

SK800

Kubota® D1105

Operator's Manual



CMW®

Issue 2.0
Original Instruction


053-2976

Overview

Chapter Contents

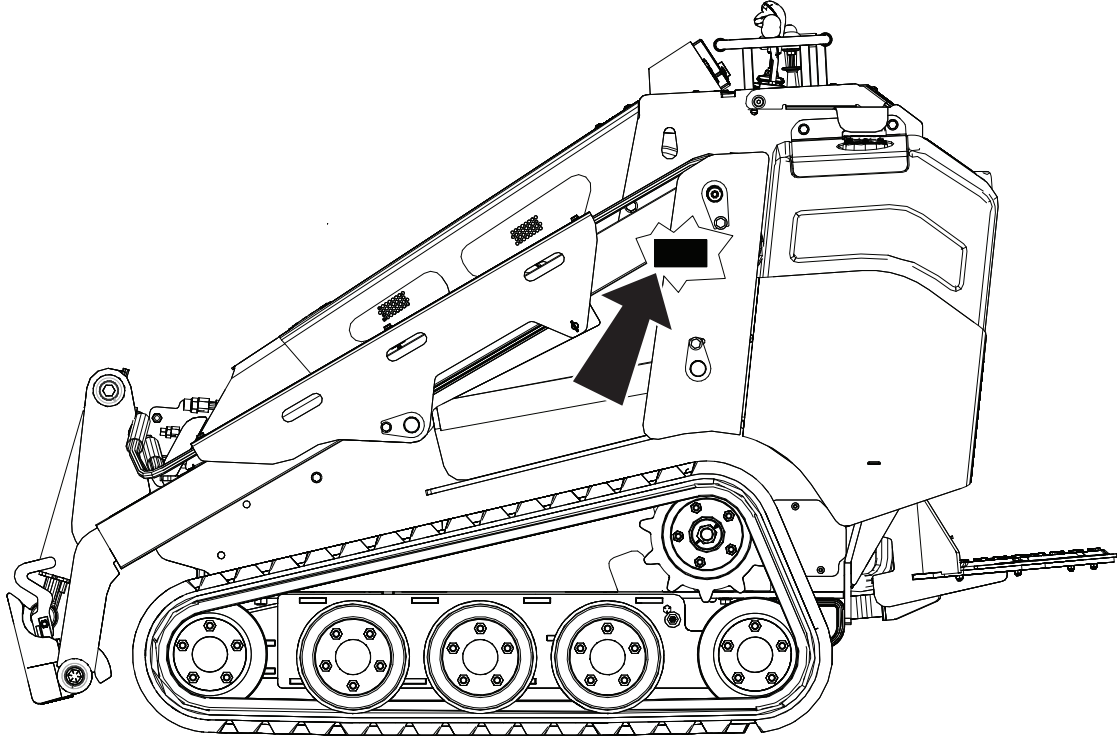
Serial Number Location	2
Intended Use	3
Equipment Modification	3
Machine Components	4
Operator Orientation	5
Operating Area	5
About This Manual	6
• Bulleted Lists	6
• Numbered Lists	6

California Proposition 65

 **WARNING** Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm. www.P65warnings.ca.gov.

Serial Number Location

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



t46om013w.eps

Item	
Date of manufacture	
Date of purchase	
Machine serial number	

Intended Use

The SK800 is a platform, rubber track compact tool carrier unit designed for medium-duty construction work. The machine has a quick attach plate which makes it easy for an operator to connect different attachments.

