/auto control* | |
- *option

Item	Description	Notes
1. Backfill blade lift/tilt function control  c00ic625w.eps	Backfill blade mode: - To lower, move forward. - To float, move forward to end. - To raise, move backward. - To tilt right side down, move right. - To tilt left side down, move left.	Reel winder mode selector switch on center console changes function to control reel winder arm lift and winder direction.
Reel winder function control  c00ic207h.eps	Reel winder mode: - To unwind, move forward. - To wind, move backward. - To lower reel winder arm, move right. - To raise reel winder arm, move left.	
2. Rear steer switch  c00ic566h.eps	To move rear tracks left, press left. To move rear tracks right, press right.	NOTICE: - Tracks move when you press the switch. To stop movement, release switch. - Visually verify track position
3. Rear steer manual/auto switch  c00ic565h.eps	To center tracks, press right. To manually steer rear tracks, press left.	Use manual mode and the manual rear steer switch to bypass auto mode.

Item	Description	Notes
4. Frame tilt control  c00ic626w.eps	To tilt left, press left. To tilt right, press right.	
5. Throttle  c00ic584h.eps	To increase speed, move forward. To decrease speed, move rearward.	



Left Console

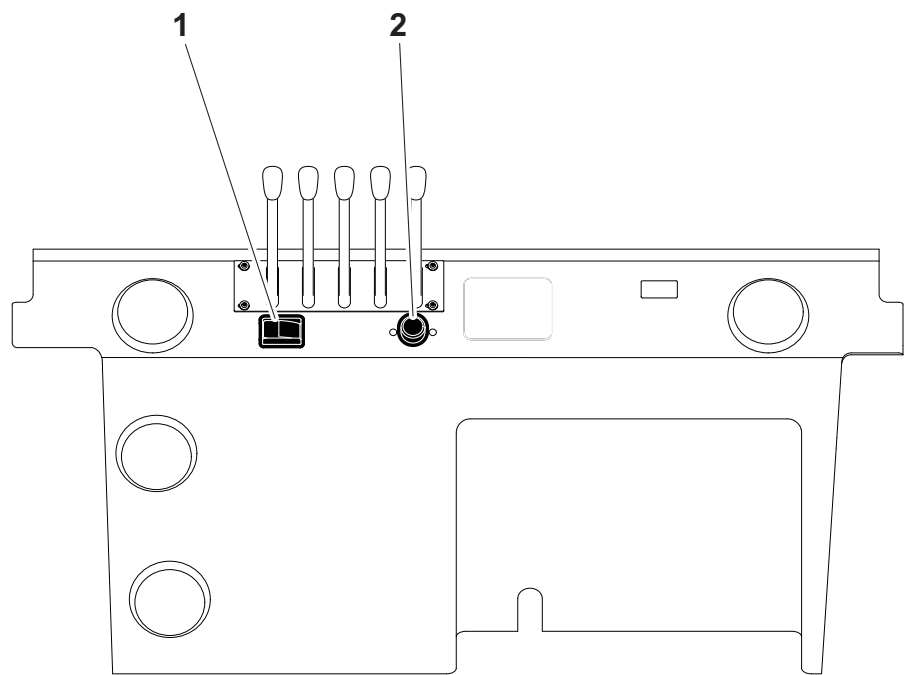


t37om006w.eps

1. Parking brake control

1. Parking brake control	To set brake, pull handle up. To release brake, push handle down.	Engaged parking brake disables ground drive.
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Rear Console

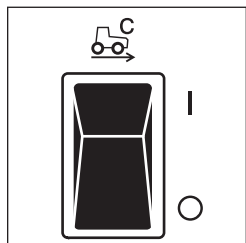


t37om007w.eps

1. Cruise control selector switch

2. Cruise control rpm dial control

1. Cruise control selector



c00ic630w.eps

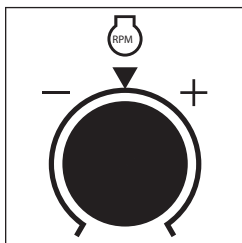
To turn on, press top. Switch indicator and display should indicate that cruise mode is activated.

To turn off, press top again. Switch indicator and display should indicate that cruise mode is deactivated.

Turn on cruise control only when:

- ground drive motor control is in low
- ground drive is in neutral

Hand and foot controls must be in neutral or cruise control switch input will be ignored.

2. Cruise control rpm dial control

c00ic629w.eps

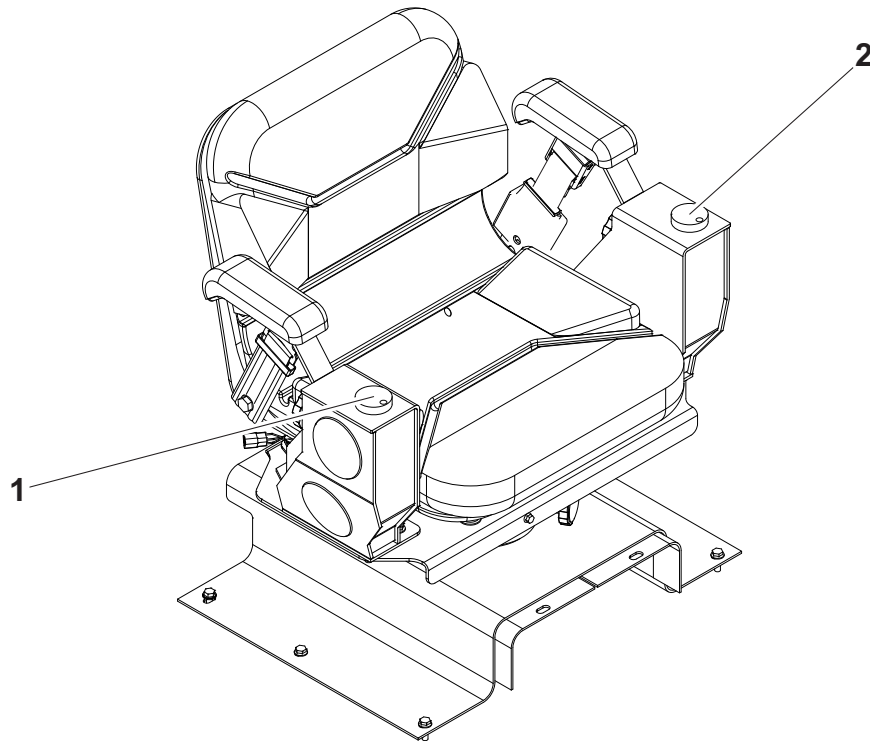
To decrease engine load while using cruise control, turn clockwise.

To increase engine load while using cruise control, turn counterclockwise.

This typically decreases engine load temporarily.

This typically increases engine load temporarily.

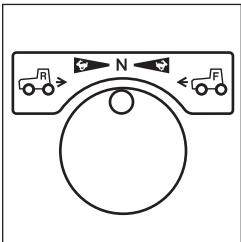
Seat Console

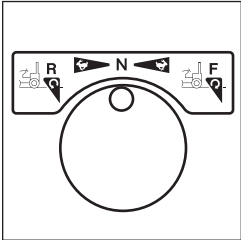


t33om002w.eps

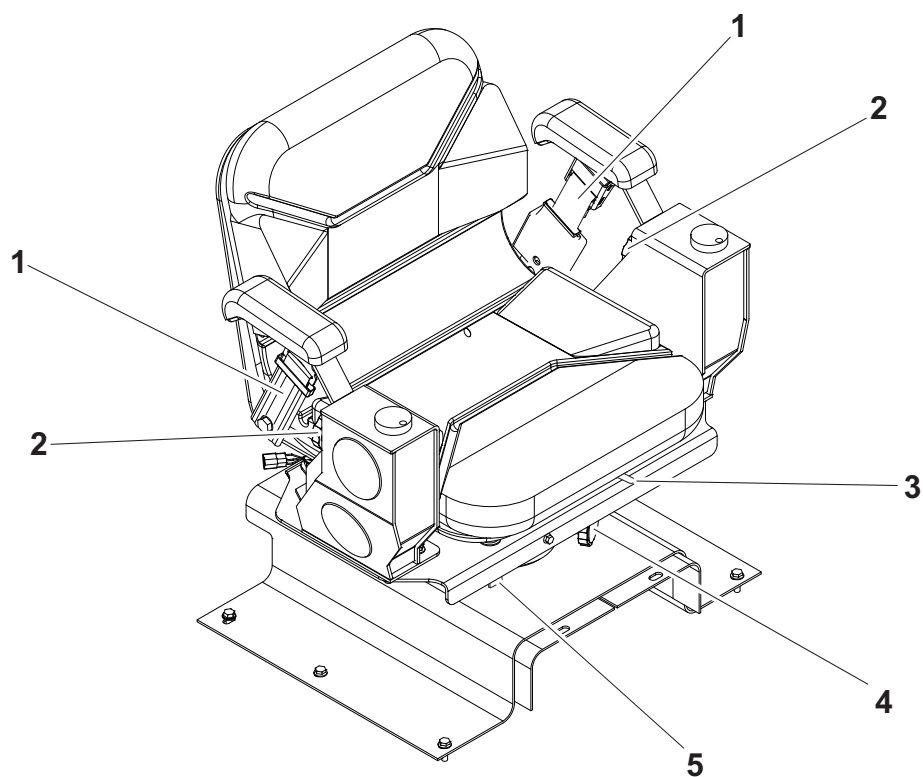
1. Ground drive speed control

2. Attachment speed/direction control

Item	Description	Notes
1. Ground drive speed control  c00ic631w.eps	To go faster in either direction, move farther from neutral. To stop, return to center.	NOTICE: Control does not automatically return to neutral. IMPORTANT: This control is disabled in high gear.

Item	Description	Notes
2. Attachment speed/ direction control  c00ic632w.eps	To go faster in either direction, move farther from neutral. To stop, return to center.	NOTICE: Control does not automatically return to neutral.

Seat Deck



t33om003w.eps

1. Seat belt

2. Armrest adjustment control

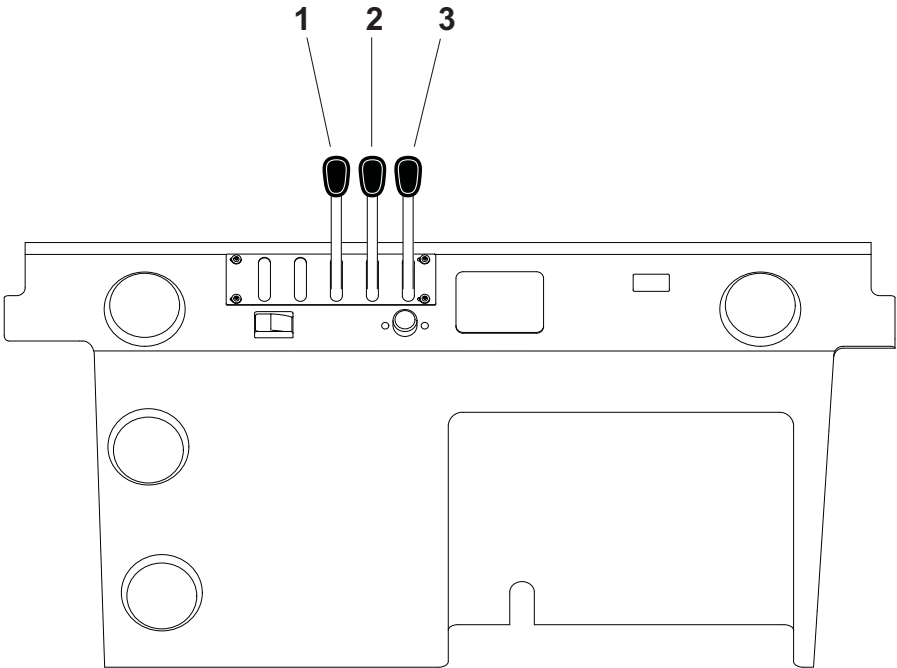
3. Seat slide control
4. Seat height adjustment lock

5. Seat pivot control

Item	Description	Notes
1. Seat belt	To fasten, insert latch into buckle. Adjust until seat belt is low and tight. To release, lift top of buckle.	
2. Armrest adjustment control	To raise or lower armrests: • Remove knob. • Adjust armrest to desired position. • Replace knob.	

Item	Description	Notes
3. Seat slide control	To slide seat forward or backward, pull, then adjust seat.	
	To lock seat in place, release.	
4. Seat height adjustment lock	To lock seat height, turn clockwise.	
	To unlock seat height, turn counterclockwise.	
5. Seat pivot control	To pivot seat to the right, pull. To lock seat in position, release. To return seat to front-facing position, swing seat left.	Seat pivots only to the right and can be locked in any position from 0-90°. IMPORTANT: Drive tractor with operator's seat facing front. If desired, operate rear attachments with seat pivoted.

Trencher Controls



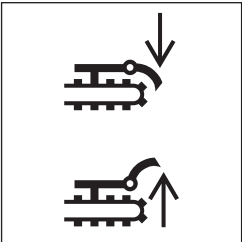
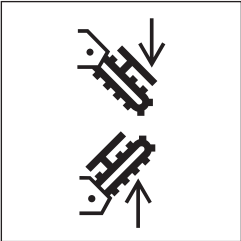
t37om008w.eps

1. Trencher slide control*

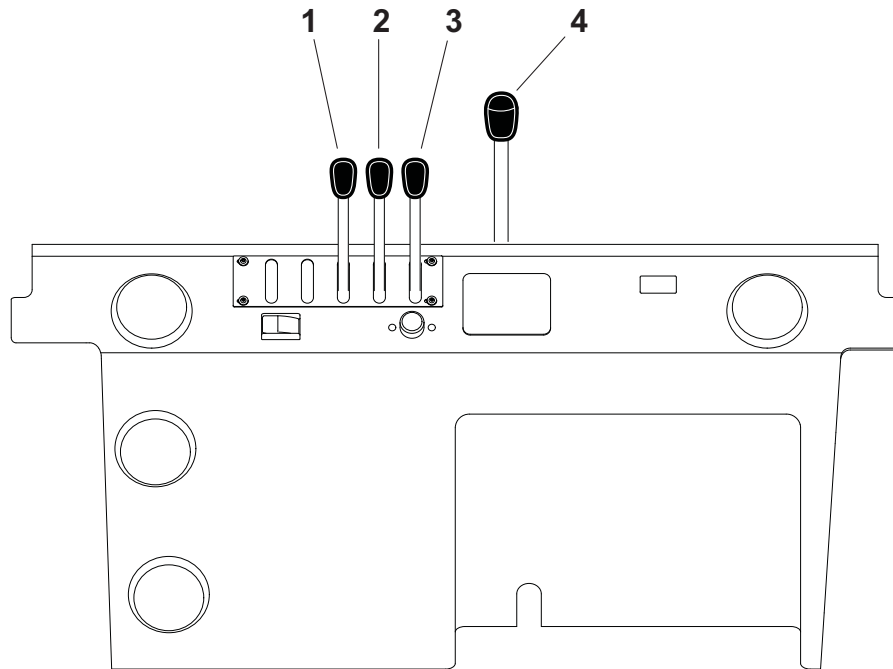
2. Trench cleaner lift control*
3. Boom lift control

*optional

Item	Description	Notes
1. Trencher slide control (H911 only) c00ic198h.eps	To slide trencher right, push. To slide trencher left, pull.	

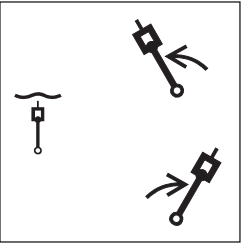
Item	Description	Notes
2. Trench cleaner lift control  The diagram shows two states of a trench cleaner lift control. The top state shows a downward arrow indicating the cleaner is lowered. The bottom state shows an upward arrow indicating the cleaner is raised. c00ic199h.eps	To lower, push. To raise, pull.	
3. Boom lift control  The diagram shows two states of a boom lift control. The top state shows a downward arrow indicating the boom is lowered. The bottom state shows an upward arrow indicating the boom is raised. c00ic200h.eps	To lower, push. To raise, pull.	

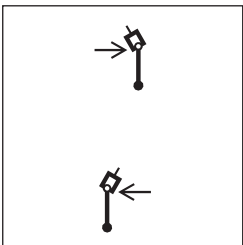
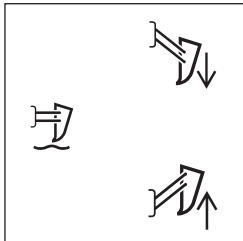
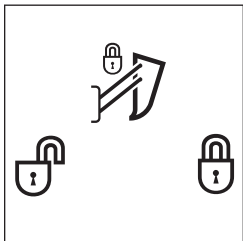
Plow Controls



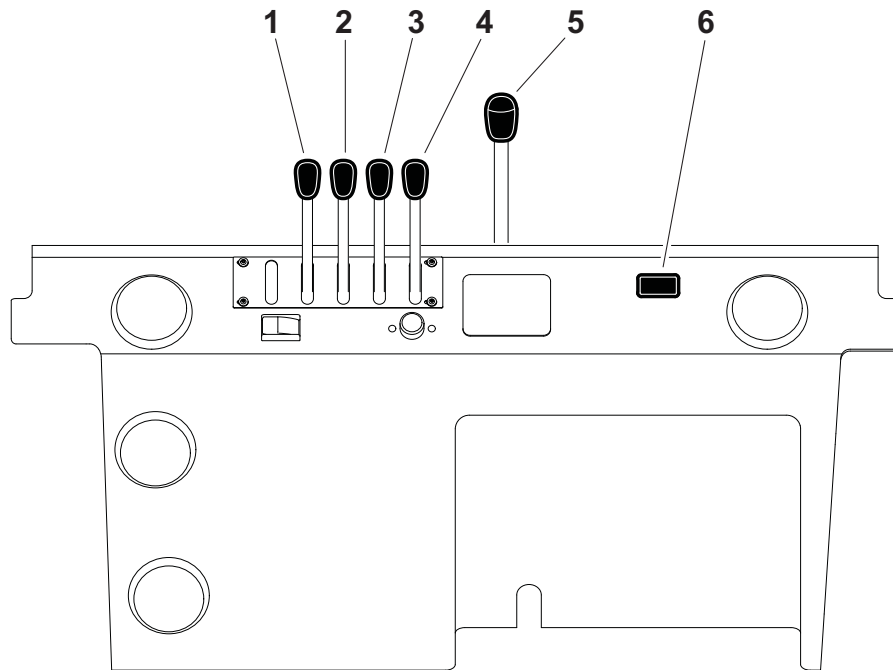
t37om009w.eps

- | | |
|------------------------|----------------------|
| 1. Plow swing control | 3. Plow lift control |
| 2. Blade steer control | 4. Stow lock control |

Item	Description	Notes
1. Plow swing control  c00ic202h.eps	To swing left, pull. To swing right, push. To float, push to end.	NOTICE: • If soil conditions allow, operate in float position. • Lower plow into ground before moving control to float position. • Do not raise plow with control in float position.

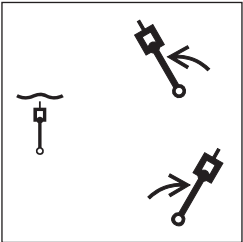
Item	Description	Notes
2. Blade steer control  c00ic203h.eps	To steer right, push. To steer left, pull.	
3. Plow lift control  c00ic204h.eps	To raise, pull. To lower, push. To float, push to end.	NOTICE: • If soil conditions allow, operate in float position. • Lower plow into ground before moving control to float position.
4. Stow lock control  c00ic643w.eps	To lock: • Raise plow fully. • Pull stow lock handle. • Lower plow slightly to engage lock. To unlock: • Raise plow slightly. • Push stow lock handle to release lock.	Use this control to lock plow in the up position.

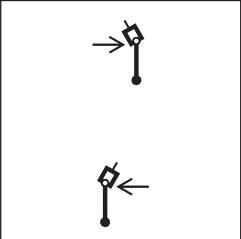
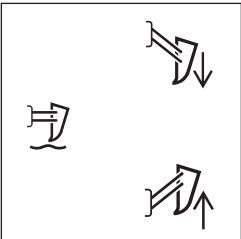
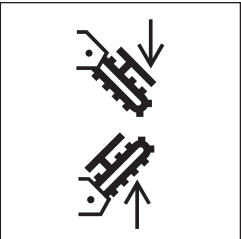
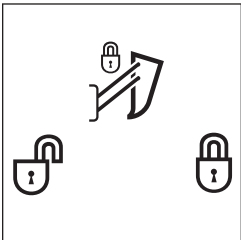
Combo Controls



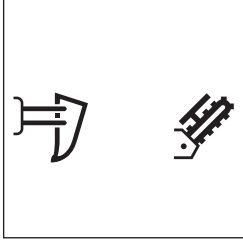
t37om010w.eps

- | | |
|------------------------|---------------------------|
| 1. Plow swing control | 4. Boom lift control |
| 2. Blade steer control | 5. Plow stow lock control |
| 3. Plow lift control | 6. Trench / Plow switch |

Item	Description	Notes
1. Plow swing control  c00ic202h.eps	To swing left, pull. To swing right, push. To float, push to end.	NOTICE: • If soil conditions allow, operate in float position. • Lower plow into ground before moving control to float position. • Do not raise plow with control in float position.

2. Blade steer control  c00ic203h.eps	To steer right, push. To steer left, pull.	
3. Plow lift control  c00ic204h.eps	To raise, pull. To lower, push. To float, push to end.	NOTICE: • If soil conditions allow, operate in float position. • Lower plow into ground before moving control to float position.
4. Boom lift control  c00ic200h.eps	To lower, push. To raise, pull.	
5. Plow stow lock control  c00ic643w.eps	To lock: • Raise plow fully. • Pull stow lock handle. • Lower plow slightly to engage lock. To unlock: • Raise plow slightly. • Push stow lock handle to release lock.	Use this control to lock plow in the up position.

6. Trench / Plow switch



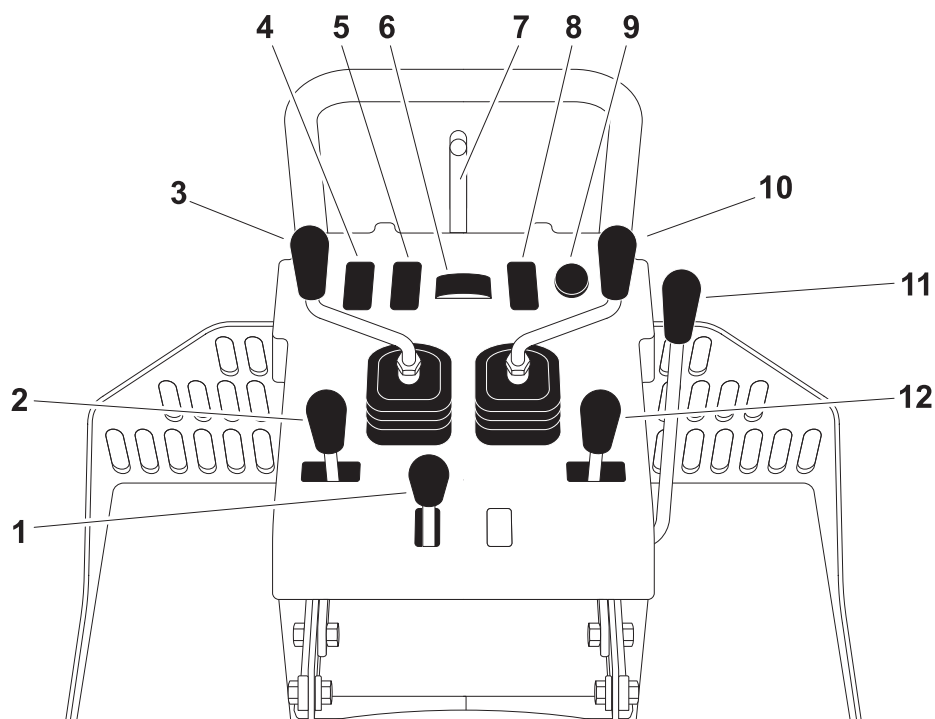
c00ic595h.eps

To trench, set switch to trench position.

To plow, set switch to plow position.



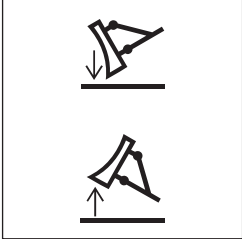
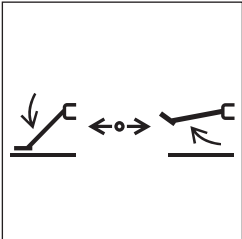
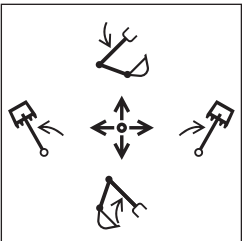
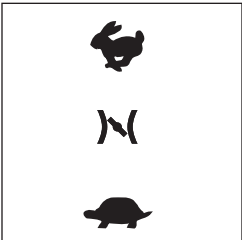
Backhoe Console



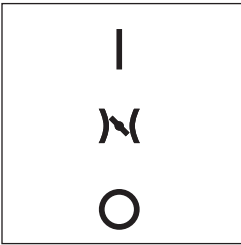
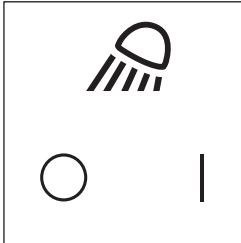
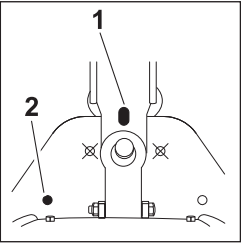
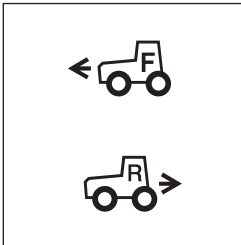
t37om046w.eps

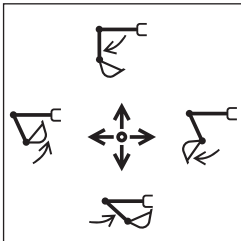
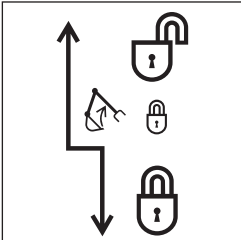
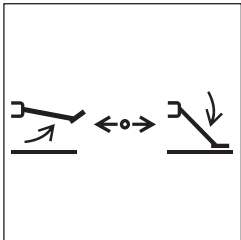
- | | |
|-----------------------------------|------------------------------|
| 1. Remote backfill blade control* | 7. Swing lock pin |
| 2. Left stabilizer control | 8. Ground drive switch |
| 3. Boom/Swing control | 9. Remote engine stop switch |
| 4. Remote throttle control switch | 10. Bucket/Dipper control |
| 5. Remote throttle enable switch | 11. Stow lock control |
| 6. Work light switch* | 12. Right stabilizer control |

*optional

Item	Description	Notes
1. Remote backfill blade control  c00ic210h.eps	To lower, push. To raise, pull.	
2. Left stabilizer control  c00ic211h.eps	To lower, push out. To raise, pull in.	
3. Boom/Swing control  c00ic212h.eps	To swing boom left, move left. To swing boom right, move right. To raise boom, pull. To lower boom, push.	Control can perform more than one action at a time. By "feathering" the control, operator can combine backhoe operations. NOTICE: Do not operate with backhoe in the stowed (upright) position.
4. Remote throttle  c00ic029w.eps	To increase engine speed, press top. To decrease engine speed, press bottom.	

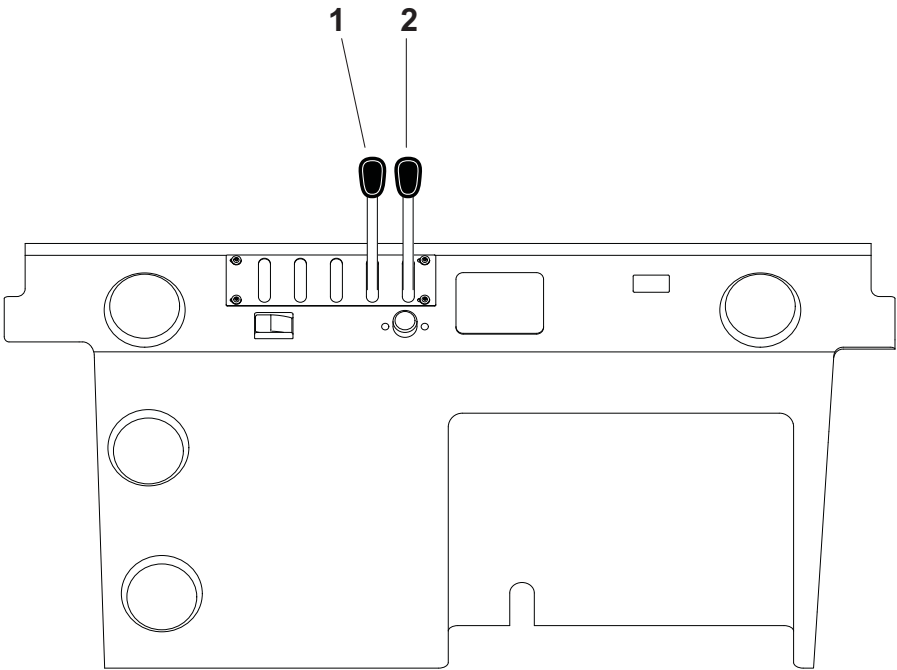


Item	Description	Notes
5. Remote throttle enable  c00ic030w.eps	To enable remote throttle control, press top. To disable remote throttle control, press bottom.	Note: This switch must be returned to the OFF position for normal throttle control at tractor.
6. Work light switch  c00ic086c.eps	To turn on, press right. To turn off, press left.	
7. Swing lock pin  c00ic234h.eps	To lock: - Engage stow lock. - Insert swing lock pin into hole (1). To release: - Remove pin and store in hole (2). - Release stow lock.	This pin locks boom from swinging during transport. NOTICE: Do not store pin in holes marked with an "X." Backhoe could swing and destroy pin.
8. Remote ground drive control  c00ic216h.eps	To move tractor forward, push. To move tractor backward, pull.	NOTICE: - This control is disabled if tractor seat is occupied. - Tractor must be in low speed for remote ground drive to function. - Ensure that backfill blade, if equipped, and stabilizers are raised before operating this control. - Do not move more than 30' (10 m) at a time.

Item	Description	Notes
9. Remote engine stop switch  c00ic085c.eps	Press to stop engine immediately.	For normal engine shutdown, use ignition switch. Note: This switch must be returned to the UP position to allow engine restarting.
10. Bucket/Dipper control  c00ic213h.eps	To open bucket, move right. To close bucket, move left. To move dipper in, pull. To move dipper out, push.	Control can perform more than one action at a time. By "feathering" the control, operator can combine backhoe operations.
11. Stow lock control  c00ic215h.eps	To lock: • Raise boom fully. • Pull stow lock handle. • Lower boom slightly to engage lock. • Insert swing lock pin. To unlock: • Remove swing lock pin. • Raise boom slightly. • Push stow lock handle to release lock.	Use this control to lock boom in the up position. NOTICE: Always use stow lock and install swing lock pin during transport. When unlocked, store swing lock pin in holder located on left stabilizer support.
12. Right stabilizer control  c00ic088c.eps	To lower, push out. To raise, pull in.	

