SK500

Operator's Manual







CMW® Issue 2.0

Overview

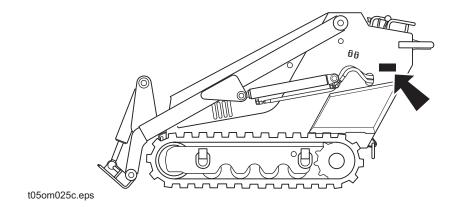


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Serial Number Location

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



Item	
date of manufacture	
date of purchase	
unit serial number	
engine serial number	

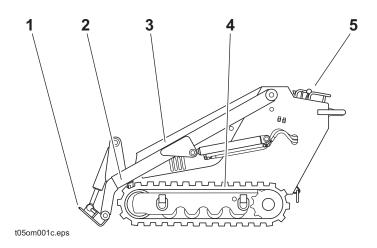
Intended Use



The SK500 is a walk-behind, rubber track mini skid steer unit designed for light-to medium-duty construction work. The SK500 has 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 SK500 should be operated, serviced, and repaired only by persons familiar with its particular characteristics and acquainted with the relevant safety procedures.

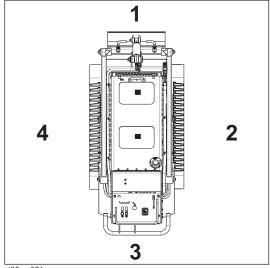
Unit Components



- 1. Mount plate
- 2. Lift arms
- 3. Engine compartment
- 4. Tracks
- 5. Operator station

Operator Orientation

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



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About This Manual

This manual contains information for the proper use of this machine. See the beige **Operation Overview** pages 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.

SK500 Operator's Manual

Issue number 2.0/OM-1/05 Part number 054-091

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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 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.

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

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



A DANGER

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



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



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





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





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





A WARNING

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



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



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





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



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





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



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



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



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



A CAUTION

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



A CAUTION

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



CAUTION protection.

Exposure to high noise levels may cause hearing loss. Wear hearing



A CAUTION

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



A CAUTION

Battery acid may cause burns. Avoid contact.



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 **near pedestrian unit**, DO NOT MOVE and do not touch unit. 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.
- Do not 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

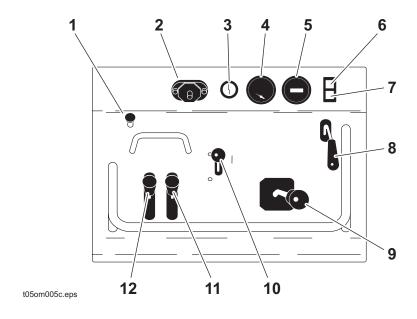
Do not look into cut ends of fiber optic or unidentified cable. Vision damage can occur.

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





- 1. Choke
- 2. Auxiliary power outlet
- 3. Ignition switch
- 4. Fuel gauge
- 5. Hourmeter
- 6. Engine oil pressure indicator

- 7. Hydraulic fluid temperature indicator
- 8. Attachment drive control
- 9. Lift arm control
- 10. Throttle
- 11. Right track drive control
- 12. Left track drive control

Ite	m	Description	Notes
1.	Choke cooico13c.eps	To help start cold engine, pull knob. When engine has warmed, push in completely.	
2.	Auxiliary power outlet	To operate work lights or other 12V devices, plug into outlet.	

Ite	m	Description	Notes
3.	Ignition switch STOP 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.	Fuel gauge co0ic018h.eps	Displays fuel level in tank.	Use only unleaded gasoline. Tank holds 6 gal (23 L).
5.	Hourmeter HOURS CO0ic019h.eps	Displays engine operating time.	Use these times to schedule service.
6.	Engine oil pressure indicator CO0ic119h.eps	Lights when engine oil pressure is low. Also lights briefly when engine is started.	Engine will stop. 1. Check oil level. 2. Check for leaks before starting engine.

Ite	n	Description	Notes
7.	Hydraulic fluid temperature indicator Colicio23h.eps	Lights when hydraulic fluid is overheating.	Check hydraulic fluid level.
8.	Attachment drive control R	To engage attachment drive in reverse, push up. To engage attachment drive in forward, pull down.	
9.	Lift arm control	To move lift arms down, push. To float, push forward to end. To move lift arms up, pull. To curl attachment up, move to left. To curl attachment down, move to right.	IMPORTANT: Do not exceed rated operating capacity when lifting loads. See page 65.
10.	Throttle cooicoo7c.eps	To increase engine speed, push. To decrease engine speed, pull.	Increasing engine speed also increases attachment speed.



