XT850

Operator's Manual

CE

CMW®

Issue 1.2

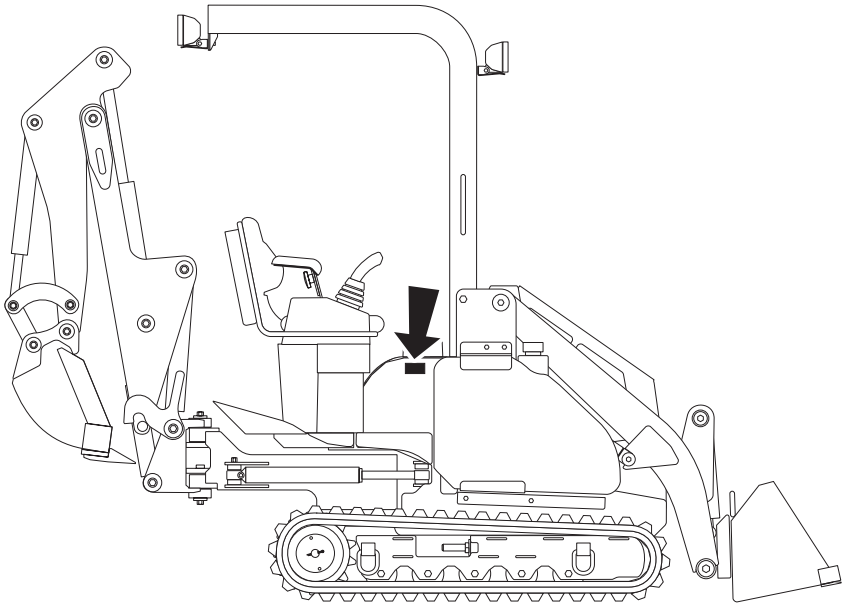
054- 123

Overview

Chapter Contents

Serial Number Location

Record serial numbers and date of purchase in spaces provided. XT850 serial number is located as shown.



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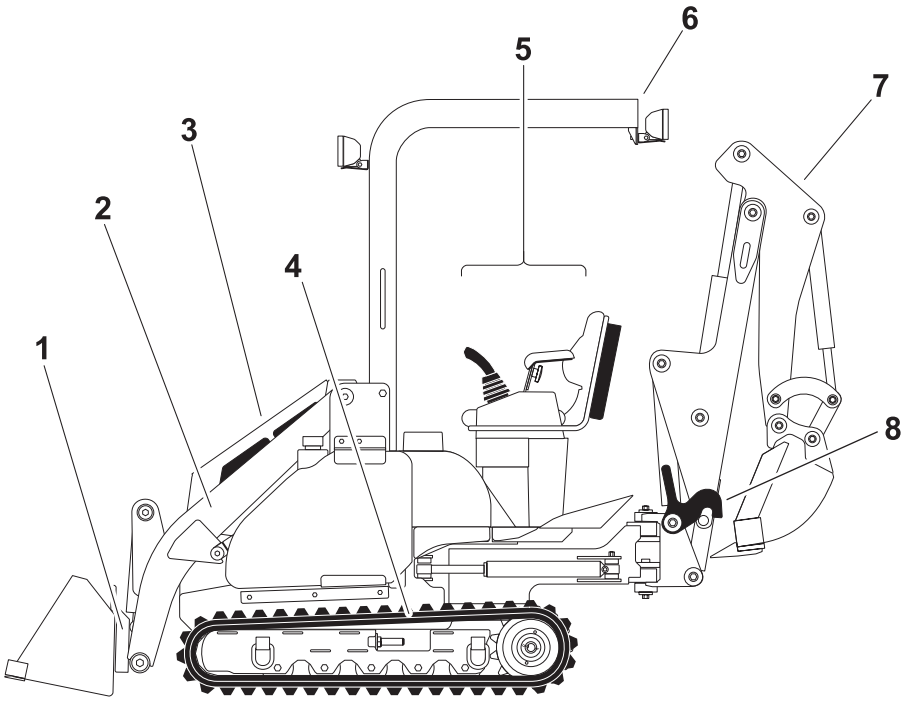
Date of manufacture	
Date of purchase	
XT850 serial number	
Engine serial number	
Attachment serial number(s)	

Intended Use

The XT850 is a ride-on, track-driven excavator/tool carrier unit designed for light-to medium-duty construction work. The XT850 excavator allows 260° swing and digging depths to 83" (2.1 m). The XT850 lift arms have a quick attach mount plate which makes it easy for an operator to connect different attachments. The unit is designed for operation in temperatures typically experienced in earth moving and construction work environments. Provisions may be required to operate in extreme temperatures. Contact your Ditch Witch dealer. Use in any other way is considered contrary to the intended use.

The XT850 should be operated, serviced, and repaired only by persons familiar with its particular characteristics and acquainted with the relevant safety procedures.

Unit Components



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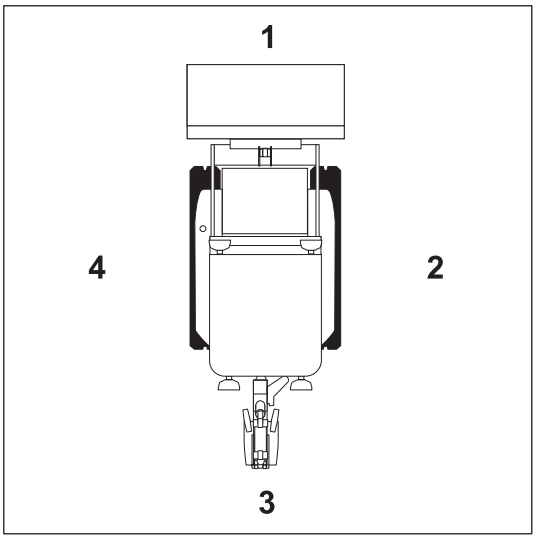
1. attachment receiver plate
2. lift arms
3. engine compartment
4. tracks
5. operator's station
6. ROPS/FOPS
7. excavator
8. excavator stow lock

Operator Orientation

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

Right and left sides of machine are determined by facing front (toward lift arms) of unit while seated in the operator's station.



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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.

XT850
Operator's Manual

Issue number 1.2/OM-10/04
Part number 054-123

Contents

Safety

Chapter Contents

Guidelines

Follow these guidelines before operating any jobsite equipment:

- Complete proper training and read operator's manual before using equipment.
- Contact One-Call (888-258-0808) and any utility companies which do not subscribe to One-Call. Have all underground pipes and cables located and marked before operating equipment. If you damage a utility, contact utility company.
- 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 is present.
- Contact your Ditch Witch dealer if you have any question about operation, maintenance, or equipment use.

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 an imminently hazardous situation which, if not avoided, will result in death or serious injury.

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

CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

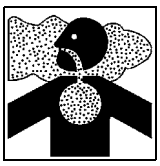
Watch for two other words: **NOTICE** and **IMPORTANT**.

NOTICE can keep you from doing something that might damage the machine or someone's property. It can also alert you against unsafe practices.

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

Safety Alerts

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



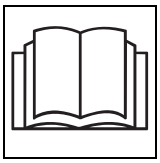
DANGER Deadly gases. Lack of oxygen or presence of gas will cause sickness or death. Provide ventilation.

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.

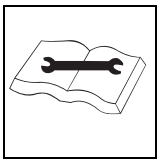
WARNING Explosion possible. Serious injury or equipment damage could occur. Follow directions carefully.



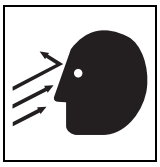
WARNING Incorrect procedures could result in death, injury, or property damage. Learn to use equipment correctly.

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

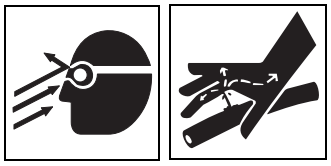
WARNING Rollover possible. If machine rolls over, you could be thrown from seat and killed or crushed. Wear seat belt.



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

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).

Emergency Procedures

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

EMERGENCY SHUTDOWN - Turn ignition switch to STOP.

Electric Strike Description

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. Almost one-third of 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 unit**, DO NOT MOVE. Remain on unit 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 attachment and/or excavator 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 unit**, DO NOT TOUCH UNIT. 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

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

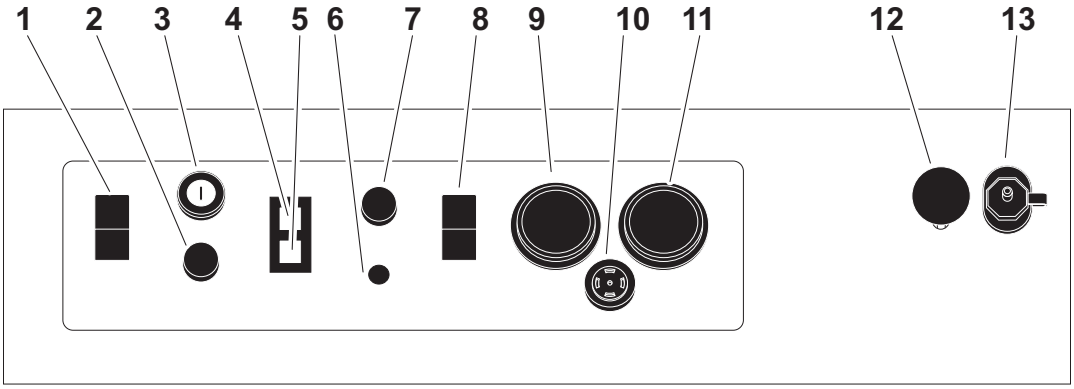
Perform emergency shutdown procedure and then take the following actions. The order and degree of action will depend on the situation.

- Immediately move battery disconnect switch (if equipped) 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.

Controls

Chapter Contents

Front Console



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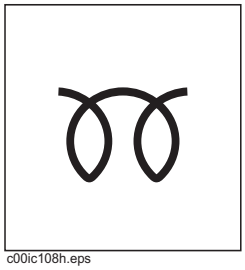
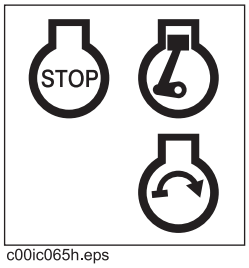
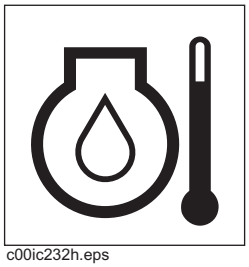
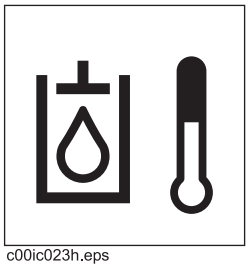
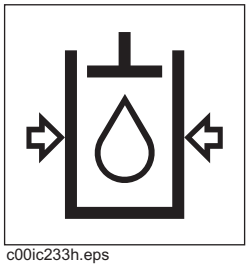
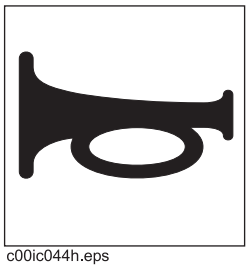
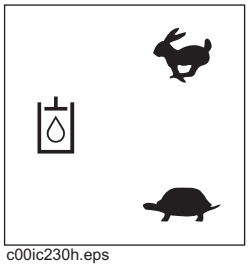
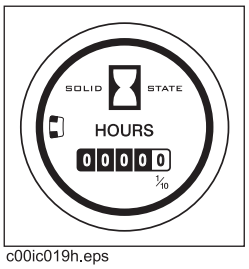
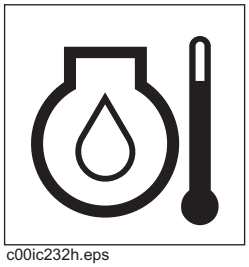
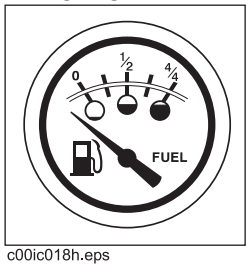
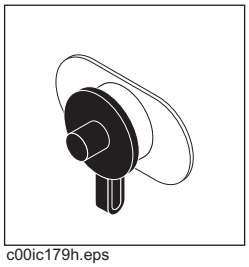
1. Work mode switch
2. Glow plug button
3. Ignition switch
4. Engine coolant temperature indicator
5. Hydraulic fluid temperature indicator
6. Auxiliary flow/pressure indicator
7. Horn
8. 2-Speed flow switch
9. Hourmeter
10. Hydraulic oil temperature alarm
11. Fuel gauge
12. Throttle
13. Auxiliary power outlet

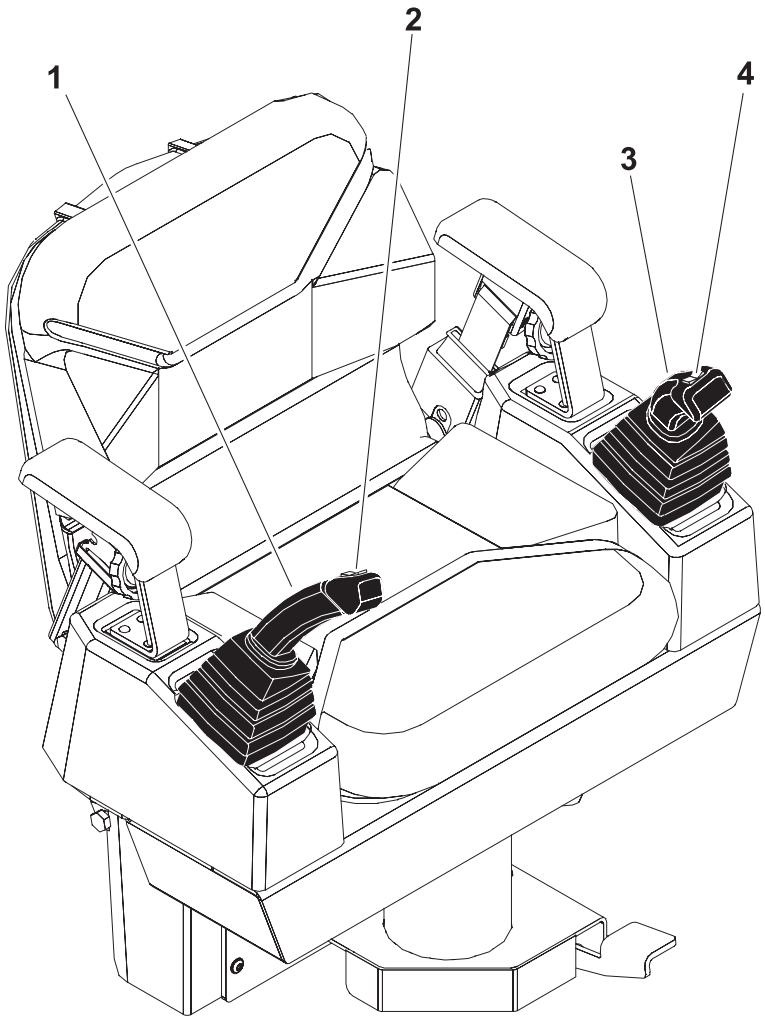
Item	Description	Notes
1. Work mode switch  c00ic229h.eps	To select tool carrier mode and control lift arms and ground drive, press top. To select excavator mode and control excavator bucket, press bottom.	

Item	Description	Notes
2. Glow plug button  c00ic108h.eps	To help start cold engine, turn ignition switch to first position. Press glow plug button as directed in notes. Release button, then turn ignition switch all the way clockwise.	**IMPORTANT:** Press glow plug button according to temperatures below. • If ambient temperature is below 40° F (4° C), press and hold button for 15 seconds. • If ambient temperature is below 20° F (-7° C), press and hold button for 60 seconds.
3. Ignition switch  c00ic065h.eps	To start engine, insert key and turn clockwise. To stop engine, turn key counterclockwise.	**IMPORTANT:** If engine does not start or stalls, turn key to STOP and then restart.
4. Engine coolant temperature indicator  c00ic232h.eps	Lights when engine coolant temperature is over 210°F (100°C).	• Allow engine to cool. • Check coolant level.
5. Hydraulic fluid temperature indicator  c00ic023h.eps	Lights when hydraulic fluid is over 210°F (100°C).	• Allow engine to cool. • Check hydraulic fluid level.