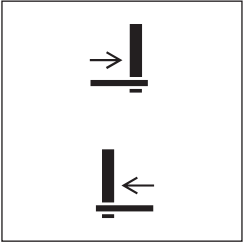


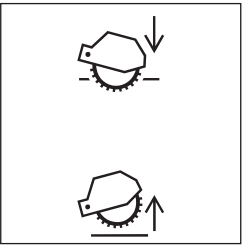
Saw Controls



t37om045w.eps

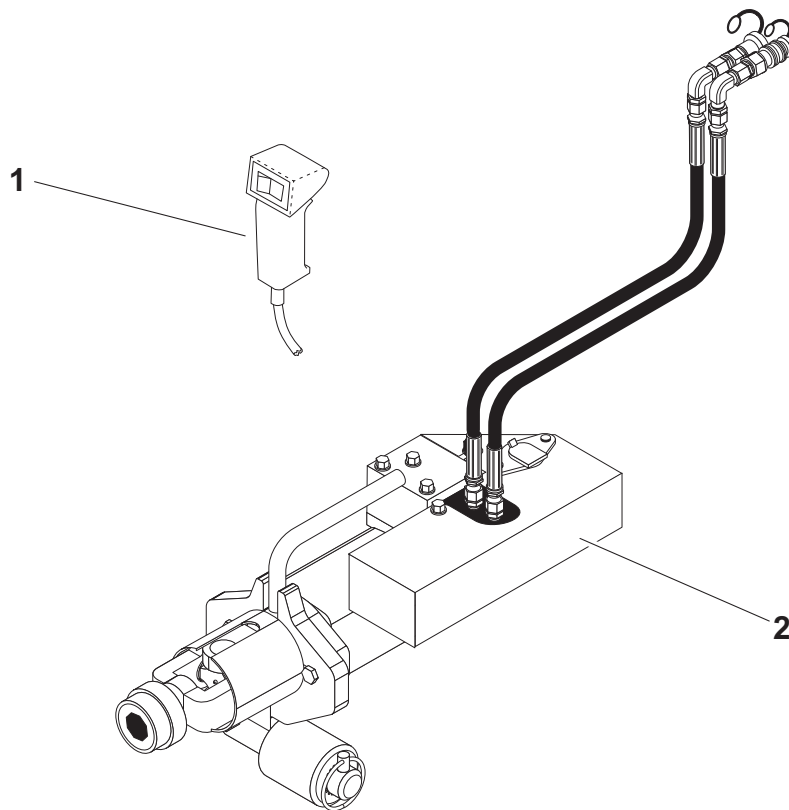
1. Saw slide control
2. Saw lift control

Item	Description	Notes
1. Saw slide control  c00ic318h.eps	To slide saw right, push. To slide saw to center, pull.	

Item	Description	Notes
2. Saw lift control  c00ic209h.eps	To lower, push. To raise, pull.	



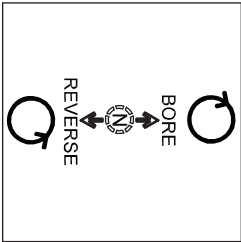
Drill Controls



t33om063w.eps

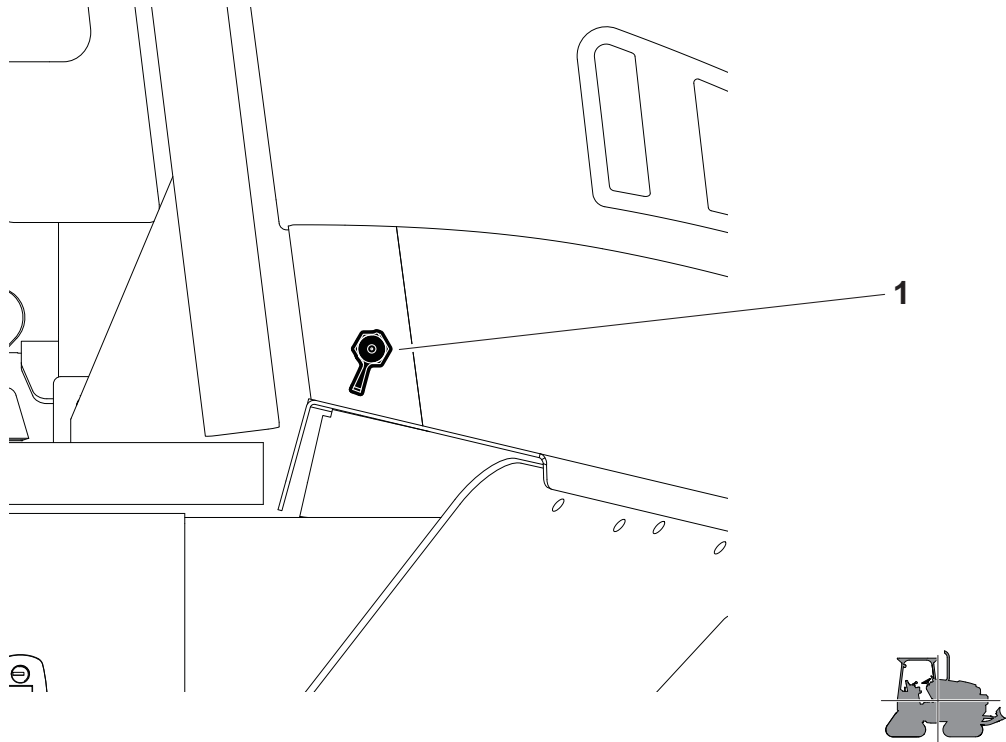
1. Drilling attachment control

2. Drilling attachment

Item	Description	Notes
1. Drilling attachment control 	To rotate clockwise, press bore. To rotate counterclockwise, press reverse.	IMPORTANT: Always rotate clockwise during drilling and backreaming. Rotate counterclockwise only to dislodge a dry bore bit or reamer that has seized in the bore hole. Switch should return to neutral position when released.

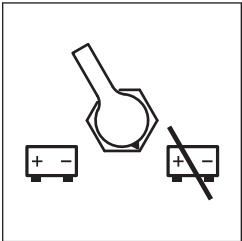
c00ic655w.eps

Battery Disconnect



t37om011w.eps

- 1. Battery disconnect switch

Item	Description	Notes
1. Battery disconnect switch  c00ic654w.eps	To connect, move left. To disconnect, move right.	NOTICE: Do not operate battery switch with engine running.

Operation Overview

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Planning..... 66

Trenching..... 66

Plowing 66

Drilling 66

Digging with Backhoe 67

Sawing 67

Leaving Jobsite..... 67



Planning

1. Gather information about jobsite. See page 70.
2. Inspect jobsite. See page 71.
3. Classify jobsite. See page 72.
4. Select chain and teeth to match your soil type, if necessary. See page 140
5. Check supplies and prepare equipment. See page 74.
6. Haul equipment to jobsite. See page 88.

Trenching

1. Start unit. See page 76.
2. Position tractor and controls. See page 94.
3. Begin trenching. See page 96.
4. Engage cruise control if desired. See page 138.
5. Complete the installation. See page 99.
6. Shut down tractor. See page 80.

Plowing

1. Start unit. See page 76.
2. Position tractor and controls. See page 102.
 - offset plowing - page 109
 - coordinated plowing - page 109
 - crabbing - page 109
3. Attach product. See page 103.
4. Begin plowing. See page 105.
5. Engage cruise control if desired. See page 138.
6. Complete the installation. See page 108.
7. Shut down tractor. See page 80.

Drilling

1. Start unit. See page 76.
2. Dig approach trench and target trench. See page 123.
3. Assemble drill string and position tractor. See page 124.

4. Begin drilling. See page 125.
5. Use drill string guide as needed. See page 126.
6. Add rod. See page 127.
7. Backream. See page 127.
8. Shut down tractor. See page 80.
9. Disassemble joints. See page 128.

Digging with Backhoe

1. Start unit. See page 76.
2. Set stabilizers and unstow backhoe. See page 116.
3. Excavate. See page 117.
4. Stow backhoe properly. See page 118.
5. Shut down tractor. See page 80.



Sawing

1. Start unit. See page 76.
2. Position tractor and controls. See page 130.
3. Begin sawing. See page 132.
4. Complete the installation. See page 134.
5. Backfill the trench. See page 144.
6. Shut down tractor. See page 80.

Leaving Jobsite

1. Backfill if necessary. See page 144.
2. Rinse equipment. See page 144.
3. Stow tools. See page 144.
4. Haul equipment from jobsite. See page 88.

Prepare

Chapter Contents

Gather Information 70

- Review Job Plan 70
- Notify One-Call Services 70
- Arrange for Traffic Control. 70
- Plan for Emergency Services 70

Inspect Site 71

- Identify Hazards 71

Classify Jobsite. 72

- Inspect Jobsite 72
- Select a Classification. 72
- Apply Precautions 73

Check Supplies and Prepare Equipment 74

- Supplies 74
- Fluid Levels. 74
- Condition and Function 74
- Accessories. 74



Gather Information

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

Review Job Plan

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

Notify One-Call Services

Contact your local One-Call (811 in USA) or the One-Call referral number (888-258-0808 in USA and Canada) to have underground utilities located before digging. Also contact any utilities that do not participate in the One-Call service.

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

Inspect jobsite before transporting equipment. Check for the following:

- changes in elevation such as hills or other open trenches
- obstacles such as buildings, railroad crossings, or streams
- signs of utilities
- traffic
- access
- soil type and condition

Identify Hazards

Identify safety hazards and classify jobsite. See "Classify Jobsite" on page 72.



⚠ 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 drilling.
- Verify location of previously marked underground hazards.
- Mark jobsite clearly and keep spectators away.

Remember, jobsite is classified by hazards in place -- not by line being installed.

Classify Jobsite

Inspect Jobsite

- Follow U.S. Department of Labor regulations on excavating and trenching (Part 1926, Subpart P) and other similar regulations.
- Contact your local One-Call (811 in USA) or the One-Call referral number (888-258-0808 in USA and Canada) to have underground utilities located before digging. Also contact any utilities that do not participate in the One-Call service.
- Inspect jobsite and perimeter for evidence of underground hazards, such as:
 - “buried utility” notices
 - utility facilities without overhead lines
 - gas or water meters
 - junction boxes
 - drop boxes
 - light poles
 - manhole covers
 - sunken ground
- Have an experienced locating equipment operator sweep area within 20' (6 m) to each side of trench path. Verify previously marked line and cable locations.
- Mark location of all buried utilities and obstructions.
- Classify jobsite.

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 sand, granite, or concrete 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.

Electric Jobsite Precautions

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

In addition to positioning equipment upwind from gas lines, 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

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.

Check Supplies and Prepare Equipment

Supplies

- fuel
- keys
- personal protective equipment, such as hard hat and safety glasses

Fluid Levels

- fuel
- hydraulic fluid
- battery charge
- engine oil

Condition and Function

- digging chain and teeth
- brake pads and disc
- fan belts
- light bulbs
- filters (air, oil, hydraulic)
- tracks
- pumps and motors
- hoses and valves
- signs, guards, and shields

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.

Drive

Chapter Contents

Start Unit 76

Drive 78

Safe Slope Operation 79

Shut Down 80



Start Unit

Before operating tractor, read engine manufacturer's starting and operating instructions. Follow instructions for new engine break-in.



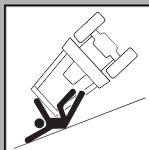
WARNING Incorrect procedures could result in death, injury, or property damage. Learn to use equipment correctly.

To help avoid injury:

- Read operator's manual before operating equipment. Follow instructions carefully. Contact Ditch Witch dealership for operation information or demonstration.
- Wear hard hat, safety glasses, and other protective equipment required by job. Do not wear jewelry or loose clothing that can catch on controls.



WARNING Runaway possible. Machine could run over you or others. Learn how to use all controls. Start and operate only from operator's position.



WARNING Rollover possible. If machine rolls over, you could be thrown from seat and killed or crushed. Wear seat belt.

1. Fasten and adjust seat belt.
2. Check that ground drive control and attachment speed/direction control are in neutral.
3. Move throttle to idle.
4. Verify that parking brake is engaged.
5. Turn ignition switch to the run position (key on, engine off). Cold start wait indicator will light (if equipped).

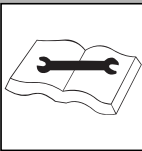


⚠ WARNING

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

To help avoid injury: Do not use ether or any other type of aerosol starting fluid when unit is equipped with cold start option.

6. When cold start wait indicator goes off, turn ignition switch all the way clockwise to start tractor. Warning alarm will sound. Indicators will light.
 - If engine does not crank, check start interlock display.
 - If engine turns but does not start within 10 seconds, allow starter to cool before trying to start again.



⚠ WARNING

Improper control function could cause death or serious injury.

To help avoid injury: Stop machine and have it serviced if control does not work as described in instructions.

IMPORTANT: Machine will not start if start interlock requirements are not met. See page 26 for start interlock information.

7. Run engine at half-throttle or less for five minutes before operating tractor. During warmup, check that all controls work properly.



Drive

General Operation

**WARNING**

Moving traffic – hazardous situation. Death or serious injury could result. Avoid moving vehicles, wear high visibility clothing, post appropriate warning signs.

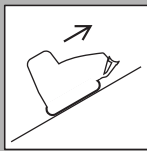
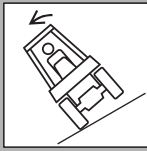
To help avoid injury:

- Drive carefully in congested areas. Know machine's clearance and turning radius.
- Keep attachments low when operating on slope. Drive slowly and cautiously.

EMERGENCY SHUTDOWN: Turn ignition switch to STOP.

1. Turn on lights as needed.
2. Raise backfill blade and all attachments.
3. Release parking brake.
4. Adjust throttle.
5. When operating in low or medium:
 - if using the hand control, the foot control will only increase speed.
 - any opposing signal from controls causes ground drive to stop.
6. When operating in high, ground drive stops if hand control is moved out of neutral position.

Safe Slope Operation



WARNING Tipover possible. Machine can tip over and crush you.

To help avoid injury:

- Always operate with heavy end uphill.
- Drive cautiously at all times.
- Never jerk control levers. Use a steady even motion.
- Do not park unit on slope without lowering digging attachment to the ground, returning all controls to neutral position, shutting down unit, and applying parking brake.

Operating safely on a slope depends upon many factors including:

- Distribution of machine weight, including front loading and absence of load
- Height of load
- Even or rough ground conditions
- Potential for ground giving way causing unplanned tilt forward, reverse or sideways
- Nearness of ditches, ruts, stumps or other obstructions and sudden changes in slope
- Speed
- Turning
- Braking performance
- Operator skill



These varying factors make it impractical to specify a maximum safe operating angle in this manual. It is therefore important for the operator to be aware of these conditions and adjust operation accordingly. Maximum engine angle and braking performance are two absolute limits which must never be exceeded. These maximums are stated below since they are design limits. These design limits usually exceed the operating limits and must never be used alone to establish safe operating angle for variable conditions.

Maximum engine lubrication angle – 30°

Maximum service brake retarding force – equal to traction of both tracks.

Maximum secondary brake retarding force – equal to traction of one track.

Maximum park brake holding force – equal to traction of both tracks.

Shut Down

1. When job is complete, move ground drive control to neutral.
2. Engage parking brake and verify parking brake indicator is on.
3. Lower all attachments to ground and let machine idle for three minutes to cool.
4. Turn ignition switch to STOP. If leaving machine unattended, remove key.
5. For maintenance or long-term storage, turn battery disconnect switch to disconnect position.

Transport

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- Points 82
- Procedure 82

Tie Down 85

- Points 85
- Procedure 85

Haul 88

- Procedure 88

Tow 91

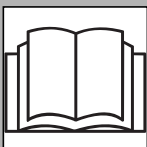
- Procedure 91



Lift



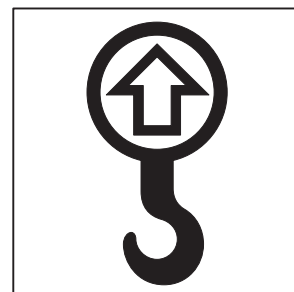
WARNING Crushing weight. If load falls or moves it could kill or crush you. Use proper procedures and equipment or stay away.



WARNING Incorrect procedures could result in death, injury, or property damage. Learn to use equipment correctly.

Points

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



ic1319a.eps

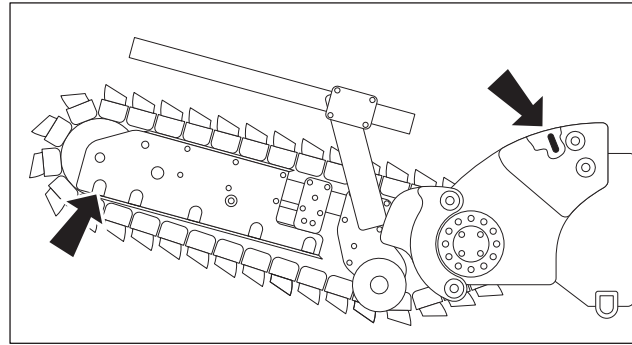
Procedure

Tractor

This machine is not configured for lifting. If the machine must be lifted, load machine into a container or onto a platform appropriate for lifting. See "Specifications" on page 187 for size and weight of machine.

Centerline Trencher

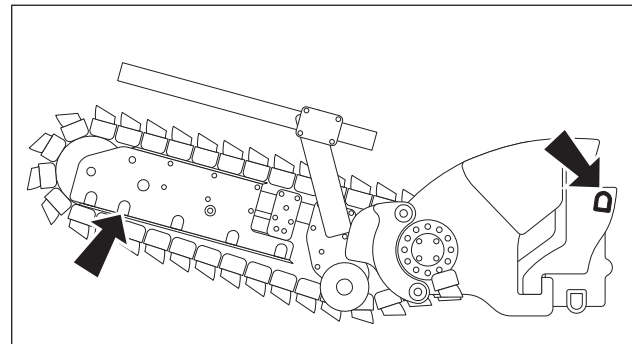
Use crane capable of supporting the equipment's size and weight. See "Specifications" on page 187 or measure and weigh equipment before lifting.



t30om012h.eps

Traversing Trencher

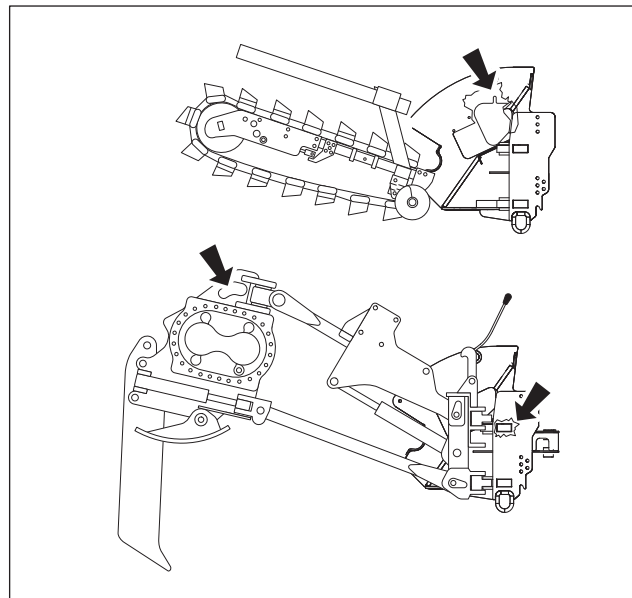
Use crane capable of supporting the equipment's size and weight. See "Specifications" on page 187 or measure and weigh equipment before lifting.



t30om013h.eps

Combo

Use crane capable of supporting the equipment's size and weight. See "Specifications" on page 187 or measure and weigh equipment before lifting.

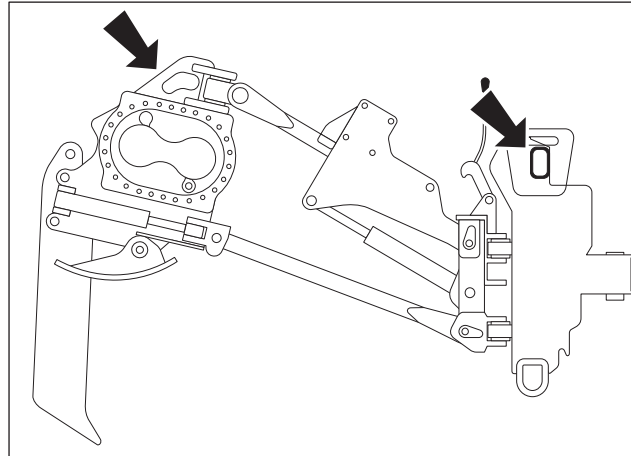


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Plow

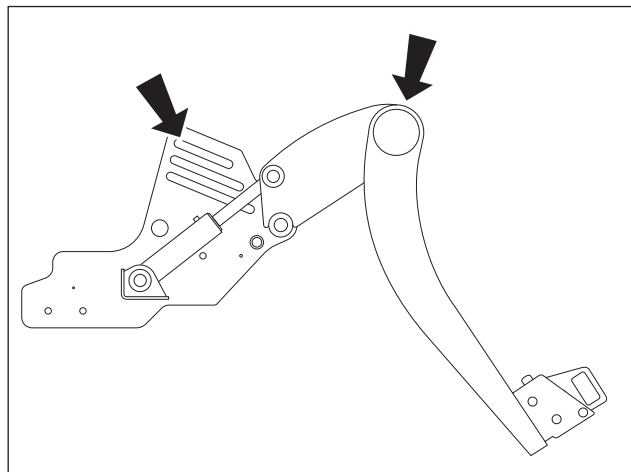
Use crane capable of supporting the equipment's size and weight. See "Specifications" on page 187 or measure and weigh equipment before lifting.



t30om014h.eps

Reel Carrier

Use crane capable of supporting the equipment's size and weight. See page 187 or measure and weigh equipment before lifting.



t30om021h.eps

Tie Down

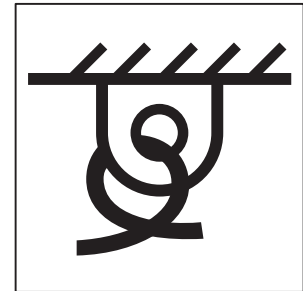


⚠ WARNING Incorrect procedures could result in death, injury, or property damage. Learn to use equipment correctly.

Points

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

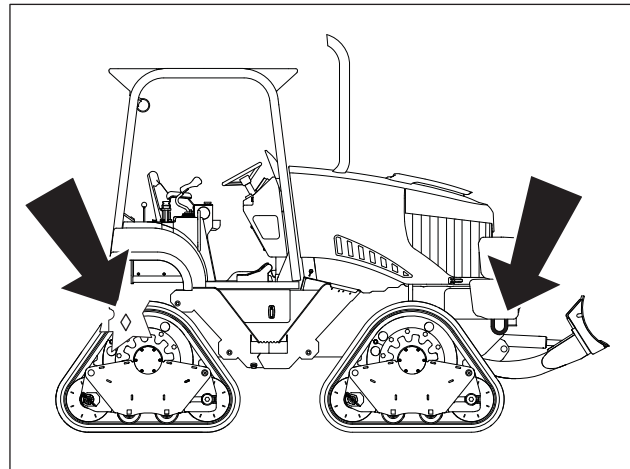
Procedure



ic1320a.eps

Tractor

Attach chains at front and rear tiedown points. Make sure chains are tight before transporting unit.

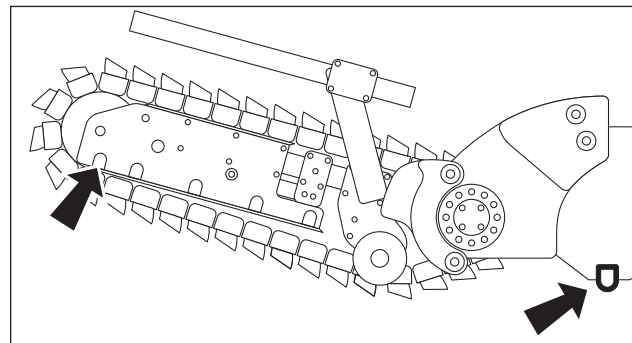


t37om012w.eps

Centerline Trencher

Lower trencher to trailer deck and chain at attachment frame and through boom. Make sure chains are tight before transporting.

IMPORTANT: If trencher is equipped with a trench cleaner, ensure that trench cleaner shoe is fully up and extra bolt (found in operator's manual compartment) is installed in appropriate hole for additional support.

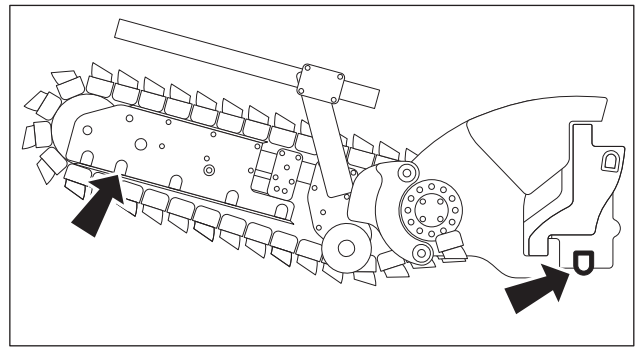


t30om016h.eps

Traversing Trencher

Lower trencher to trailer deck and chain at attachment frame and through boom. Make sure chains are tight before transporting.

IMPORTANT: If trencher is equipped with a trench cleaner, ensure that trench cleaner shoe is fully up and extra bolt (found in operator's manual compartment) is installed in appropriate hole for additional support.



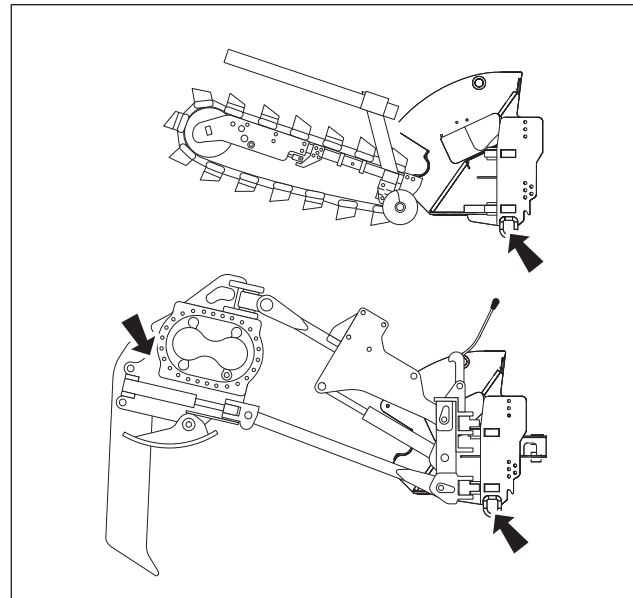
t30om017h.eps

Combo

Lower attachment to trailer deck and chain at attachment frame and vibrator box. Make sure chains are tight before transporting.

NOTICE:

- Engage attachment stow lock and swing lock devices in addition to securing at tiedowns.
- Unsecured plow can swing outside the trailer and become a traffic hazard. Lower plow and chain to trailer deck before hauling.
- If trencher is equipped with a trench cleaner, ensure that trench cleaner shoe is fully up and extra bolt (found in operator's manual compartment) is installed in appropriate hole for additional support.



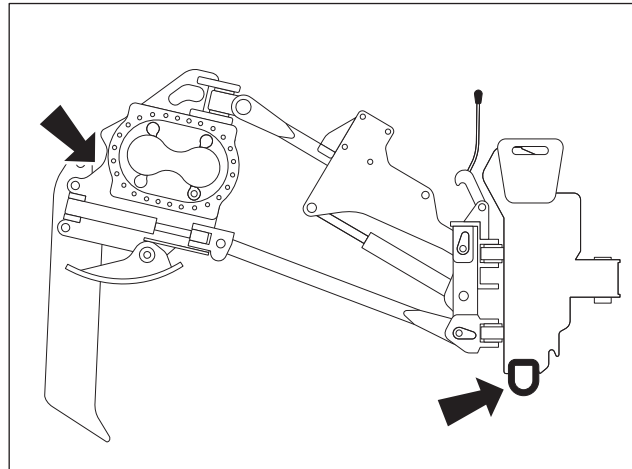
t30om104h.eps

Plow

Lower plow to trailer deck and chain at attachment frame and vibrator box. Make sure chains are tight before transporting.

NOTICE:

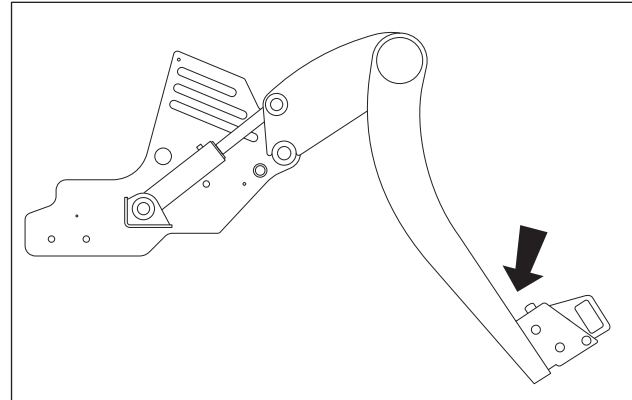
- Engage attachment stow lock and swing lock devices in addition to securing at tiedowns.
- Unsecured plow can swing outside the trailer and become a traffic hazard. Lower plow and chain to trailer deck before hauling.



t30om018h.eps

Reel Carrier

Lower reel carrier to lowest position and tie down at attachment arms. Make sure chains are tight before transporting.



t30om020h.eps



Haul



⚠ WARNING Incorrect procedures could result in death, injury, or property damage. Learn to use equipment correctly.

To help avoid injury:

- Read trailer operator's manual before loading or transporting your machine. Incorrectly loaded machine can slip or cause trailer sway.
- Ensure that tow vehicle has proper tow capacity rating.
- Attach trailer to tow vehicle before loading or unloading.
- Park, load, and unload trailer on level ground.
- Check that unit and trailer do not exceed size or weight regulations.
- Load trailer correctly to avoid trailer sway. Ten to fifteen percent of total vehicle weight (equipment plus trailer) must be on tongue to help prevent trailer sway.
- Connect safety chains to tow vehicle. Attach left chain to right side of tow vehicle and vice versa to cradle hitch. Do not connect to pintle hook or hitch ball.
- Connect breakaway switch cable to tow vehicle. Do not connect to pintle hook or hitch ball.

Procedure

Inspect Trailer

1. Check hitch for wear and cracks. Lubricate if needed.
2. Check battery for 12V charge.
3. Inspect lights for cleanliness and correct operation. Inspect reflectors and replace if needed.
4. Check trailer tire pressure. Check lug nut torque with a torque wrench. Adjust if needed.
5. Ensure trailer brakes are adjusted to come on in synchronization with tow vehicle brakes.
6. Check ramps and trailer bed for cracks.

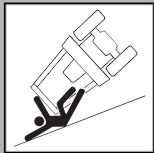
Load



WARNING Crushing weight. If load falls or moves it could kill or crush you. Use proper procedures and equipment or stay away.