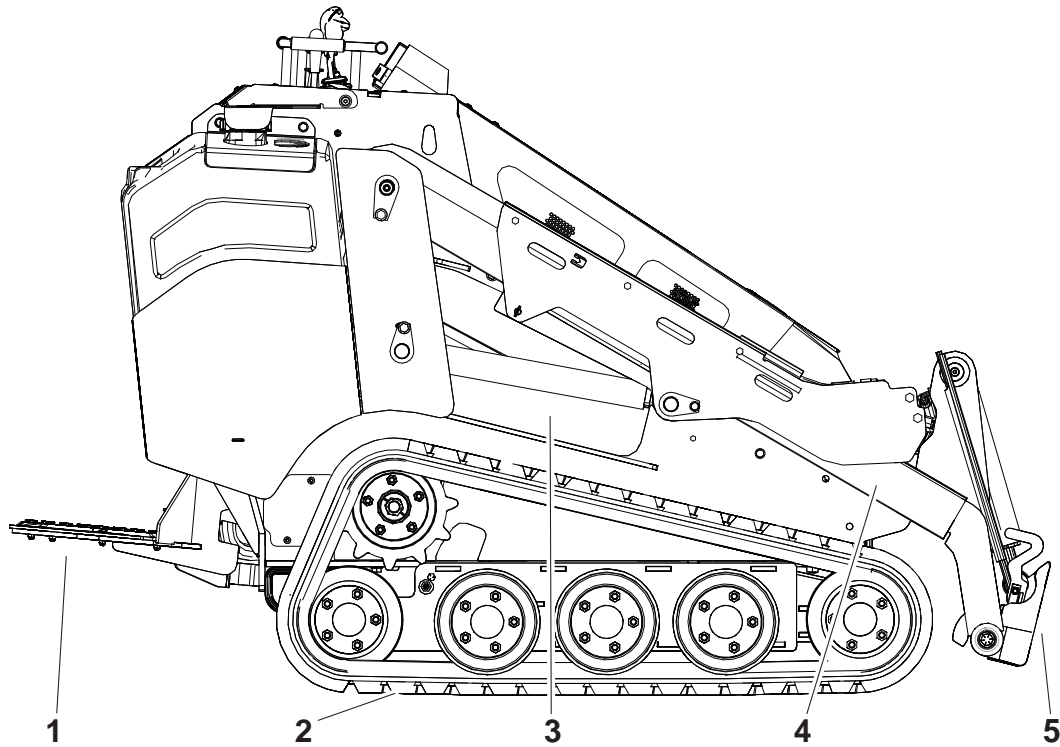
This machine is intended for operation only according to the instructions in this manual. Operate machine in ambient temperatures from 10° to 115°F (-12° to 46°C). Contact your Ditch Witch® dealer for provisions required for operating in extreme temperatures. Use in any other way is considered contrary to the intended use.

This machine should be operated, serviced, and repaired only by professionals familiar with its particular characteristics and acquainted with the relevant safety procedures.

Equipment Modification

This equipment was designed and built in accordance with applicable standards and regulations. Modification of equipment could mean that it will no longer meet regulations and may not function properly or in accordance with the operating instructions. Modification of equipment should only be made by competent personnel possessing knowledge of applicable standards, regulations, equipment design functionality/requirements and any required specialized training.