Item	Description	Notes
6. Auxiliary flow/pressure indicator  c00ic233h.eps	Lights to indicate flow and pressure to the auxiliary (attachment drive) system.	**IMPORTANT:** Ensure auxiliary flow and pressure are off when no attachment is connected.
7. Horn  c00ic044h.eps	To sound horn, press.	
8. 2-Speed flow switch  c00ic230h.eps	To select high flow, press top. To select low flow, press bottom.	**IMPORTANT:** This switch only works if attachment drive switch is in forward.
9. Hourmeter  c00ic019h.eps	Displays engine operating time.	Use these times to schedule service.

Item	Description	Notes
10. Hydraulic oil temperature alarm  c00ic232h.eps	Sounds when hydraulic oil temperature is above 210°F (100°C).	• Allow unit to cool. • Check hydraulic oil level.
11. Fuel gauge  c00ic018h.eps	Displays fuel level in tank.	Use only #2 diesel fuel. Tank holds 10 gal (38 L).
12. Throttle  c00ic007c.eps	To increase engine speed, push. To decrease engine speed, pull.	Increasing engine speed also increases attachment speed.
13. Auxiliary power outlet  c00ic179h.eps	To operate work lights or other 12V devices, plug into outlet.	

Joysticks



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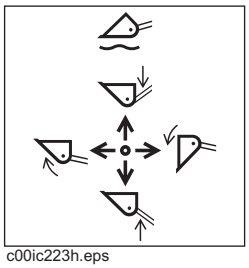
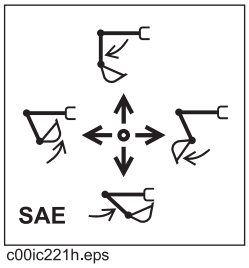
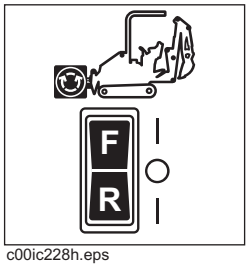
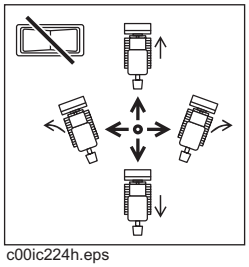
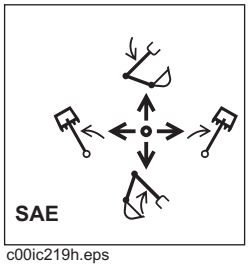
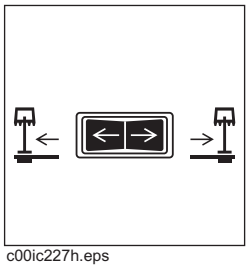
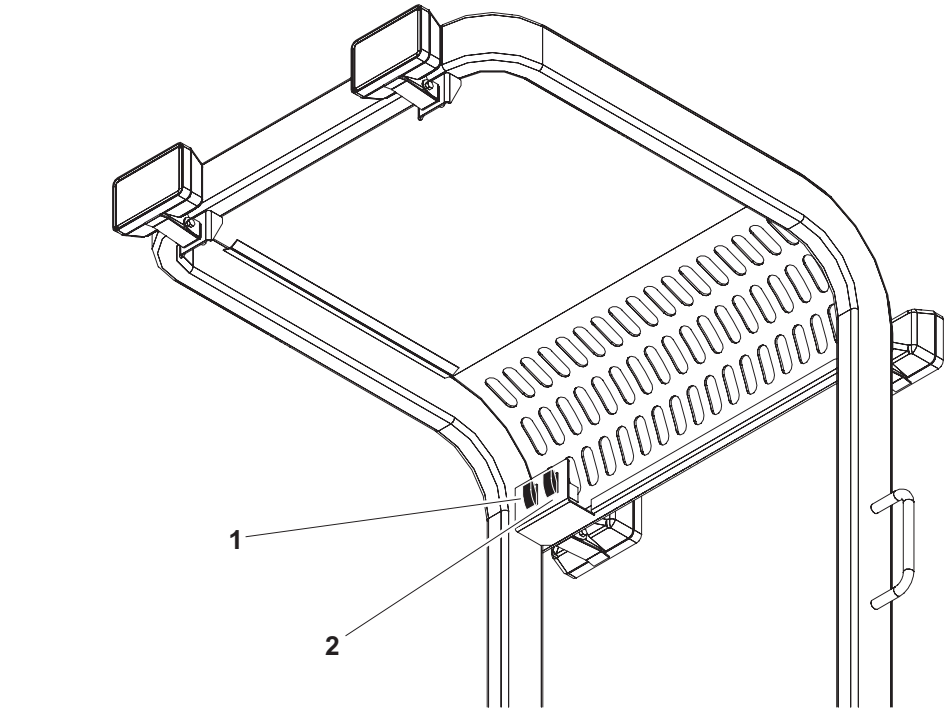
1. Right joystick
2. Attachment drive switch
3. Left joystick
4. Boom offset switch

Item	Description	Notes
1. Right joystick  c00ic223h.eps	With work mode switch in **tool carrier mode**: • To move lift arms down, push. • To float, push forward to end. Control will lock into float position. • To move lift arms up, pull. • To curl attachment up, move to left. • To curl attachment down, move to right.	**IMPORTANT:** • Control can perform more than one action at a time. Using them together, operator can "feather" or combine operations. • Do not exceed rated operating capacity when lifting loads. See page 59.
 c00ic221h.eps	With work mode switch in **excavator mode**: • To open bucket, move right. • To close bucket, move left. • To move dipper in, pull. • To move dipper out, push.	**IMPORTANT:** SAE excavator control pattern is shown. For information about ISO control pattern, see "Operate Controls" on page 63.
2. Attachment drive switch  c00ic228h.eps	To engage attachment drive in forward, push top. Switch will lock into forward position. To engage attachment drive in reverse, push and hold bottom.	

Item	Description	Notes
3. Left joystick  c00ic224h.eps	With work mode switch in **tool carrier mode**: • To move forward, push. • To move backward, pull. • To go faster in either direction, move farther from neutral. • To stop, return to neutral.	**IMPORTANT:** • Control can perform more than one action at a time. Using them together, operator can "feather" or combine operations. • For steering instructions, see page 44.
 c00ic219h.eps	With work mode switch in **excavator mode**: • To swing excavator to right, move right. • To swing excavator to left, move left. • To raise boom, pull. • To lower boom, push.	**IMPORTANT:** SAE excavator control pattern is shown. For information about ISO control pattern, see "Operate Controls" on page 63.
4. Boom offset switch  c00ic227h.eps	To swing boom to right, press right side. To swing boom to left, press left side.	

Upper Console



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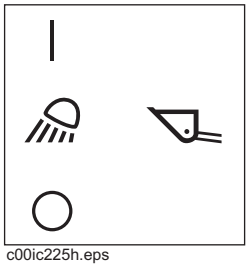
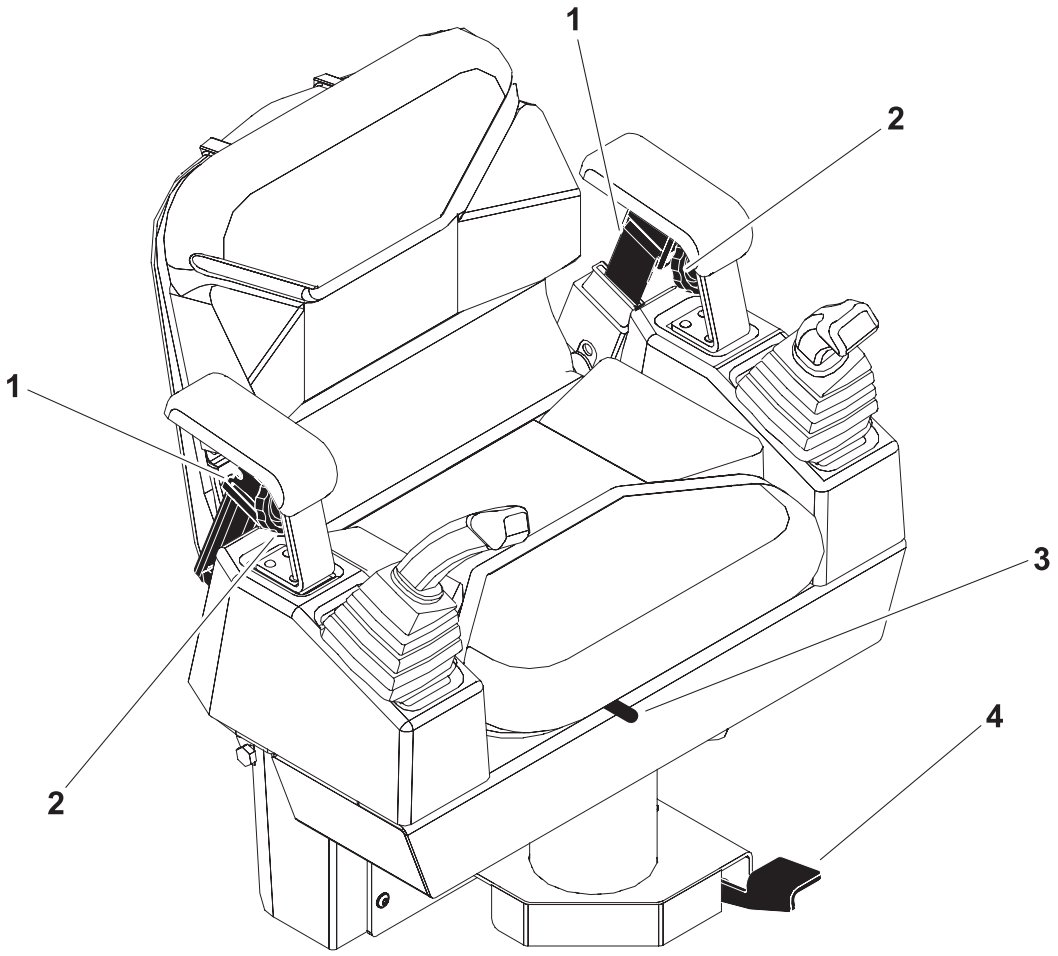
1. Front light switch
2. Rear light switch

Item	Description	Notes
1. Front light switch  c00ic225h.eps	To turn on, press top. To turn off, press bottom.	
2. Rear light switch  c00ic226h.eps	To turn on, press top. To turn off, press bottom.	

Seat



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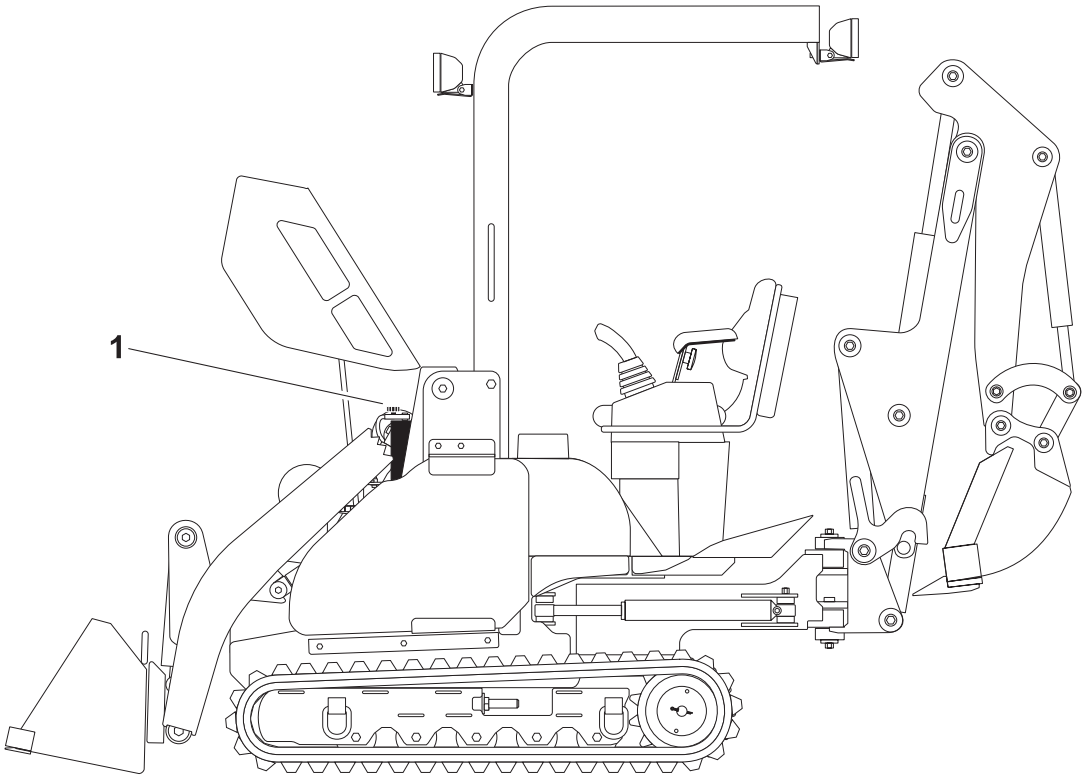
1. Seat belt
2. Armrest adjustment
3. Seat slide control
4. Operator's station pivot control

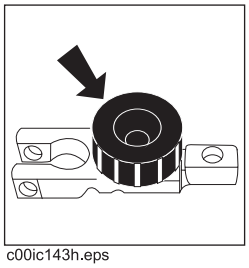
Item	Description	Notes
1. Seat belt	To fasten, insert latch into buckle. Adjust until seat belt is low and tight.	**NOTICE:** Always fasten seat belt when operating unit.
2. Armrest adjustment	To adjust armrest position, loosen knob, move armrest to new position, and tighten knob.	

Item	Description	Notes
3. Seat slide control  c00ic095h.eps	To slide forward or backward, move left. To lock seat in position, move right.	
4. Operator's station pivot control	To pivot, press and swing station to desired position. To lock into position, release.	

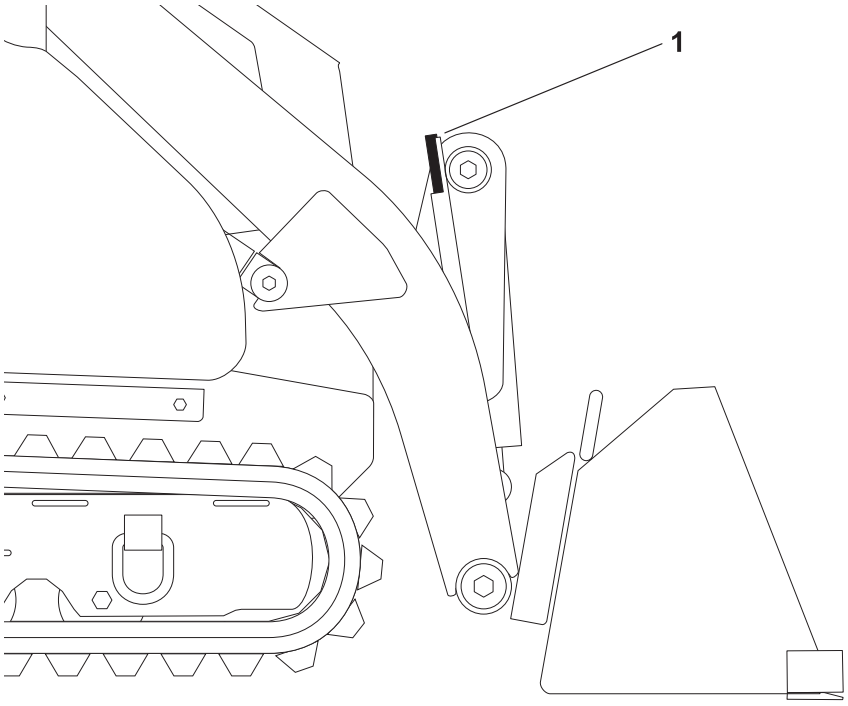
Battery



1. Battery disconnect switch

Item	Description	Notes
1. Battery disconnect switch  c00ic143h.eps	To disconnect battery power, turn counterclockwise. To connect battery power, turn clockwise.	Green switch is located under the hood on the battery cable. Use when servicing unit and during long-term storage.