To help avoid injury:

- Attach trailer to tow vehicle before loading or unloading.
- Load and unload trailer on level ground.
- Block trailer wheels.
- Put ground drive control into neutral. Turn off ignition. Set parking brake.



WARNING Rollover possible. If machine rolls over, you could be thrown from seat and killed or crushed. Wear seat belt.

1. Fasten and adjust seat belt.
2. Tilt steering column down.
3. Start tractor. See page 76 for proper start-up procedures.
4. Raise attachments, but keep them low and centered. Check that they are not in float.
5. Release parking brake and verify that parking brake indicator is off.
6. Move ground drive switch to low.
7. Slow engine to low throttle and slowly drive tractor onto trailer.
8. Position tractor on trailer deck for proper weight distribution.
9. Engage parking brake and verify that parking brake indicator is on.
10. Lower attachments to trailer bed and turn tractor off. See page 80 for proper shutdown procedures.
11. Attach chains to tractor and attachments where tiedown decals are located. See page 85.



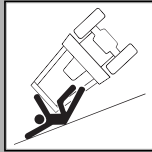
Unload



WARNING Crushing weight. If load falls or moves it could kill or crush you. Use proper procedures and equipment or stay away.

NOTICE:

- Attach trailer to tow vehicle before loading or unloading.
- Load and unload trailer on level ground.
- Block trailer wheels.



WARNING Rollover possible. If machine rolls over, you could be thrown from seat and killed or crushed. Wear seat belt.

1. Lower trailer or ramps.
2. Check that parking brake is engaged and verify that parking brake indicator is on.
3. Check that ground drive controls are in neutral.
4. Remove chains from tiedowns.
5. Fasten and adjust seat belt.
6. Tilt steering column down.
7. Start tractor. See page 76 for proper start-up procedures.
8. Raise attachments, but keep them low and centered. Check that they are not in float.
9. Release parking brake and verify that parking brake indicator is off.
10. Slow engine to low throttle and slowly back unit down trailer or ramps.

Tow



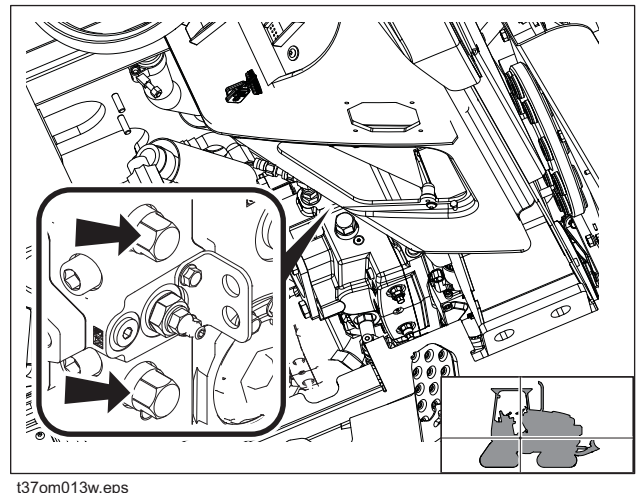
⚠ WARNING Incorrect procedures could result in death, injury, or property damage. Learn to use equipment correctly.

Under normal conditions, tractor should not be towed. If tractor becomes disabled and towing is necessary:

- Do not tow for more than 200 yd (180 m).
- Tow at less than 1 mph (1.6 km/h).
- Steering will be very difficult.

Procedure

1. Engage parking brake.
2. Block front and rear tracks to prevent unit from rolling.
3. Attach tow line to all available tie-down points facing towing vehicle.
4. Activate the tow valve (shown).
 - Remove floor plate.
 - Locate two hex-shaped relief valves.
 - Turn each valve (whole hex) counterclockwise three complete revolutions.



t37om013w.eps

NOTICE: Do not turn tow valve more than three revolutions.

- Replace floor plate.
5. Remove blocks.
 6. Fasten seat belt and adjust seat belt.
 7. Disengage parking brake.

Warning: While towing, unit will not have brakes.

8. After towing, turn tow valve clockwise three complete revolutions.



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Setup 94

Operation..... 96

Setup

EMERGENCY SHUTDOWN - Turn ignition switch to STOP.



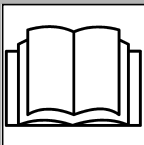
⚠ WARNING Crushing weight could cause death or serious injury. Use proper procedures and equipment or stay away.

To help avoid injury: Use attachments or counterweights to make front and rear loads balance when all attachments are raised. Contact your Ditch Witch dealer about counterweighting for your equipment.



⚠ 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: Comply with all utility notification regulations before digging or drilling.



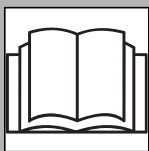
⚠ WARNING Incorrect procedures can result in death, injury, or property damage. Learn to use equipment correctly.

NOTICE: The RT120Q is programmed to operate with the original attachment (trencher or plow) configuration. If you change attachments, contact your Ditch Witch dealer to make sure the electronic programming is updated. If you change attachments without updating the electronic programming, your attachment may not function correctly.

1. If using optional trench cleaner, remove bolt installed for transport.
2. Fasten and adjust seat belt.
3. Start tractor. See page 76 for start-up procedures.
4. Drive to starting point. Move in line with planned trench. See page 78 for driving procedures.
5. Engage parking brake and verify parking brake indicator is on.
6. Move ground drive switch to low.
7. Turn seat to the desired position.
8. Engage axle lock.
9. Lower boom to just above ground.
10. Check that attachment speed/direction control is in neutral.
11. Check that boom is in line with planned trench.



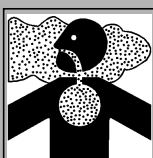
Operation

**⚠ WARNING**

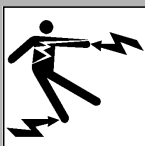
Incorrect procedures could result in death, injury, or property damage. Learn to use equipment correctly.

To help avoid injury:

- Comply with all utility notification regulations before digging or drilling.
- Notify companies that do not subscribe to One-Call.

**⚠ WARNING**

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

**⚠ DANGER**

Electrical shock. Contacting electrical lines will cause death or serious injury. Know location of lines and stay away.

To help avoid injury: Expose lines by hand before digging. Cutting high voltage cable can cause electrocution.

**⚠ CAUTION**

Flying objects thrown by machine may strike people. Wear hard hat and safety glasses.

Start Trench

1. Lower backfill blade, if equipped, to reduce shock when trenching begins.
2. If equipped with combo, set trench/plow switch to the trench position.
3. Move attachment speed/direction control to desired speed. **DIGGING CHAIN WILL MOVE.**



Moving digging teeth will cause death or serious injury. Stay away.

To help avoid injury:

- Machine might jerk when digging starts. Allow 3' (1 m) between digging teeth and obstacle.
 - Keep everyone at least 6' (2 m) from machine, attachments, and their range of movement.
4. Set throttle to full engine speed.
 5. Lift trench cleaner, if equipped.
 6. Slowly lower digging boom to desired trench depth.



Move Forward

1. Raise backfill blade, if equipped.
2. Release parking brake, if set, and verify parking brake indicator is off.
3. If using trench cleaner:
 - Use ground drive foot control to move forward about 1 foot (30 cm), or until there is enough room for trench cleaner to enter trench.
 - Return ground drive control to neutral to stop forward movement.
 - Raise boom slightly, then fully lower trench cleaner to lock it in place.
 - Lower boom to desired trench depth.

NOTICE:

- Do not have trench cleaner in working position when starting a trench.
- Do not back up with trench cleaner in working position.
- Do not use trench cleaner in working position in conditions where large rocks can get between chain and cleaner.

4. Move ground drive hand control to desired speed. Always start trenching with ground drive speed set at low. Increase ground drive speed only as soil conditions permit.

IMPORTANT:

- Ground drive speed/direction can be controlled with foot pedal or hand lever. When trenching, set ground drive speed with hand lever. Use foot pedal to temporarily adjust speed if digging conditions change for a short distance.
- For cruise control operation, see page 138.

5. Operate engine at full throttle when working.

NOTICE:

- Do not make sharp turns. Lower boom to full depth when turning.
- If an object becomes lodged in chain, move attachment speed/direction control to neutral and raise boom slightly. Reverse chain direction. If object must be removed manually, turn engine off and engage parking brake.

Finish Trenching



1. When trench is complete, move ground drive hand control to neutral.
2. Adjust throttle to low idle.
3. Raise boom.
4. As boom clears top of trench, move attachment speed/direction control to neutral.
5. Raise trench cleaner.
6. Swivel seat to the drive position.
7. Disengage axle lock.

IMPORTANT: Drive tractor in reverse 6' (2 m) while turning steering wheel left to right to fully disengage axle lock.

8. Drive a short distance away from work site. See page 78 for driving procedures.
9. Shut down tractor. See page 80 for proper shutdown procedures.
10. Stow trench cleaner.

Plow

Chapter Contents



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- Position Tractor 103
- Attach Product. 103

Operation 105

- Special Plowing. 109

Setup

EMERGENCY SHUTDOWN - Turn ignition switch to STOP.



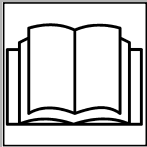
⚠ WARNING Crushing weight could cause death or serious injury. Use proper procedures and equipment or stay away.

To help avoid injury: Keep everyone at least 6' (2 m) from machine, attachments, and their range of movement.



⚠ 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: Comply with all utility notification regulations before digging or drilling.



⚠ WARNING Incorrect procedures can result in death, injury, or property damage. Learn to use equipment correctly.

To help avoid injury: Use attachments or counterweights to make front and rear loads balance when all attachments are raised. Contact your Ditch Witch dealer about counterweighting for your equipment.

NOTICE:

- Do not operate vibrator unless plow is in the ground.
- The RT120Q is programmed to operate with the original attachment (trencher or plow) configuration. If you change attachments, contact your Ditch Witch dealer to make sure the electronic programming is updated. If you change attachments without updating the electronic programming, your attachment may not function correctly.

Position Tractor

IMPORTANT: If material must be at a constant depth, dig starting and target trenches.

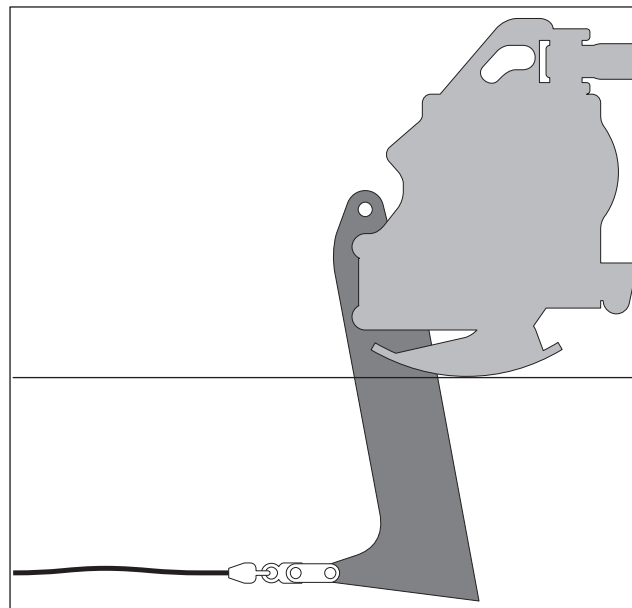
1. Fasten and adjust seat belt.
2. Start tractor. See page 76 for start-up procedures.
3. Drive to starting point. Move in line with planned trench.
4. Engage parking brake and verify parking brake indicator is on.
5. Lower backfill blade, if equipped.
6. If equipped with combo, set trench/plow switch to the plow position.
7. Lower plow to starting point of trench.
8. Turn ignition switch to STOP.



Attach Product

To Pull Product

1. Insert material into pulling grip.
2. Tape grip with duct tape.



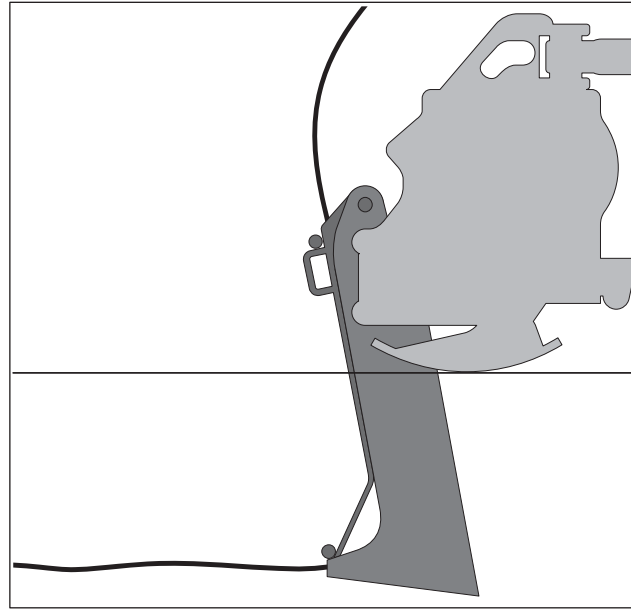
Plow_Pull.eps

To Feed Product

IMPORTANT: ROPS-attached cable guide should be a genuine Ditch Witch cable guide manufactured for this purpose.

1. Remove cable guide.
2. Feed cable through tube from top to bottom.
3. Replace cable guide and tighten fasteners.
4. Secure cable.

CAUTION: Keep everyone away from material being installed.



Plow_Feed.eps

Operation

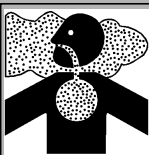


⚠ WARNING

Incorrect procedures could result in death, injury, or property damage. Learn to use equipment correctly.

To help avoid injury:

- Comply with all utility notification regulations before digging or drilling.
- Notify companies that do not subscribe to One-Call.



⚠ WARNING

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



⚠ DANGER

Electrical shock. Contacting electrical lines will cause death or serious injury. Know location of lines and stay away.

To help avoid injury: Expose lines by hand before digging. Cutting high voltage cable can cause electrocution.



⚠ WARNING

Crushing weight could cause death or serious injury. Use proper procedures and equipment or stay away.

NOTICE: Do not drive backward with plow in the ground.



Prepare

1. Fasten and adjust seat belt.
2. Start tractor.
3. Adjust throttle to low idle.
4. Check that ground drive hand and foot controls are in neutral.
5. Release parking brake and verify parking brake indicator is off.
6. Move ground drive switch to low.
7. Lower reel carrier to lowest position possible, if equipped.

NOTICE: Use extreme caution when operating reel carrier on sloped surfaces.

8. Raise backfill blade, if equipped.
9. Swivel seat to the desired position.
10. Engage axle lock.

Lower Plow

1. If equipped with combo, ensure that the trench/plow switch is in the plow position.
2. Move ground drive hand control forward to plowing speed and lower plow blade into ground.

NOTICE:

- Lower plow into ground before moving plow lift control or plow swing control to float.
- Do NOT move ground drive to reverse with plow blade in the ground.

3. Move plow lift control to float.
4. Move plow swing control to float.
5. Increase engine speed to full throttle.

IMPORTANT: Keep sod cutter edge sharp when plowing in areas with heavy grass cover or surface clutter.

6. Move attachment speed/direction control forward to start plow vibration. PLOW WILL VIBRATE.
7. Reduce attachment speed to a point with the least tractor vibration and the highest ground drive speed possible without track slippage. Adjust vibrator speed if ROPS vibrates excessively.

Note: In some soil conditions, changing vibrator weights can improve plow performance. Contact your Ditch Witch dealer for details.

8. Check cable for damage during plowing. Run continuity checks on electric cable and check pipe pressure. Damage can result from improper operation, incorrect blade choice, striking underground obstructions, or other conditions.



Finish Plowing

1. When installation is complete, move plow swing out of float.
2. With vibrator running, raise plow to ground level.

NOTICE: Do not operate vibrator when plow is out of the ground. This will cause excessive vibration resulting in rapid wear, and possible damage to the unit and product being installed.

3. Move attachment speed/direction control to neutral.
4. Swivel seat to the drive position.
5. Engage parking brake and verify parking brake indicator is on.
6. Lower backfill blade, if equipped.
7. Turn ignition switch to STOP and remove product from plow.
8. Swing plow to center position and engage swing lock and stow lock.
9. Raise backfill blade, if equipped.
10. Disengage axle lock.

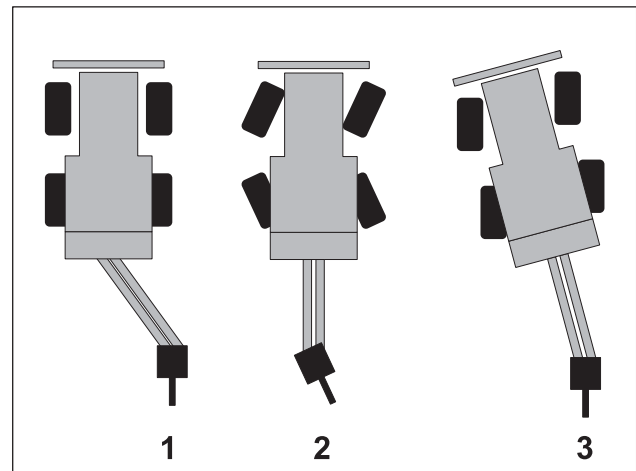
IMPORTANT: Drive tractor in reverse 6' (2 m) while turning steering wheel left to right to fully disengage axle lock.

11. Drive a short distance away from work site.
12. Shut down tractor. See page 80 for proper shutdown procedures.

Special Plowing

Your Ditch Witch equipment allows you to plow four ways: normal plowing, offset plowing (1), coordinated plowing (2), and crabbing (3).

NOTICE: Oversteering blade may damage blade or cable.



Plowing.eps

Offset Plow

Offset plowing can be used to plow next to a road while keeping tracks on a more stable surface or in similar conditions.

1. Use plow swing to move plow to planned trench line.
2. Use blade steer to position blade parallel to direction of tractor frame.

Coordinated Plow

Coordinated plowing can be used to turn a tight circle around a jobsite obstacle or in similar conditions.

1. Move rear steer/center switch to the rear steer position.
2. Use the rear steer switch to position the tracks as shown above (2).
3. Slowly move tractor forward.
4. Plow as normal.

IMPORTANT: When coordinated plowing, keep plow blade straight or in the same angle position as rear tracks.

Crab Plow

Crab can be used to plow along edge of jobsite or in similar conditions.

1. Move rear steer/center switch to the rear steer position.
2. Use the rear steer switch to position the tracks as shown above (3).
3. Slowly move tractor forward.
4. Plow as normal.

Reel Carrier

Chapter Contents

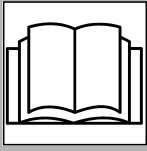
Setup 112

- Adjust Reel Winder 112

Operation 113



Setup

**⚠ WARNING**

Incorrect procedures can result in death, injury, or property damage. Learn to use equipment correctly.

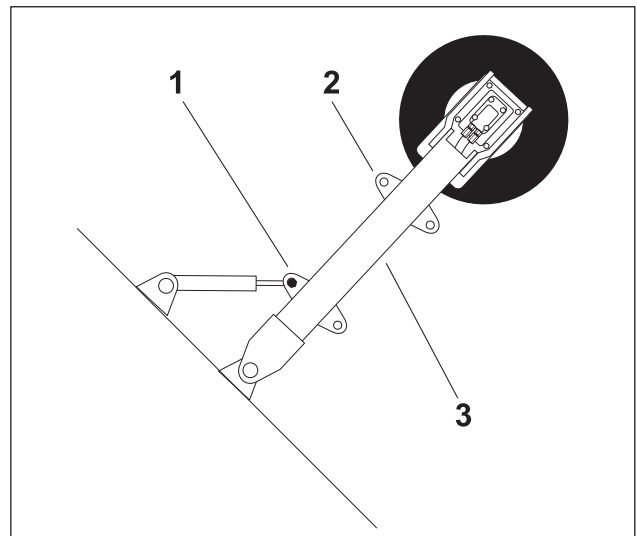
Adjust Reel Winder

1. Lower reel carrier.
2. Turn ignition switch to STOP.
3. Remove reel.

**⚠ WARNING**

Crushing weight could cause death or serious injury. Use proper procedures and equipment or stay away.

4. While supporting lever arm (3), remove bolt (1) that attaches hydraulic lift cylinder to lever arm.
5. Attach cylinder rod to the correct mounting hole for your diameter reel:
 - For 2-5' (61-152 cm) diameter reels, attach to bottom mounting hole (1).
 - For 5-7' (152-213 cm) diameter reels, attach to top mounting hole (2).



ReelWinder.eps

Operation

1. Fasten and adjust seat belt.
1. Drive to beginning of planned plow path.
2. Engage parking brake.
3. Lower backfill blade, if equipped.
4. Lower plow attachment.
5. Adjust throttle.
6. Attach service line to reel.



away.

Moving parts could cut off hand or foot. Stay

7. Move reel winder selector switch to activate reel winder control functions.
8. Lower reel winder arm until track meets reel flange.
9. Wind service line.
10. When finished winding, raise reel winder arm.
11. Adjust throttle.
12. Move reel winder selector switch to activate backfill blade controls.
13. Raise backfill blade, if equipped.
14. Release parking brake.
15. Follow directions in "Plow" on page 101 to begin plowing.

Backhoe

Chapter Contents

Setup 116

Operation..... 117

Stowing 118



Setup

1. Move attachment speed/direction control to neutral position.
2. Move ground drive control to neutral position.
3. Set ground drive motor speed to low.
4. Lower rear attachment to 6" (150 mm) above ground.
5. Check that backfill blade, if equipped is straight and lower it to ground.
6. Decrease engine speed to low throttle.
7. Move to backhoe operator's station.
8. Lower stabilizers enough to lift front tracks.

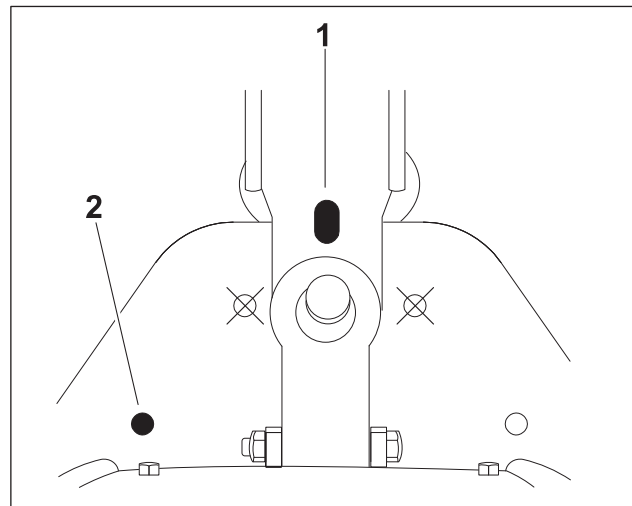
IMPORTANT: For more information about stabilizer controls, see 56.

9. Remove swing lock pin from hole (1) and store in hole (2).
10. Raise boom to release tension on stow lock.
11. Release stow lock by pushing handle forward.

IMPORTANT: For more information about stow lock, see page 51.

12. Adjust engine speed to 1/2 to 3/4 throttle for digging.

NOTICE: Engine speed affects speed of backhoe operation.



Backhoe_Setup_Swinglock.eps

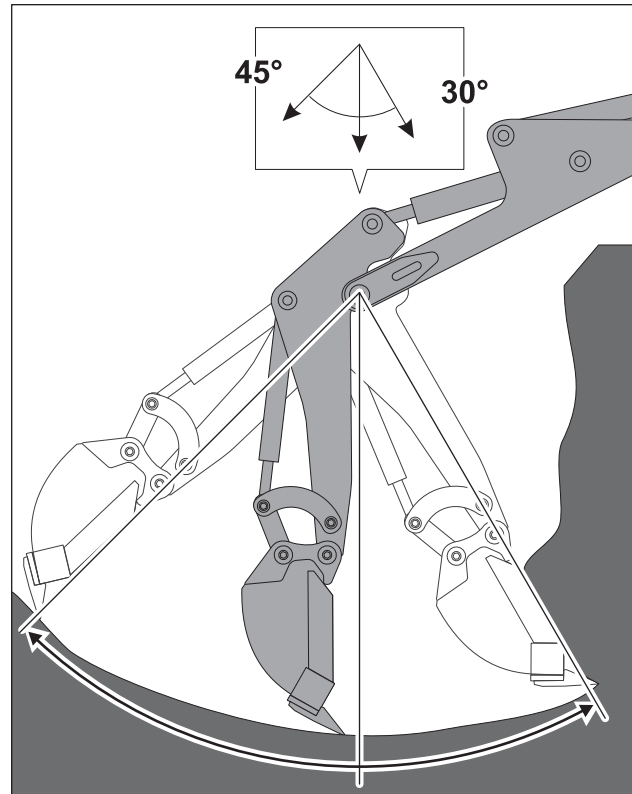
Operation

Dig

Use boom/swing control and bucket/dipper control to dig hole or trench.

IMPORTANT: For more information about backhoe controls, see page 48.

- Keep dipper and boom at right angles as much as possible for maximum power.
- Keep bucket in line with dipper as much as possible.
- Position bucket so teeth cut soil. As soil is cut, curl bucket under dipper.
- Move dipper and bucket together. Increasing engine speed will not increase backhoe force.



Backhoe_Dig.eps

Move Unit

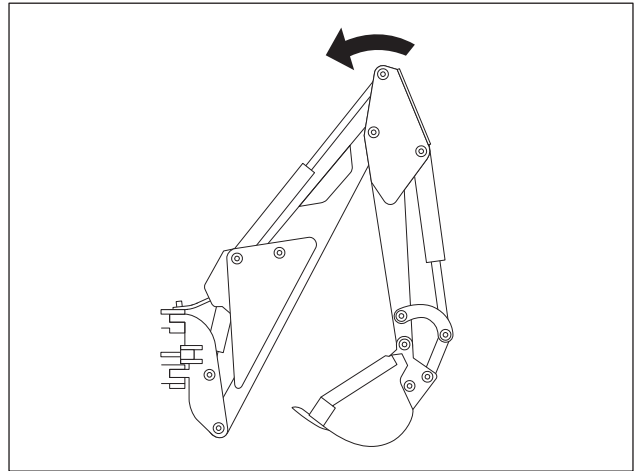
NOTICE: Only use this method to move unit less than 30' (10 m) at one time.

1. Raise stabilizers.
2. Release parking brake.
3. Use remote ground drive switch to move unit.
4. Lower stabilizers.
5. Set parking brake.

Stow

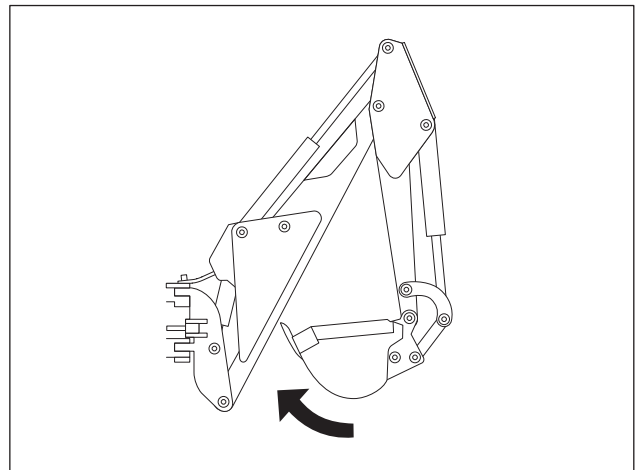
NOTICE: Before returning to tractor operator station, raise stabilizers, return remote throttle to low idle, and stow and lock boom.

1. When hole or trench is complete, lift boom while keeping dipper pointed at ground.



Backhoe_Stow_Boom.eps

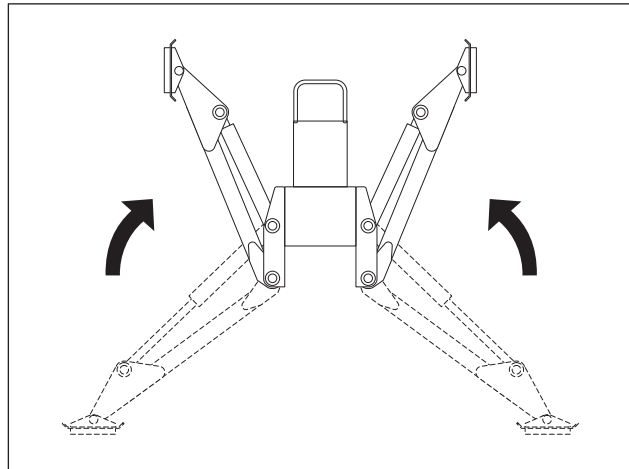
2. Curl bucket closed and move dipper fully toward boom.
3. Lift boom to highest position and latch stow lock.
4. Lower boom slightly to engage lock.
5. Engage swing lock. See page 56.



Backhoe_Stow_Bucket.eps

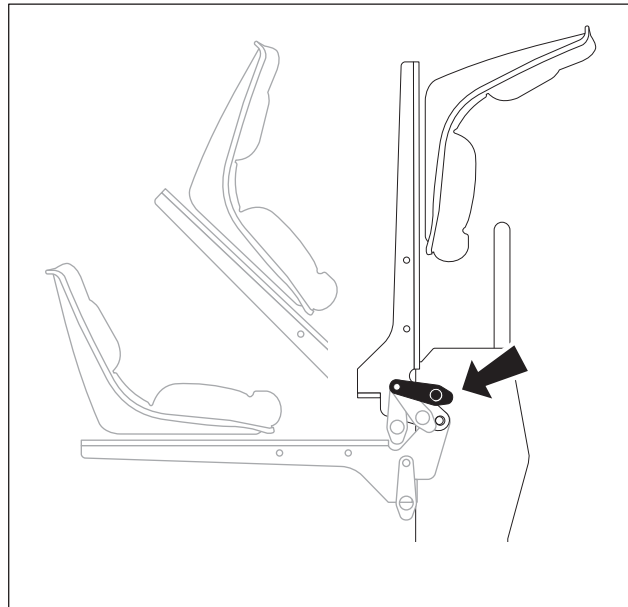
6. Raise stabilizers.
7. Return remote throttle to low idle.

NOTICE: Before returning to tractor operator station, raise stabilizers, return remote throttle to low idle, and stow and lock boom.



Backhoe_Stow_Stabilizers.eps

8. Rotate seat into stowed position and engage seat lock (shown).



Backhoe_Seat.eps



Drill

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Drilling Attachment. 122

Prepare Jobsite and Equipment 123

- Approach Trench. 123
- Target Trench 123
- Drill Rod and Equipment. 124

Drill. 125

- Using Drill String Guide. 126

Add Rod. 127

Backream. 127

Disassemble Joints 128



Drilling Attachment

**⚠ DANGER**

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

To help avoid injury:

- Do not straddle trench or drill pipe while drilling. Keep everybody at least 10' (3 m) away from drill pipe during operation.
- Keep all persons away from material being installed. If swivel malfunctions, material being installed can rotate.
- Use a guide to align drill rod when starting a bore. Guides are available from your Ditch Witch dealership.

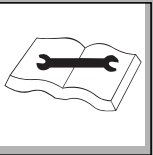
**⚠ WARNING**

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

To help avoid injury: Set up warning barriers and keep people away from equipment and jobsite while drilling.