Item	Description	Notes
11. Right track drive control F N N R c00ic012c.eps	To move forward, push. To move backward, pull. To go faster in either direction, move control farther from neutral. To stop, move to neutral.	To turn right, move left control forward and right control back. To turn left, move right control forward and left control back. To counter-rotate in either direction, move controls fully to ends in the directions indicated above.
12. Left track drive control F N N coolic011c.eps	To move forward, push. To move backward, pull. To go faster in either direction, move control farther from neutral position. To stop, move to neutral position.	To turn right, move left control forward and right control back. To turn left, move right control forward and left control back. To counter-rotate in either direction, move controls fully to ends in the directions indicated above.

Prepare

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Gather Information

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

All Jobs

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.

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.

Ground-Penetrating Jobs

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.

Above-Ground Jobs

Locate Overhead Lines

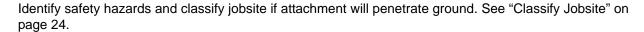
Note location and height of all overhead lines in jobsite and ensure that fully lifted attachment and/or load will not touch lines.

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 24.)
- traffic
- access
- · soil type and condition

Identify Hazards







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

- 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
- 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.
- Have an experienced locating equipment operator sweep area within 20 feet (6 m) to each side of work 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 ft (3 m) of a buried electric line	electric
within 10 ft (3 m) of a natural gas line	natural gas
in sand or granite which is capable of producing crystalline silica (quartz) dust	crystalline silica (quartz) dust
within 10 ft (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
- lubricants
- 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
- 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.

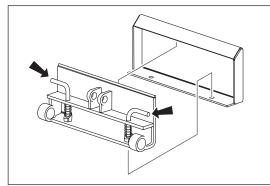
Connect Attachment

IMPORTANT: Use only Ditch Witch-approved attachments. Attachments can change the stability and operating characteristics of the unit.

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.



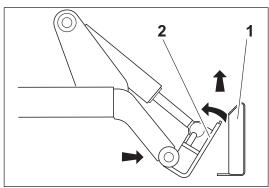


- 4. Tilt mount plate (2) forward.
- 5. Position mount plate in the upper lip of the receiver plate (1) on attachment.
- 6. Raise lift arms while tilting back mount plate.

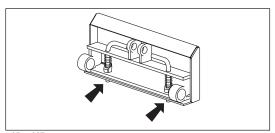
IMPORTANT: Attachment should be raised enough to clear the ground. Mount plate should be tilted back fully.

- 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.

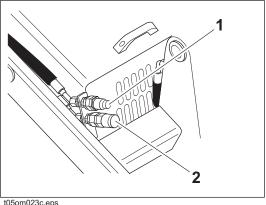


A CAUTION

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. Cycle attachment drive control to relieve residual pressure at hydraulic couplers.
- 2. Remove dirt and debris from hydraulic couplers.
- 3. Connect male coupler on attachment to female coupler (2) on unit.
- 4. Connect female coupler on attachment to male coupler (1) on unit.
- 5. Ensure that connections are secure by pulling on hoses.



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Drive

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Start Unit

- 1. Ensure all controls are in neutral.
- 2. If necessary, choke cold engine.
- 3. Move throttle to half open.
- 4. Turn ignition switch to start position and release when engine starts.
- 5. Push in choke after engine is warm.

EMERGENCY SHUTDOWN: Turn ignition switch to STOP.

Drive

General Operation

- 1. Pull lift arm control to raise mount plate (and attachment) off ground.
- 2. Move both track drive controls to forward or reverse. See page 20.
- 3. Adjust throttle as needed.

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.

Shut Down

- 1. Move track drive controls to neutral position.
- 2. Run engine at low idle for three minutes to cool.
- 3. Turn ignition switch to STOP.
- 4. Remove key.

NOTICE:

- Unit should not be parked on a slope unless chocked or blocked.
- Turn ignition switch to STOP to engage parking brake.



Transport

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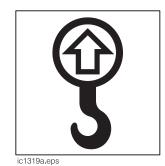
Lift



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

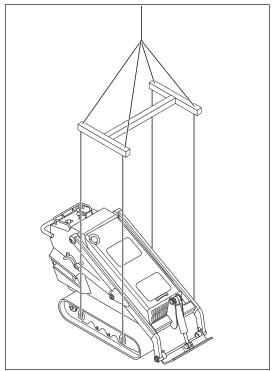
Points

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



Procedure

Use a hoist capable of supporting the equipment's size and weight. See page 65 or measure and weigh equipment before lifting. Use four lift points. Attach securely to cross members.



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Haul

IMPORTANT: For complete information, see the trailer manufacturer's manual.

Inspect Trailer

- · Check hitch for wear and cracks. Lubricate if needed.
- Check battery for 12V charge, if installed.
- 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.
- If equipped, 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 chain keepers (cross-shaped slots on bumper of tow vehicle). Attach left chain to right side of tow vehicle and vice versa to cradle hitch.