Tool Carrier Bucket



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1. Level bucket indicator

Item	Description	Notes
1. Level bucket indicator	To level bucket, adjust bucket position until indicator is at top of sleeve.	Indicator only works with loader buckets.

Operation Overview

Chapter Contents

Planning

1. Gather information about jobsite. See page 36.
2. Inspect jobsite. See page 37.
3. Classify jobsite. See page 38.
4. Check supplies and prepare equipment. See page 40.
5. Load unit onto truck or trailer. See page 48.

Using Tool Carrier Mode

1. Unload from trailer. See page 52.
2. Drive to job. See page 43.
3. Connect front attachment. See page 64.
4. Operate attachment. See page 24 and attachment operator's manual.
5. Disconnect front attachment. See page 68.

Using Excavator Mode

1. Unload from trailer. See page 52.
2. Drive to job. See page 43.
3. Dig trench or hole. See page 58.

Leaving Jobsite

1. Rinse unit and stow tools. See page 68.
2. Load unit onto trailer. See page 48.

Prepare

Chapter Contents

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

Call area One-Call or similar services and have existing lines located and marked. Call any utilities in your area that do not subscribe to One-Call.

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.

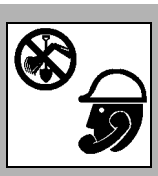
Inspect Site

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 (See "Inspect Jobsite" on page 38.)
- traffic
- access
- soil type and condition

Identify Hazards

Identify safety hazards and classify jobsite. See "Classify Jobsite" on page 38.

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

NOTICE:

- 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 One-Call (888-258-0808) and any utility companies which do not subscribe to One-Call.
- 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

Follow OSHA or other guidelines for exposure to crystalline silica when trenching, sawing or drilling through material that might produce dust containing crystalline silica (quartz).

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
- engine oil

Condition and Function

- 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

EMERGENCY SHUTDOWN: Turn ignition switch to STOP.

1. Fasten and adjust seat belt.
2. Ensure all controls are in neutral.
3. If necessary, use glow plug button to warm cold engine. See page 21.
4. Turn ignition switch to start position and release when engine starts.

IMPORTANT:

- After starting in cold temperatures, allow unit to warm up by running it at low throttle for several minutes.
- When working in low ambient temperatures, pay special attention to fuel, oil viscosity, antifreeze, and water adhering to filter.

Drive

General Operation

NOTICE: When driving unit more than a few feet (meters), pivot seat so that operator is facing lift arms. If operator is facing excavator, operation of track drive controls is reversed.

1. Verify that excavator boom lock is engaged.
2. Adjust throttle as needed.
3. Ensure work mode switch is in tool carrier mode.
4. Use right joystick to raise mount plate (and attachment) off ground.
5. Move left joystick to forward or reverse. See "Joysticks" on page 24.

Slope Operation Guidelines

NOTICE: Keep attachment/load low when operating on a slope. Drive slowly and cautiously at all times.

- Operate up and down slopes with heavy end of unit uphill. Weight distribution changes based on attachments and load. For example, an empty bucket makes the rear of the unit the heavy end while a full bucket makes the front of the unit the heavy end. Most Ditch Witch-approved attachments make the front of the unit the heavy end.
- Avoid starting, stopping, or turning on slopes. If you must turn, keep the heavy end of the unit uphill.
- Do not park unit on slope without lowering attachment to the ground and turning ignition switch to STOP.

Steer

NOTICE: When driving unit more than a few feet (meters), pivot seat so that operator is facing lift arms. If operator is facing excavator, operation of track drive controls is reversed.

To steer while moving forward, push forward and then move to left or right. Unit will gradually turn to left or right.

To steer while moving backward, pull back and then move to left or right. Unit will gradually turn to left or right.

For tight steering in low speed, move control to center position and then to left or right side. Tracks will counter-rotate and turn unit in a tight circle.

Shut Down

1. Move all controls to neutral position.
2. Ensure lift arms are lowered to ground and ensure excavator boom lock is engaged.
3. Run engine at low idle for three minutes to cool.
4. Turn ignition switch to STOP.
5. Remove key.

NOTICE: Unit should not be parked on a slope unless chocked or blocked.

Transport

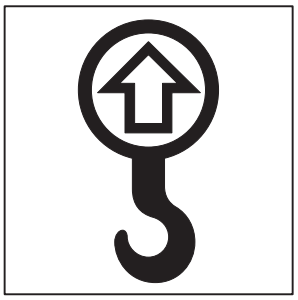
Chapter Contents

Lift

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

Points

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



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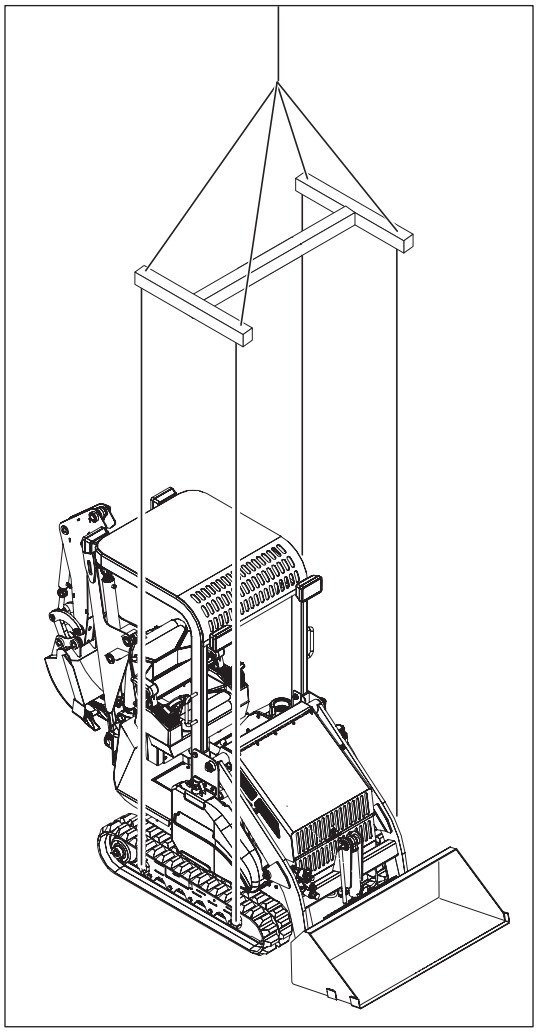
Procedure

Use a crane capable of supporting the equipment's size and weight. See “Specifications” on page 89 or measure and weigh equipment before lifting.

1. Attach chains to four lift points (two on each side of unit).
2. Attach each chain securely to cross members.

IMPORTANT: Length of spreader bars should be equal to width of unit.

3. Bring chains together to a central pull point.



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Haul

Inspect Trailer

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

Hitch Trailer

1. Back tow vehicle to trailer.
2. Put manual transmission into first or reverse gear or automatic transmission into park. Turn off ignition. Set parking brake.
3. Connect trailer drawbar, lunette or coupler to tow vehicle hitch and lock in place with lock pin. If needed, adjust drawbar, lunette or coupler height to level load.
4. Connect safety chains to tow vehicle.
5. Connect breakaway switch cable to tow vehicle. Do not connect to pintle hook or hitch ball.
6. Plug trailer electrical connector into tow vehicle connector.
7. Use jack crank to raise jack base and stow.
8. Remove wheel blocks.

Load

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

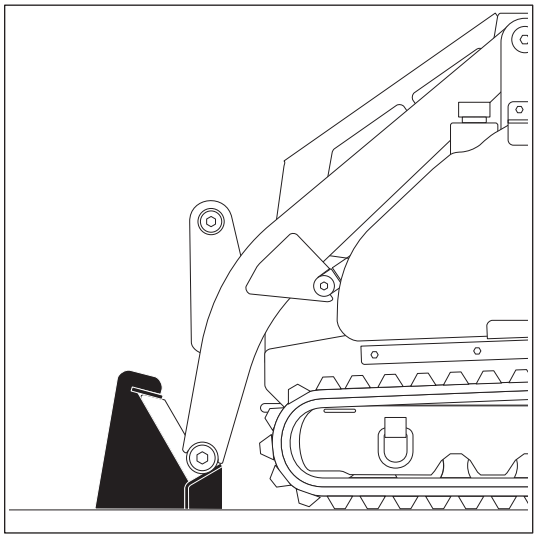
NOTICE:

- Load and unload trailer on level ground.
- Verify that trailer wheels are blocked.
- Incorrect loading can cause trailer swaying.
- Attach trailer to vehicle before loading or unloading.
- Ten to fifteen percent of total vehicle weight (equipment plus trailer) must be on tongue to help prevent trailer sway.

With Tiedown Kit

IMPORTANT: Disconnect and stow front attachment before loading unit.

1. Start engine.
2. Ensure work mode switch is in tool carrier mode.
3. Raise mount plate off ground.
4. Move unit to rear of trailer and align with ramps.
5. Slow engine to low throttle and slowly drive unit onto trailer until mount plate nears rest.
6. Lower and tilt mount plate until it slides into rest (shown).
7. Raise lift plate slightly to seat in rest.
8. Verify that excavator boom lock is engaged.
9. Stop engine.
10. Attach tiedown where indicated on page 50.



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Without Tiedown Kit

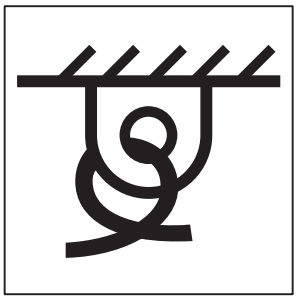
IMPORTANT: Disconnect and stow front attachment before loading unit.

1. Start engine.
2. Ensure work mode switch is in tool carrier mode.
3. Raise mount plate off ground.
4. Move unit to rear of trailer and align with ramps.
5. Slow engine to low throttle and slowly drive unit onto trailer.
6. Once unit is correctly positioned on trailer, lower mount plate to trailer floor.
7. Verify that excavator boom lock is engaged.
8. Stop engine.
9. Attach tiedowns where indicated on page 50.

Tie Down

Points

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



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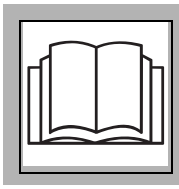
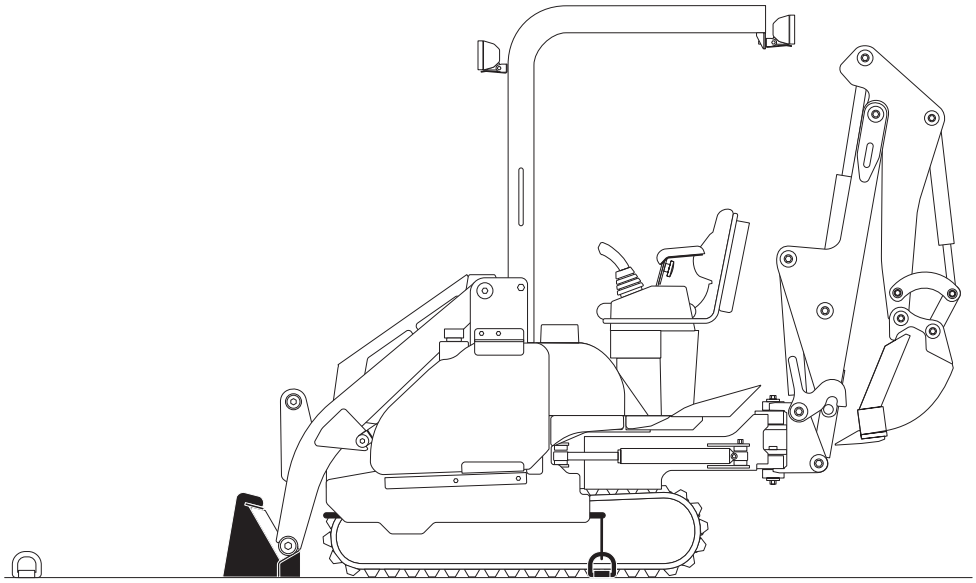
Procedure



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

With Tiedown Kit

Install c-clamp through rear tiedown point. Make sure unit is secure before transporting.



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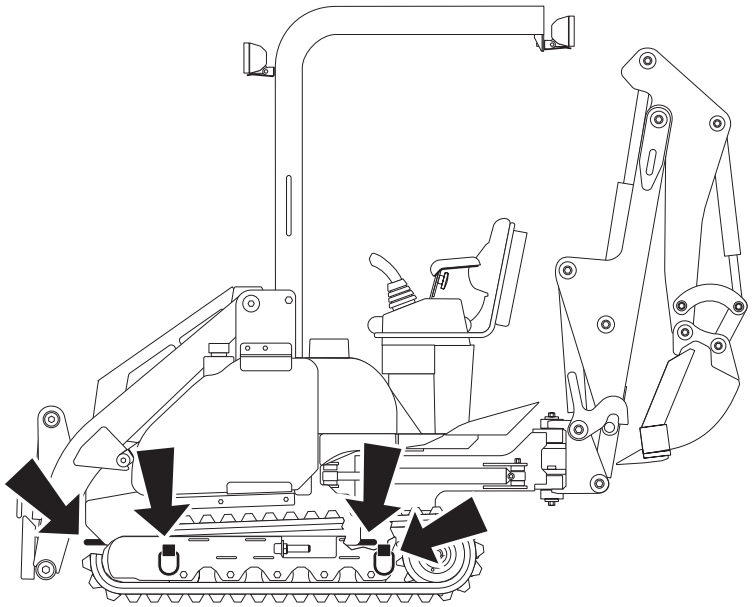
Without Tiedown Kit

IMPORTANT: Do not use any point on excavator and swing arm as tiedown point.

Loop tiedowns around unit at tiedown points. Make sure tiedowns are tight before transporting.



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Unload

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

NOTICE:

- Load and unload trailer on level ground.
- Ensure trailer wheels are blocked.
- Attach trailer to vehicle before loading or unloading.

With Tiedown Kit

1. Lower ramps.
2. Remove tiedown.
3. Start engine.
4. Ensure work mode switch is in tool carrier mode.
5. Tilt mount plate out of rest and lift until it clears rest.
6. Slow engine to low throttle and back unit down ramps.

Without Tiedown Kit

1. Lower ramps.
2. Remove tiedowns.
3. Start engine.
4. Ensure work mode switch is in tool carrier mode.
5. Raise mount plate.
6. Slow engine to low throttle and slowly back unit down ramps.

Unhitch Trailer

1. Stop tow vehicle and trailer on level ground.
2. Put manual transmission into first or reverse gear or automatic transmission into park. Turn off ignition. Set parking brake.
3. Block trailer wheels.
4. Reverse "Hitch Trailer " steps to unhitch trailer from tow vehicle.

Tow

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

NOTICE:

- While towing, engine must be running and hydrostatic charge pump that supplies pilot pressure must be working properly to release brakes.
- If engine will not run or pilot pressure is not available, do not tow unit.

Under normal conditions, unit should not be towed. If unit breaks down and towing is necessary:

- Do not tow for more than 200 yd (180 m).
- Tow at less than 1 mph (1.6 km/h).
- Use maximum towing force of 1.5 times unit weight.