**⚠ WARNING**

Incorrect procedures could result in death, injury, or property damage. Learn to use equipment correctly.

**⚠ 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.

To help avoid injury:

- Do not alter controls. Improper control function can cause serious injury.
- Do not tape or tie down switch or lever.
- Stop drilling and turn off power supply if releasing control does not stop turning shaft. Have unit repaired.

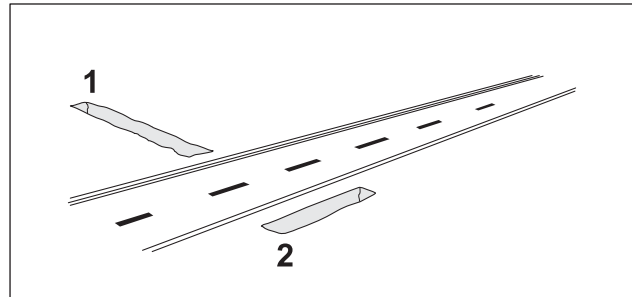
Prepare Jobsite and Equipment

Approach Trench (1)

1. Mark path where you intend to drill.
2. Dig an approach trench (1) along the intended bore path.

IMPORTANT: The approach trench should be at least:

- deep enough for pipe to lay flat and enter soil at correct angle
- 20' (6 m) long
- 4" (100 mm) wide



Drill_Attchmnt_Prep_Job.eps

Target Trench (2)

1. Select a completion point for the drilling project.
2. Dig a target trench (2) **across** the anticipated completion point.

IMPORTANT:

- The actual length of the target trench depends on soil conditions and length of pipe sections. Make it deep enough for drill bit to enter slightly above the trench floor.
- An alternative to digging a target trench is to use an electronic tracker to locate the bit, then dig down with posthole diggers. This method may be desirable to minimize surface soil disturbance.

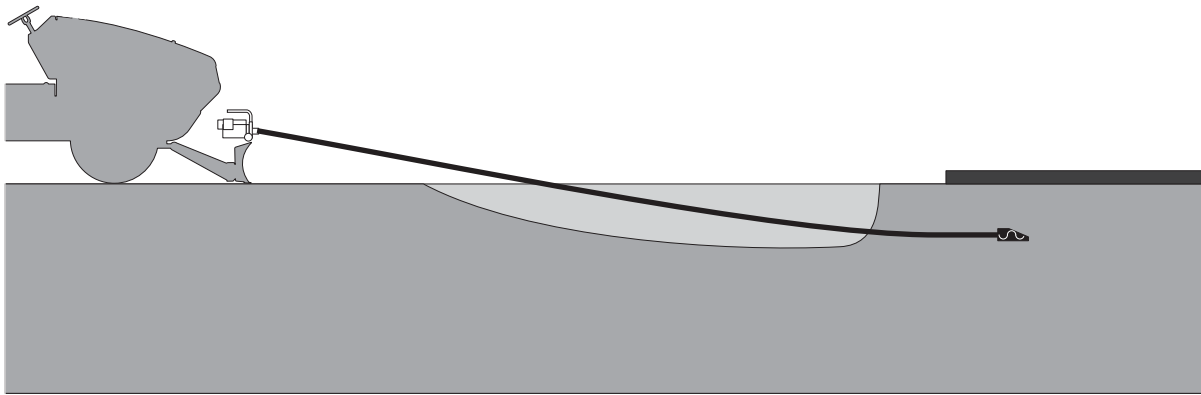


Drill Rod and Equipment

1. Assemble at least 20' (6 m), but not more than 30' (9 m), of drill rod.

NOTICE: More than 10-15' (3-4.5 m) of drill rod out of the trench increases the tendency of drill rod to bend.

2. Install drill bit to the cutting end of the drill string.
3. Put drill string in approach trench.
4. Move tractor to the approach trench and align the drilling attachment with the intended bore path.
5. Turn off engine.
6. Attach drill string to drilling attachment.



DrillRod_Trencher

Drill

EMERGENCY SHUTDOWN: Release drilling control and turn ignition switch to STOP.

1. Start tractor's engine and begin clockwise (forward) rotation.
2. Slowly advance tractor while maintaining clockwise rotation.

NOTICE:

- Drilling too quickly causes bit to drift off course and may bend drill rod. After bore path is established, speed may be slightly increased.
- If drill rod starts to bend, stop forward movement of unit and back the unit slightly until rod straightens. Do not drill with bent rod.
- If drill rod hits an obstruction, rotate drill string counterclockwise to back up slightly.



Using Drill String Guide



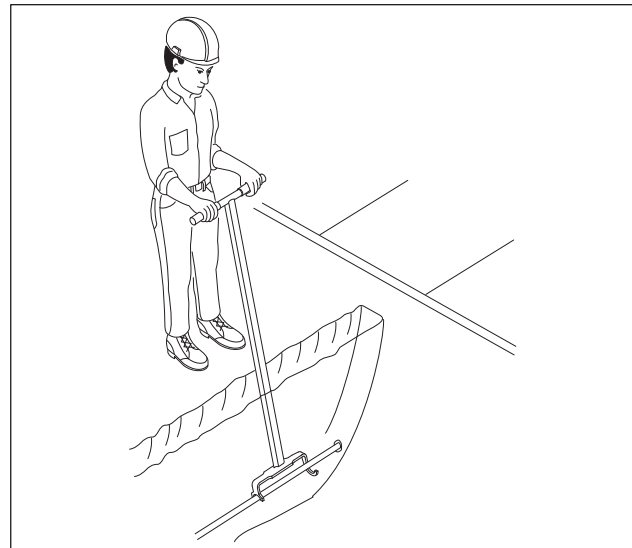
DANGER Turning shaft will kill you or crush arm or leg. Stay away.

To help avoid injury:

- Do not straddle trench or drill rod while drilling. Keep everybody at least 10' (3 m) away from drill rod during operation.
- Use a drill string guide to align drill rod when starting a bore. Guides are available from your Ditch Witch dealership.

Use drill string guide to align drill string as it enters the soil. When using drill string guide, follow these guidelines:

- Use only approved Ditch Witch drill string guide (p/n 179-737).
- Stand only on the **left** side of the approach trench.
- Keep drill string guide at least 3' (1 m) behind bit.
- Use drill string guide to control only the first 5' (1.5 m) of the bore path.
- After drilling 5' (1.5 m), stop unit and remove drill string guide.
- **Do not** use drill string guide during backreaming or any time the drill string is being pulled back.



DrillStringGuide.eps

Add Rod

IMPORTANT: It is recommended that a helper be used to add drill rod.

1. Use control to stop drilling attachment.
2. Use ground drive controls to back up unit 6" (150 mm) to loosen drill rod in ground.
3. Disconnect drill rod from drilling attachment.
4. Use ground drive controls to move unit away from bore.
5. Add one drill rod to continue bore.
 - Have a helper direct unit operator to align drilling attachment with new rod and stop when drilling attachment and rod are 1" (25 mm) apart.
 - Have a helper lightly hold rod and direct unit operator to move unit forward slowly.
 - As soon as rod begins to engage drilling attachment, have helper release rod and move hands and arms clear of drilling attachment.



Backream

After drill bit enters target trench, the bore hole may be enlarged by changing the drill bit to a backreamer and drawing it back through the initial bore.

1. Turn tractor ignition switch to STOP.
2. Replace drill bit with backreamer.
3. Start tractor engine and begin clockwise rotation.

NOTICE: Always rotate clockwise during backreaming. Rotate counterclockwise only to dislodge a dry bore bit or reamer that has seized in the bore hole.

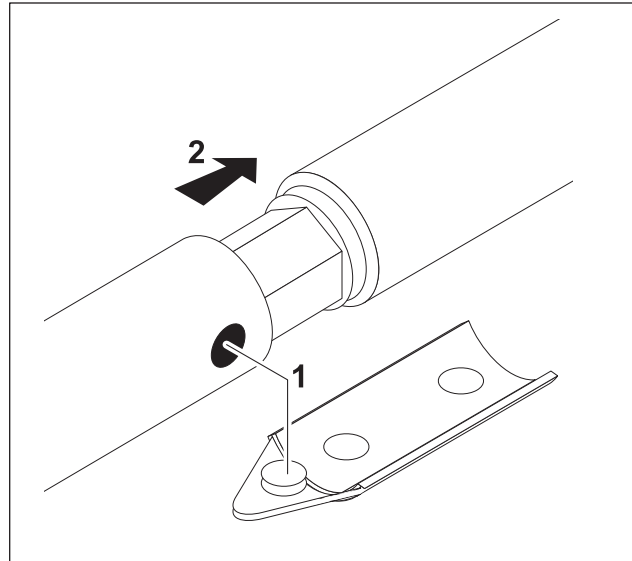
4. Slowly back up tractor while maintaining rotation.
5. When backreamer exits the bore hole, stop rotation immediately.

NOTICE:

- Do not try to increase hole size too much in one pass. Several passes using successively larger reamers will save wear on machine.
- During backreaming, keep drill string straight. Sharp bends in the drill rod at the motor coupling can cause rod failure.

Disassemble Joints

1. Press tab through hole in female side of joint (1) using special tool or screwdriver.
2. Pull rods apart (2).



Drill_Attchmnt_RodJoints.eps

Saw

Chapter Contents

Setup 130

- Before First Use 130

Operation 132

- Normal Use 133

Setup

EMERGENCY SHUTDOWN - Turn ignition switch to STOP.



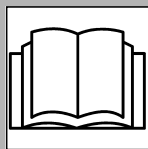
⚠ WARNING Crushing weight could cause death or serious injury. Use proper procedures and equipment or stay away.

To help avoid injury: Use attachments or counterweights to make front and rear loads balance when all attachments are raised. Contact your Ditch Witch dealer about counterweighting for your equipment.



⚠ 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: Comply with all utility notification regulations before digging or drilling.



⚠ WARNING Incorrect procedures can result in death, injury, or property damage. Learn to use equipment correctly.

Before First Use and After Replacing Bits

NOTICE: Unless otherwise instructed, all service should be performed with tractor off.

Check Bit Clearance

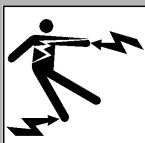
1. Check that all bits are properly secured.
2. Check that all bit retaining rings are secure.
3. Spin wheel by hand and listen for bits hitting diverters.
4. If bits hit diverters, repeat steps 1-3 to make sure bits are in the proper location and secured at proper depth.
5. If bits do not hit diverters:
 - Set parking brake.

- Fasten and adjust seat belt.
- Start tractor and adjust throttle.
- Raise saw slightly.
- Use attachment speed/direction control to rotate saw slowly. As it rotates, listen for clicking sounds. If clicking is present, repeat steps 1-4.

Operation

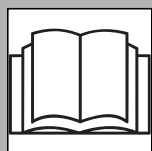
**CAUTION**

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

**DANGER**

Electrical shock. Contacting electrical lines will cause death or serious injury. Know location of lines and stay away.

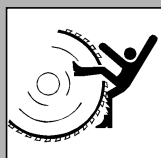
To help avoid injury: Expose lines by hand before digging. Cutting high voltage cable can cause electrocution.

**WARNING**

Incorrect procedures could result in death, injury, or property damage. Learn to use equipment correctly.

**CAUTION**

Flying objects thrown by machine may strike people. Wear hard hat and safety glasses.

**DANGER**

Moving digging teeth will kill you or cut off arm or leg. Stay away.

To help avoid injury:

- Allow 3' (1 m) between digging teeth and obstacle. Machine might jerk when digging starts.
- Keep everyone at least 6' (2 m) from machine, attachments, and their range of movement.

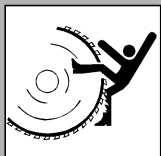
Normal Use

IMPORTANT:

- Saw use is not recommended for soft, wet, or sticky soil conditions.
- Before operating saw, check bits for free rotation. Tap bits lightly with a hammer and turn by hand. If bits are stuck, remove and clean packed soil from bit block.
- For best results, use retaining clip loading and removing tool and a knock-out bar included with saw to remove and reinsert bits.
- Carbide bits are recommended for cutting abrasive material, such as sandstone or frozen sands or gravels.

1. Fasten and adjust seat belt.
2. Start tractor. See page 76 for start-up procedures.
3. Drive to starting point. Move in line with planned trench. See page 78 for correct operating procedures.
4. Engage parking brake and verify parking brake indicator is on.
5. Move gearbox control to 1 (low).
6. Tilt steering wheel column up.
7. Swivel seat to the desired position.
8. Engage axle lock.
9. Lower saw to just above ground.
10. Lower stabilizer until distance from bottom of skid shoe to bottom of saw bits equals desired trench depth.
11. Ensure that saw is aligned with planned trench and that tracks are pointing straight ahead. Work slowly and carefully.

1. Adjust throttle to low idle.
2. Move attachment speed/direction control to desired speed. SAW WILL TURN.

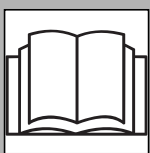
**⚠ DANGER**

Moving digging teeth will kill you or cut off arm or leg. Stay away.

To help avoid injury:

- Machine might jerk when digging starts. Allow 3' (1 m) between digging teeth and obstacle.
- Keep everyone at least 6' (2 m) from machine, attachments, and their range of movement.

3. Slowly lower saw to trench depth.

**⚠ WARNING**

Incorrect procedures could result in death, injury, or property damage. Learn to use equipment correctly.

To help avoid injury: Ensure that stabilizers are in contact with the ground while sawing. Failure to use stabilizers correctly will damage equipment.

4. Release parking brake and verify parking brake indicator is off.
5. Increase engine speed to full throttle.
6. Push ground drive control forward to trenching speed.

IMPORTANT:

- Lower saw into softer material then move into harder or abrasive material. For example, lower saw into dirt at shoulder before cutting across road.
- For cruise control operation, see page 43.

7. If a curved trench must be cut, make a series of straight cuts.
8. When trench is complete, adjust throttle to low idle.
9. Raise saw and stabilizers.
10. As saw clears top of trench, move attachment speed/direction control to neutral.
11. Swivel seat to the drive position.
12. Tilt steering wheel column down.
13. Drive a short distance away from work site.

14. Disengage axle lock.

IMPORTANT: Drive tractor in reverse 6' (2 m) while turning steering wheel left to right to fully disengage axle lock.

15. Shut down tractor. See "Shut Down" on page 80 for correct shutdown procedures.
16. Wash bits and mounting blocks with high pressure water before parking unit overnight.

Systems and Equipment

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Cruise Control 138

- Operate Cruise Control 138

Chain, Teeth, and Sprockets 140

- Chain and Tooth Maintenance 140
- Chain Types 140
- Chain Selection 140

Optional Equipment 142

- RT120Q Tractor 142
- H910/H911 Trencher. 142
- H1032 Plow. 142
- H1140 Saw 142
- A920 Backhoe. 142



Cruise Control

Cruise control is a standard feature that allows the unit to automatically adjust ground drive speed according to digging conditions. In easier soil conditions, the ground drive speed will increase. When the unit encounters difficult soil conditions, the ground drive speed will decrease. The unit does this by adjusting ground drive pump output to maintain a preset engine speed.

Operate Cruise Control

EMERGENCY SHUTDOWN - Turn ignition switch to STOP.

Plowing

1. First set the following controls:
 - ground drive controls to neutral
 - ground drive switch to low
 - ensure cruise control is off
 - all other controls set as desired
2. Set ground drive hand control to maximum speed suitable for digging conditions.
3. Press cruise control switch once and ensure that cruise control indicator lights.
4. Use RPM control to select optimum engine speed for digging conditions.
5. When finished plowing, move ground drive control to neutral and press cruise control switch again to turn off cruise control.

Trenching

1. First set the following controls:
 - ground drive controls to neutral
 - ground drive switch to low
 - ensure cruise control is off
 - all other controls set as desired
2. Move cruise control RPM control to arrow at center.
3. Press cruise control switch once and ensure that cruise control indicator lights.
4. Following procedures on page 96, begin trenching to desired depth.
5. When desired depth is reached, ensure throttle is fully open.
6. Slowly move ground drive control forward.
7. Slowly adjust cruise control RPM control to match digging conditions.

IMPORTANT:

- In harder digging conditions, higher cruise control rpm setting may improve digging performance.
- In easier digging conditions, lower cruise control rpm setting may increase ground drive speed.



8. When finished trenching, move ground drive control to neutral and press cruise control switch again to turn off cruise control.
9. Allow chain to dig itself free before stopping attachment.

Chain, Teeth, and Sprockets

Chain and Tooth Maintenance

- Always replace sprockets at the same time you replace the digging chain. Sprockets and chain are designed to work together. Replacing one without the other will cause premature wear of the new part.
- Keep digging teeth sharp. Using dull, worn teeth will decrease production and increase shock load to other trencher components. It can also cause chain stretch, which leads to premature chain wear and failure.
- Maintain the proper amount of tension on the digging chain. Overtightening will cause chain stretch and loss of machine performance. For correct tightening procedure, see page 162.
- Use the tooth pattern most appropriate for your digging conditions. If you move to a different soil type, contact your Ditch Witch dealer for information about the most effective chain type and tooth pattern.

Chain Types

Chain type	Features
4-pitch	standard chain
2-pitch	more teeth for smoother cutting
alternating side bar	prevents spoil compaction on chain
bolt-on adapters	allow easy configuration changes
Shark Chain II	versatile, virtually maintenance-free
combination	provides pick and shovel effect

Chain Selection

These charts are meant as a guideline only. No one chain type works well in all conditions. See your Ditch Witch dealer for soil conditions and chain recommendations for your area. Ask for the latest Chain, Teeth, and Sprockets Parts Catalog.

- 1 = best
- 2 = better
- 3 = good
- 4 = not recommended

Chain	Sandy Soil	Soft Soil	Medium Soil	Hard Soil	Rocky Soil	Sticky Soil
4-pitch cup tooth	3	1	2	3	4	1
2-pitch cup tooth	2	3	1	1	3	4
bolt-on adaptor, 2-pitch	4	4	3	2	1	4

Chain	Sandy Soil	Soft Soil	Medium Soil	Hard Soil	Rocky Soil	Sticky Soil
bolt-on adaptor/cup tooth combo	4	3	2	1	2	4
Shark Chain II	4	3	2	1	1	4
alternating side bar	4	4	4	4	4	1

Soil	Description
sandy soil	sugar sand, blow sand, or other soils where sand is the predominant component
soft soil	sandy loam
medium soil	loams, loamy clays
hard soil	packed clays, gumbo, all compacted soils
rocky soil	chunk rock, glacial till, cobble, rip rap, gravel
sticky soil	gumbo, sticky clays



Optional Equipment

See your Ditch Witch dealer for more information about the following optional equipment.

RT120Q Tractor

Equipment	Description
backup alarm	alarm sounds when tractor is in reverse
light kit	mounts to ROPS and includes work lights and hazard light

H910/H911 Trencher

Equipment	Description
booms	several boom length options are available
hydraulic trench cleaner	removes spoils from the trench floor
long auger extensions	for conditions that require spoils to be moved farther from the trench

H1032 Plow

Equipment	Description
blades	several blade options are available
toes	stabilize the plow for more constant depth
bullets	allow a larger cavity for the material being installed
RC120Q reel carrier	designed to fit your Ditch Witch equipment and speed cable installation

H1140 Saw

Equipment	Description
cutting bit types	rotating, self-sharpening conical bit with spring retainer, or carbide cap or carbide insert available.

A920 Backhoe

Equipment	Description
bucket width	12-24" (305-610 mm) buckets available

Complete the Job

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Restore Jobsite 144

- Backfilling 144

Rinse Equipment 144

Stow Tools 144

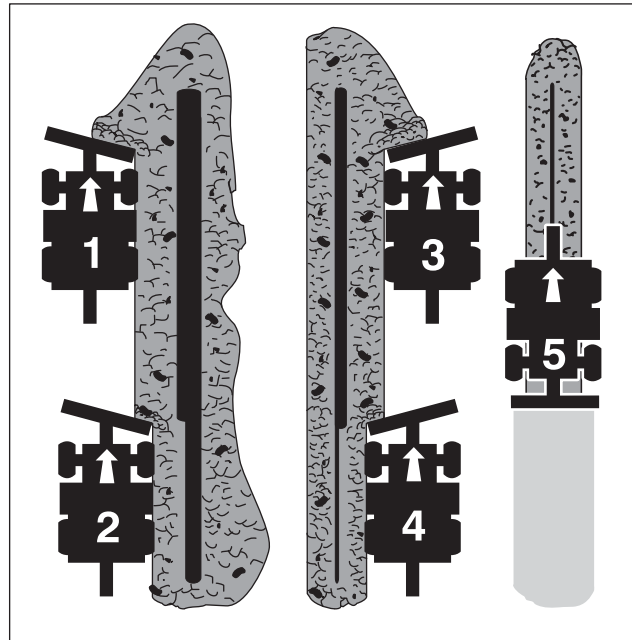


Restore Jobsite

After product is installed, return spoils to the trench with optional backfill blade.

Backfilling

1. Position unit at end of trench, several feet from spoils. Aim tractor at outer edge of spoils.
2. Adjust backfill blade to fit land contour.
3. Move outer edge of spoils toward trench. Take two or more passes at spoils rather than moving all spoils at once.
4. Repeat on other side of trench, if necessary.
5. Engage float and make final pass over trench.



Backfilling.eps

Rinse Equipment

Spray water onto equipment to remove dirt and mud.

NOTICE: Do not spray water onto operator's console. Electrical components could be damaged. Wipe down instead.

Stow Tools

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

Service



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Tier 4i Engine 148

Recommended Lubricants/Service Key 149

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- Approved Coolant 152
- Engine Oil Temperature Chart 152

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50 Hour 165

100 Hour. 167

250 Hour 170

500 Hour 173

1000 Hour 176

2000 Hour. 178

As Needed 180

Service Precautions

**⚠ WARNING**

Incorrect procedures could result in death, injury, or property damage. Learn to use equipment correctly.

To help avoid injury:

- Perform all service with the engine off unless otherwise instructed.
- Refer to engine manufacturer's manual for engine maintenance instructions.
- Lower unstowed attachments to ground, before servicing equipment,

Welding

NOTICE: Welding can damage electronics.

- Disconnect battery at battery disconnect switch, if equipped, or disconnect battery cables before welding to prevent damage to battery. Do not turn off battery disconnect switch with engine running or alternator and other electronic devices may be damaged.
- Connect welder ground clamp close to welding point and make sure no electronic components are in the ground path.
- Always disconnect the ECU ground connection from the frame, harness connections to the ECU, and other electronic components prior to welding on machine or attachments.

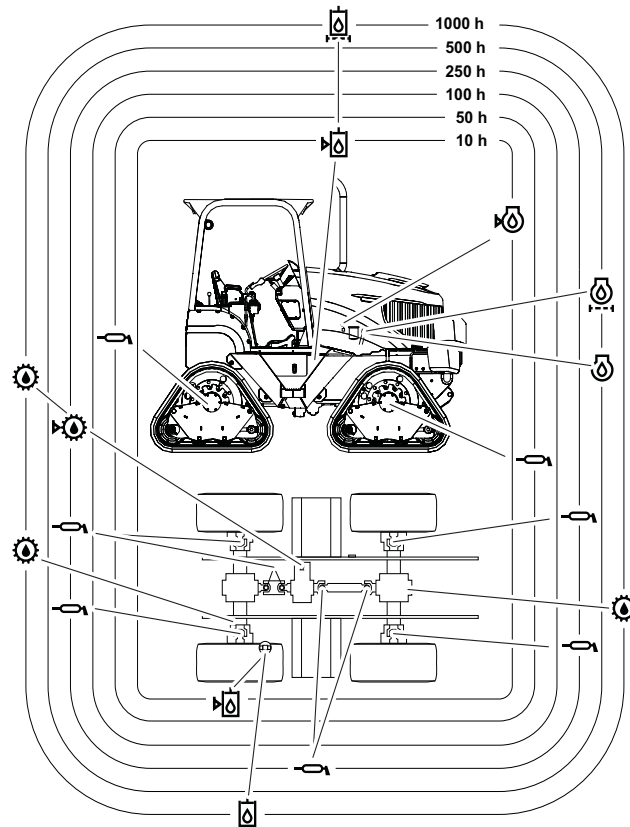
Cleaning

NOTICE: When cleaning equipment, do not spray electrical components with water.

Changing Attachments

The RT120Q T4i is programmed to operate with the original attachment configuration. If you change attachments, contact your Ditch Witch dealer to make sure the electronic programming is updated. If you change attachments without updating the electronic programming, your attachment may not function correctly.

Lubrication Overview



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Tier 4i Engine

The Deutz Tier 4i TCD 3.6 L4 engine uses a computer-controlled fuel management system, turbocharger with charge air cooling, and exhaust after treatment system (EAT). The engine and the corresponding EAT system are adapted to each other and linked by an appropriate electronic controller.

The diesel oxidation catalytic converter behind the cylinder head at the rear of the engine is a very recognizable feature. A crankcase breather is located on top of the left side of engine.

Diagnostic and maintenance work may only be carried out by authorized personnel using equipment approved by Deutz.

Deutz control units are equipped with self-diagnostics. Active and passive error codes are saved in the error memory. Active errors are displayed on the electronic display panel or error lamp (flash code) CAN bus. If error codes are recorded, call Product Support.

NOTICE: Diesel engines that are equipped with an exhaust after treatment system (EAT) may only be operated with an ultra low sulfur diesel fuel. See "Approved Fuel" on page 151.

Recommended Lubricants/Service Key



Item	Description
 Tier 4i DEO	Diesel engine oil meeting or exceeding Deutz specification DQC III- LA. NOTICE: Shipped from factory with API CJ-4 DEO meeting Deutz specification DQC II- LA. Change oil initially at 250 hours. • Engine must use low sulfated ash, phosphorous, and sulfur (low SAPS) oil. • See viscosity chart. • If oils meeting only API CJ-4 or ACEA E6/E9 are used, service interval is reduced to 250 hours.
 Tier 3 DEO	Diesel engine oil meeting or exceeding Deutz specification DQC III. NOTICE: Shipped from factory with API CJ-4 DEO meeting Deutz specification DQC II- LA. Change oil initially at 100 hours if fuel sulphur content exceeds 500 ppm (500 mg/ kg). Otherwise, initial oil change should be at 250 hours. • See viscosity chart. • If oils meeting only API CJ-4 or ACEA E7 are used, service interval is reduced to 250 hours.
 MPG	Multipurpose grease. Use polyurea based NLGI GC-LB Grade 1.5 or lithium based NLGI GC-LB Grade 2.
 EPG	Extreme pressure grease. Use polyurea based NLGI GC-LB Grade 1.5 or lithium based NLGI GC-LB Grade 2, with extreme pressure additives.
 MPL	Multipurpose gear oil meeting API service classification GL-5 (SAE 80W90)
 THF	Tractor hydraulic fluid, similar to Phillips 66 HG, Mobilfluid 423, Chevron Tractor Hydraulic Fluid, Texaco TDH Oil, or equivalent
 DEAC	Low silicate, fully formulated diesel engine antifreeze/coolant meeting ASTM D6210.
	Check level of fluid or lubricant
	Check condition
	Filter
	Change, replace.
	Adjust, service, or test

Proper lubrication and maintenance protects Ditch Witch equipment from damage and failure. Service intervals listed are for minimum requirements. In extreme conditions, service machine more frequently. Use only recommended lubricants. Fill to capacities listed in "Fluid Capacities" on page 190.

For more information on engine lubrication and maintenance, see your Deutz engine manual.

NOTICE:

- Use only genuine Ditch Witch parts, filters, approved lubricants, TJC, and approved coolants to maintain warranty.
- Use the "Service Record" on page 209 to record all required service to your machine.

Approved Fuel

Tier 4i Engine (U.S., Canada, EU, and Japan)



⚠ WARNING

Avoid static electricity when fueling. Ultra Low Sulfur Diesel (ULSD) poses a greater static ignition hazard than earlier diesel formulations. Avoid death or serious injury from fire or explosion. Consult with your fuel system supplier to ensure the delivery system is in compliance with fueling standards for proper grounding and bonding practices.

This engine is designed to run on diesel fuel. Use only high quality fuel meeting ASTM D975 No. 2D, EN590, or equivalent. At temperatures below 32°F (0°C) winter fuel blends are acceptable. See the engine operation manual for more information.

NOTICE: Use only Ultra Low Sulfur Diesel (less than 15 ppm (15 mg/kg) sulfur content) in this unit. Operating with higher sulfur content will damage the engine and aftertreatment device.

Biodiesel blends up to 5% (B5) are approved for use in this unit. The fuel used must meet the specifications for diesel fuel shown above. In certain markets, higher blends may be used if certain steps are taken. Extra attention is needed when using biodiesel, especially when operating in cold weather or storing fuel. Contact your Ditch Witch dealer or the engine manufacturer for more information.

Tier 3 Engine (Rest of World)

This engine is designed to run on diesel fuel. Use only high quality fuel meeting ASTM D975 No. 2D, EN590, or equivalent. At temperatures below 32°F (0°C) winter fuel blends are acceptable. See the engine operation manual for more information.

IMPORTANT: Worldwide, fuel sulfur regulations vary widely. Fuel used should always comply with local regulations. Prior to shipping, Tier 3 units were filled with API CJ-4 DEO. If operating fuel with sulfur content above 500 ppm (500 mg/kg), change oil initially at 100 hours.

Biodiesel blends up to 5% (B5) are approved for use in this unit. The fuel used must meet the specifications for diesel fuel shown above. In certain markets, higher blends may be used if certain steps are taken. Extra attention is needed when using biodiesel, especially when operating in cold weather or storing fuel. Contact your Ditch Witch dealer or the engine manufacturer for more information.

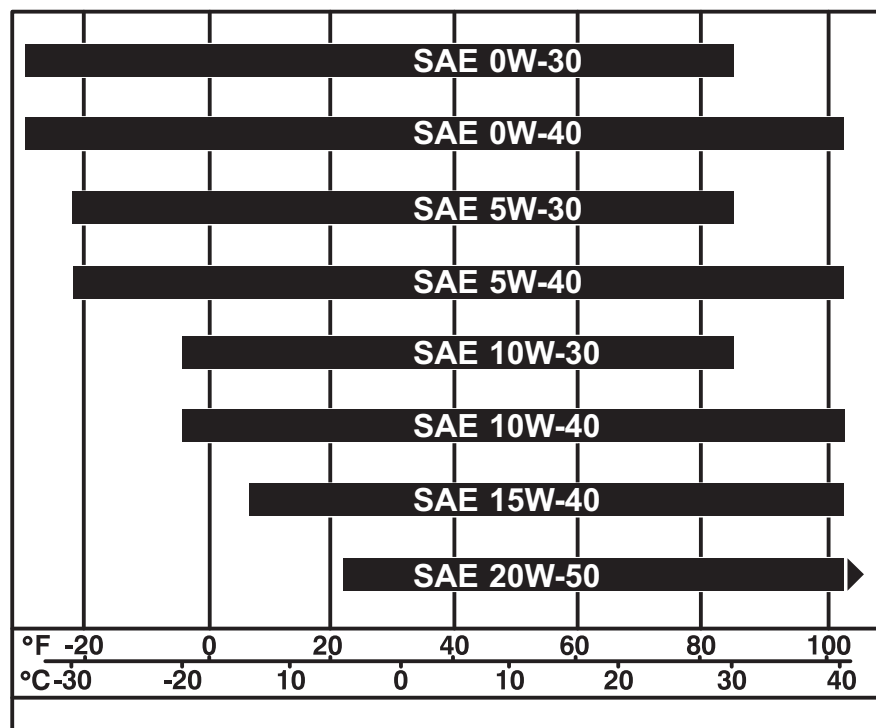
Approved Coolant

This unit was filled with John Deere Cool-Gard II coolant before shipment from factory. Add only John Deere Cool-Gard II (p/n 255-006) or any fully formulated, ethylene glycol based, low-silicate, heavy-duty diesel engine coolant meeting ASTM specification D6210.