IMPORTANT: Do not connect safety chains to pintle hook or hitch ball.

5. If equipped, connect breakaway switch cable to tow vehicle.

IMPORTANT: Do not connect breakaway switch cable to pintle hook or hitch ball.

- 6. If equipped, plug trailer electrical connector into tow vehicle connector.
- 7. If equipped, use jack crank to raise jack base and stow.
- 8. Remove wheel blocks.



Load



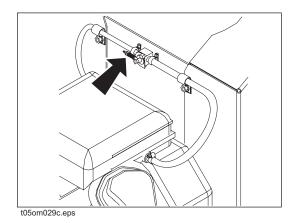
Crushing weight. If load falls or moves it could kill or crush you. Use proper procedures and equipment or stay away.

NOTICE:

- Load and unload trailer on level ground.
- 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.
- 1. Start engine.
- 2. Slow engine to low throttle.
- 3. Pull lift arm control to raise mount plate (and attachment) clear of trailer, but keep it low.
- 4. Move unit to rear of trailer and align with ramps.
- 5. Move both track drive controls forward and slowly move unit onto trailer until tiedown position is reached.

NOTICE: If loading onto tilt-bed trailer, be prepared for trailer to tilt.

- 6. Push lift arm control to lower mount plate (and attachment) to trailer bed.
- 7. Turn ignition switch off.
- 8. Close fuel shutoff valve (shown).
- 9. Tie down unit.



Tie Down

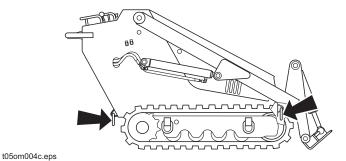
Points

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



Procedure

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





Unload

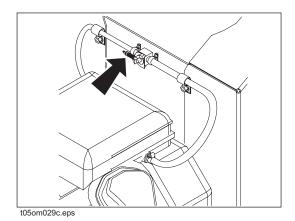


Crushing weight. If load falls or moves it could kill or crush you. Use proper procedures and equipment or stay away.

NOTICE:

- Load and unload trailer on level ground.
- Attach trailer to vehicle before loading or unloading.
- 1. Lower trailer or ramps.
- 2. Remove tiedowns.
- Open fuel shutoff valve (shown).
- 4. Start engine.
- 5. Pull lift arm control to raise mount plate (and attachment) off ground, but keep it low.
- 6. Slow engine to low throttle and slowly back unit down trailer or ramps.

NOTICE: If unloading from tilt-bed trailer, be prepared for trailer to tilt.

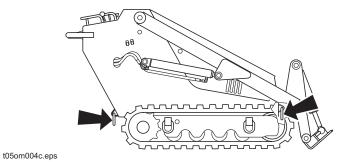


Unhitch Trailer

- 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 on page 35 to unhitch trailer from tow vehicle.

Tow

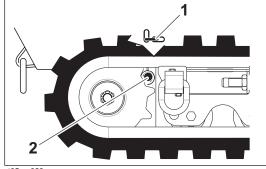
Under normal conditions, unit should not be towed. If unit breaks down and towing is necessary:



- attach chains to tow points facing towing vehicle
- tow for short distances at less than 1 mph (1.6 km/h)
- do not tow for more than 100 ft (30 m)
- use no more than 1,300 lb (5800 N) of towing force
- · disengage brakes and open bypass valve

Prepare Unit for Towing

- 1. Block tracks.
- 2. Insert pry bar between end of spring (1) and frame.
- 3. Rotate spring up and allow it to move through vertical slot.
- 4. Drive in pin (2) in until sprocket teeth clear it.

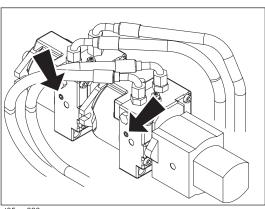


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5. Unscrew bypass valve pins (shown) 3 turns.

IMPORTANT: Open bypass valves in both front and rear pumps.

6. Repeat process on other side.



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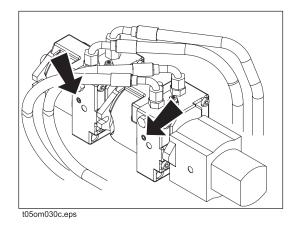


Return Unit to Normal Operation

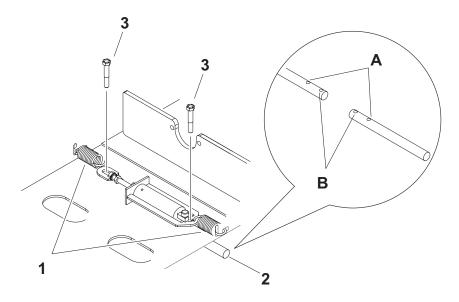
1. Screw in bypass valve pins and torque to 12.5 ft•lb (17 N•m).