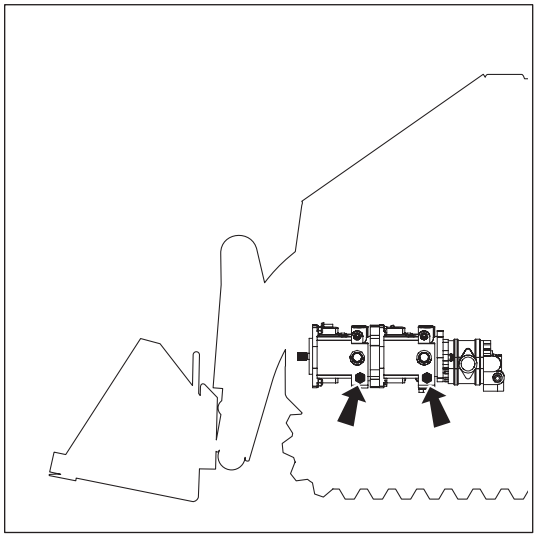
Procedure

Prepare for Towing

1. Verify that mode switch is in tool carrier mode.
2. Attach tow line to available tow points facing towing vehicle.
3. Open hood.
4. Open 4 tow valves on hydrostatic pumps (shown, 2 on each side).

IMPORTANT: Use 4-mm Allen wrench and 13-mm box wrench to adjust tow valves.

- Loosen jam nut.
- Turn set screw in until it stops.
- Tighten jam nut.



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Prepare Unit for Normal Operation

1. Close 4 tow valves on pumps.

   IMPORTANT: Use 4-mm Allen wrench and 13-mm box wrench to adjust tow valves.

   - Loosen jam nut.
   - Turn set screw out 6 turns.
   - Tighten jam nut.
2. Close hood.
3. Disconnect tow line.

Dig

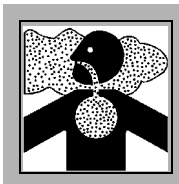
Chapter Contents

Overview

IMPORTANT: This chapter covers how to use the excavator. For information on how to use front-mounted attachments, refer to controls chapter and attachment operator's manual.

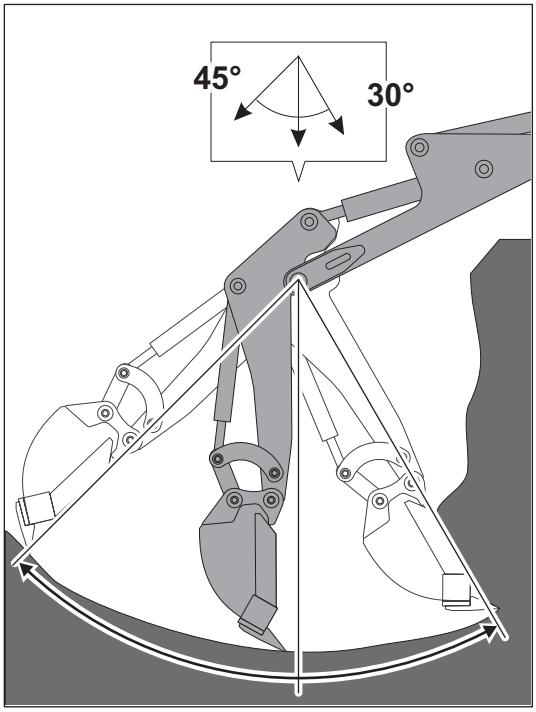
The XT850 can perform a variety of different kinds of work in excavator mode. All basic excavator work involves filling and dumping the bucket.

Filling Bucket



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

NOTICE: Cutting or drilling concrete containing sand or rock containing quartz may result in exposure to silica dust. Use respirator, water spray or other means to control dust. Silica dust can cause lung disease and is known to the State of California to cause cancer.



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Use right and left joysticks to control excavator dipper, boom, and bucket.

1. Keep dipper and boom at right angles as much as possible for maximum power.
2. Keep bucket in line with dipper as much as possible.
3. Position bucket so teeth cut soil. As soil is cut, curl bucket under dipper.
4. Move dipper and bucket together. Increasing engine speed will increase excavator speed but not excavator force.
5. When job is finished, stow excavator, pivot seat to face tool carrier end, switch unit into tool carrier mode and drive away from area.

Dumping Bucket

Use right and left joysticks to control excavator dipper, boom, and bucket.

1. Position unit.

Onto truck	Into hole or onto ground
Position unit between material to be loaded and back end of truck, if possible.	Position unit to minimize the need for travel.

2. Fill bucket.
3. Dump bucket.

Onto truck	Into hole or onto ground
• Swing boom into position over truck. • Raise boom above truck bed. • Move dipper out and open bucket. • Swing boom back into position over fill site.	• Swing boom into position over dump site. • Move dipper out and open bucket. • Swing boom back into position over fill site.

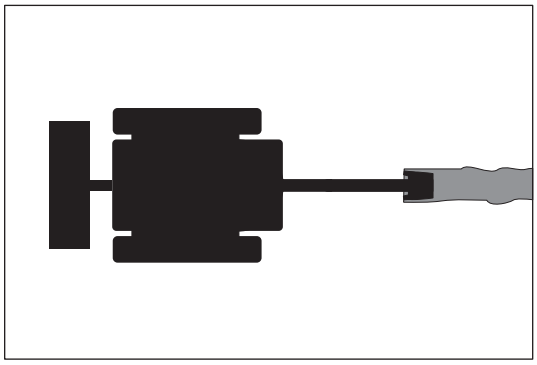
4. Continue filling and dumping buckets.
5. Reposition unit as needed to complete job.

IMPORTANT: If operator is facing excavator when driving, unit movements are reversed.

6. When job is finished, stow excavator, pivot seat to face tool carrier end, switch unit into tool carrier mode and drive away from area.

Digging

Single Inline Trench

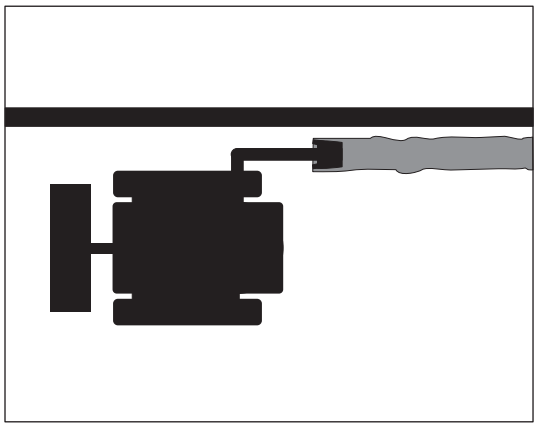


1. Position unit with tracks parallel with the intended digging path.
2. Fill and dump buckets.
3. Reposition unit as needed to continue trench.

IMPORTANT: If operator is facing excavator when driving, unit movements are reversed.

4. When trench is finished, stow excavator, pivot seat to face tool carrier end, switch unit into tool carrier mode and drive away from trench.

Single Offset Trench



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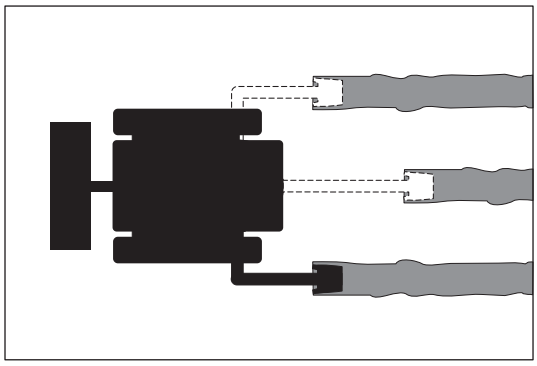
1. Position unit near the intended digging path.
2. Swing excavator and offset boom as needed to align with digging path.
3. Fill and dump buckets.
4. Reposition unit as needed to continue trench.

IMPORTANT: If operator is facing excavator when driving, unit movements are reversed.

5. When trench is finished, stow excavator, pivot seat to face tool carrier end, switch unit into tool carrier mode and drive away from trench.

Multiple Trenches

1. Position unit in a central location to the intended digging paths.
2. Swing excavator and offset boom as needed to align with first digging path.
3. Fill and dump buckets.
4. Reposition excavator and boom as need to dig additional trenches.
5. When all trenches are finished, stow excavator, pivot seat to face tool carrier end, switch unit into tool carrier mode and drive away from area.



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Operating Tips

- Do not lift loads heavier than lift capacity for unit.
- Unit lift capacity is limited by stability. Unit is most likely to tip when arms are horizontal. A load picked up when arms are above or below horizontal can cause unit to tip when arms are moved to the horizontal position.
- When filling bucket from materials piled higher than unit, keep unit bucket about 2' (610 mm) above ground and work around pile instead of cutting deeply into one side.
- Keep bystanders clear of work area.
- Do not use impact force of excavator bucket to break materials. Unit damage and loss of stability can occur.
- Take care to avoid digging deeply under the tracks. Ground under the tracks can collapse and cause unit to fall.
- Do not walk or work under raised attachments unless lift arms are securely supported.

Systems and Equipment

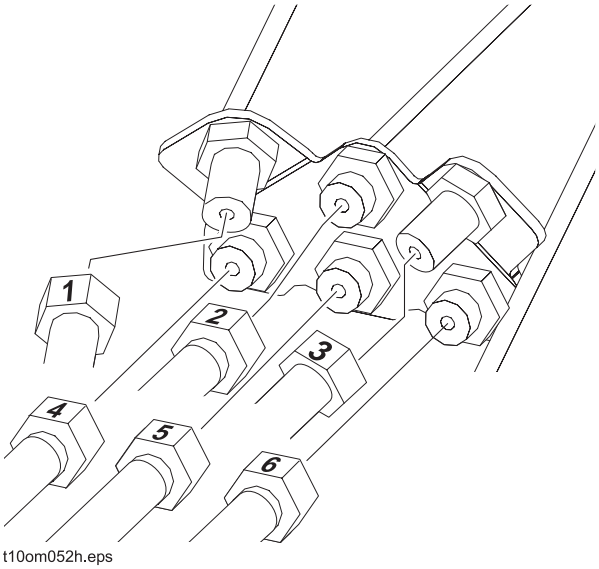
Chapter Contents

Excavator Control Pattern

Change Pattern

IMPORTANT: Numbers are scribed into hose connectors. These hose numbers are referenced in the instructions below.

1. Disengage excavator stow lock.
2. Fully extend boom and rest bucket on the ground.
3. Cut ziptie around hoses closest to operator's station side of bulkhead.
4. Change hose positions as shown. Be careful not to cross hoses near the ends.



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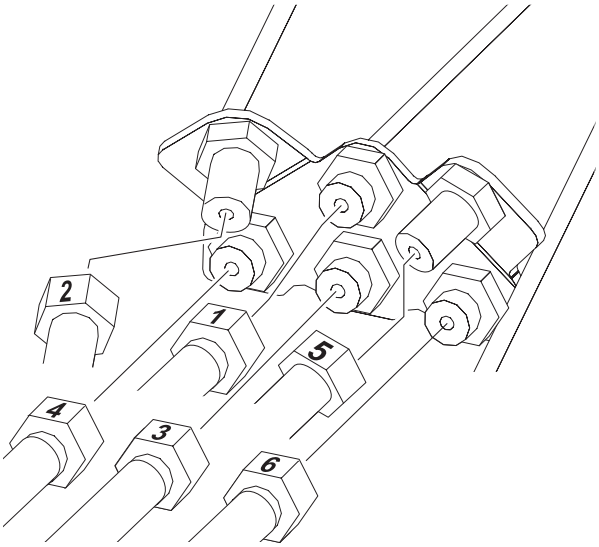
SAE

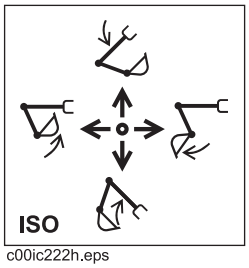
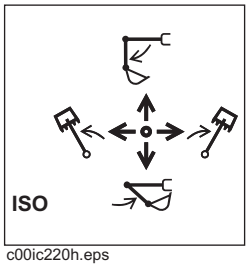


ISO

5. Verify controls work properly. See "Operate Controls" on page 63 for ISO pattern operation and "Joysticks" on page 24 for SAE pattern operation.
6. Ziptie the hoses.

Operate Controls

IMPORTANT: ISO excavator control pattern is shown. For information about SAE control pattern, see "Joysticks" on page 24.

Item	Description	Notes
Right joystick  c00ic222h.eps	With work mode switch in **excavator mode**: • To open bucket, move right. • To close bucket, move left. • To raise boom, pull. • To lower boom, push.	
Left joystick  c00ic220h.eps	With work mode switch in **excavator mode**: • To swing excavator to right, move right. • To swing excavator to left, move left. • To move dipper in, pull. • To move dipper out, push.	

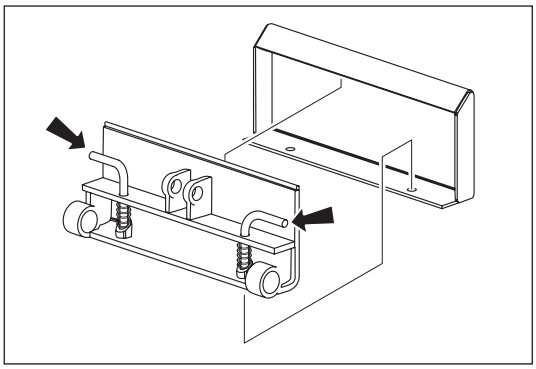
Front Attachments

Connect Attachment

Attachment

IMPORTANT: Before connecting attachment to unit, ensure that mount and receiver plates are free of dirt and debris.

1. Position attachment on level surface with enough space behind it to accommodate unit.
2. Ensure that lock pin handles (shown) on mount plate are turned away from center of attachment.
3. Start engine.



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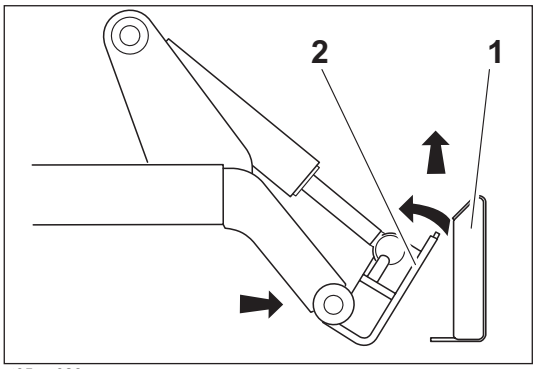
4. Tilt mount plate (2) forward.
5. Position mount plate in the upper lip of the receiver plate (1) on attachment.
6. Raise lift arms while tilting back mount plate.

IMPORTANT: Attachment should be raised enough to clear the ground. Mount plate should be tilted back fully.



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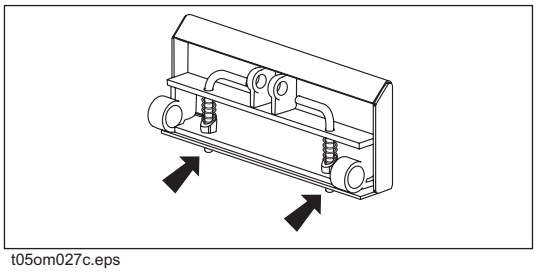
7. Turn ignition switch off and remove key.
8. Rotate lock pin handles toward center of mount plate to secure attachment to lift plate.

NOTICE: To ensure proper connection, verify that bottoms of lock pins are visible under attachment receiver plate (shown).



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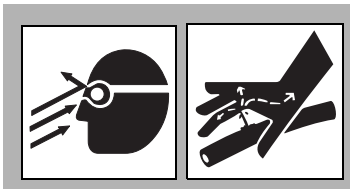
Hydraulic Hoses

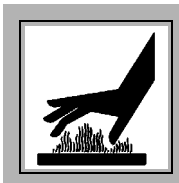
If attachment requires hydraulic power for operation, connect hydraulic hoses.