NOTICE:

- Use only pre-diluted coolant or concentrated coolant mixed with distilled water. Do not use tap water.
- Do not use water or high-silicate automotive-type coolant. This will lead to engine damage or premature engine failure.
- Do not mix heavy-duty diesel engine coolant and automotive-type coolant. This will lead to coolant breakdown and engine damage.

Engine Oil Temperature Chart



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Temperature range anticipated before next oil change

10 Hour

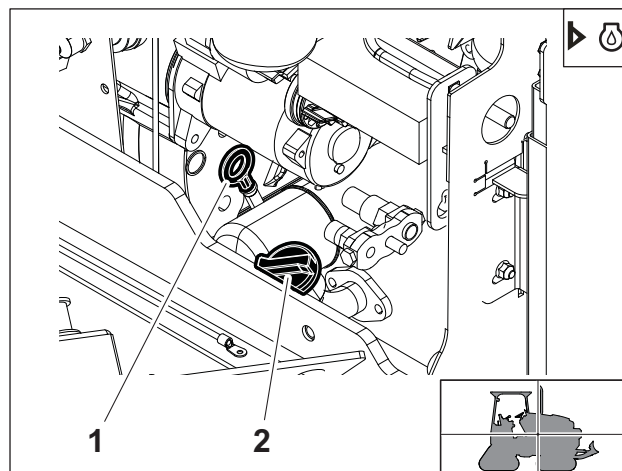


Location	Task	Notes
TRACTOR	Check engine oil level	DEO
	Check air filter indicator and clean dust trap	
	Check hydraulic fluid level	THF
	Check hydraulic hoses	
	Check coolant level	DEAC
	Check radiator fins	
TRENCHER	Lube trencher tail roller	EPG
	Lube trencher pivot	EPG
	Lube trencher auger bearings	EPG
	Lube trencher auger shaft	EPG
	Check trencher auger bolts	
	Check digging chain teeth and bits	
	Check boom mounting bolts	250 ft•lb (339 N•m)
	Check attachment mounting bolts	200 ft•lb (271 N•m)
	Check restraint bar position	
	Check trench cleaner position (if equipped)	
	Check personnel restraint bar/trench cleaner bolts	350 ft•lb (475 N•m)
	Check digging chain tension	
PLOW	Lube plow pivots	EPG
	Check plow vibrator oil level	MPL
	Check plow arm pins and bushings	
	Check plow connector pivots	
	Check attachment mounting bolts	200 ft•lb (271 N•m)

Tractor

Check Engine Oil Level

Check engine oil at dipstick (1) before operation and every 10 hours thereafter. Add DEO at fill (2) as necessary to keep oil level at highest line on dipstick.



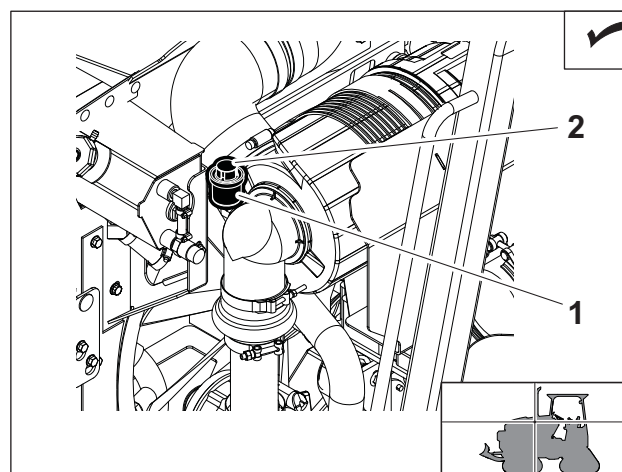
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Check Air Filter Indicator and Clean Dust Trap

Check air filter indicator (1) and clean dust trap every 10 hours. Red band indicates filter must be changed. Push button (2) to re-set indicator.

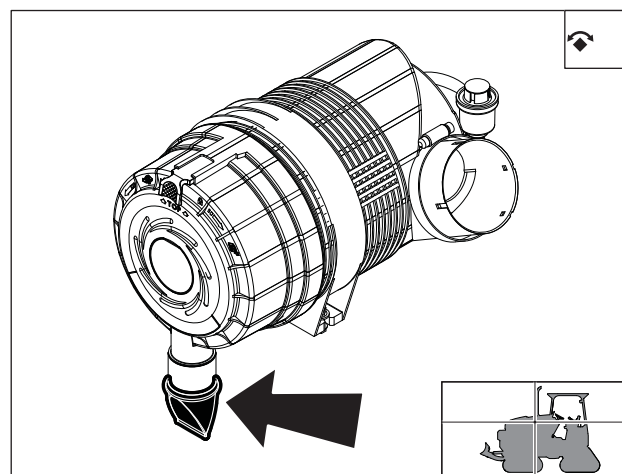
NOTICE: Only open the air filter canister when air restriction is indicated. Change the elements, do not attempt to clean them.

- Compressed air or water may damage filter elements.
- Tapping filter elements to loosen dirt may damage the elements.



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Wipe dust from trap every 10 hours.



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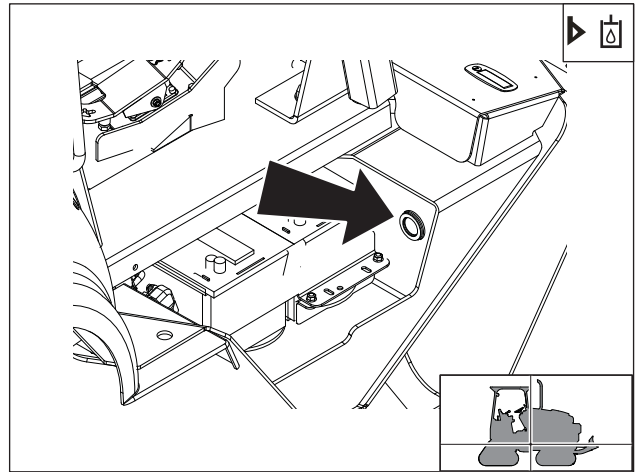
Check Hydraulic Fluid Level

With frame level, check fluid at sight glass every 10 hours. Add THF at fill as necessary.

Clean dust from cap by blowing with low-pressure air.

IMPORTANT:

- Open cap slowly, tank may be under pressure.
- Do not open unless adding hydraulic fluid.



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Check Hydraulic Hoses

**⚠ WARNING**

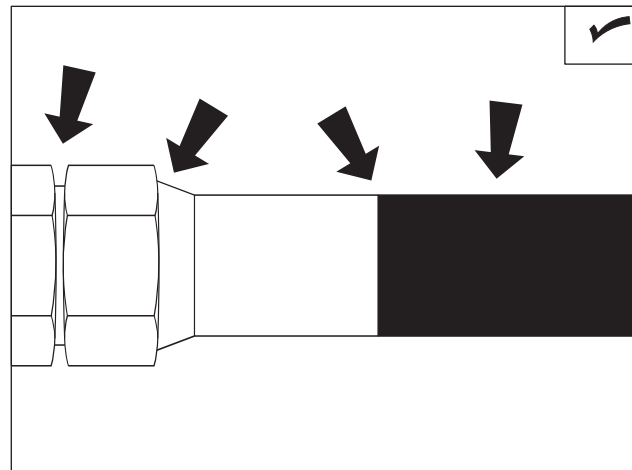
Fluid or air pressure could pierce skin and cause injury or death. Stay away.

To help avoid injury:

- 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.
- Use a piece of cardboard or wood, rather than hands, to search for leaks.
- Wear protective clothing, including gloves and eye protection.

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

Check all hydraulic hoses every 10 hours.

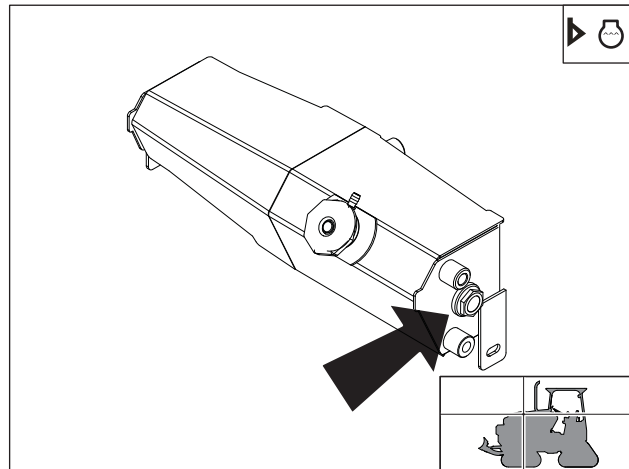


CheckHoses.eps

Check Coolant Level

With engine cool, check coolant level in expansion tank sight glass every 10 hours. Maintain level so that coolant is visible in sight glass and no higher than bottom of fill neck. If low, add approved coolant. Do not overfill. Add pre-diluted coolant to maintain proper freeze protection.

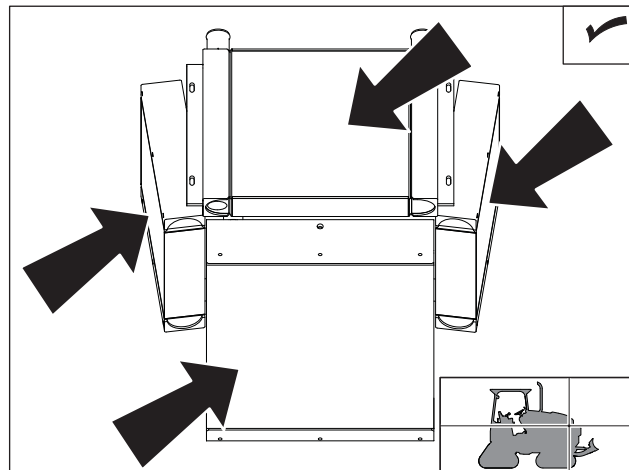
IMPORTANT: See page 152 for information on approved coolants.



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Check Radiator Fins

Check radiator for dirt, grass, and other foreign matter every 10 hours. Clean out with compressed air or spray wash if required. Be careful not to damage fins with high pressure air or water. Check more often if operating in dusty or grassy conditions.



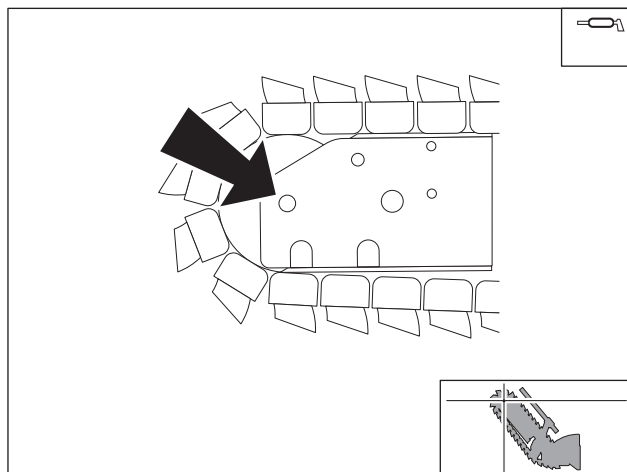
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Trencher

Lube Trencher Tail Roller

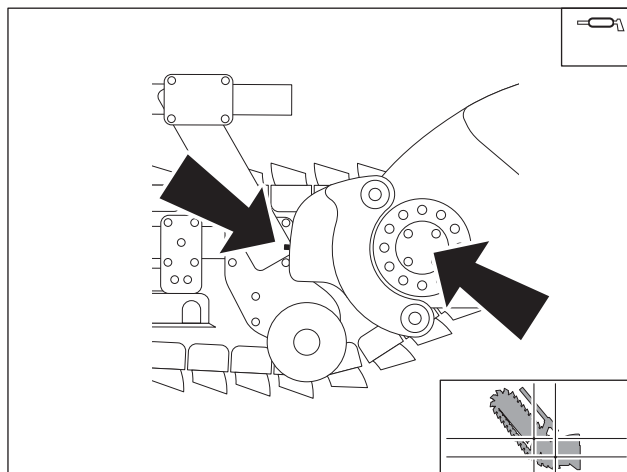
Wipe zerks clean and lube every 10 hours with EPG. Lube roller zerks on both sides of boom.



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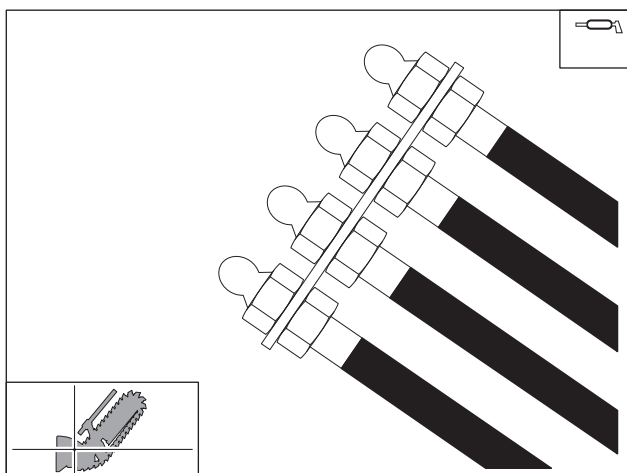
Lube Trencher Pivot

Wipe five zerks located on right of trencher pivot clean and lube every 10 hours with EPG.



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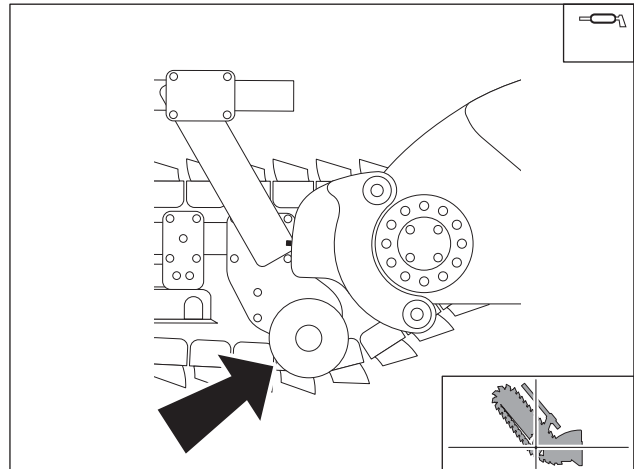
Wipe four zerks located on left of trencher pivot clean and lube every 10 hours with EPG.



t30om051h.eps

Lube Trencher Auger Bearings

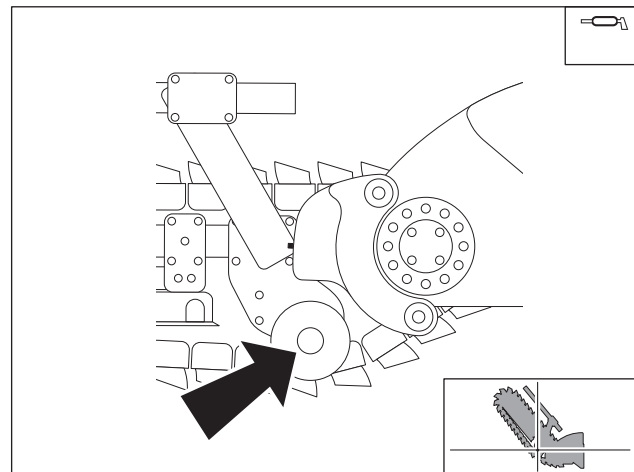
Lube two auger bearing zerks (one on each side) every 10 hours with EPG.



t30om052h.eps

Lube Trencher Auger Shaft

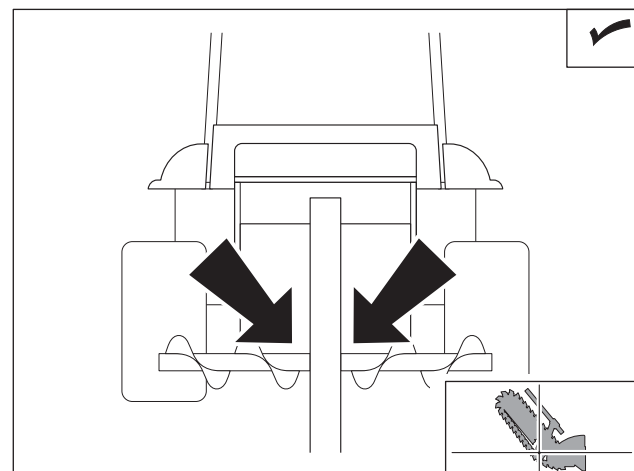
Lube four auger shaft zerks (two on each side) every 10 hours with EPG.



t30om053h.eps

Check Trencher Auger Bolts

Check trencher auger bolts every 10 hours. For optimal spoils delivery, adjust augers to match terrain and digging depth.



t30om054h.eps



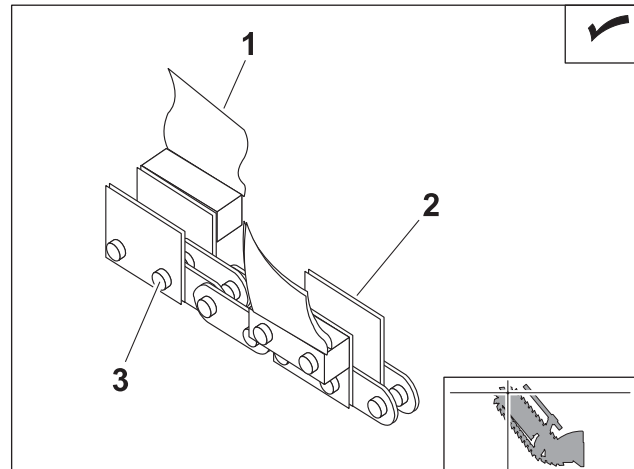
Check Digging Chain Teeth and Bits

Check teeth (1) for wear every 10 hours. Replace worn teeth, using Ditch Witch replacement parts and maintaining original tooth pattern.

For more efficient digging, contact your Ditch Witch dealer for information about the tooth pattern best suited to your jobsite.

If using rock chain bits, check that bits rotate freely. Clean chain and check bits after each use. Replace bit when carbide cap or insert is worn or adapter can be damaged.

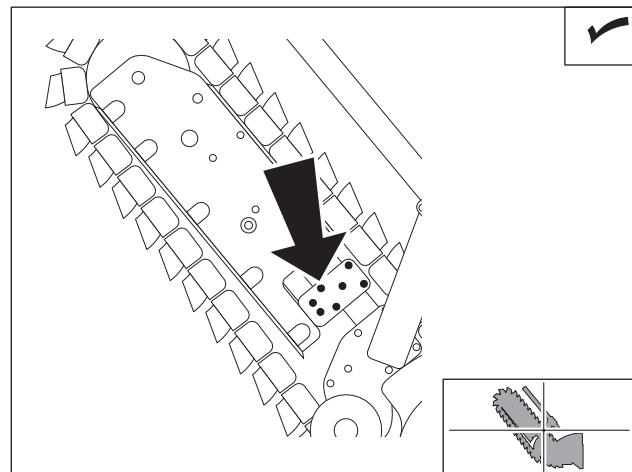
Check chain every 10 hours. Replace worn or broken chains. If sidebars (2) are bent or loose on chain pins (3), chain spacers should be used to join sidebars.



t30om055h.eps

Check Boom Mounting Bolts

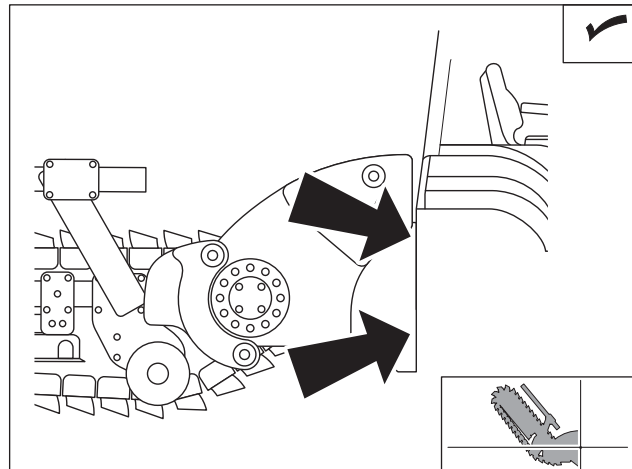
Check 14 bolts (7 on each side) every 10 hours and tighten as necessary to keep bolts and other fasteners tight. Check for looseness or wear. Check that bolts are tightened to 250 ft•lb (28 N•m).



t30om056h.eps

Check Attachment Mounting Bolts

Check bolts every 10 hours and tighten as necessary to keep bolts and other fasteners tight. Check for looseness or wear. Apply Loctite 271[®] adhesive. Check that bolts are tightened to 200 ft•lb (271 N•m).

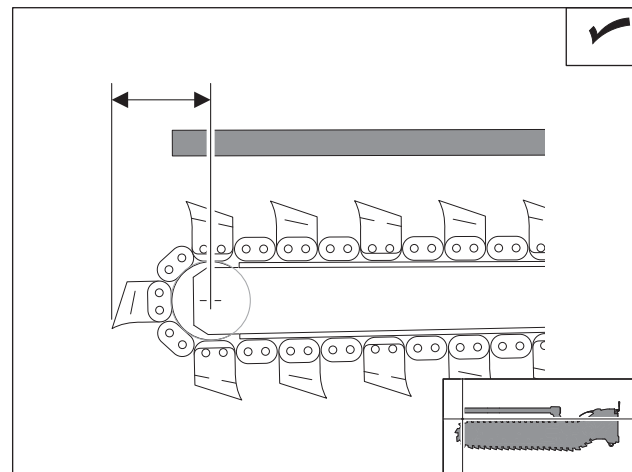


t30om057h.eps

Check Restraint Bar Position

Check restraint bar position every 10 hours, or anytime the digging chain is adjusted or replaced. The restraint bar is properly positioned when the end of bar extends between the center of the tail roller/sprocket and the end of the digging chain. Check for looseness or wear.

Tighten bolts as necessary to keep them tight. Bolts mounting arm to boom should be tightened to 400 ft•lb (542 N•m). Apply Loctite 271[®] adhesive.

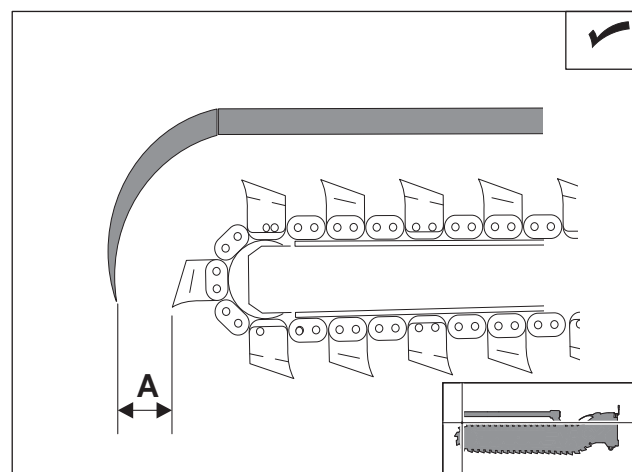


t33om89w.eps

Check Trench Cleaner Position

Check trench cleaner position (if equipped) every 10 hours, or anytime the digging chain is adjusted or replaced. The trench cleaner is properly positioned when there is 3-4 in (76-102 mm) between the digging teeth and the inside of the trench cleaner shoe (A).

Check that bolts holding personnel restraint bar/trench cleaner to arm are tightened to 350 ft•lb (475 N•m). Apply Loctite 271[®] adhesive.



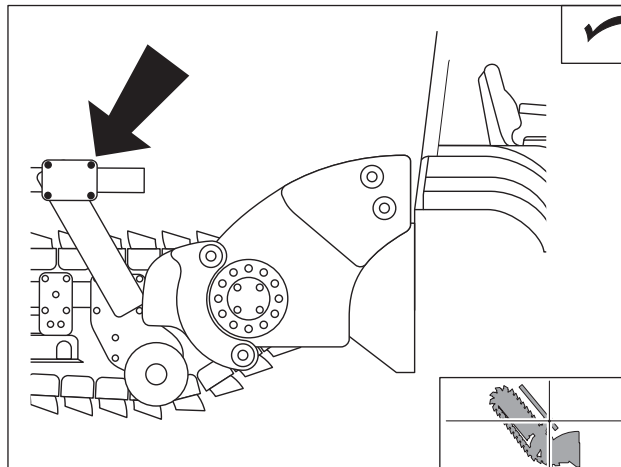
t33om90w.eps



Check Personnel Restraint Bar/ Trench Cleaner Bolts

Check all bolts that mount restraint bar/trench cleaner to arm every 10 hours and tighten as necessary to keep bolts tight. Check for looseness or wear. Apply Loctite 271[®] adhesive.

Check that bolts holding personnel restraint bar/trench cleaner to arm are tightened to 350 ft•lb (475 N•m). Bolts mounting arm to boom should be tightened to 400 ft•lb (542 N•m).



t30om058h.eps

Check Digging Chain Tension.

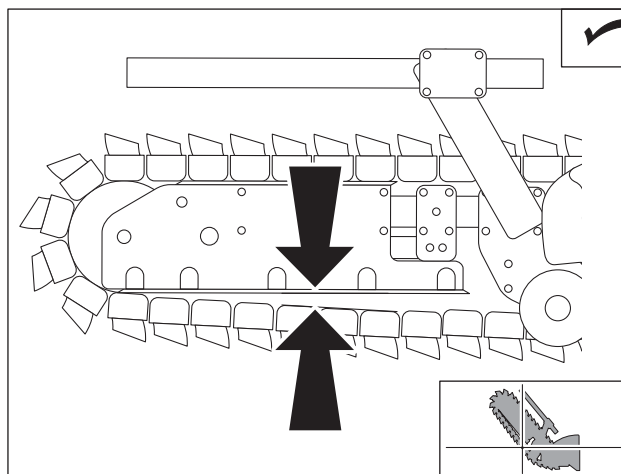


WARNING Fluid pressure could pierce skin and cause injury or death. Stay away.

To help avoid injury: Service digging boom grease cylinder only while standing on opposite side of boom. Wear gloves and safety glasses, and cover fitting with cloth when relieving pressure in cylinder.

Check digging chain tension every 10 hours. With boom horizontal, measure distance from bottom of boom to chain. When properly adjusted, distance should be 4.5 - 5.5" (114 - 140 mm).

To tighten chain, loosen six bolts on trencher boom and pump EPG into cylinder. To relieve chain tension, loosen plug on grease cylinder.

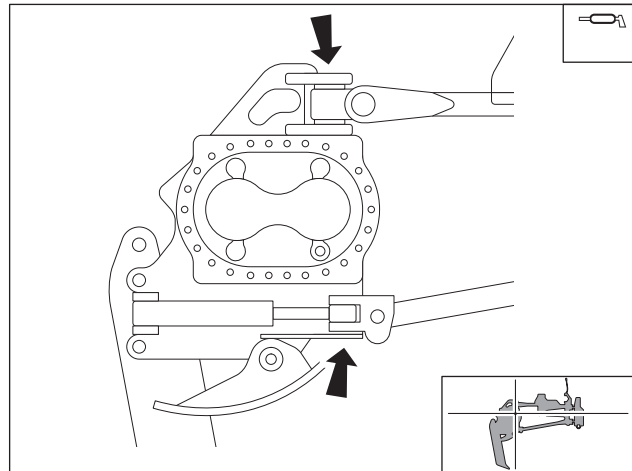


t30om059h.eps

Plow

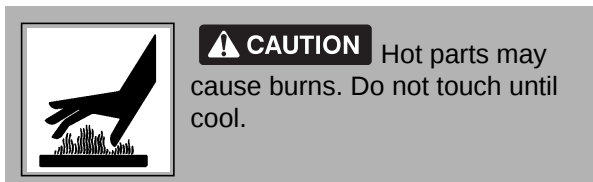
Lube Plow Pivots

Lube pivots every 10 hours with EPG.