IMPORTANT: Close bypass valve in both front and rear pumps.

2. Remove rear access panel.



3. Remove brake pin bolts (3).



IMPORTANT: Note which holes brake pin bolts are installed in for proper reinstallation. "A" represents narrow track configuration. "B" represents wide track configuration.

4. Push out pins (2) on tracks.

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- 5. Attach end of both springs (1) through hole in each side of frame.
- 6. Stretch springs and install brake pin bolts in the same holes they were removed from.
- 7. Install rear access panel.

Complete the Job

Chapter Contents

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Stow Tools	42



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.

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. Cycle attachment drive control and 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

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10 Hour
20 Hour
50 Hour
100 Hour 55
200 Hour
250 Hour
300 Hour 60
500 Hour

Precautions



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

NOTICES:

- Unless otherwise instructed, all service should be performed with engine off.
- Refer to engine manufacturer's manual for engine maintenance instructions.
- Before servicing equipment, lower unstowed attachments to ground.

Working Under Raised Lift Arms

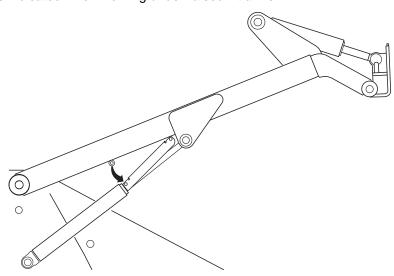




Crushing weight could cause death or serious injury. Use proper procedures and equipment or stay away.

NOTICE: Support both lift arms before working under raised lift arms.

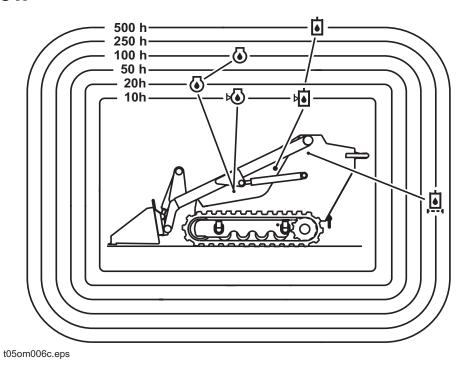
Use safety supports as indicated when working under raised lift arms.



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Overview





Recommended Lubricants/Service Key

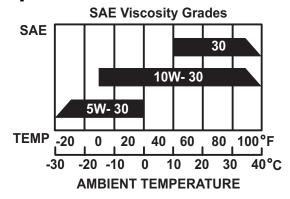
Item	Description
⊚ GEO	Gasoline engine oil meeting current API service classifications and SAE viscosity recommended by engine manufacturer (SAE 10W30)
⊘ DEO	IMPORTANT: DEO can be used in Honda engines to lessen foaming. Diesel engine oil meeting API service classification CF-4 or E1-96 and SAE viscosity recommended by engine manufacturer (SAE 15W40)
古HF	Tractor hydraulic fluid, similar to Phillips 66 HG, Mobilfluid 423, Chevron Tractor Hydraulic Fluid, Texaco TDH Oil, or equivalent
>	Check level of fluid or lubricant
~	Check condition
h1	Filter
S	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 67.

NOTICE:

- Use only genuine Ditch Witch parts, filters, and approved lubricants to maintain warranty.
- Use the "Service Record" on page 73 to record all required service to your machine.

Engine Oil Temperature Chart



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Temperature range anticipated before next oil change

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

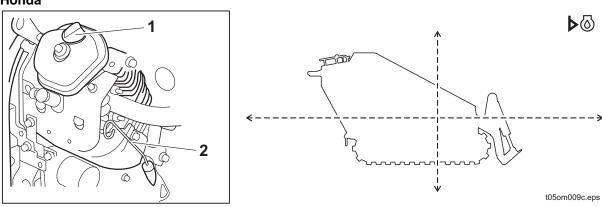
10 Hour

Location	Task	Notes
Traction Unit	Check engine oil level	GEO*
	Check hydraulic fluid level	THF
	Check hydraulic hoses	
	Check air filter	
	Check track tension	

Traction Unit

Check Engine Oil Level

Honda



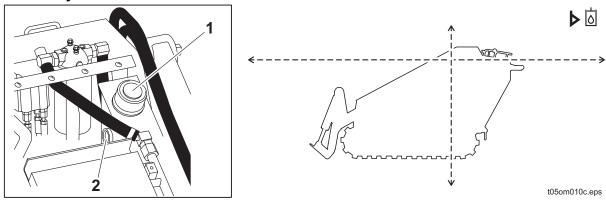
Check engine oil level at dipstick (2) every 10 hours. If low, add GEO* at fill (1). Check with unit on level surface and at least 15 minutes after stopping engine.