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

NOTICE:

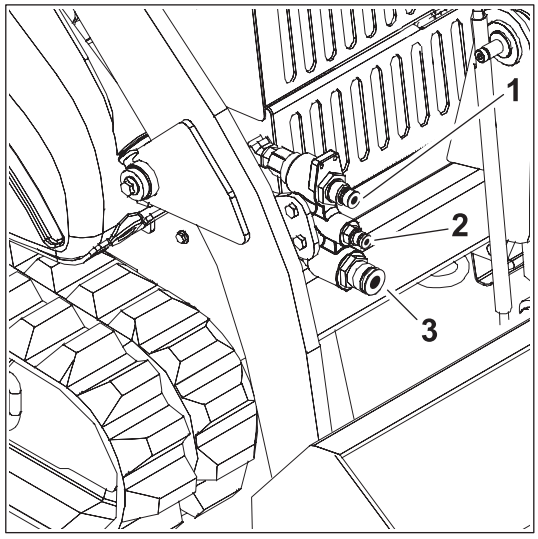
- Escaping pressurized fluid can cause injury or pierce skin and poison.
- Before disconnecting a hydraulic line, turn engine off and operate all controls to relieve pressure. Lower, block, or support any raised component with a hoist. Cover connection with heavy cloth and loosen connector nut slightly to relieve residual pressure. Catch all fluid in a container.
- Before using system, check that all connections are tight and all lines are undamaged.
- Fluid leaks can be hard to detect. 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.



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

NOTICE: Hydraulic couplers, hoses and fluid may be hot. Wear gloves when connecting and disconnecting hydraulic hoses and wait until unit has cooled before touching hydraulic components.

1. Remove dirt and debris from hydraulic couplers.
2. Connect male coupler on attachment to female coupler (3) on unit.
3. Connect female coupler on attachment to male coupler (1) on unit.
4. Connect female coupler on case drain hose to case drain coupler (2) on unit, if attachment requires it.
5. Ensure that connections are secure by pulling on hoses.



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Operate Attachment

See "Joysticks" on page 24 for a description of XT850 front-attachment controls and refer to attachment operator's manual for specific attachment operating instructions.

Optional Equipment

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

Equipment	Description
Ditch Witch XT series buckets and SK series attachments	a variety of attachments are available to expand the capabilities of the tool carrier end of the unit
Bobcat adapter plate	allows tool carrier end of unit to accept Bobcat-style attachments
mini excavator attachment kit	allows excavator end of unit to accept attachments other than bucket
mini excavator attachments	several attachments are available to expand the capabilities of the excavator end of the unit

Complete the Job

Chapter Contents

Rinse Equipment

1. 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.

2. Open hood and remove debris from inside of unit.
3. Remove mud from track sprockets and rollers.

Disconnect Attachment

1. Lower attachment to the ground.
2. Turn off engine.
3. Disengage lock pins by turning handles away from center of attachment.
4. Disconnect hydraulic hoses, if used.
5. Start engine.
6. Tilt mount plate forward and back unit away from attachment.

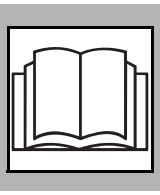
Stow Tools

Make sure all tools and accessories are loaded on trailer.

Service

Chapter Contents

Service Precautions



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

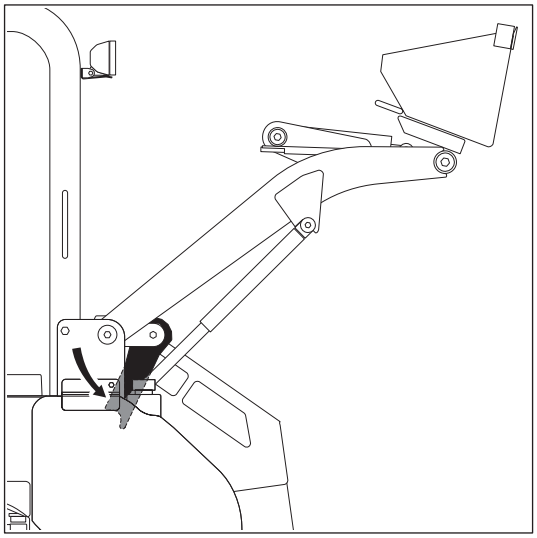
NOTICE: Unless otherwise instructed, all service should be performed with engine off.

Working Under Raised Lift Arms

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

Before working under raised lift arms, stop engine, rotate props into position (shown), start engine, and lower arms until props support lift arms.

To return to normal operation, start engine, raise lift arms slightly, stop engine, and rotate props into stowed position.



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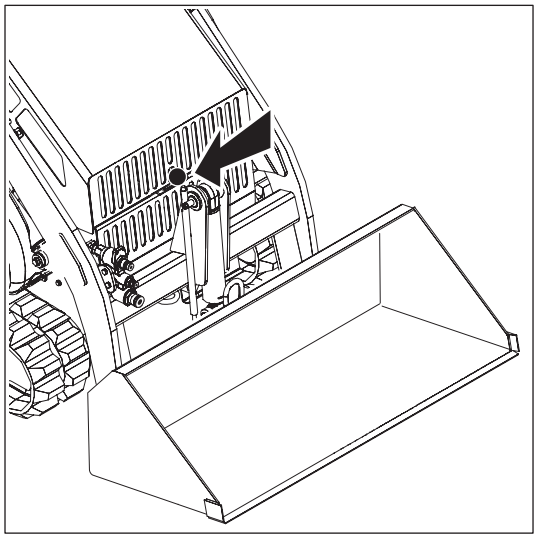
Opening Hood

1. Move knob as shown to unlatch hood.
2. Raise hood fully.



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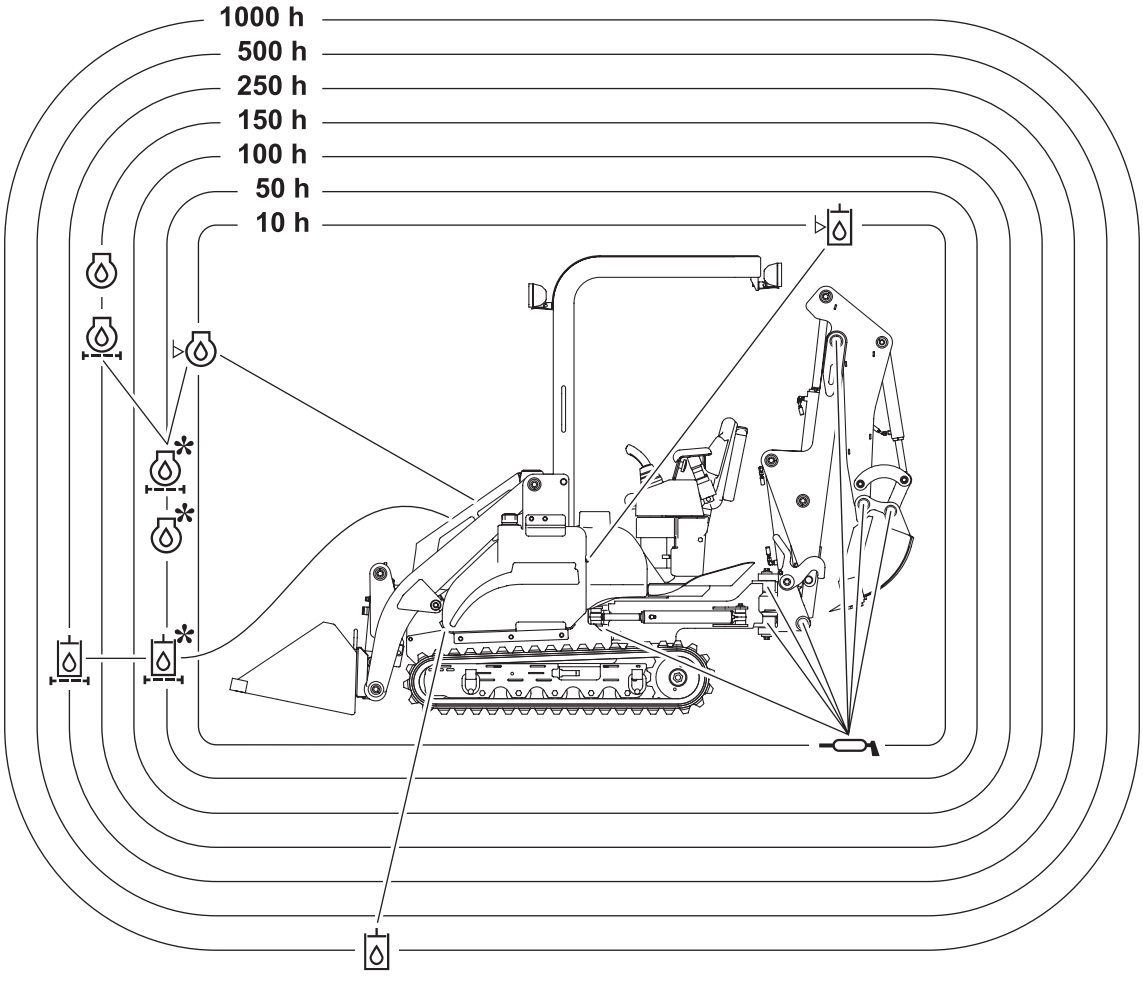
Lubrication Overview



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See next page for service key.

Recommended Lubricants/Service Key

Item	Description
DEO	Diesel engine oil meeting or exceeding CH-4 per the API service classification or E5 per the European Automobile Manufacturer's Association (ACEA) and SAE viscosity recommended by engine manufacturer (SAE 10W30)
MPG	Multipurpose grease meeting ASTM D217 and NLGI 5
THF	Tractor hydraulic fluid, similar to Phillips 66 HG, Mobilfluid 423, Chevron Tractor Hydraulic Fluid, Texaco TDH Oil, or equivalent
DEAC	Diesel engine antifreeze/coolant meeting ASTM D5345 (prediluted) or D4985 (concentrate)
	Check level of fluid or lubricant
	Check condition
	Filter
	Change, replace, adjust, service or test

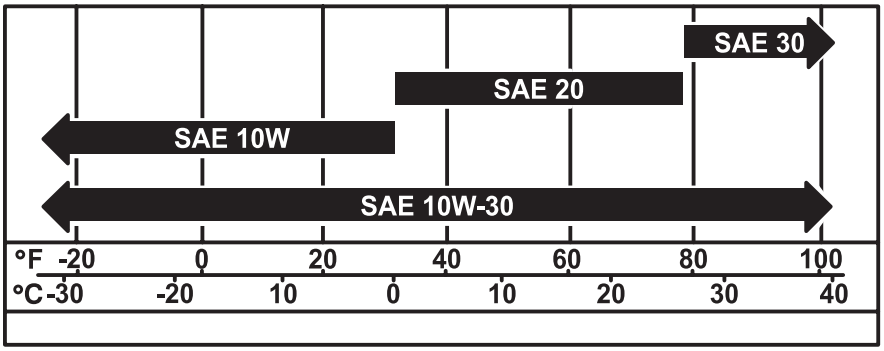
Proper lubrication and maintenance protects Ditch Witch equipment from damage and failure. Service intervals listed are for minimum requirements. In extreme conditions, service machine more frequently. Use only recommended lubricants. Fill to capacities listed in "Fluid Capacities" on page 92.

For more information on engine lubrication and maintenance, see your Kubota® 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 99 to record all required service to your machine.

Engine Oil Temperature Chart



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Temperature range anticipated before next oil change

Approved Coolant

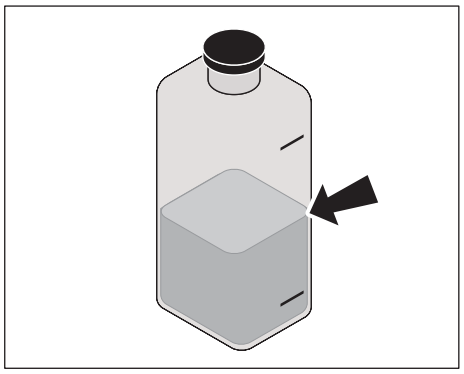
Any coolant is approved for use with this unit. However, it was filled with John Deere Cool-Gard coolant before shipment from factory. Add only Cool-Gard (p/n 255-006) or any fully-formulated, ethylene glycol based, low-silicate, heavy-duty diesel engine coolant meeting ASTM specification D5345 (prediluted) or D4985 (concentrate). Before using any other kind of coolant, completely flush radiator.

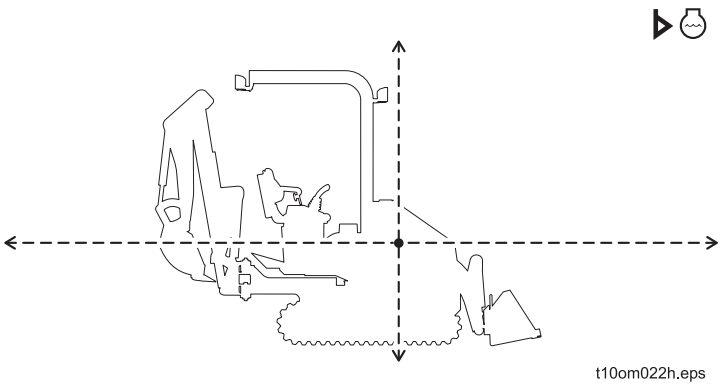
NOTICE: Do not mix heavy-duty diesel engine coolant and automotive-type coolant. This will lead coolant breakdown and engine damage.

10 Hour

Location	Task	Notes
	Check coolant level	DEAC
	Check engine oil level	DEO
	Clean radiator screen	
	Check track tension	
	Check hydraulic fluid level	THF
	Lubricate excavator	MPG

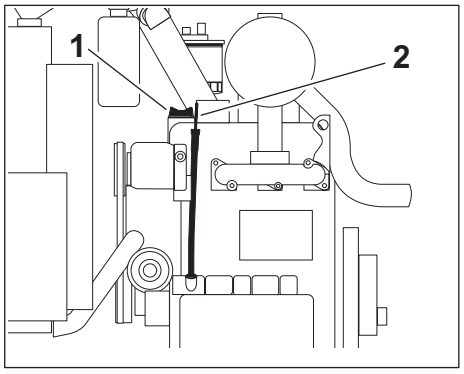
Check Coolant Level

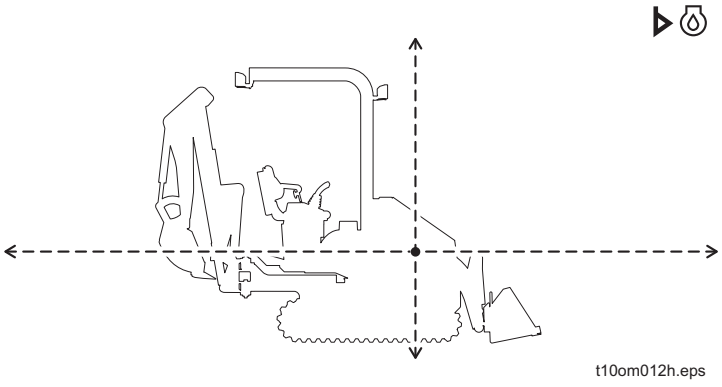




Check coolant level every 10 hours. Add coolant as needed to maintain as shown on overflow bottle.

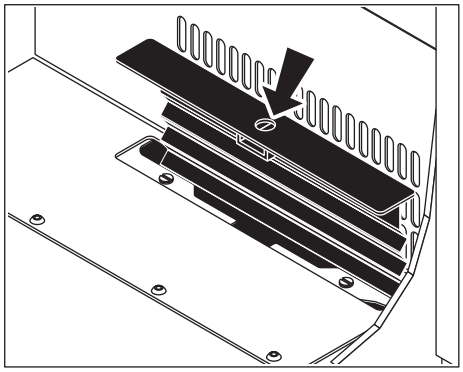
Check Engine Oil Level

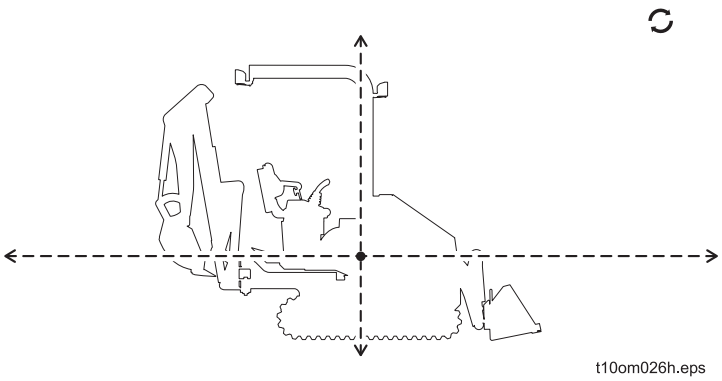




Check engine oil level at dipstick (2) every 10 hours. Add DEO at fill (1) as needed to maintain oil level at highest line on dipstick.