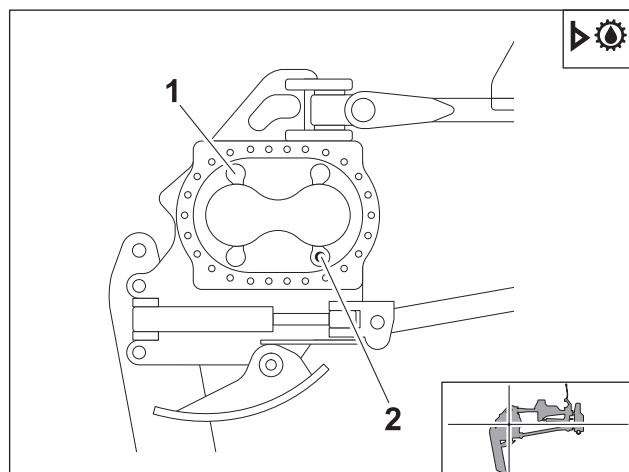


t30om064h.eps

Check Plow Vibrator Oil Level



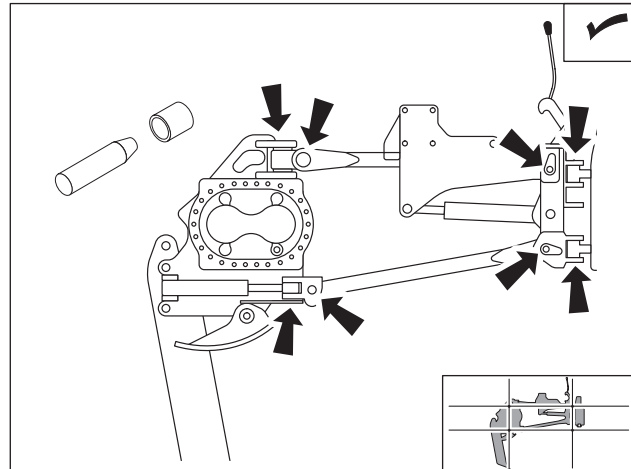
Check plow vibrator oil on each side of vibrator every 10 hours. With vibrator horizontal, oil should be halfway up sight glass (2). Add MPL as needed at fill (1).



t30om065h.eps

Check Plow Arm Pins and Bushings

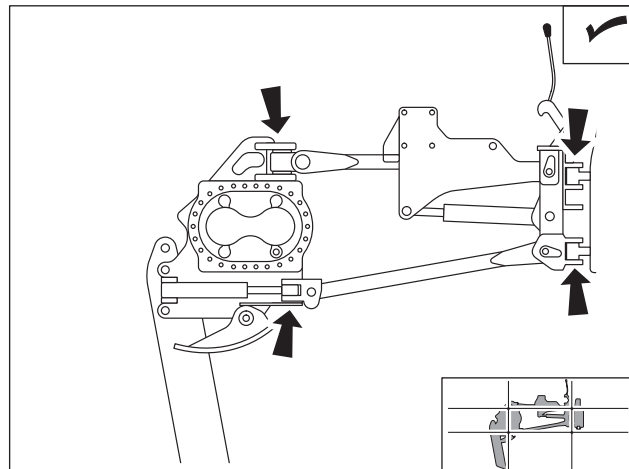
Check plow arm pins and bushings every 10 hours. Tighten as needed.



t30om067h.eps

Check Plow Connector Pivots

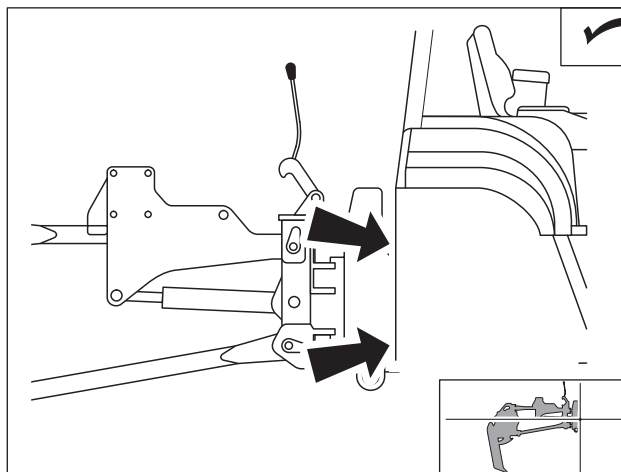
Visually check pivots every 10 hours for wear or damage.



t30om068h.eps

Check Attachment Mounting Bolts

Check mounting bolts every 10 hours and tighten as necessary to keep bolts and other fasteners tight. Check for looseness or wear. Apply Loctite 271[®] adhesive. Check that bolts are tightened to 200 ft•lb (271 N•m).



t30om069h.eps



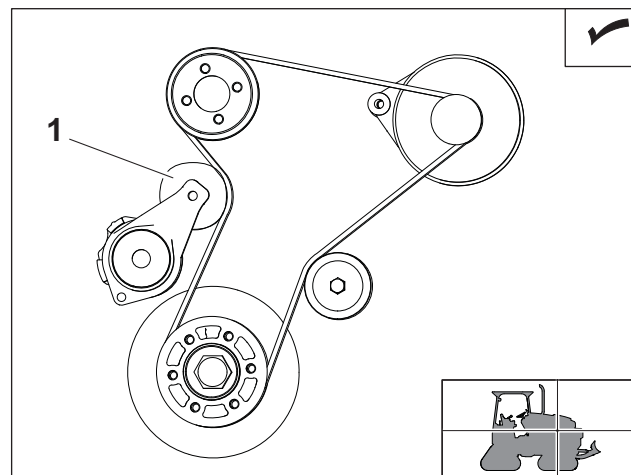
50 Hour

Location	Task	Notes
TRACTOR	Check drive belt	
	Lube track pivot bearings	MPG
TRENCHER	Check trencher gearbox oil level	MPL
PLOW	Change plow vibrator oil (initial)	MPL

Tractor

Check Drive Belt

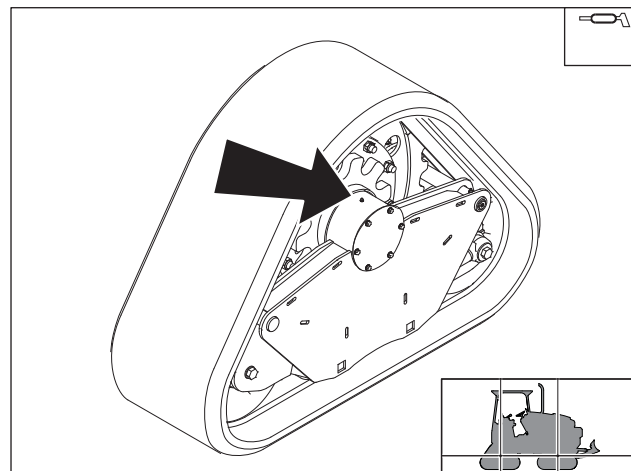
Check belt every 50 hours for damage or wear. Replace worn belt. To tension belt, loosen bolt (1) and adjust tensioner. See Deutz engine manual for more information.



t37om021w.eps

Lube Track Pivot Bearings

Lube track pivot bearings at zerk (shown) every 50 hours. Use MPG.

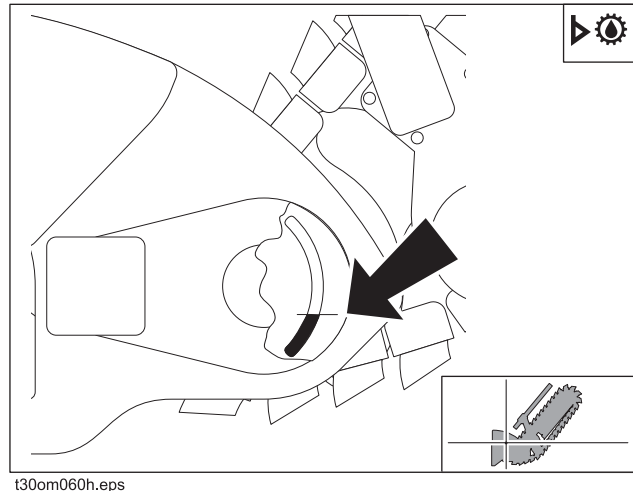


t37om022w.eps

Trencher

Check Trencher Gearbox Oil Level

Check oil at sight tube every 50 hours. Keep oil level at horizontal line on housing. If necessary, add MPL at fill plug.



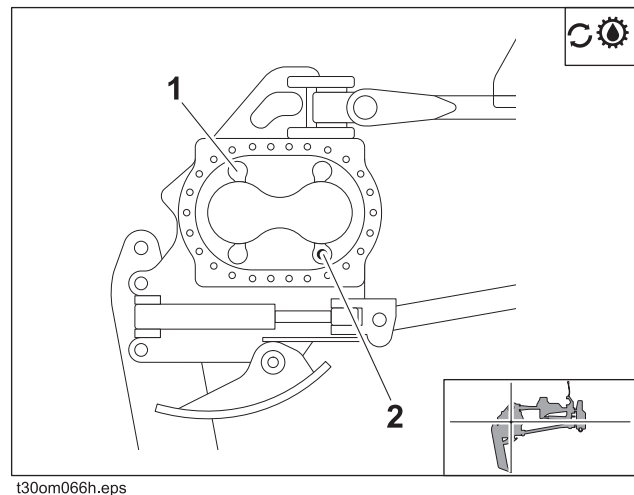
Plow

Change Plow Vibrator Oil



CAUTION Hot parts may cause burns. Do not touch until cool.

Change plow vibrator oil after first 50 hours of operation. Drain oil at drain plug (2). Replace plug and move plow vibrator to horizontal position. Add MPL at fill (1) until oil is halfway up sight glass (2). Refill capacity is 4 qt (3.8 L).



100 HOUR



Location	Task	Notes
TRACTOR	Change engine oil (Tier 3)	Initial; if using fuel with sulfur content above 500 ppm (500 mg/kg)
	Check track tension	
	Inspect track rollers and sprocket	
PLOW	Check plow shear mounts	
	Test plow connector pivots	

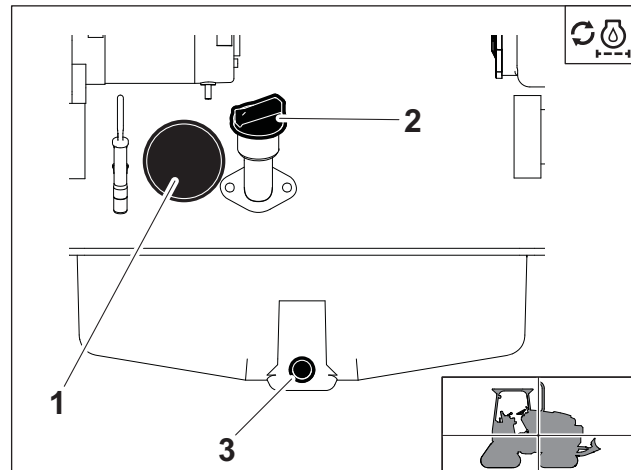
Tractor

Change Engine Oil and Filter (Initial)

Change engine oil and filter at 100 hours if fuel sulfur content is above 500 ppm (500 mg/kg). See page 149 for more information about DEO specifications.

To change:

1. While oil is warm, remove drain plug (3). Drain oil and replace plug.
2. Remove filter (1) and replace with new filter each time oil is changed. Add DEO at fill neck (2).



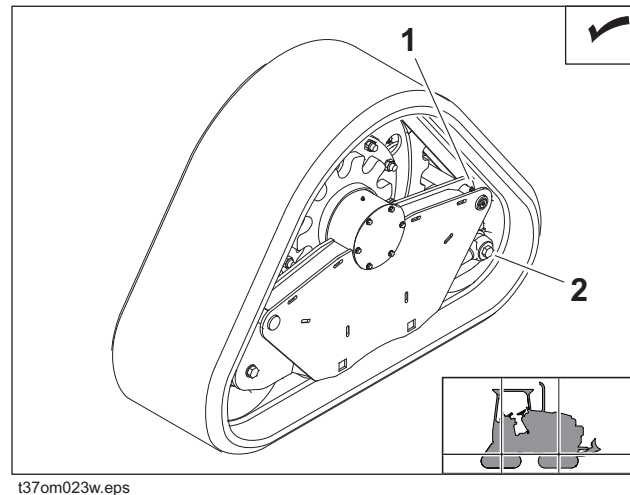
t37om039w.eps

Check Track Tension

Check track tension every 100 hours.

To check:

1. Elevate unit on jackstands, or lifting devices capable of holding the weight of the tractor.
2. Measure tension using one of the methods below. Track is tensioned correctly when:
 - the track just comes into contact with the middle rollers,
 - when there is a 1/4" gap between the tracks and the middle rollers,
 - or when grease pressure is 1400-1600 psi.

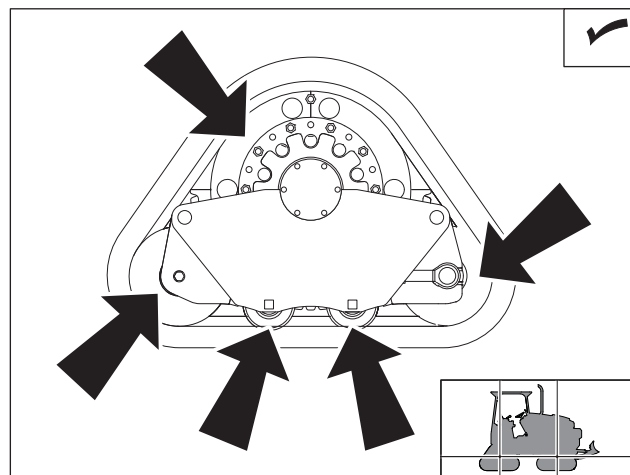


To adjust:

1. Loosen bolts on each cylinder end (2).
2. Pump MPG into zerk (1) until track is correctly tensioned.
3. Tighten bolts on cylinder end (2).

Inspect Track Rollers and Sprocket

Inspect track rollers and sprocket for wear every 100 hours. Replace as needed.

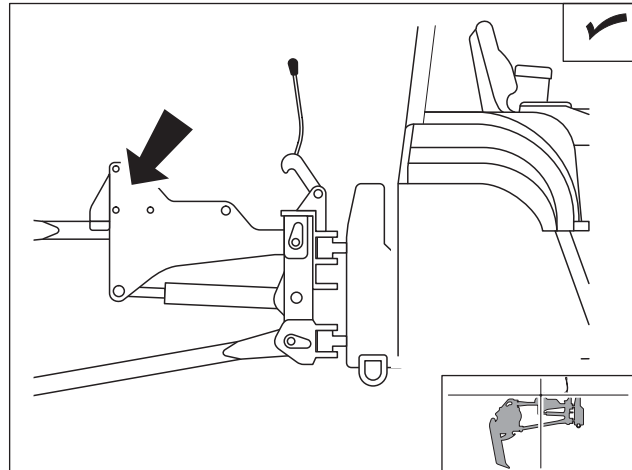


Plow

Check Shear Mounts

Check shear mounts for wear every 100 hours. Replace as needed.

IMPORTANT: When replacing shear mounts, it is important to compress the shear mounts with the washers to prevent the shear mount from tearing.



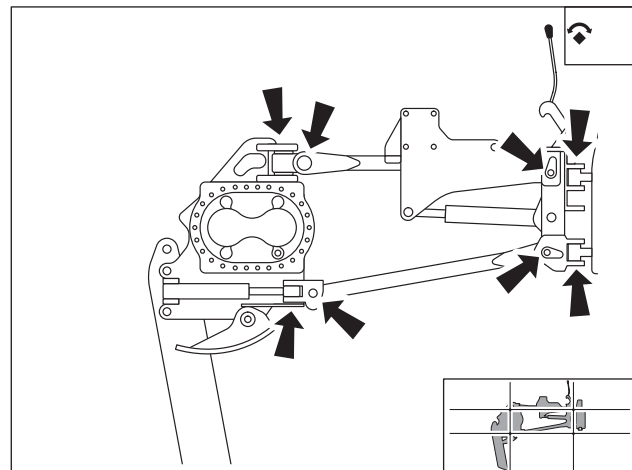
t30om070h.eps

Test Plow Connector Pivots

Test upper and lower connector pivots every 100 hours.

To test upper pivot:

1. Lower plow to ground.
2. Use plow lift control to put hydraulic load on pivot joints. Do not raise plow.
3. As hydraulic load is applied and released, visually check joints for motion. If motion is observed, contact your Ditch Witch dealer.



t30om071h.eps

To test lower pivot:

1. Lower plow to ground.
2. Use hydraulic jack to place load on lower arm.
3. As hydraulic load is applied and released, visually check joints for motion. If motion is observed, contact your Ditch Witch dealer.

IMPORTANT: Lower plow blade to ground and visually inspect bushings and joints. Replace bushings if there is excessive motion.



250 Hour

Location	Task	Notes
TRACTOR	Engine oil and filter change	DEO
	Lube driveshaft U-joints	EPG
	Lube axle spindle pins	EPG
	Check ground drive gearbox oil level	MPL
	Check differential oil level	MPL
	Lube planetary wheel ends	MPL

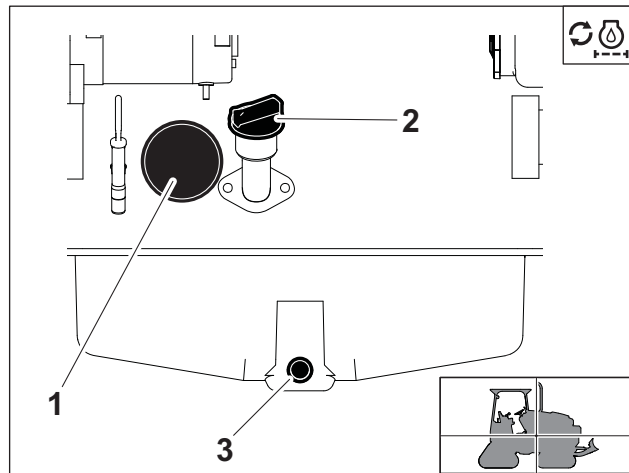
Tractor

Engine Oil and Filter Change (Tier 3)

Change engine oil and filter every 250 hours when using motor oils meeting only API CJ-4 or ACEA E7. See page 149 for more information about DEO specifications.

To change:

1. While oil is warm, remove drain plug (3). Drain oil and replace plug.
2. Remove filter (1) and replace with new filter each time oil is changed. Add DEO at fill neck (2).



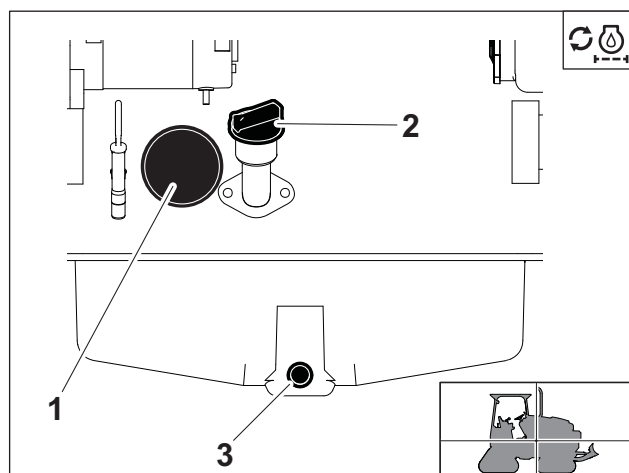
t37om039w.eps

Engine Oil and Filter Change (Tier 4i)

Change engine oil and filter every 250 hours when using motor oils meeting only API CJ-4 or ACEA E6/E9. See page 149 for more information about DEO specifications.

To change:

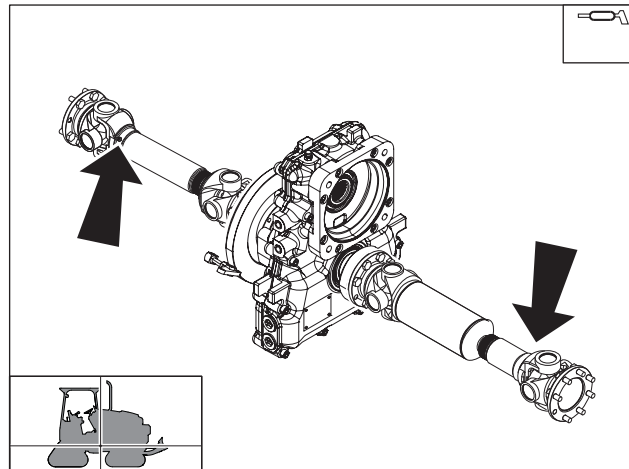
1. While oil is warm, remove drain plug (3). Drain oil and replace plug.
2. Remove filter (1) and replace with new filter each time oil is changed. Add DEO at fill neck (2).



t37om039w.eps

Lube Driveshaft U-joints

Lube driveshaft U-joints every 250 hours with 3-4 shots of EPG.

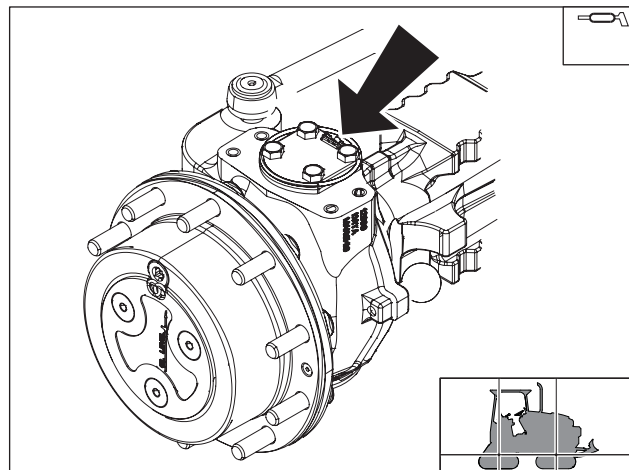


t37om025w.eps



Lube Axle Spindle Pins

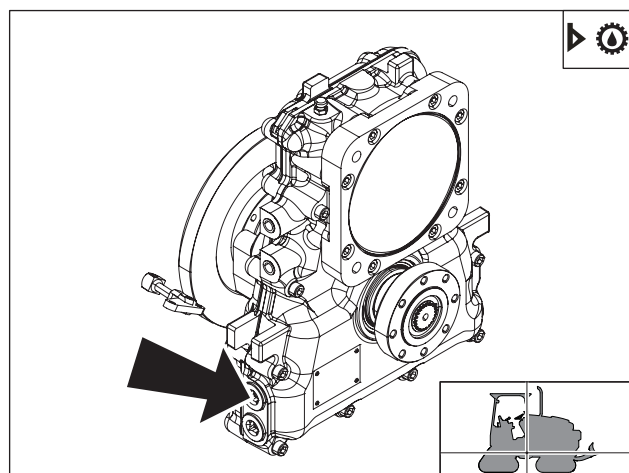
Lube axle spindle pins every 250 hours with 3-4 shots of EPG.



t37om026w.eps

Check Ground Drive Gearbox Oil Level

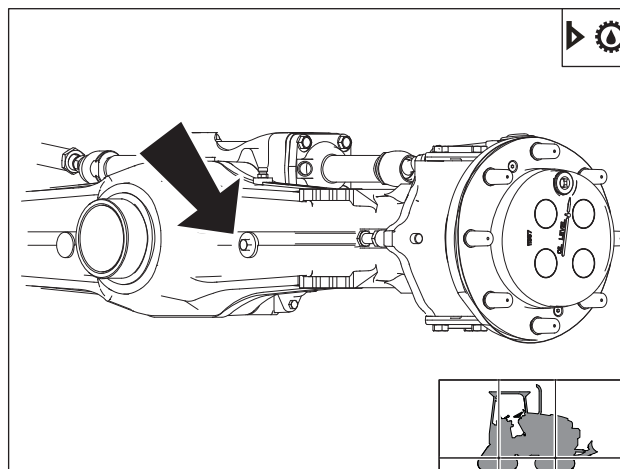
Check oil level at fill (shown) every 250 hours. Keep level at raised horizontal line on gearbox. Add MPL as needed.



t37om027w.eps

Check Differential Oil Level

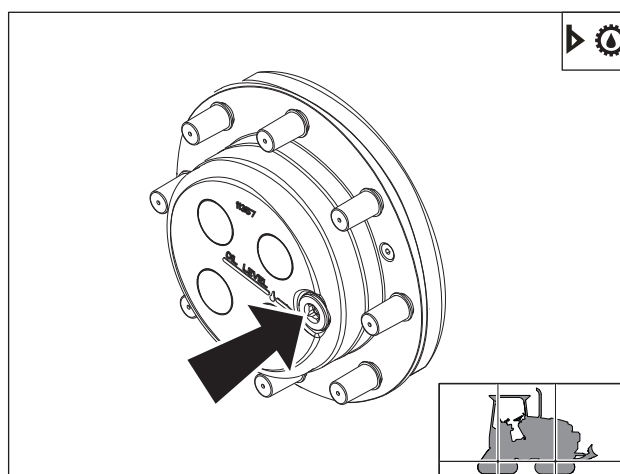
Check oil level at fill (shown) every 250 hours.
Add MPL as needed.



t37om028w.eps

Check Planetary Wheel End Oil Level

Remove track to check oil level in planetary wheel ends every 250 hours. Add MPL as needed.



t37om029w.eps

500 Hour



Location	Task	Notes
TRACTOR	Change engine oil and filter	ONLY if using motor oil meeting Deutz specifications DQCIII-LA (Tier 4i) or DQCIII (Tier 3).
	Change fuel filters	
	Change hydraulic fluid and filter	THF
	Test coolant freeze protection level	
PLOW	Change plow vibrator oil	MPL
TRENCHER	Adjust headshaft bearings	

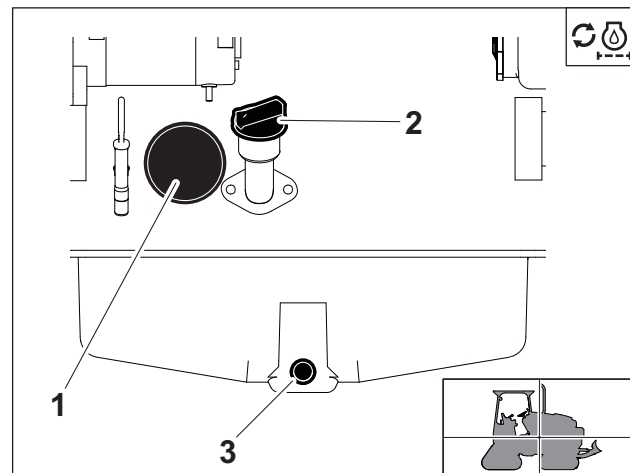
Tractor

Change Engine Oil and Filter

Change engine oil and filter every 500 hours
ONLY if using motor oil meeting Deutz specifications DQCIII-LA. See page 149 for more information about DEO specifications.

To change:

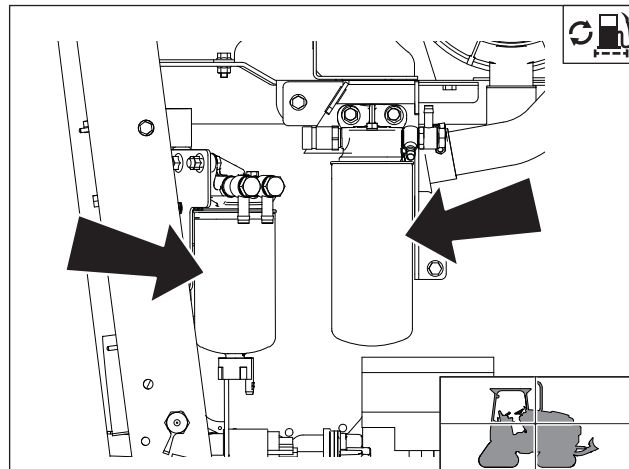
1. While oil is warm, remove drain plug (3). Drain oil and replace plug.
2. Remove filter (1) and replace with new filter each time oil is changed. Add DEO at fill neck (2).



t37om039w.eps

Change Fuel Filters

Change fuel filters (shown) every 500 hours.



t37om030w.eps

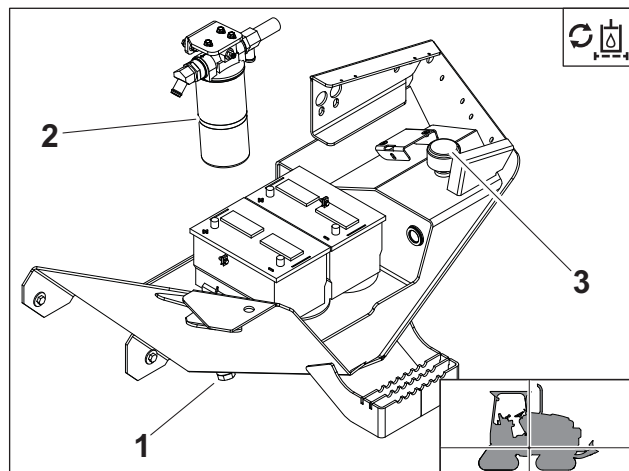
Change Hydraulic Fluid and Filter

Change hydraulic fluid and filter every 500 hours.

Change hydraulic fluid and filter every 250 hours if jobsite temperature exceeds 100°F (38°C) more than 50% of the time.

To change:

1. Remove drain plug (1).
2. Drain fluid and replace plug.
3. Change filter (2).
4. Add THF at fill (3).



t37om031w.eps

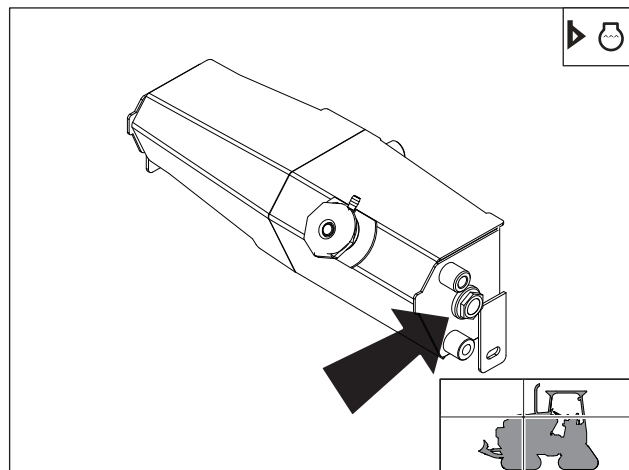
Test Coolant Freeze Protection Level

With engine cool, test coolant freeze protection level using a hydrometer or refractometer. Recommended freeze protection level is -34°F (-37°C). Adjust as needed.

If colder temperatures are expected, consult your Ditch witch dealer or coolant supplier.

IMPORTANT: See page 152 for information on approved coolants.

Use pre-diluted coolant to maintain proper freeze protection.



t37om019w.eps

Plow

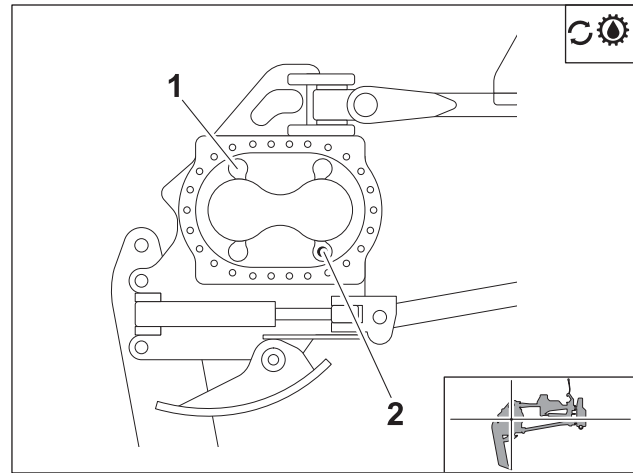
Change Plow Vibrator Oil



CAUTION Hot parts may cause burns. Do not touch until cool.

Change plow vibrator oil every 500 hours. If normal operating temperature exceeds 100°F (38°C), change plow vibrator oil every 250 hours.

Drain oil at drain plug (2). Replace plug and move plow vibrator to horizontal position. Add MPL at fill until oil is halfway up sight glass (1). Refill capacity is 4 qts (3.8 L).



t30om066h.eps

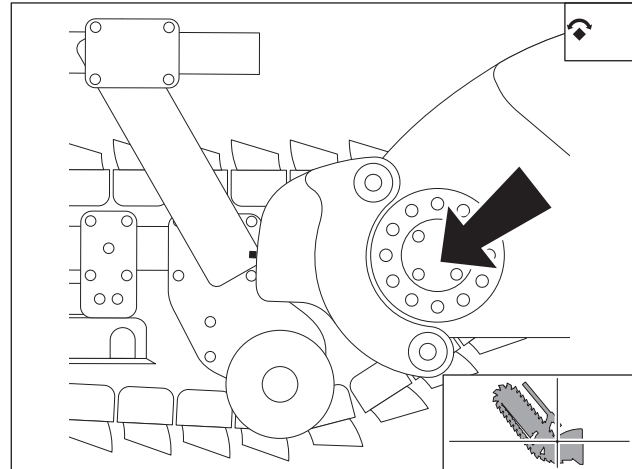
Trencher

Adjust Headshaft Bearing

Adjust headshaft bearing every 500 hours.