IMPORTANT: DEO can be used in Honda engines to lessen foaming.



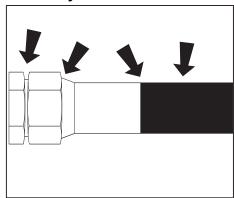
Check engine oil level at dipstick (1) every 10 hours. If low, add GEO at fill (2). Check with unit on level surface and at least 15 minutes after stopping engine.

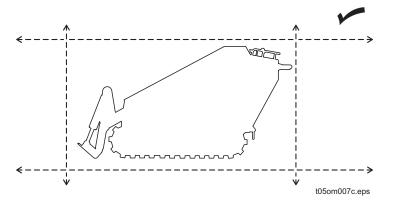
Check Hydraulic Fluid Level



Check hydraulic fluid level every 10 hours. Maintain fluid level at halfway point on sight glass (2), when engine is off and fluid is cool. If low, add THF at fill (1).

Check Hydraulic Hoses







Check hydraulic hoses for leaks every 10 hours.





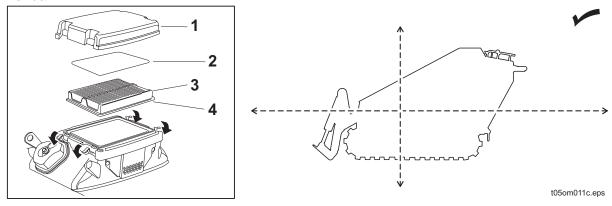
Fluid or air pressure could pierce skin and cause injury or death. Stay away.

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.

Check Air Filter

Honda



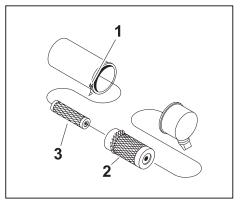
Check air filter every 10 hours.

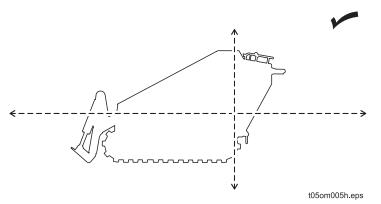
- 1. Remove air cleaner cover (1).
- 2. Remove and inspect foam (2) and paper (3) filter elements.
- 3. Clean or replace elements if they are dirty or damaged. See "Clean Air Filter" on page 54.
- 4. Wipe dirt from insides of air cleaner cover and body with a moist rag.
- 5. Install both elements into air cleaner case.

IMPORTANT: Ensure that seal lip (4) is not folded over.

6. Install cover and latch tabs securely.

Kohler



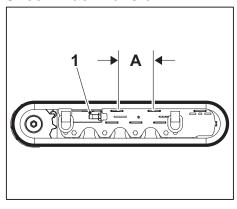


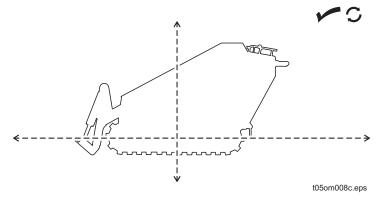


Check air filter every 10 hours. Replace as needed.

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

Check Track Tension





Check track tension every 10 hours and adjust as needed. Turn bolt (1) clockwise to tighten and counterclockwise to loosen. Track tension is correct when dimension A is 10" (254 mm).

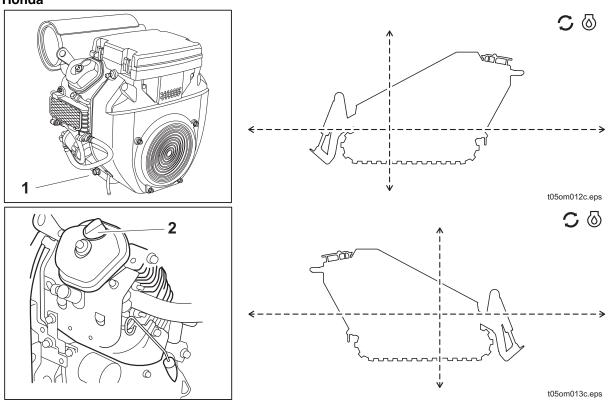
20 Hour

Location	Task	Notes	
Traction Unit	Change engine oil	Initial service, GEO*	

Traction Unit

Change Engine Oil (Initial)

Honda

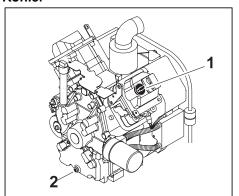


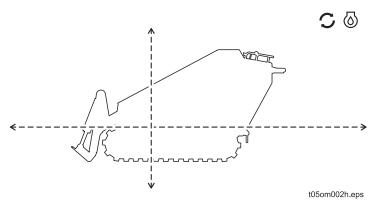
Change engine oil after 20 hours. Drain oil (1) and add 1.2 qt (1.1 L) of GEO* at fill (2).