Clean Radiator Screen

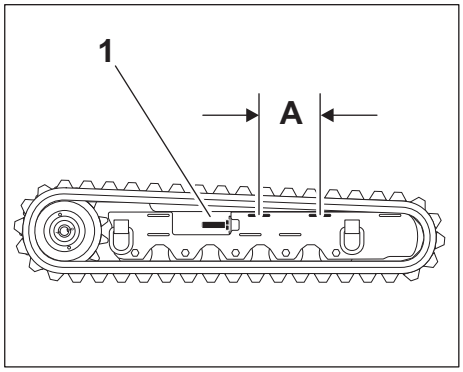


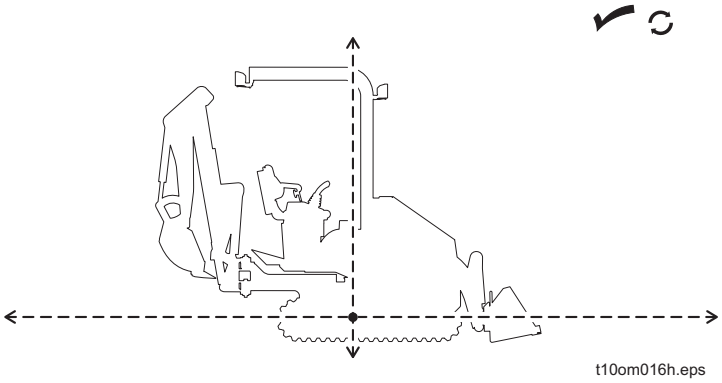


Clean radiator screen every 10 hours. Remove screen by pulling up at hole.

IMPORTANT: Do not operate unit without screen in place.

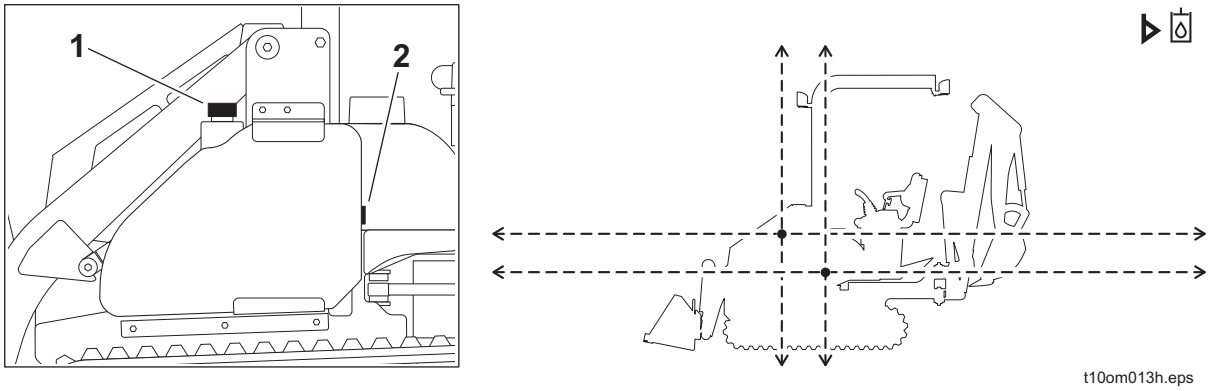
Check Track Tension





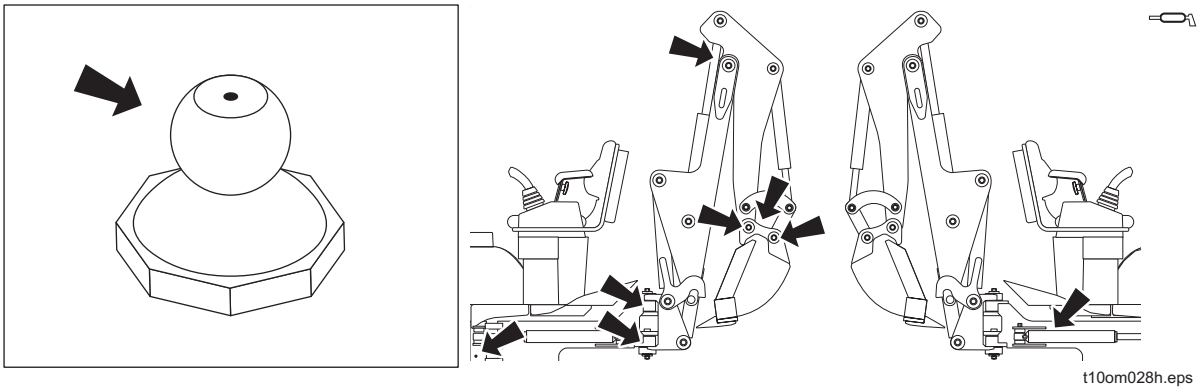
Check track tension every 10 hours. Measure length of spring as shown. When tracks are properly tensioned, dimension A should be 9 1/4" (235 mm). Adjust as needed (see page 85).

Check Hydraulic Fluid Level



Check hydraulic fluid level every 10 hours. Maintain level at halfway point on sight glass (2). Add THF as needed at fill (1).

Lubricate Excavator



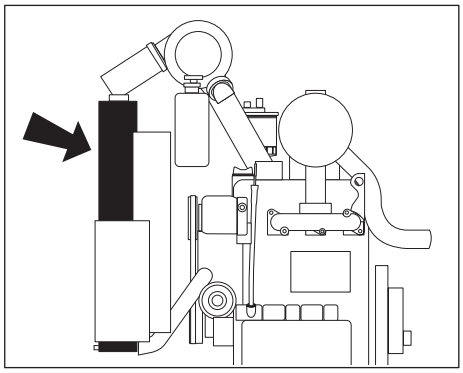
Lubricate excavator every 10 hours of use. Apply MPG at each of the 8 zerks.

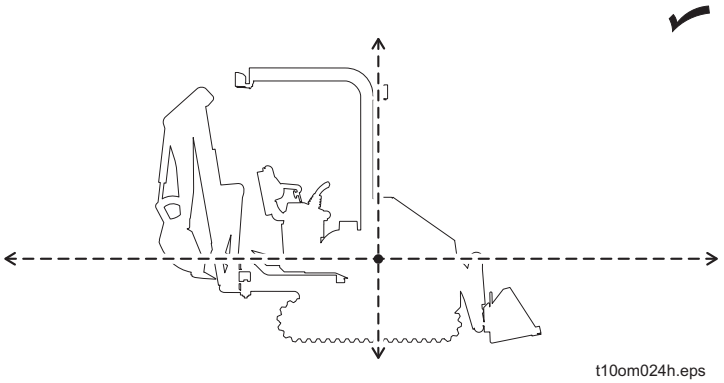
IMPORTANT: On some units, zerk farthest to the left on illustration may be located on swing post.

50 Hour

Location	Task	Notes
	Check radiator	
	Check air filter	
	Check battery	
	Change engine oil and filter	Initial, DEO
	Change hydraulic filter	Initial

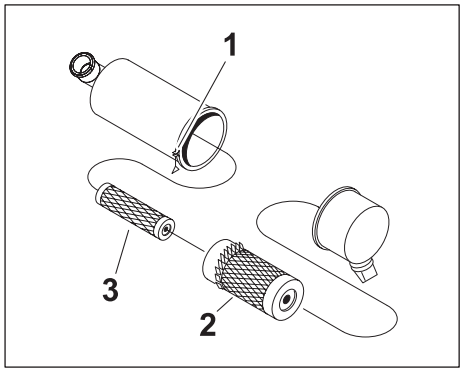
Check Radiator

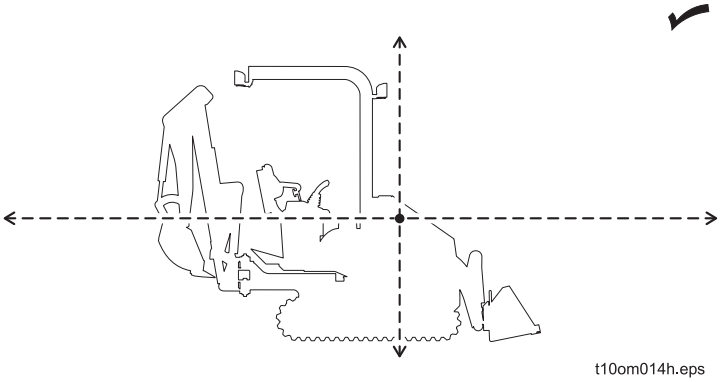




Check radiator for dirt, grass, and other foreign matter every 50 hours. Clean out with compressed air or spray wash if required. Be careful not to damage fins with high-pressure air or water. Check more often if operating in dusty or grassy conditions.

Check Air Filter

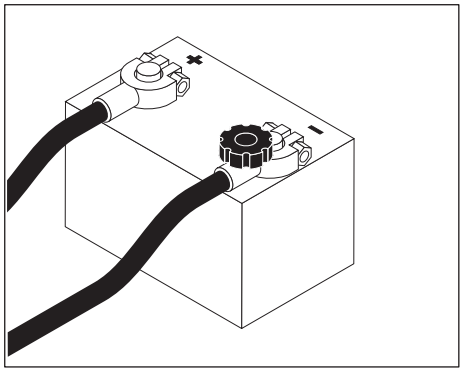


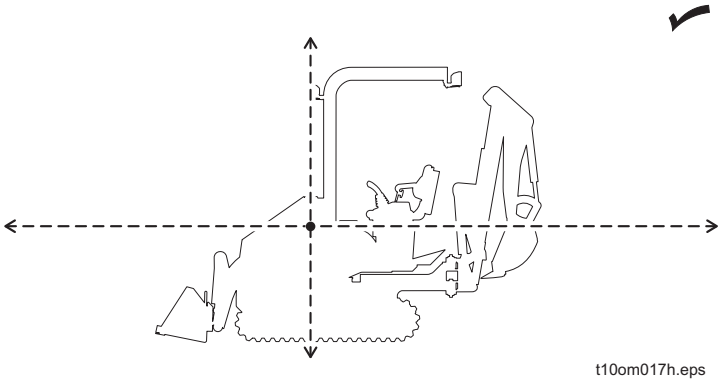


Check air filter for wear or holes every 50 hours. Replace as needed.

IMPORTANT: Lift arms must be raised to access filter elements. Engage props (see page 70).

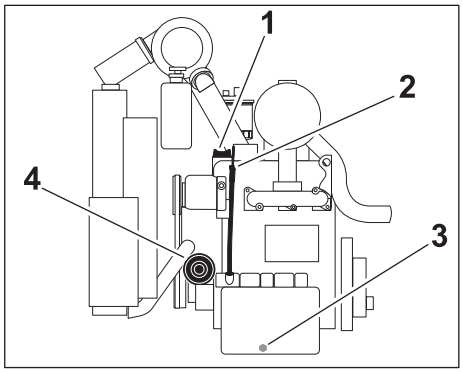
Check Battery

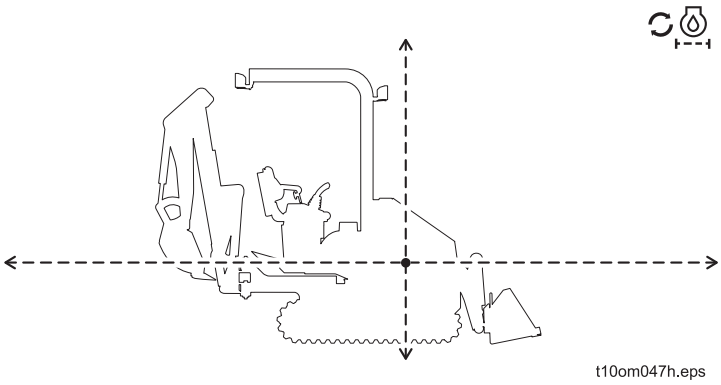




Check battery connections for wear or corrosion every 50 hours. Keep connections clean and tight. Batteries supplied by the factory are maintenance free. Service replacement batteries according to manufacturer's instructions.

Change Engine Oil and Filter (Initial)

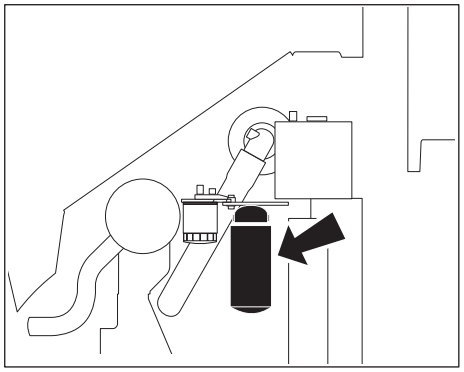


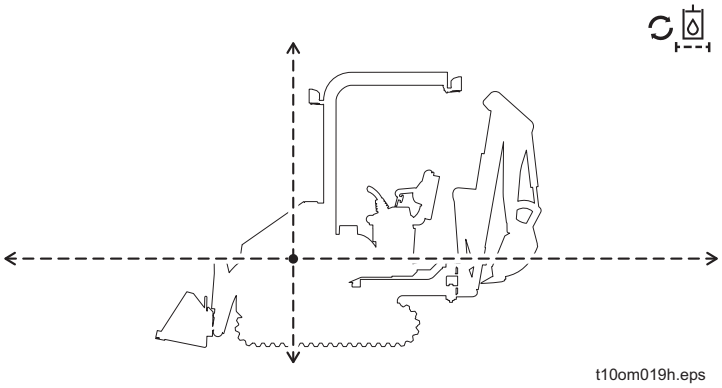


Change engine oil after 50 hours.

1. Remove large cover plate under unit to access drain (3, on side of pan).
2. Drain crankcase while oil is warm.
3. Replace filter (4).
4. Close drain and install cover.
5. Add DEO at fill (1) until oil level is at highest line on dipstick (2).

Change Hydraulic Filter (Initial)



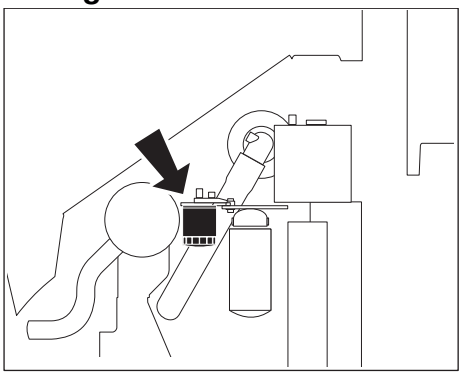


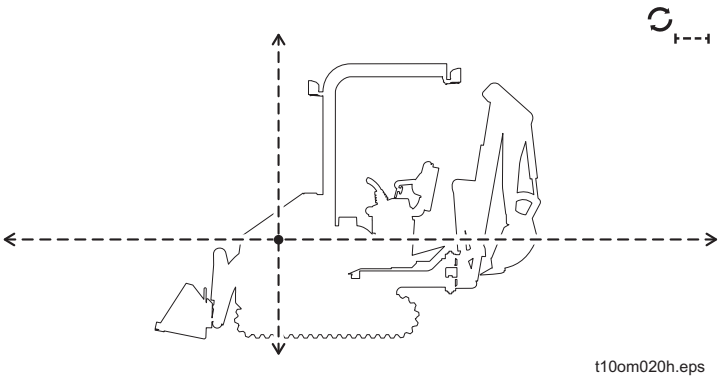
Change hydraulic filter after 50 hours.