To adjust:

1. Remove cover. Remove bolts attaching trenching attachment motor to gearbox.
2. Remove bolt and washers in left end of headshaft.
3. Support gearbox with hoist and slide it off headshaft.
4. Install spacer (p/n 184-044) in place of gearbox while checking bearings.
5. Replace bolt on end of headshaft.
6. Remove chain from headshaft sprocket.
7. Turn chain sprocket until headshaft sprocket turns. When properly adjusted, it will take two hands and some effort. If it turns easily, remove a shim.



t30om062h.eps

1000 Hour

Location	Task	Notes
TRACTOR	Change differential oil	MPL
	Change ground drive gearbox oil	MPL
	Change planetary wheel end oil	MPL
TRENCHER	Change trencher gearbox oil	MPL

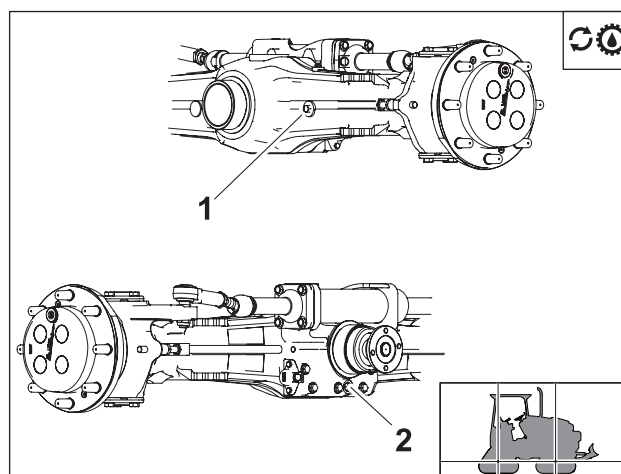
Tractor

Change Differential Oil

Change differential oil every 1000 hours.

To change:

1. Remove drain plug (2).
2. Drain fluid and replace plug.
3. Add MPL at fill (1).



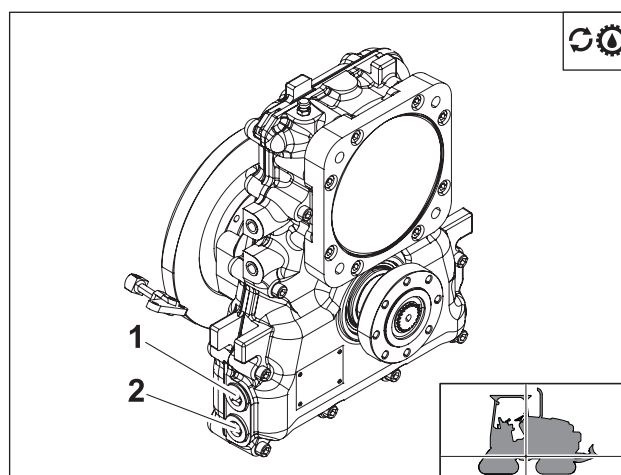
t37om033w.eps

Change Ground Drive Gearbox Oil

Change ground drive gearbox oil every 1000 hours.

To change:

1. Remove drain plug (2).
2. Drain oil and replace plug.
3. Fill gearbox with MPL at fill (1).



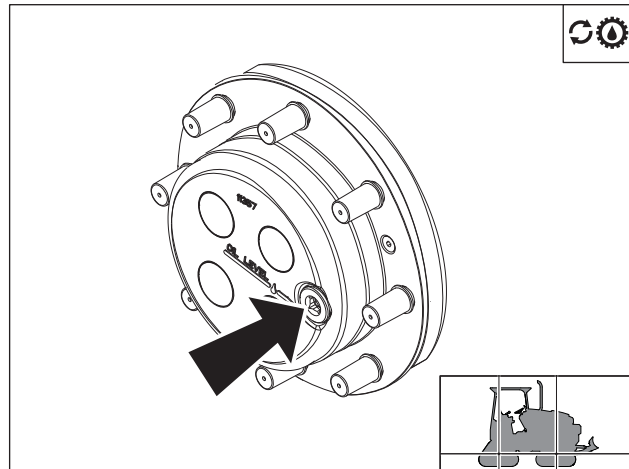
t37om034w.eps

Change Planetary Wheel End Oil

Change wheel end oil every 1000 hours.

To change:

1. Position wheel with plug at bottom.
2. Remove plug.
3. Drain oil.
4. Reposition wheel with plug at midway position.
5. Fill with MPL to plug opening.
6. Replace plug.



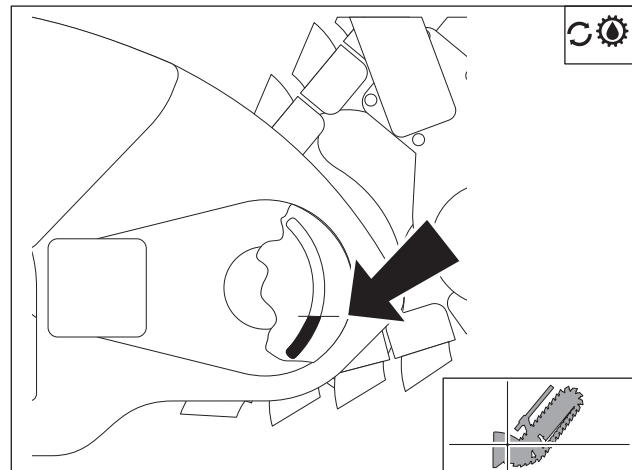
t37om035w.eps



Trencher

Change Trencher Gearbox Oil

Change trencher gearbox oil every 1000 hours.
Drain at plug. Replace drain plug and fill with
MPL to lowest line on sight tube.



t30om061h.eps

2000 Hour

Location	Task	Notes
TRACTOR	Change engine coolant	DEAC
	Check seatbelt and seatbelt mounting hardware	

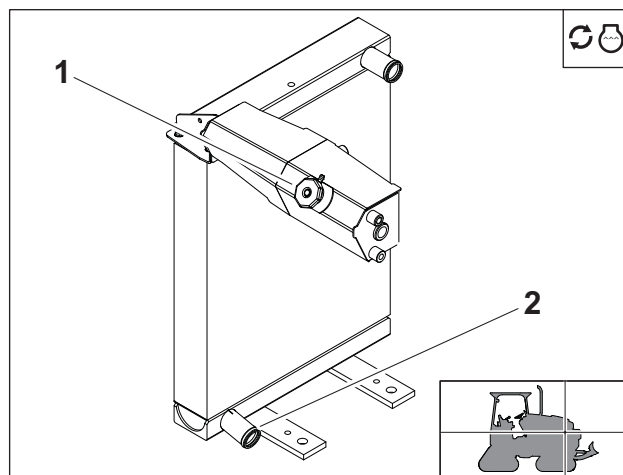
Tractor

Change Engine Coolant

NOTICE:

- The use of non-approved coolant may lead to engine damage or premature engine failure and will void engine warranty.
- See “Approved Coolant” on page 152 for list of approved coolants.

Drain cooling system at drain (2) every two years or 2000 hours. Add approved coolant at fill (1).



t37om042w.eps

Inspect Seat Belt

Check seat belt and mounting hardware as needed. Inspect the webbing, buckle and latch, retractor, and mounting hardware.

Buckle and Latch

Check that the buckle and latch (1) are not broken or corroded. When inserting the latch into the buckle, the latch should insert smoothly until an audible click is heard. Latch should not release when the seat belt is tugged.

Webbing

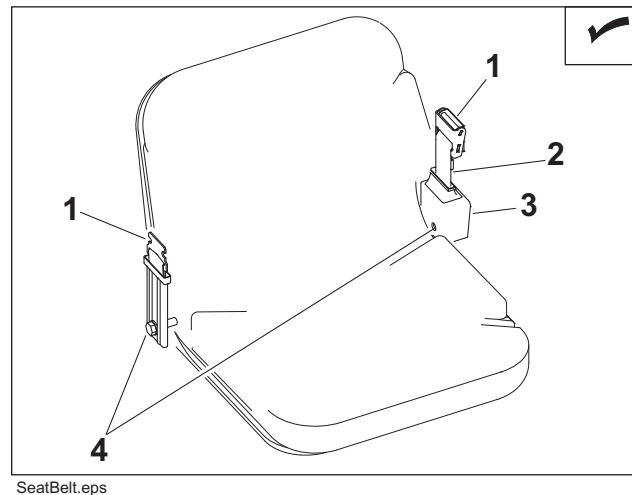
Inspect seat belt webbing (2) to ensure that it is not cut, frayed or showing signs of extreme or unusual wear. Check the area near the buckle and latch and anywhere the seat belt has contact with equipment or seat.

Retractor

Check that the retractor (3) operates smoothly when the belt is pulled and released. Retractor should spool belt without locking.

Mounting Hardware

Inspect the seat belt mounting bolts (4) on both sides of the seat to ensure they are tight. Replace missing, damaged, or corroded bolts.



As Needed

Location	Task	Notes
TRACTOR	Adjust parking brake	
	Clean radiator fins	
	Drain water separators and fuel filter	As indicated on dash display
TRENCHER	Replace digging chain	
PLOW	Clean feed tube	
	Replace sod cutter and blade	
	Check plow blade bolts	210 ft•lb (285 N•m)
BACKHOE	Replace pins and bushings	

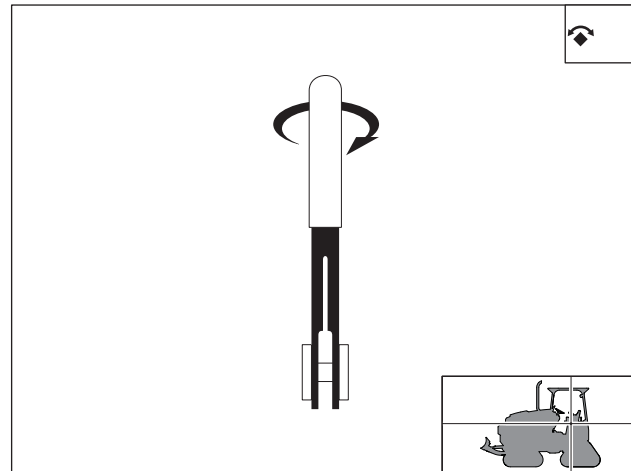
Tractor

Adjust Parking Brake

Adjust parking brake as needed.

To adjust:

1. Release parking brake.
2. Remove orange sleeve.
3. Twist lever clockwise to tighten.
4. Engage parking brake to test tension. If tension is too tight, the brake lever will not engage fully. Repeat steps 1-3 as necessary.
5. Replace orange sleeve.

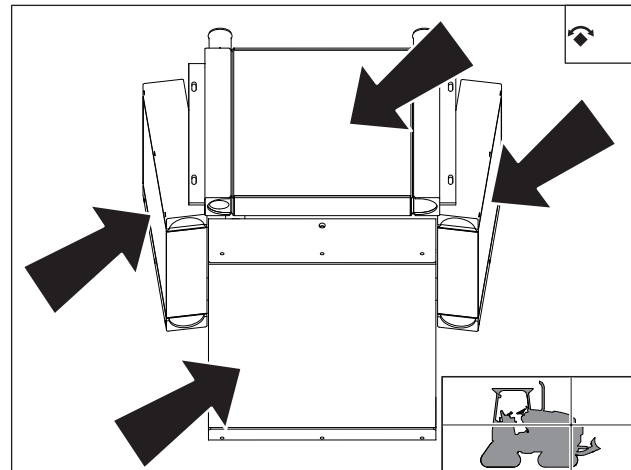


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Clean Radiator Fins

Clean out radiator fins with compressed air or spray wash if required. Be careful not to damage fins with high-pressure air or water. Check more often if operating in dusty or grassy conditions.

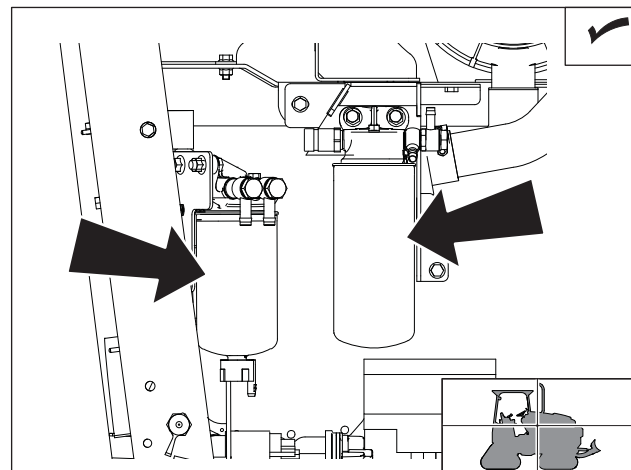


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Drain Water Separators and Fuel Filter

Drain water separators and fuel filter as needed. WIF (water in fuel) indicator will indicate need.

Drain at plug as needed until water is removed and fuel runs from drain.



t37om017w.eps

Trencher

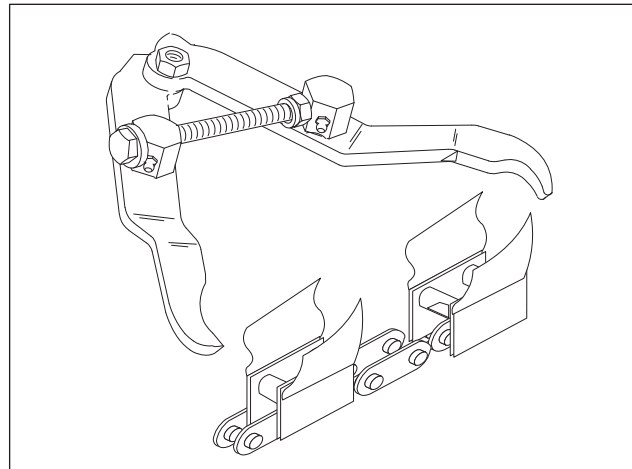
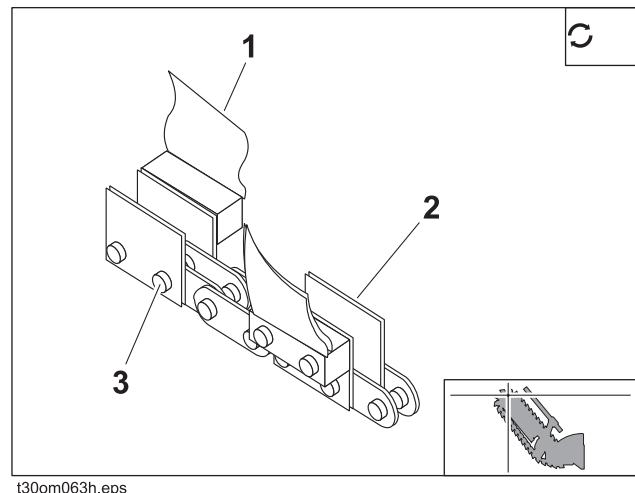
Replace Digging Chain

Visually check digging chains for wear on teeth (1), rollers, and sidebars (2). Check pins (3) and bushing wear by measuring distance between chain pins and comparing it with a new chain.

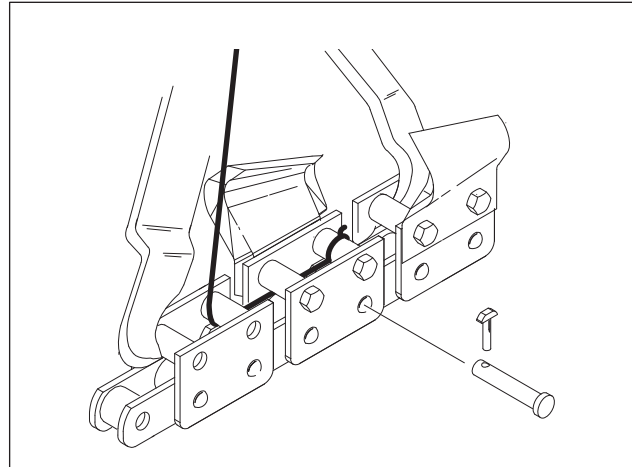
IMPORTANT: Replace sprockets when a new chain is installed.

To remove chain:

1. Fasten and adjust seat belt.
2. Start tractor. See page 76 for proper start-up procedures.
3. Move attachment direction/speed control until digging chain connector pin is on top of boom.
4. Lower boom to ground.
5. Engage parking brake and verify parking brake indicator is on.
6. Turn ignition switch to STOP.
7. Secure chain by clamping links on either side of connector pin with chain jaws. Squeeze jaws to reduce pressure on connector pin.



8. Loop cable through links nearest connector pin.



WARNING Fluid pressure could pierce skin and cause injury or death. Stay away.

To help avoid injury: Service digging boom grease cylinder only while standing on opposite side of boom. Wear gloves and safety glasses, and cover fitting with cloth when relieving pressure in cylinder.

9. Loosen plug on grease cylinder to relieve chain tension.
10. Stand clear of chain and remove lock key from connector pin. Drive connector pin out of link.



WARNING Crushing weight could cause death or serious injury. Use proper procedures and equipment or stay away.

11. Unclamp links. Slowly release cable and lower chain to ground.
12. Lay chain on ground with teeth down.

To install chain:

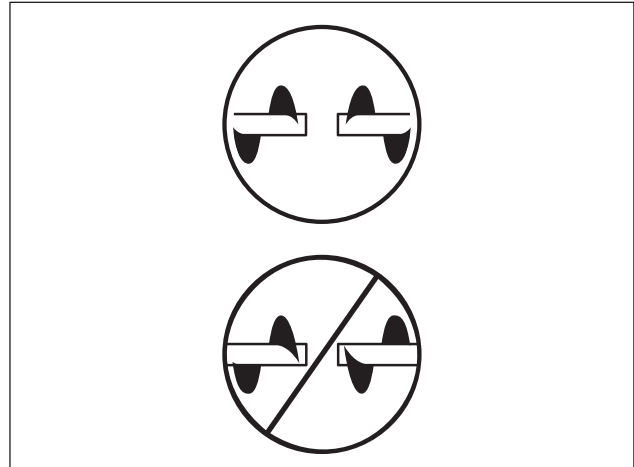
1. Lay chain on ground with teeth down and pointed toward unit.
2. Fasten and adjust seat belt.
3. Start tractor. See page 76 for start-up procedures.
4. Disengage parking brake and verify parking brake indicator is off.
5. Move ground drive control to reverse.
6. Back unit up until chain extends past head shaft about 1' (305 mm).
7. Move ground drive control to neutral.
8. Lower backfill blade, if equipped, to ground.
9. Lower boom to horizontal position.
10. Engage parking brake and verify parking brake indicator is on.
11. Turn ignition switch to STOP.
12. Pull rear end of chain over and about 10" (260 mm) past tail roller.
13. Use hoist to pull front end of chain over head shaft sprocket.
14. Move chain down boom until chain connector pin and lock key can be installed. Install connector pin and lock key.
15. Tighten chain by pumping EPG into grease cylinder.

Time Augers

Ensure that augers are balanced, as shown. If auger timing is off, unit will bounce from side to side even in normal digging conditions.

To adjust timing:

1. Remove bolts holding augers to auger shaft and rotate either auger as needed until augers are balanced.
2. Reinstall bolts and tighten securely.

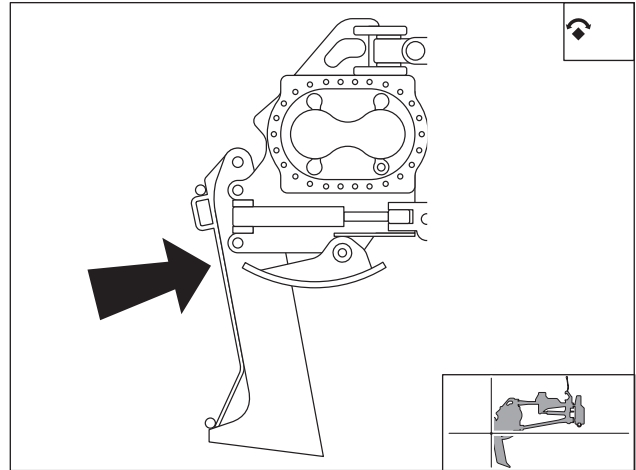


Augers_Adjust.eps

Plow

Clean Feed Tube

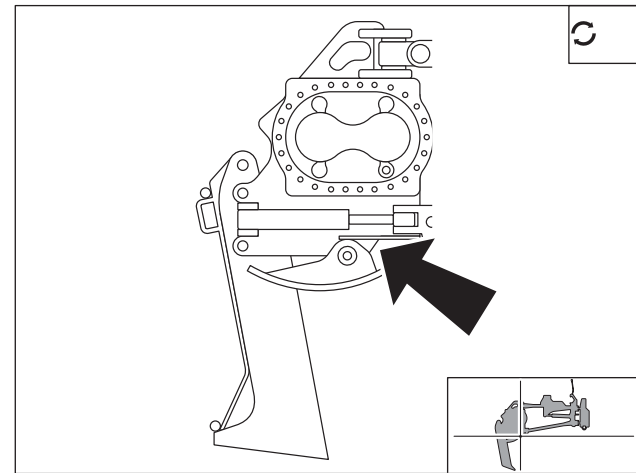
Clean feed tube as needed.



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Replace Sod Cutter and Blade

Replace worn sod cutter and plow blade as needed.

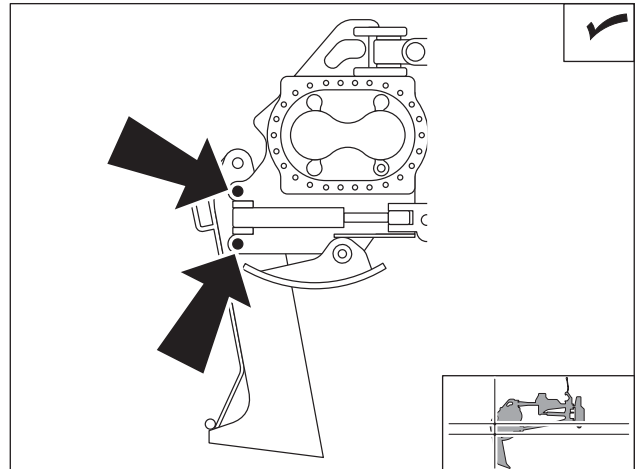


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Check Plow Blade Bolts

Check plow blade bolts as needed. If loose, use Loctite® 242 (blue) and tighten bolts to 210 ft•lb (285 N•m).

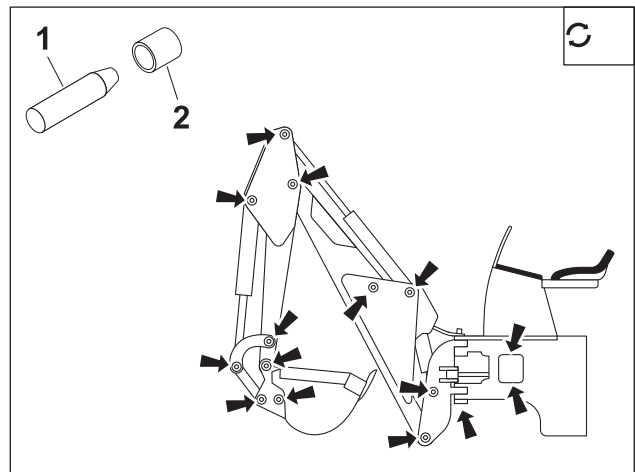


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Backhoe

Replace Pins and Bushings

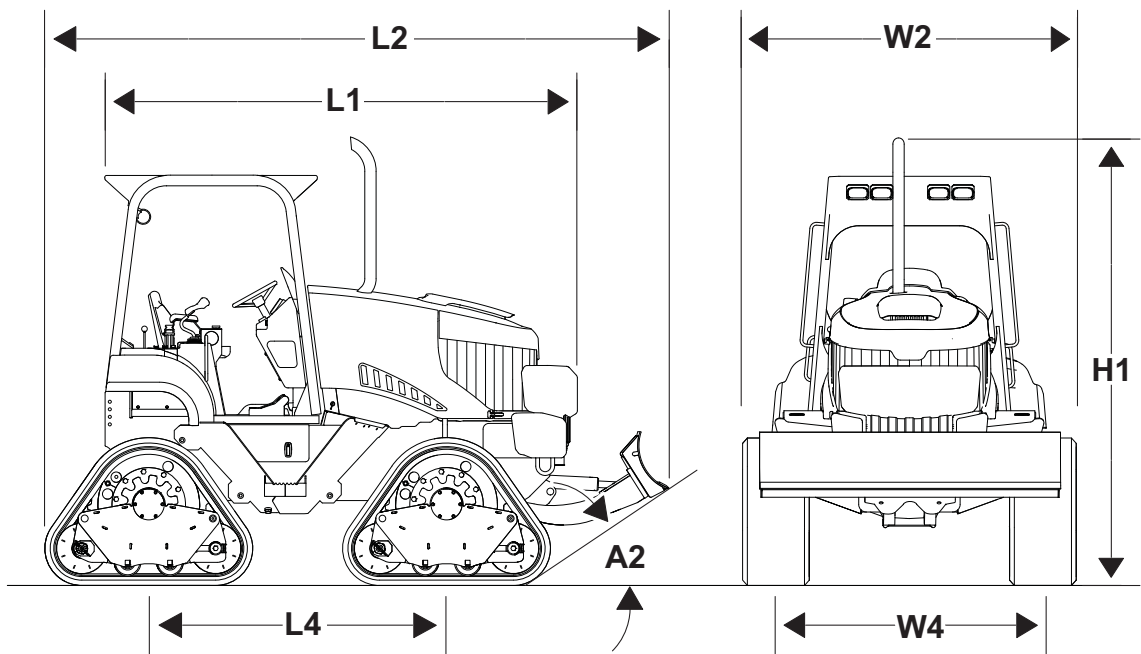
Replace pins (1) and bushings (2) when worn or damaged.



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Specifications

RT120Q Tractor



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Dimensions		U.S.	Metric
A2	Angle of approach	34°	34°
H1	Height	117 in	2.97 m
L1	Nose to rear mount length	125 in	3.18 m
L2	Length - transport	166 in	4.22 m
L4	Wheelbase	79 in	2.01 m
W2	Width	89 in	2.26 m
W4	Tread	71 in	1.80 m

General

Ditch Witch model RT120Q tractor, 4-wheel drive, rigid frame, hydrostatic ground drive through rubber tracks, 4-wheel steering, hydrostatic attachment drive, riding unit.

Operation		U.S.	Metric
Forward speeds			
	Low	2.0 mph	3.2 km/h
	Medium	4.4 mph	7.1 km/h
	High	7.2 mph	11.6 km/h
Reverse speeds			
	Low	2.0 mph	3.2 km/h
	Medium	4.4 mph	7.1 km/h
	High	4.7 mph	7.5 km/h
Vehicle clearance circle (SAE) wall to wall with optional backfill blade			
	Front steer only	39.5 ft	12 m
	Coordinated steer	27 ft	8.2 m
Ground clearance		15.5 in	394 mm
Basic unit weight		13,600 lb	6169 kg
Maximum allowable tractor weight		26,200 lb	11,884 kg
Front counterweight		1300 lb	590 kg
Side counterweight (each)		250 lb	114 kg

Backfill Blade (optional)		U.S.	Metric
Blade width		80 in	2.03 m
Blade height		17 in	430 mm
Lift height above ground		26 in	660 mm
Blade drop below ground		10 in	254 mm
Maximum swing angle (left/right)		30°	30°
Tilt angle (up/down)		24°	24°

Power Plant		U.S.	Metric
Engine: Deutz Tier 3 or Tier 4i TCD 3.6 L4 diesel, liquid cooled, 4 cyl, common rail direct injection, turbocharged with charge air cooling, and Tier 4i with exhaust after treatment system (EAT).			
Displacement		221 in ³	3.6 L
Bore		3.86 in	98 mm
Stroke		4.72 in	120 mm
Engine manufacturer's gross power rating per SAE J1349		121 hp	90 kW
Estimated net power per SAE J1349		113 hp	84 kW
Rated speed		2300 rpm	2300 rpm
Maximum engine tilt angles*			
	Longitudinal	30°	30°
	Lateral	30°	30°

*Exceeding these operating angles will cause engine damage. This DOES NOT IMPLY machine is stable to maximum angle of safe engine operation.

Power Train
Ground drive: hydrostatic
Differentials: planetary front and rear with rear steering
Service brake: hydrostatic
Parking brake: disc, hand operated
Tracks: 450x86x42 rubber track, chevron pattern
Attachment drive: hydrostatic, electronically-operated speed infinitely variable from zero to maximum

Hydraulic System	U.S.	Metric
Ground drive pump capacity at 2300 rpm	47.4 gpm	179 L/min
Ground drive pump relief pressure at 2300 rpm	6200 psi	427.5 bar
Attachment pump capacity at 2300 rpm	47.4 gpm	179 L/min
Attachment pump relief pressure at 2300 rpm	6200 psi	427.5 bar
Auxiliary pump capacity at 2300 rpm	13.8 gpm	52 L/min
Auxiliary pump relief pressure at 2300 rpm	3300 psi	227.5 bar



Fluid Capacities	U.S.	Metric
Fuel tank	38 gal	144 L
Engine oil	8.4 qt	8 L
Hydraulic reservoir	20 gal	76 L
Hydraulic system	25 gal	95 L
Cooling system	12.3 qt	11.6 L

Battery (2 used)

Group 65, SAE res. cap 165 min., SAE cold crank @ 0° F (-18° C), 875 amp

Auxiliary power outlet - 12 volt, 10 amp

Vibration Level

Average vibration transmitted to the operator's hand and whole body while plowing is 8.12 and 1.44 m/sec² respectively.

Operator seat complies with ISO 7096.

Noise Levels

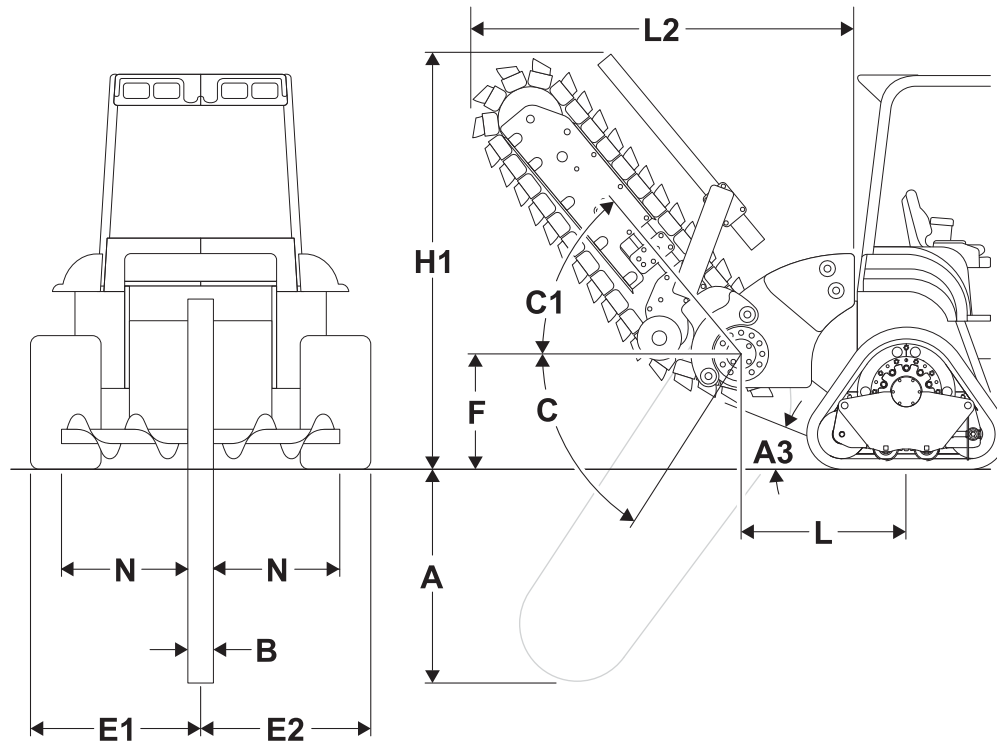
Operator ear sound pressure level is 92 dBa per ISO 6394.