IMPORTANT:

- Use oil specified in "Engine Oil Temperature Chart" on page 46.
- DEO can be used in Honda engines to lessen foaming.

Kohler







Change engine oil after 20 hours. Drain oil (2) and add 2.1 qt (2 L) of GEO at fill (1).

IMPORTANT: Use oil specified in "Engine Oil Temperature Chart" on page 46.

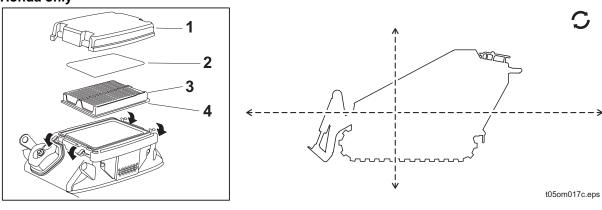
50 Hour

Location	Task	Notes
Traction Unit	Clean air filter	
	Check battery	

Traction Unit

Clean Air Filter

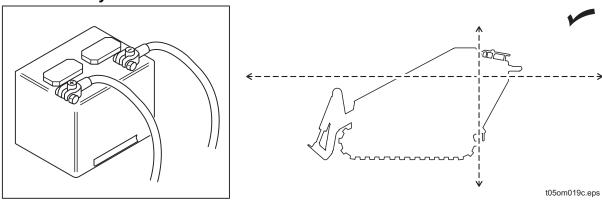
Honda only



Clean air filter every 50 hours.

- 1. Remove air filter cover (1), foam filter element (2), and paper filter element (3). See page 50.
 - Clean paper element by tapping several times on hard surface or blowing compressed air through element from the bottom.
 - Clean foam element in warm, soapy water and allow to dry thoroughly.
- 2. Clean air cleaner cover and body and install both elements into air cleaner case. See page 50.

Check Battery



Check battery every 50 hours. Keep battery clean and free of corrosion.

100 Hour

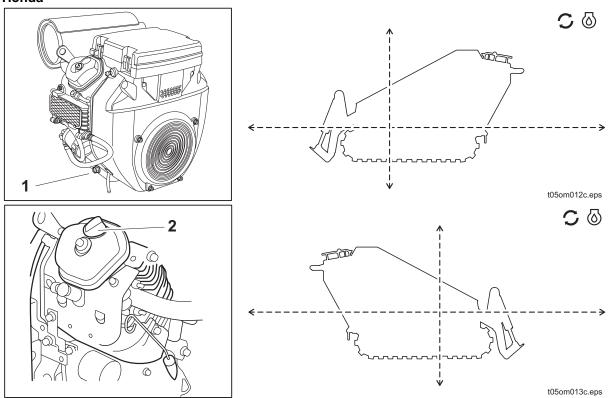
Location	Task	Notes
Traction Unit	Change engine oil	GEO*

1

Traction Unit

Change Engine Oil

Honda



Change engine oil every 100 hours. Drain oil (1) and add 1.2 qt (1.1 L) of GEO* at fill (2).

IMPORTANT:

- Use oil specified in "Engine Oil Temperature Chart" on page 46.
- DEO can be used in Honda engines to lessen foaming.

Kohler S S t05om002h.eps

Change engine oil every 100 hours. Drain oil (2) and add 2.1 qt (2 L) of GEO at fill (1).

IMPORTANT: Use oil specified in "Engine Oil Temperature Chart" on page 46.

200 Hour

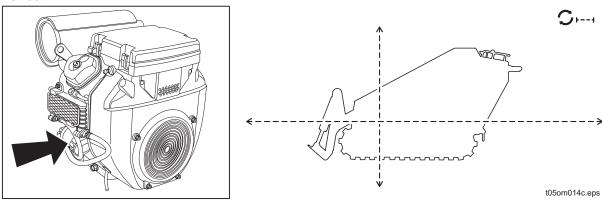
Location	Task	Notes
Traction Unit	Change engine oil filter	



Traction Unit

Change Engine Oil Filter

Honda

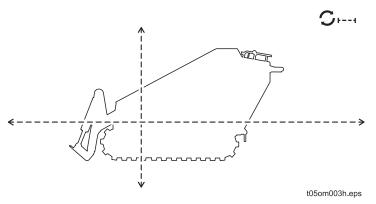


Change engine oil filter every 200 hours. Drain oil, change filter (shown) and add 1.5 qt (1.4 L) of GEO* at fill. See page 52.