Machine Components



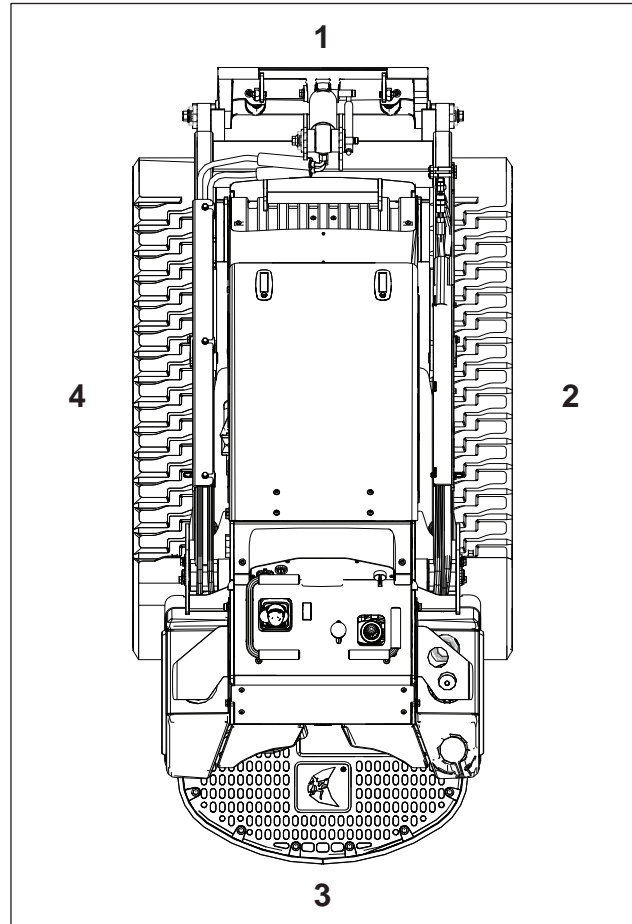
t46om014w.eps

- | | |
|------------------------------|---------------------|
| 1. Operator station platform | 4. Lift arms |
| 2. Tracks | 5. Attachment plate |
| 3. Engine compartment | |

Operator Orientation

IMPORTANT: Top view of machine is shown.

1. Front
2. Right side
3. Rear
4. Left side

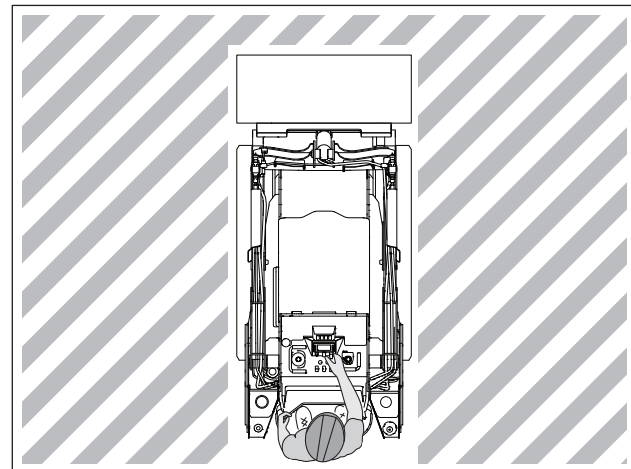


t46om015w.eps

Operating Area

IMPORTANT: Top view of machine is shown.

Operator should stand only in the location shown.



t62om004w19.eps

About This Manual

This manual contains information for the proper use of this machine. 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 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.

**SK800
Operator's Manual**

Kubota® D1105

Issue number 2.0/OM-7/20

Part number 053-2976

Copyright 2017, 2020

by The Charles Machine Works, Inc.



**Ditch
Witch®**

and Ditch Witch are registered trademarks of The Charles Machine Works, Inc.

This product and its use may be covered by one or more patents at <http://patents.charlesmachine.works>.

Contents

Overview	1
Machine serial number, information about the type of work this machine is designed to perform, basic machine components, and how to use this manual	
Foreword	7
Part number, revision level, and publication date of this manual, and factory contact information	
Safety	11
Machine safety alerts and emergency procedures	
Prepare	19
Procedures for preparing jobsite, preparing operator, and preparing equipment	
Controls	31
Machine controls, gauges, and indicators and how to use them	
Drive	41
Procedures for startup, cold start, driving, and shutdown	
Transport	47
Procedures for lifting, hauling, and retrieving	
Complete the Job	55
Procedures for restoring the jobsite and rinsing and storing equipment	
Maintenance	57
Maintenance intervals and instructions for this machine including lubrication, replacement of wear items, and basic maintenance	
Specifications	79
Machine specifications including weights, measurements, power ratings, and fluid capacities	


Support

85

The warranty policy for this machine and procedures for obtaining warranty consideration and training

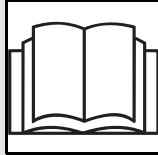
Safety

Chapter Contents

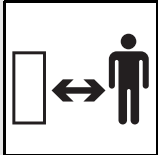
	For additional precautions, see "Prepare" chapter.
---	--

- Guidelines 12**
- Emergency Procedures 13**
 - Electric Strike Description 13
 - If an Electric Line is Damaged 14
 - If a Gas Line is Damaged 14
 - If a Fiber Optic Cable is Damaged 14
 - If Machine Catches on Fire 14
- Safety Alert Classification 15**
- Machine Safety Alerts 16**

Guidelines

**⚠ WARNING**

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

**⚠ WARNING**

Raised component. Crushing can cause death or serious injury. Stay away. Use correct equipment and procedures.