Exterior sound power level is 109 dBa per ISO 6393.

Unless otherwise specified, all figures are for standard equipment only.

Specifications are called out according to SAE recommended procedures. Specifications are general and subject to change without notice. If exact measurements are required, equipment should be weighed and measured. Due to selected options, delivered equipment may not necessarily match that described.

H910 Trencher

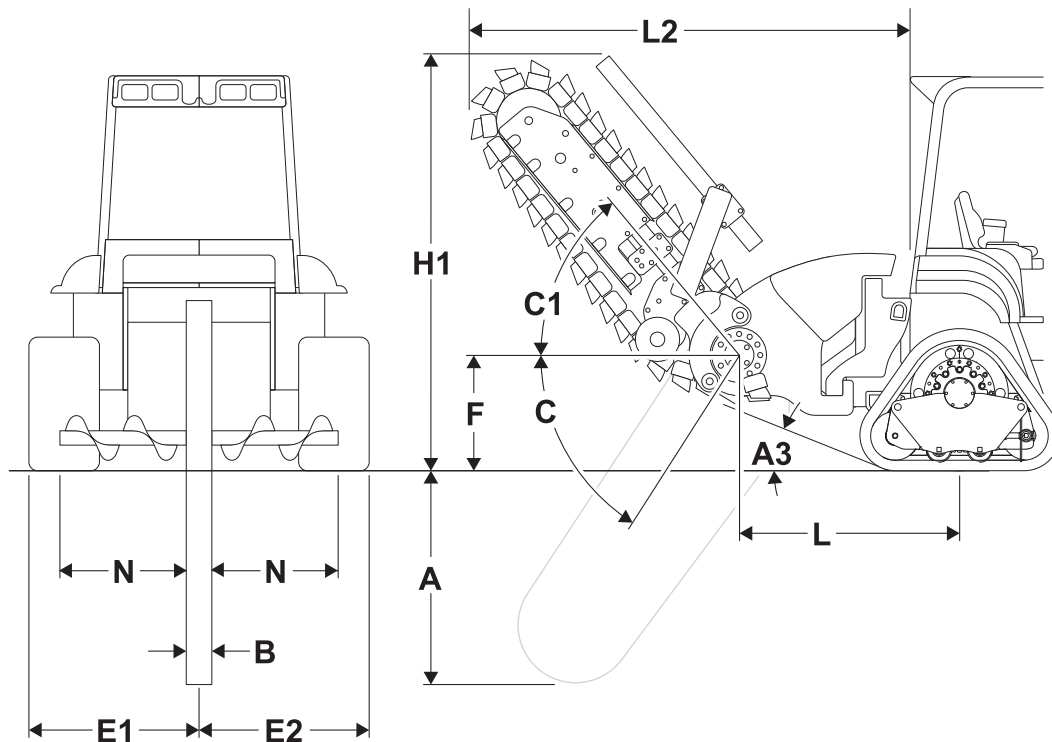


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Dimensions		U.S.	Metric
A ³	Angle of departure	30°	30°
A	Trench depth, maximum	93 in	2.36 m
B	Trench width, maximum	24 in	610 mm
C	Boom travel down	65°	65°
C ¹	Boom travel up	50°	50°
E ¹	Centerline of trench to outside edge, left	45.5 in	1.12 m
E ²	Centerline of trench to outside edge, right	36.5 in	927 mm
F	Headshaft height, digging chain	36 in	914 mm
H ¹	Transport height	128 in	3.25 m
L ²	Transport length	120 in	3.05 m
L	Headshaft overhang	48.5 in	1.2 m
N	Soil discharge reach	33 in	843 mm
	Attachment weight	1750 lb	794 kg

Operation		U.S.	Metric
Headshaft speeds with RT120Q at 2300 engine rpm			
	Ratio low	152 rpm	152 rpm
	Ratio standard	203 rpm	203 rpm
	Ratio high (not recommended)	247 rpm	247 rpm
Digging chain speeds with RT120Q			
	Ratio low	428 ft/min	130 m/min
	Ratio standard	572 ft/min	174 m/min
	Ratio high (not recommended)	694 ft/min	212 m/min

H911 Trencher

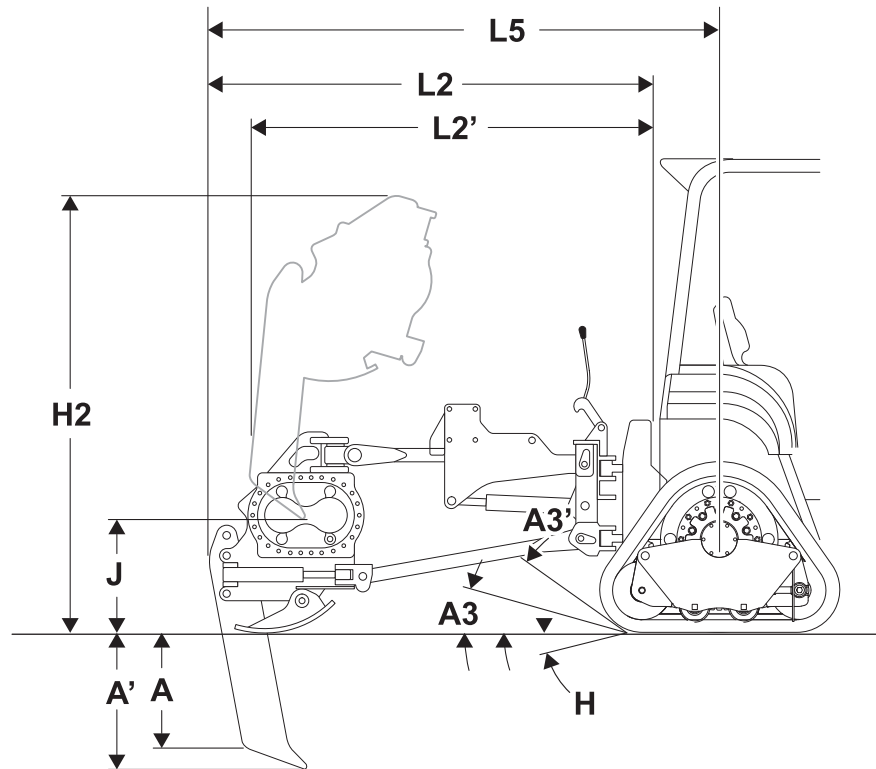


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Dimensions		U.S.	Metric
A3	Angle of departure	27°	27°
A	Trench depth, maximum	90 in	2.29 m
B	Trench width, maximum	24 in	610 mm
C	Boom travel down	65°	65°
C1	Boom travel up	50°	50°
E1	Centerline of trench to outside edge, left	30.5 in	775 mm
E2	Centerline of trench to outside edge, right	19 in	483 mm
F	Headshaft height, digging chain	39 in	991 mm
H1	Transport height	130 in	3.30 m
L2	Transport length	134.5 in	3.42 m
L	Headshaft overhang	62.5 in	1.59 m
N	Soil discharge reach	33 in	838 mm
Attachment weight		2350 lb	1066 kg

Operation		U.S.	Metric
Headshaft speeds with RT120Q at 2300 engine rpm			
	Ratio low	152 rpm	152 rpm
	Ratio standard	203 rpm	203 rpm
	Ratio high (not recommended)	247 rpm	247 rpm
Digging chain speeds with RT120Q			
	Ratio low	428 ft/min	130 m/min
	Ratio standard	572 ft/min	174 m/min
	Ratio high (not recommended)	694 ft/min	212 m/min

H1032 Plow



t30om086h.eps

Dimensions		U.S.	Metric
A	Cover depth*	36 in	915 mm
A'	Penetration*	40 in	1.02 m
A3'	Angle of departure, transport, no blade	47.5°	47.5°
A3	Angle of departure, transport, 24" (610-mm) blade	30°	30°
	Angle of departure, transport, 30" (760-mm) blade	24°	24°
H	Angle of depression, plow max.	25°	25°
H2	Height transport	93 in	2.36 m
J	Blade ground clearance, 30" (760-mm) blade	24 in	610 mm
L2	Attachment length, fully lowered, no blade	97 in	2.46 m
L2'	Attachment length, fully raised, no blade	78 in	1.98 m
	Plow swing angle	43°	43°
	Inclusive blade steer angle	89°	89°
	Center of plow to outside edge of machine, left	43.5 in	1.11 m

	Center of plow to outside edge of machine, right	45.5 in	1.16 m
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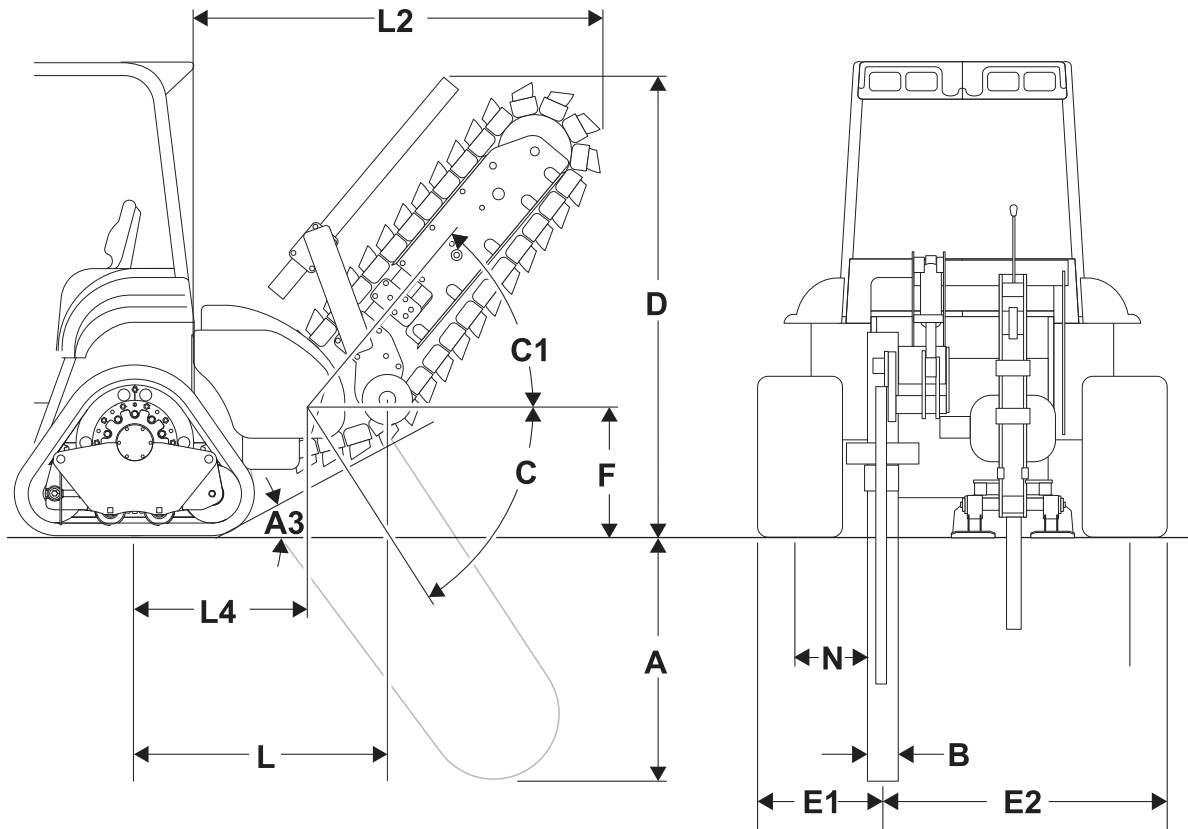
*Suggested maximum. Plow blade used will be determined by job requirements and soil conditions

Operation		U.S.	Metric
Plow vibrator force @ 1800 rpm		35,215 lb	157 kN
Maximum material diameter			
	Pulled	3 in	80 mm
	Fed	2 in	50 mm

General		U.S.	Metric
Attachment weight, without plow blade		2600 lb	1180 kg
Counterweight required. Contact your local Ditch Witch dealer for counterweight requirements.			

H1052 Combo

Trencher



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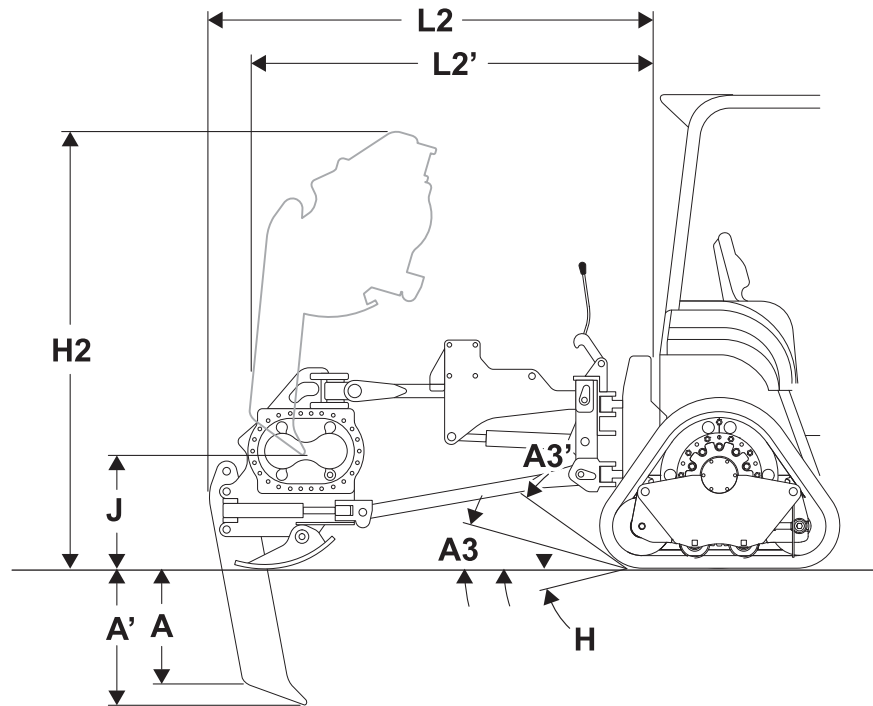
Dimensions		U.S.	Metric
A	Trench depth, maximum	70 in	1.78 m
A3	Angle of departure	26°	26°
B	Trench width	6-12 in	150-300 mm
C1	Boom travel up	44°	44°
C	Boom travel down	60°	60°
F	Headshaft height, digging chain	31 in	790 mm
L ²	Transport length (48" boom)	111 in	2.19 m
D	Transport height (48" boom)	96 in	2.44 m
E1	Center of trench to outside edge, left*	13 in	330 mm
E2	Center of trench to outside edge, right	76 in	1.93 m
N	Spoil discharge reach, minimum	19 in	480 mm

L	Headshaft overhang	48 in	1.22 m
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*Left edge of machine is defined as outside of digging chain guard

Operation		U.S.	Metric
Maximum headshaft speed at 2300 engine rpm			
	Ratio low	229 rpm	229 rpm
	Ratio standard	280 rpm	280 rpm
	Ratio high (not recommended)	377 rpm	377 rpm
Maximum digging chain speed			
	Ratio low	644 ft/min	196 m/min
	Ratio standard	787 ft/min	240 m/min
	Ratio high	1059 ft/min	323 m/min

Plow



t30om100h.eps

Dimensions		U.S.	Metric
A	Cover depth*	36 in	915 mm
A'	Penetration*	40 in	1.02 m
A3	Angle of departure, transport, 24" (610-mm) blade	30°	30°
	Angle of departure, transport, 30" (760-mm) blade	24°	24°
A3'	Angle of departure, transport, no blade	47.5°	47.5°
H	Angle of depression, plow max.	25°	25°
H2	Height, transport	93 in	2.36 m
J	Blade ground clearance, 30" (760-mm) blade	24 in	610 mm
L2	Attachment length, fully lowered, no blade	97 in	2.46 m
L2'	Attachment length, fully raised, no blade	78 in	1.98 m
	Plow swing angle, left	0°	0°
	Plow swing angle, right	43°	43°
	Inclusive blade steer angle	89°	89°
	Center of plow to outside edge of machine, left	41 in	1.04 m

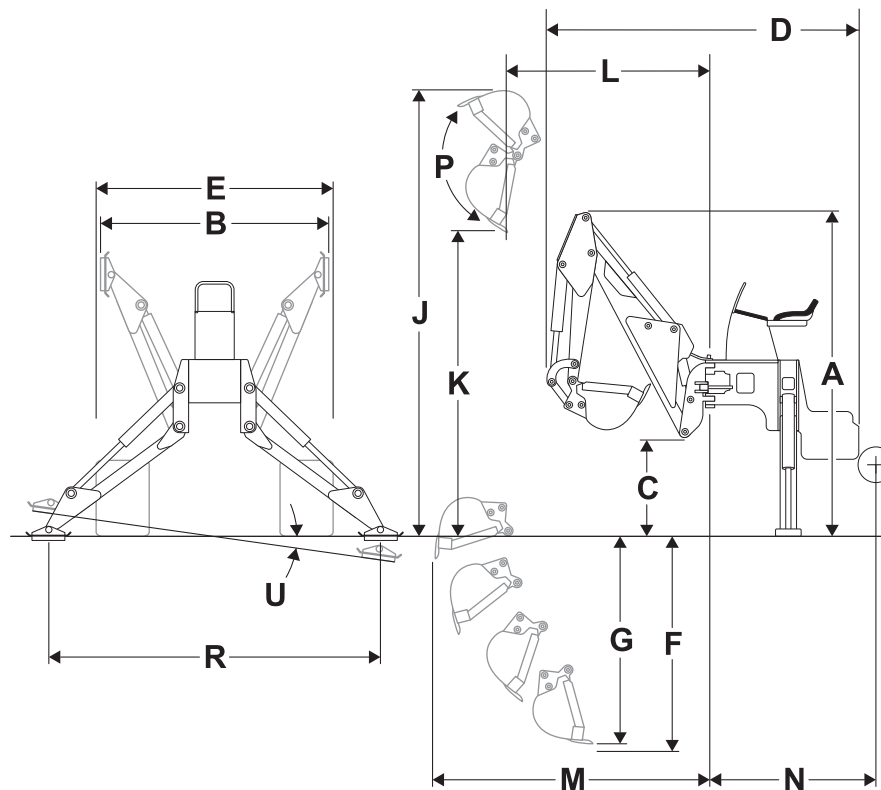
	Center of plow to outside edge of machine, right	48 in	1.22 mm
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* Suggested maximum. Plow blade used will be determined by job requirements and soil conditions.

Operational		U.S.	Metric
Plow vibrator force @ 1800 rpm		35,215 lb	156 644 kN
Maximum material diameter			
	Pulled	3 in	76 mm
	Fed	2 in	51 mm

General		U.S.	Metric
Attachment weight without boom, chain, or plow blade		3465 lb	1567 kg
Counterweight required. Contact your local Ditch Witch dealer for counterweight requirements.			

A920 Backhoe



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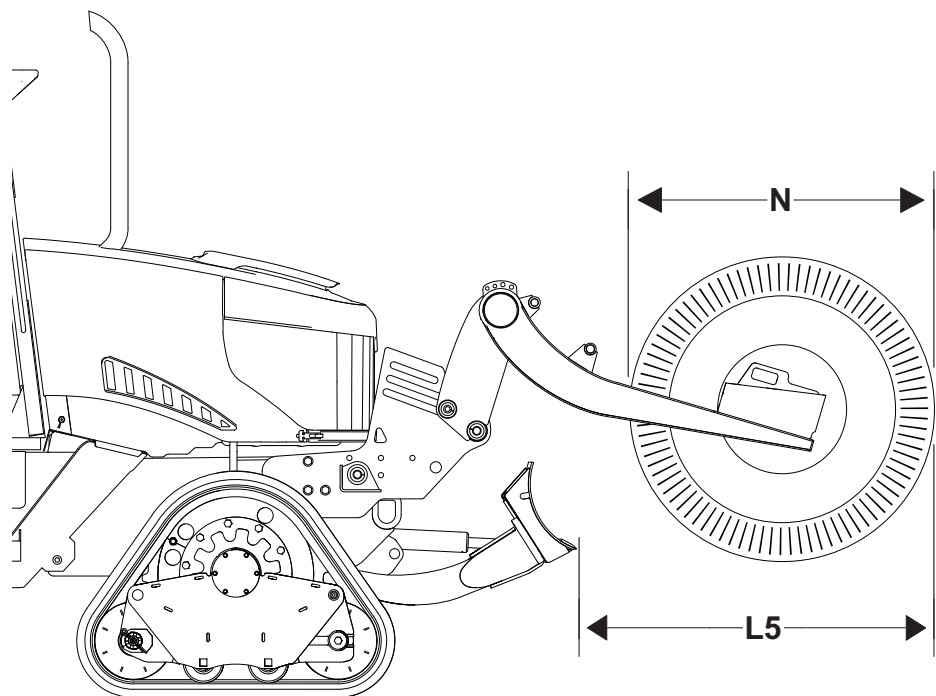
Dimensions		U.S.	Metric
A	Transport height	122 in	3.10 m
C	Ground clearance	33 in	838 mm
D	Backhoe length, stowed	117 in	2.97 m
F	Digging depth, max.	108 in	2.74 m
G	Digging depth, 2" (0.6 m) flat bottom	105 in	2.67 m
J	Operating height, fully raised	160 in	4.06 m
K	Loading height	108 in	2.74 m
L	Loading reach	78 in	1.98 m
M	Reach from swing pivot	158 in	4.01 m
N	Swing pivot to centerline axle	57 in	1.45 m
P	Bucket rotation	170°	170°
B	Stabilizer spread, transport	86 in	2.18 m

E	Backhoe or basic unit width	82 in	2.08 m
R	Stabilizer spread, operating	121 in	3.07 m
U	Leveling angle	10°	10°

General		U.S.	Metric
Bucket			
	Width	12-24 in	305-610 mm
	Capacity	1.7-3.5 ft ³	0.05-.1 m ³
Backhoe weight with 18" (686 mm) bucket		3300 lb	1497 kg
Lift capacity, boom over end and swing arc, SAE*			
	@ 48" (1.2 m)	1170 lb	530 kg
	@ ground level	1250 lb	567 kg
	@ 72" (1.8 m)	1184 lb	537 kg
Lift capacity, dipperstick over end and swing arc, SAE*			
	@ 52" (1.3 m)	3184 lb	1444 kg
	@ 96" (2.4 m)	2242 lb	1017 kg
Swing arc		180°	180°
Digging force			
	Using bucket cylinder	6600 lb	2994 kg
	Using dipperstick cylinder	4475 lb	2030 kg

*Lift capacities are for a stationary machine supported by stabilizers.

RC120 Reel Carrier

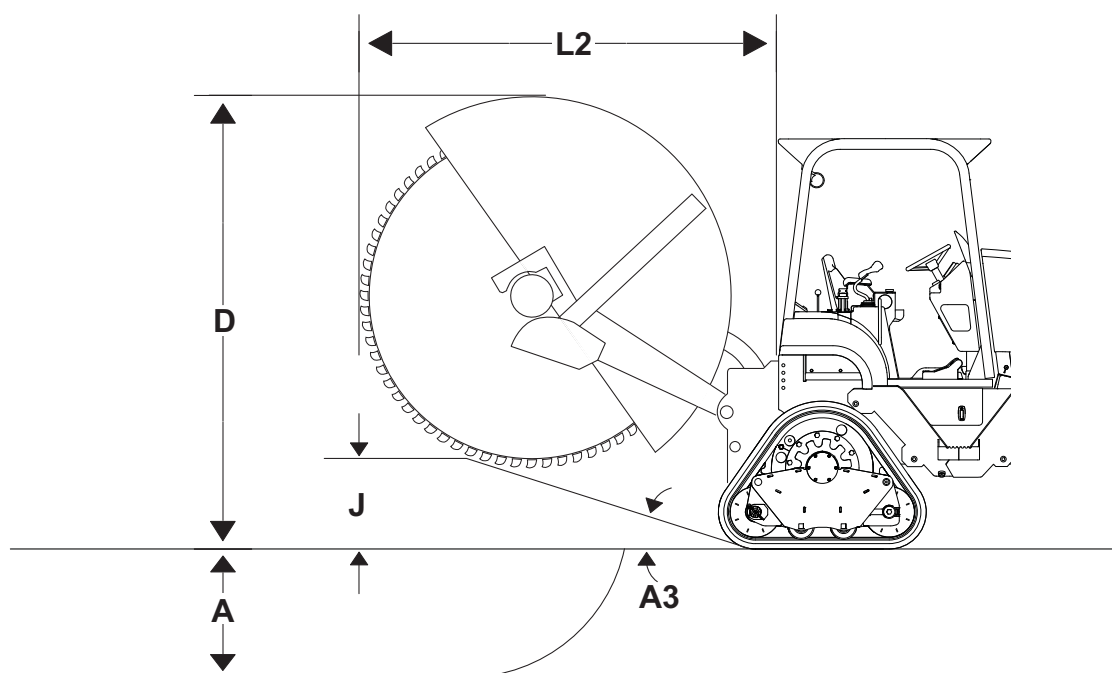


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Dimensions		U.S.	Metric
L5	Distance from backfill blade to outside edge of reel carrier with maximum diameter reel	74 in	1.88 m
N	Maximum reel diameter	84 in	2.13 m
	Internal width	54 in	1.37 m
	Capacity	2500 lb	1134 kg
	Attachment weight with six 90-lb (41-kg) counterweights	1600 lb	726 kg

H1140 Saw



t37om049w.eps

Dimensions		U.S.	Metric
A	Trench depth	40.5 in	1.03 m
	Trench width	4.5, 6, 8 in	115,150, 203 mm
D	Transport height - attachment	130 in	3.3.m
	Height - wheel on ground	102 in	2.6 m
L2'	Overall length - wheel on ground	122.5 in	3.1 m
J	Ground clearance at wheel	27 in	700 mm
A3	Angle of departure	24°	24°
	Attachment weight	5900 lb	2675 kg

Support

Procedure

Notify your dealer immediately of any malfunction or failure of Ditch Witch® 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 Ditch Witch replacement or repair parts from your authorized Ditch Witch dealer. Use of another manufacturer's parts may void warranty consideration.

Resources



Publications

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

Ditch Witch Training

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

Warranty

Ditch Witch® Equipment and Replacement Parts Limited Warranty Policy

Subject to the limitation and exclusions herein, free replacement parts will be provided at any authorized Ditch Witch dealership for any Ditch Witch equipment or parts manufactured by The Charles Machine Works, Inc. (CMW) that fail due to a defect in material or workmanship within one (1) year of first commercial use. Free labor will be provided at any authorized Ditch Witch dealership for installation of parts under this warranty during the first year following "initial commercial" use of the serial-numbered Ditch Witch equipment on which it is installed. The customer is responsible for transporting their equipment to an authorized Ditch Witch dealership for all warranty work.

Exclusions from Product Warranty

- All incidental or consequential damages.
- All defects, damages, or injuries caused by misuse, abuse, improper installation, alteration, neglect, or uses other than those for which products were intended.
- All defects, damages, or injuries caused by improper training, operation, or servicing of products in a manner inconsistent with manufacturer's recommendations.
- All engines and engine accessories (these are covered by original manufacturer's warranty).
- Tires, belts, and other parts which may be subject to another manufacturer's warranty (such warranty will be available to purchaser).
- ALL IMPLIED WARRANTIES NOT EXPRESSLY STATED HEREIN, INCLUDING ANY WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE AND MERCHANTABILITY.

IF THE PRODUCTS ARE PURCHASED FOR COMMERCIAL PURPOSES, AS DEFINED BY THE UNIFORM COMMERCIAL CODE, THEN THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE FACE HEREOF AND THERE ARE NO IMPLIED WARRANTIES OF ANY KIND WHICH EXTEND TO A COMMERCIAL BUYER. ALL OTHER PROVISIONS OF THIS LIMITED WARRANTY APPLY INCLUDING THE DUTIES IMPOSED.

Ditch Witch products have been tested to deliver acceptable performance in most conditions. This does not imply they will deliver acceptable performance in all conditions. Therefore, to assure suitability, products should be operated under anticipated working conditions prior to purchase.

Defects will be determined by an inspection within thirty (30) days of the date of failure of the product or part by CMW or its authorized dealer. CMW will provide the location of its inspection facilities or its nearest authorized dealer upon inquiry. CMW reserves the right to supply remanufactured replacement parts under this warranty as it deems appropriate.

Extended warranties are available upon request from your local Ditch Witch dealer or CMW.

Some states do not allow exclusion or limitation of incidental or consequential damages, so above limitation of exclusion may not apply. Further, some states do not allow exclusion of or limitation of how long an implied warranty lasts, so the above limitation may not apply. This limited warranty gives product owner specific legal rights and the product owner may also have other rights which vary from state to state.

For information regarding this limited warranty, contact CMW's Product Support department, P.O. Box 66, Perry, OK 73077-0066, or contact your local Ditch Witch dealer.

First version: 1/91; Latest version: 11/11

**A Note To
Ditch Witch
Equipment Owners:**

If your equipment was purchased through a Ditch Witch dealer, there is no need to read further.

However, if you purchased from any other source, please fill out the form on the reverse side and return it to us.

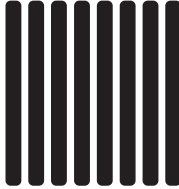
This will enable you to receive updates on this equipment as well as information on new products of interest.

Thanks for using Ditch Witch equipment.

(Please Fold Along This Line And Seal At Bottom With Tape)



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IN THE
UNITED STATES



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FIRST CLASS PERMIT NO 23 PERRY OKLAHOMA

POSTAGE WILL BE PAID BY

**The Charles Machine Works, Inc.
P.O. Box 66
Perry, Oklahoma 73077-9989**



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Ditch Witch
Equipment Owners:**

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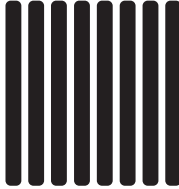
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POSTAGE WILL BE PAID BY

**The Charles Machine Works, Inc.
P.O. Box 66
Perry, Oklahoma 73077-9989**



Ditch Witch® Registration Card

Please Type or Print All Information

Purchaser's Company Name		
Attention		
Street Address or P.O. Box		
City	County	
State	Zip	Nation
()		
Phone Number With Area Code		
Model	Serial Number	
Attachments/Accessories	Serial Numbers	
Attachments/Accessories	Serial Numbers	
Attachments/Accessories	Serial Numbers	
Name of Ditch Witch Dealership		
Your Signature		

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Attachments/Accessories	Serial Numbers	
Name of Ditch Witch Dealership		
Your Signature		

Service Record

[illegible]

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