IMPORTANT:

- Use oil specified in "Engine Oil Temperature Chart" on page 46.
- DEO can be used in Honda engines to lessen foaming.

Kohler



Change engine oil filter every 200 hours. Drain oil, change filter (shown) and add 2.1 qt (2 L) of GEO at fill. See page 52.

IMPORTANT: Use oil specified in "Engine Oil Temperature Chart" on page 46.

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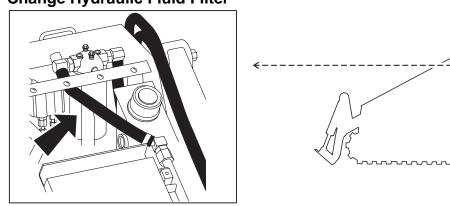
250 Hour

Location	Task	Notes
Traction Unit	Change hydraulic fluid filter	

1

Traction Unit

Change Hydraulic Fluid Filter



Change hydraulic fluid filter every 250 hours.

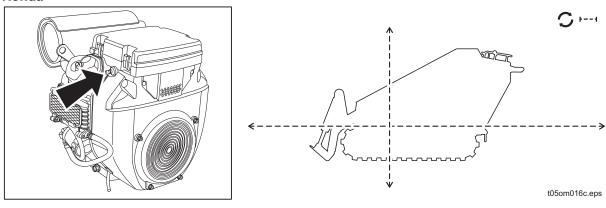
300 Hour

Location	Task	Notes
Traction Unit	Change fuel filter	
	Change air filter	

Traction Unit

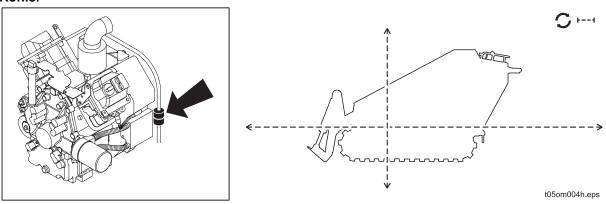
Change Fuel Filter

Honda



Change fuel filter every 300 hours. If you refuel from cans, replace filter more often. See parts manual or contact your Ditch Witch dealer for correct replacement filter.

Kohler



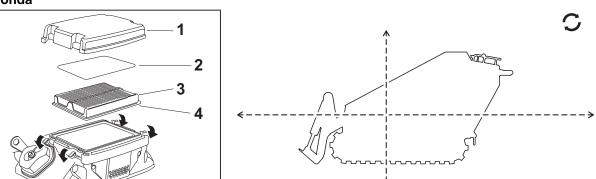
Change inline fuel filter every 300 hours. See parts manual or contact your Ditch Witch dealer for correct replacement filter.

- 1. Remove filter.
- 2. Install new filter.

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Change Air Filter

Honda



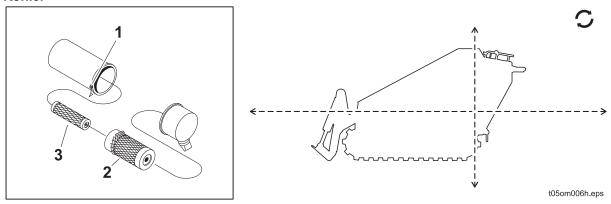
Change air filter every 300 hours. Change more often in dusty conditions.

- 1. Remove air cleaner cover (1).
- 2. Remove foam (2) and paper (3) filter elements.
- 3. Replace both elements.
- 4. Wipe dirt from insides of air cleaner cover and body with a moist rag.
- 5. Install both elements into air cleaner case. Install cover and latch tabs securely.

IMPORTANT: Ensure that seal lip (4) is not folded over.



Kohler



Change air filter every 300 hours.

- 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.

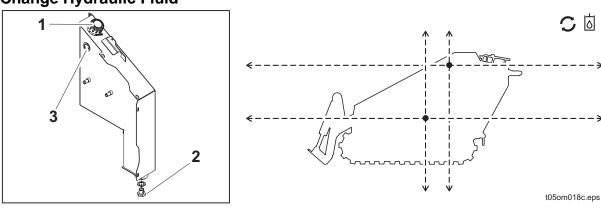
500 Hour

Location	Task	Notes
Traction Unit	Change hydraulic fluid	THF



Traction Unit

Change Hydraulic Fluid



Change hydraulic fluid every 500 hours. Drain fluid at plug (2) and add THF at fill (1) until fluid level is at halfway point on sight glass (3).