100 Hour

Location	Task	Notes
	Change fuel filter	
	Check pump drive belt tension	
	Change inline fuel filter	
	Check front idler roller	

Change Fuel Filter

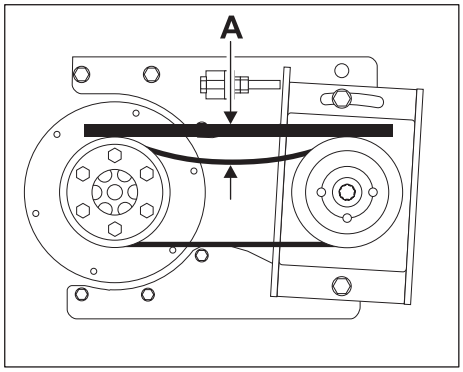


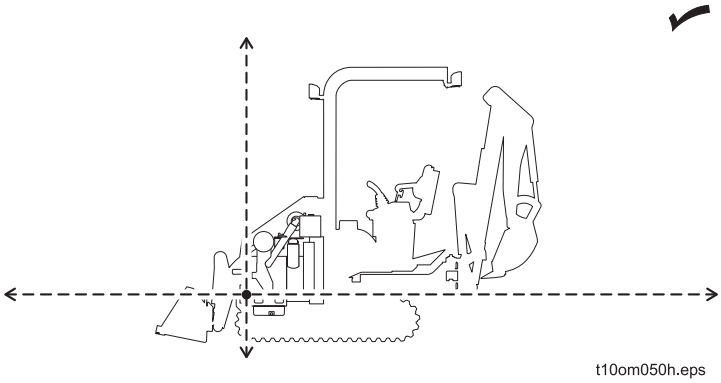


Change fuel filter every 100 hours.

1. Remove filter.
2. Fill new filter with clean fuel.
3. Apply fuel oil over the gasket and hand-tighten.

Check Pump Drive Belt Tension

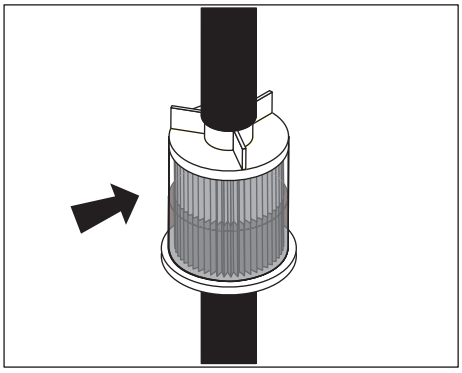


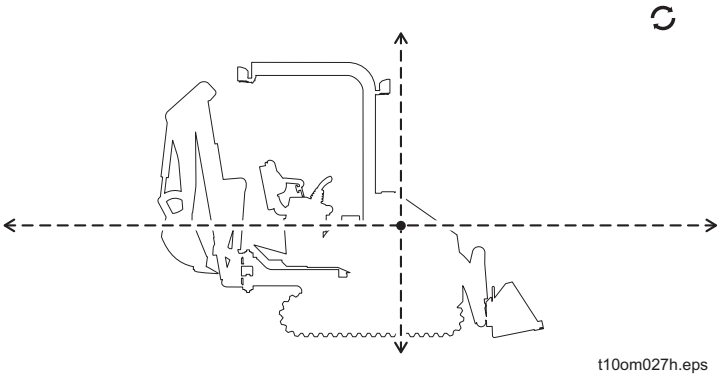


Check pump drive belt tension every 100 hours.

1. Turn off engine and remove key.
2. Apply moderate thumb pressure to top of belt.
3. Belt is properly tensioned when deflection (A) is 1/4-1/2" (5-13 mm). To adjust, see page 87.

Change Inline Fuel Filter

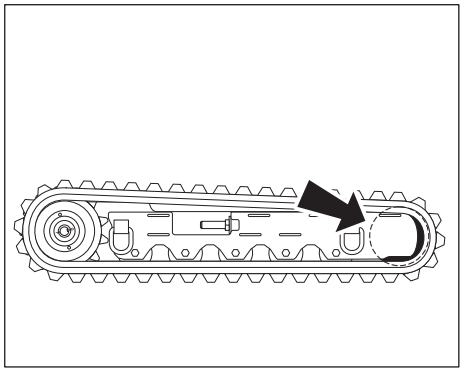


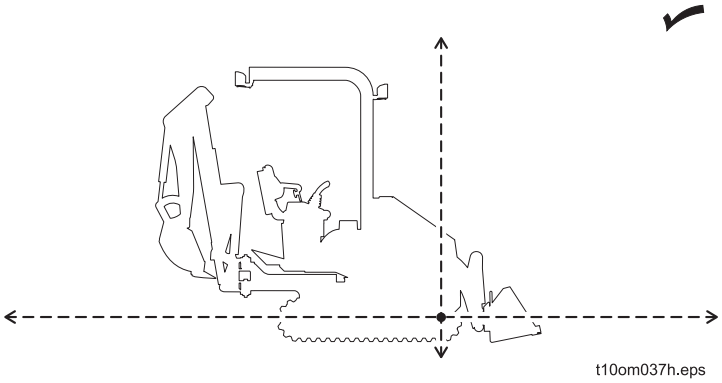


Change inline fuel filter (mounted outside engine compartment) every 100 hours.

1. Remove filter.
2. Install new filter.

Check Front Idler Roller

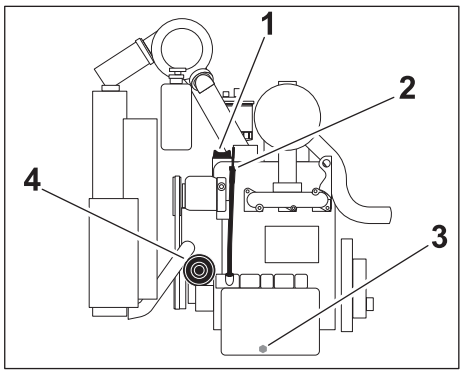


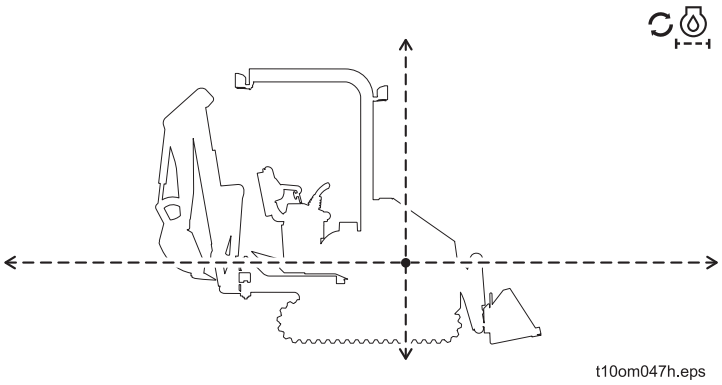


Check front idler roller for wear every 100 hours. Replace as needed.

150 Hour

Change Engine Oil and Filter





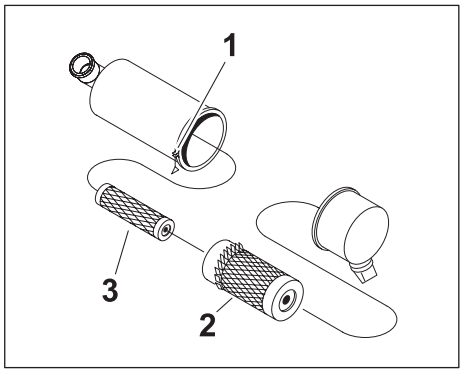
Change engine oil every 150 hours.

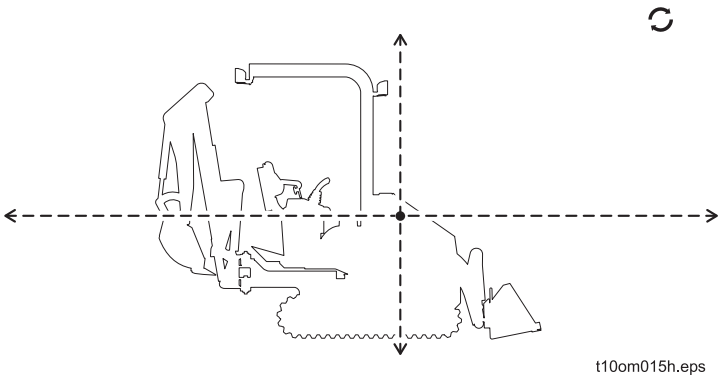
1. Remove large cover plate under unit to access drain (3, on side of pan).
2. Drain crankcase while oil is warm.
3. Replace filter (4).
4. Close drain and install cover.
5. Add DEO at fill (1) until oil level is at highest line on dipstick (2).

250 Hour

Location	Task	Notes
	Change air filter	
	Change hydraulic filter	

Change Air Filter



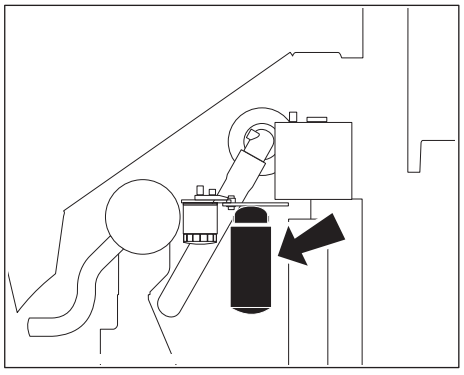


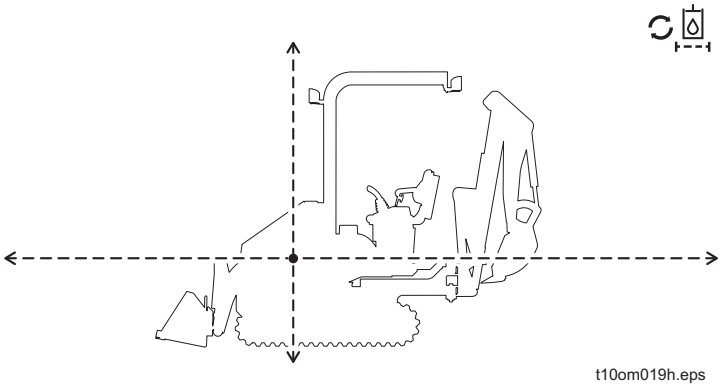
Change air filter every 250 hours.

IMPORTANT: Raise lift arms to access filter elements. Engage props (see page 70).

1. Open air filter housing at latches (1).
2. Remove primary (2) and secondary (3) elements.
3. Wipe inside of housing and wash end cup.
4. Insert new primary and secondary elements.
5. Close air filter case.

Change Hydraulic Filter

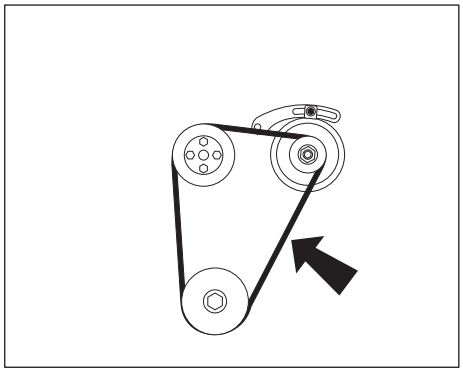


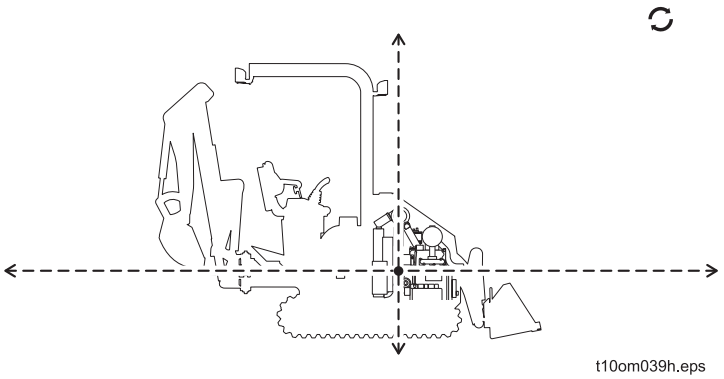


Change hydraulic filter every 250 hours.

500 Hour

Replace Fan Belt

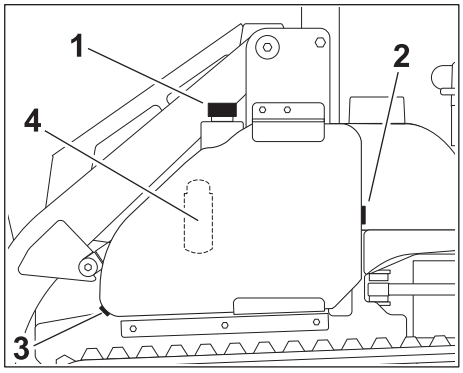


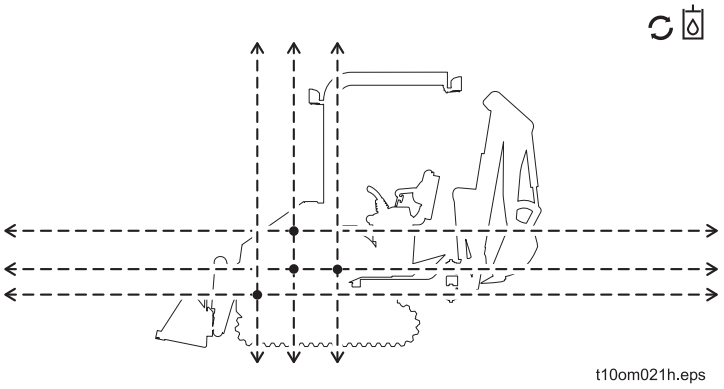


Replace fan belt every 500 hours. Adjust properly. See page 86.

1000 Hour

Change Hydraulic Fluid and Filter

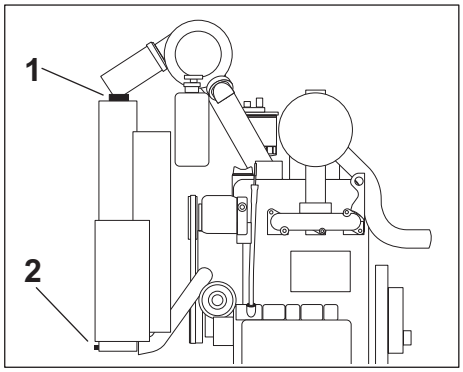


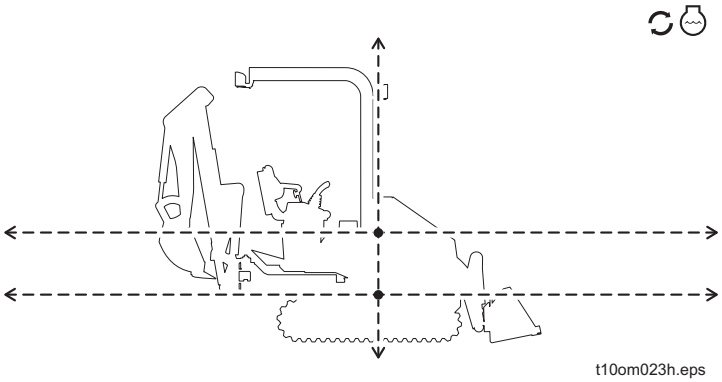


Drain (3) hydraulic fluid and change filter (4) every 1000 hours. Add THF at fill (1) until oil level is at halfway point on sight glass (2). Change fluid and filter every 500 hours if jobsite temperature exceeds 100°F (38°C) more than 50% of the time.

2000 Hour

Change Engine Coolant





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

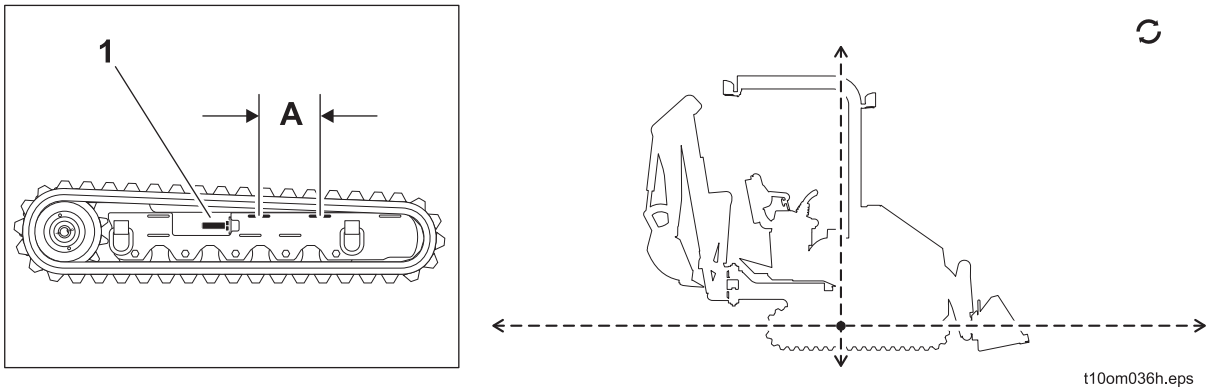
NOTICE:

- 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 73. for list of approved coolants.

As Needed

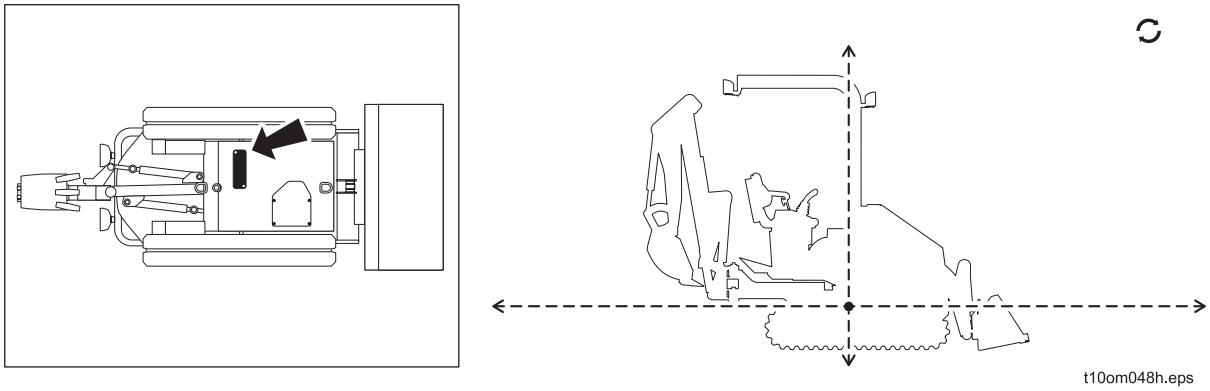
Location	Task	Notes
	Adjust track tension	
	Empty radiator cleanout	
	Adjust fan belt	
	Adjust pump drive belt	

Adjust Track Tension



Adjust track tension as needed. To increase tension, turn screw (1) clockwise. To reduce tension, turn screw counterclockwise. When tracks are properly tensioned, dimension A should be 9 1/4" (235 mm).

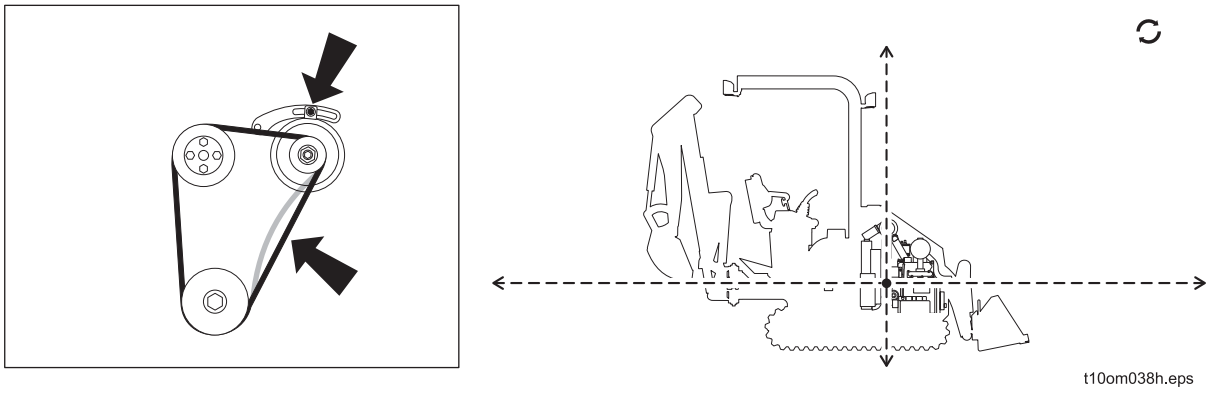
Empty Radiator Cleanout



Empty radiator cleanout as needed.

1. Remove radiator screen (see page 75) and the radiator cover holding the screen in place.
2. Remove plate (shown) under unit.
3. Clean out all debris from cleanout area.
4. Replace plate, radiator cover, and radiator screen.

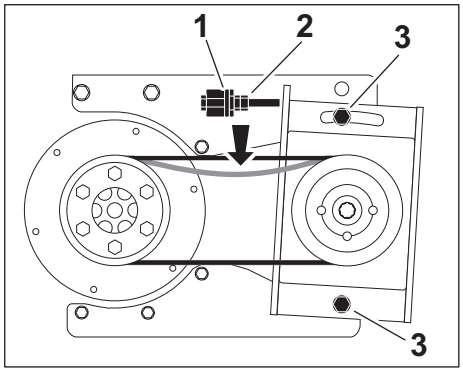
Adjust Fan Belt

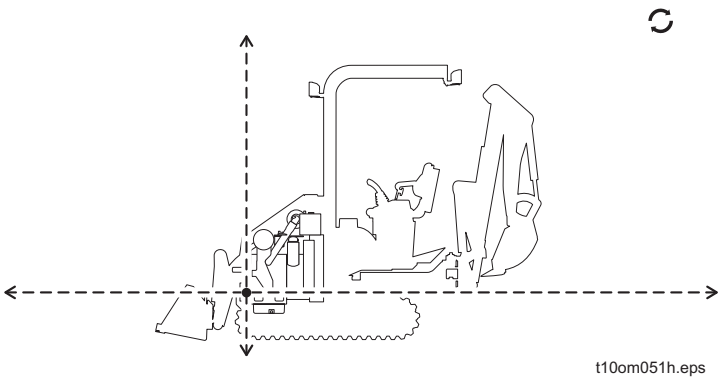


Adjust fan belt as needed.

1. Turn off engine and remove key.
2. Apply moderate thumb pressure to belt between pulleys where shown.
3. Belt is properly tensioned when deflection is about 1/4-3/8" (7-9 mm).
4. If needed, loosen alternator bolts (shown) and pull alternator out until correct tension is reached.

Adjust Pump Drive Belt

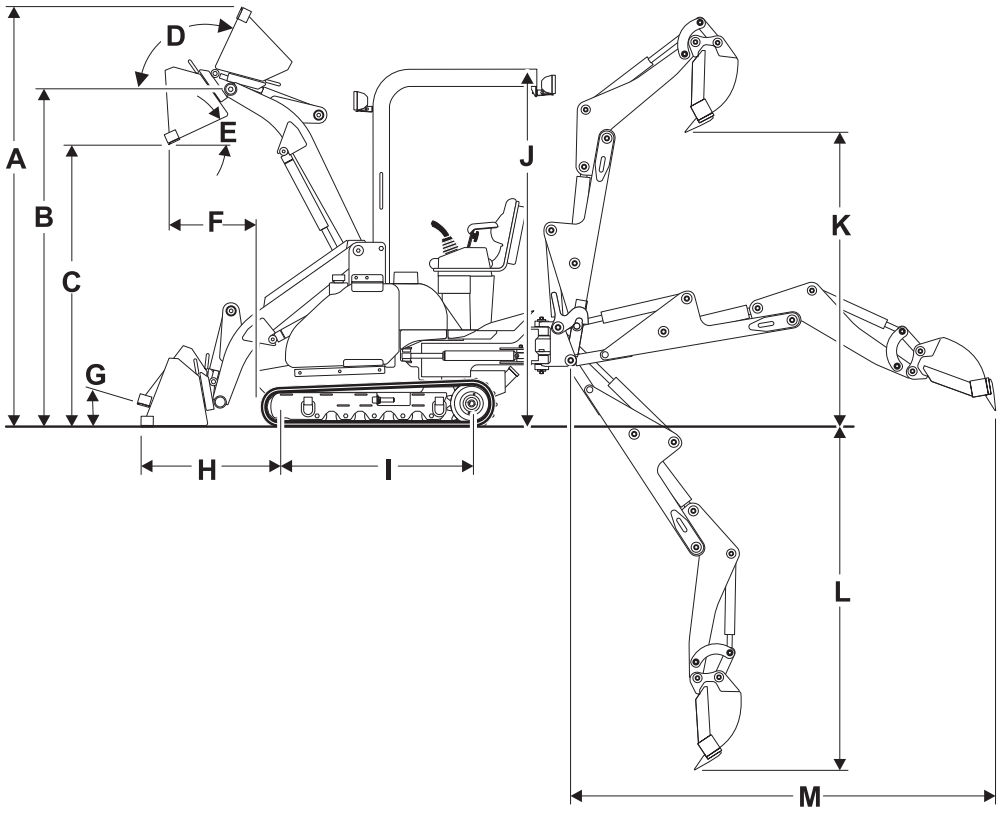




Adjust pump drive belt as needed.

1. Raise lift arms and engage props. See "Working Under Raised Lift Arms" on page 70.
2. Turn off engine and remove key.
3. Open hood.
4. Remove front grill.
5. Loosen bolts (2) and locknut (3).
6. Adjust bolt (1) to increase or decrease tension.
7. Check tension by applying moderate thumb pressure in center of top of belt. Belt is properly tensioned when deflection is 1/4-1/2" (5-13 mm).
8. Once tension is set, tighten locknut and bolts.
9. Replace grill.

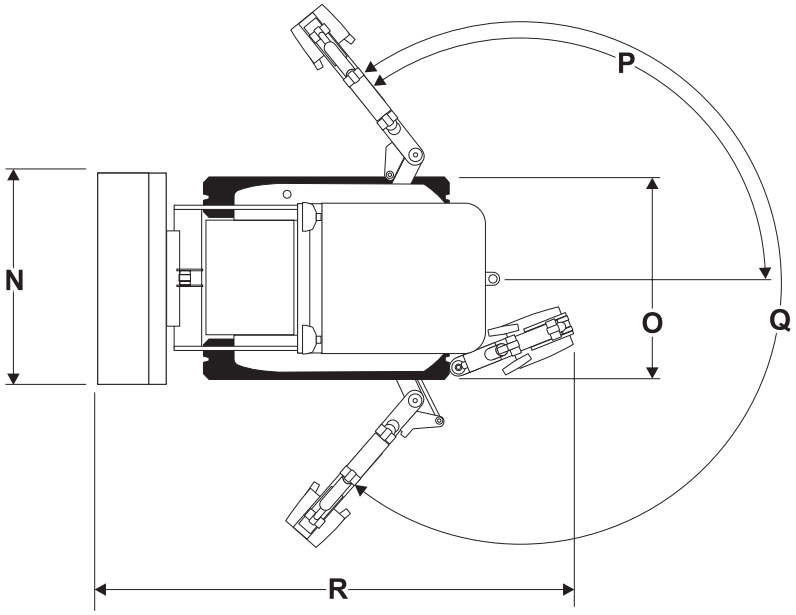
Specifications



General Dimensions		U.S.	Metric
I	Wheelbase/track length	46 in	1.2 m
J	Overall height of machine	89 in	2.3 m

Tool Carrier Dimensions		U.S.	Metric
A	Operating height with standard bucket, max	104 in	2.6 m
B	Hinge pin height, max	83 in	2.1 m
C	Dump height with standard bucket, max	69 in	1.75 m
D	Bucket rollback angle, top	115°	115°
E	Dump angle, standard bucket	25°	25°
F	Reach with standard bucket, fully raised	21 in	533 mm
G	Bucket rollback angle, ground level	16°	16°
H	Reach at grade	34 in	864 mm

Excavator Dimensions		U.S.	Metric
K	Loading height, max	72 in	1.8 m
L	Dig depth, max	83 in	2.1 m
	Dig depth, 2-ft (.6-m) flat bottom	79 in	2.0 m
M	Reach from swing post	103 in	2.6 m



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General Dimensions		U.S.	Metric
O	Machine width	50 in	1.3 m
R	Overall machine length, excavator stowed	120 in	3 m
	Weight	3980 lb	1805 kg

Tool Carrier Dimensions		U.S.	Metric
N	Bucket width, max	52 in	1.3 m

Excavator Dimensions		U.S.	Metric
P	Swing angle from center	130°	130°
Q	Total swing angle	260°	260°

Performance	U.S.	Metric
Ground drive speed, forward	4.2 mph	6.7 km/h
Ground drive speed, reverse	4.2 mph	6.7 km/h
Ground pressure	4.0 psi	0.28 bar
Angle of departure	30°	30°
Tipping capacity	2500 lb	1134 kg
Rated operating capacity @ 35% of tipping capacity	850 lb	385.5 kg
Drawbar pull	2500 lb	11.1 kN

Hydraulic System	U.S.	Metric
Auxiliary: dual gear pumps		
Flow rate	6.5/13 gpm	25/49 L/min
Pressure	2900 psi	200 bar
Ground drive: dual hydrostat		
Flow rate	14 gpm	53 L/min
Pressure	3400 psi	234 bar

Power	U.S.	Metric
Engine: Kubota D1105-E diesel		
Cooling medium: coolant (see "Approved Coolant" on page 73)		
Number of cylinders: 3		
Injection	1991 lbf/in^2	140 kgf/cm^2
Displacement	68.53 in^3	1123 cm^3
Bore	3.07 in	7.7 cm
Stroke	3.09 in	7.86 cm
* Maximum tilt angle, fore and aft	30°	30°
* Maximum tilt angle, side	30°	30°
Installed net power per SAE J1349 (@ 3000 rpm)	24.5 hp	18 kW
Gross power per SAE J1995	26 hp	19.4 kW
Maximum governed speed (no load)	3160 rpm	3160 rpm

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

Fluid Capacities	U.S.	Metric
Fuel tank	10 gal	38 L
Engine oil, with filter	4.2 qt	4 L
Hydraulic system	10 gal	38 L

Battery
SAE reserve capacity 80 min, SAE cold crank @ 0°F (-18°C) 525 amp, 12V electrical system

Vibration Levels
Under normal operation of the excavator or tool carrier of the XT850, the vibration level to the arms does not exceed 2.5 m/sec^2. Under the same conditions, the vibration level to the body does not exceed .5 m/sec^2.

Noise Levels
104 dBA sound power per Noise Emission Directive 2000/14/EC
Operator 92.7 dBA sound pressure per ISO 6394

Specifications are called out according to SAE recommended practices. 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 shown.

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 Parts Limited Warranty Policy

Subject to the limitations 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 (Exception: 2 years for all SK500 attachments). 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.

Exclusions from Product Warranty

- Wear-related failure of parts subject to ground contact including, but not limited to, digging teeth, digging chains, sprockets, backhoe buckets, plow blades, drill pipe, drill bits, backreamers, and swivels.
- 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 replacements 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: 1/03

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)

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL

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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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

Ditch Witch® Registration Card

Please Type or Print All Information

Purchaser's Company Name

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Street Address or P.O. Box

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Your Signature

Service Record

Service Performed	Date	Hours

Service Performed	Date	Hours