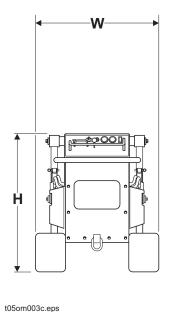
Specifications

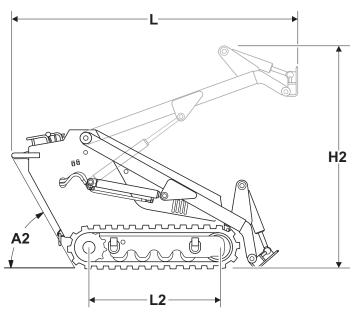
Basic Unit

A2

Angle of departure

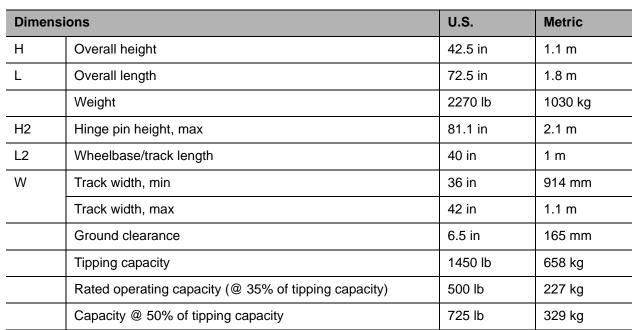
Swing radius





30°

42 in





30°

1.1 m

Performance	U.S.	Metric
Ground drive speed, forward	3.6 mph	5.8 km/h
Ground drive speed, reverse	2.3 mph	3.7 km/h
Ground pressure, 7-in tracks	4.3 psi	0.3 bar
Ground pressure, 9-in tracks	3.3 psi	0.2 bar

Hydraulic System	U.S.	Metric	
Auxiliary: double gear pump			
Flow rate (pump 1)	4 gpm	15 L/min	
Flow rate (pump 2)	8 gpm	30 L/min	
Pressure	2500 psi	172 bar	
Ground drive: dual hydrostat			
Flow rate	12.5 gpm	47 L/min	
Pressure	2500 psi	172 bar	

Power - Honda Engine	U.S.	Metric
Engine: Honda GX670, gasoline		
Cooling medium	air	
Number of cylinders	2	
Displacement	40.9 in ³	670 cm ³
Bore	3 in	76 mm
Stroke	2.8 in	71 mm
Installed net power per SAE J1349 (@ 3600 rpm)	24 hp	18 kW
Maximum governed speed (no load)	3600 rpm	3600 rpm
Idle speed	1700 rpm	1700 rpm

Power - Kohler Engine	U.S.	Metric
Engine: Kohler CH740S, gasoline		
Cooling medium	air	
Number of cylinders	2	
Displacement	44 in ³	625 cm ³
Bore	3.3 in	88 mm
Stroke	2.6 in	67 mm
Installed net power per SAE J1349 (@ 3600 rpm)	27 hp	20.1 kW
Maximum governed speed (no load)	3750 rpm	3750 rpm
Idle speed	1200 rpm	1200 rpm



Fluid	Capacities	U.S.	Metric
Fuel t	ank	6 gal	23 L
Engine oil, with filter			
	Honda	1.5 qt	1.4 L
	Kohler	2.1 qt	2 L
Hydraulic reservoir 5.5 gal 21 L		21 L	

Battery

SAE reserve capacity 180 min, SAE cold crank @ 0°F (-18°C) 675 amp, 12V electrical system

Noise Levels - Honda Engine

Operator 86 dBA sound pressure per ISO 6394 Exterior 101 dBA sound power per ISO 6393

Noise Levels - Kohler Engine

Operator 86 dBA sound pressure per ISO 6394 Exterior 103 dBA sound power per ISO 6393

Vibration Level

Vibration at the operator's hand during normal operation is 4.9 m/sec²

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

Ditch Witch A Note To

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)



UNITED STATES



BUSINESS REPLY MAIL

FIRST CLASS

PERMIT NO 23 PERRY OKLAHOMA

The Charles Machine Works, Inc. Perry, Oklahoma 73077-9989 POSTAGE WILL BE PAID BY P.O. Box 66

NO POSTAGE Necessary If Mailed



Ditch Witch A Note To

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





BUSINESS REPLY MAIL

PERMIT NO 23 PERRY OKLAHOMA FIRST CLASS

POSTAGE WILL BE PAID BY

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





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		
Attention		
Street Address or P.O. Box		
City		County
State	Zip	Nation
Phone Number With Area Code		
Model	W	Serial Number
Attachments/Accessories	S	Serial Numbers
Attachments/Accessories	S	Serial Numbers
Attachments/Accessories	S	Serial Numbers
Name of Ditch Witch Dealership		
Your Signature		

Service Record

Service Performed	Date	Hours



Service Performed Hours Date