Follow these guidelines before operating any jobsite equipment:

- Complete proper training.
- Read and understand operator's manual before using equipment.
- Wear personal protective equipment. See "Prepare Operator" in "Prepare" chapter.
- Mark proposed path with white paint and have underground utilities located before working. In the US or Canada, call 811 (US) or 888-258-0808 (US and Canada). Also contact any local utilities that do not participate in the One-Call service. In countries that do not have a One-Call service, contact all local utility companies to have underground utilities located.
- Classify jobsite based on its hazards and use correct tools and machinery, safety equipment, and work methods for jobsite.
- Mark jobsite clearly and keep spectators away.
- 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 or at www.ditchwitch.com/safe. Safety Data Sheets (SDS) are available at www.ditchwitch.com/support.
- Fully inspect equipment before operating. Repair or replace any worn or damaged parts. Replace missing or damaged safety shields and safety alert signs. Contact your Ditch Witch dealer for assistance.
- Follow instructions on all safety alert signs on machine.
- Use equipment carefully per the instructions in this manual. Stop operation and investigate anything that does not look or feel right.
- Do not operate machine where flammable gas may be present.
- Only operate equipment in well ventilated areas.
- Always tie down equipment and properly stow accessories, even if traveling short distances.
- Contact your Ditch Witch dealer if you have any questions about operation, maintenance, or equipment use.
- Complete the equipment checklist located at www.ditchwitch.com/safe.

Emergency Procedures

**⚠ WARNING**

Underground utilities. Contact can cause death or serious injury. Locate and verify underground utilities before digging or drilling.

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

EMERGENCY SHUTDOWN: Shut off machine or press remote engine stop button (if equipped).

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. Many work-related electrocutions result from contact with less than 440 volts.

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

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

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

If an Electric Line is Damaged

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

- If you are **on the machine**, REMAIN ON MACHINE. Raise attachments and drive from immediate area.
- If you are **off the machine**,
 - DO NOT TOUCH ANY EQUIPMENT.
 - If you must leave the area, take small steps with feet close together to reduce the hazard of being shocked from one foot to the other.
- Warn people nearby that an electric strike has occurred. Instruct them to leave the area.
- Have someone contact electric company to shut off power.
- If you leave the area, 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.
- After warning others to leave the area, leave jobsite as quickly as possible.
- Immediately call your local emergency phone number and utility company.
- If jobsite is along street, stop traffic from driving near jobsite.
- Do not return to jobsite until given permission by emergency personnel and utility company.

If a Fiber Optic Cable is Damaged

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

If Machine Catches on Fire

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

- Immediately move battery disconnect switch (if equipped and accessible) to disconnect position.
- If fire is small and fire extinguisher is available, attempt to extinguish fire.
- If fire cannot be extinguished, leave area as quickly as possible and contact emergency personnel.

Safety Alert Classifications

These classifications and the icons defined on the following pages work together to alert you to situations which could be harmful to you, jobsite bystanders, or your equipment. When you see these words and icons in the book or on the machine, carefully read and follow all instructions. YOUR SAFETY IS AT STAKE.



When you see this safety alert sign, carefully read and follow all instructions. **YOUR SAFETY IS AT STAKE.** Read this entire section before using your equipment.

Watch for the three safety alert levels: **DANGER**, **WARNING**, and **CAUTION**. Learn what each level means.



DANGER indicates a hazardous situation that, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations.



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



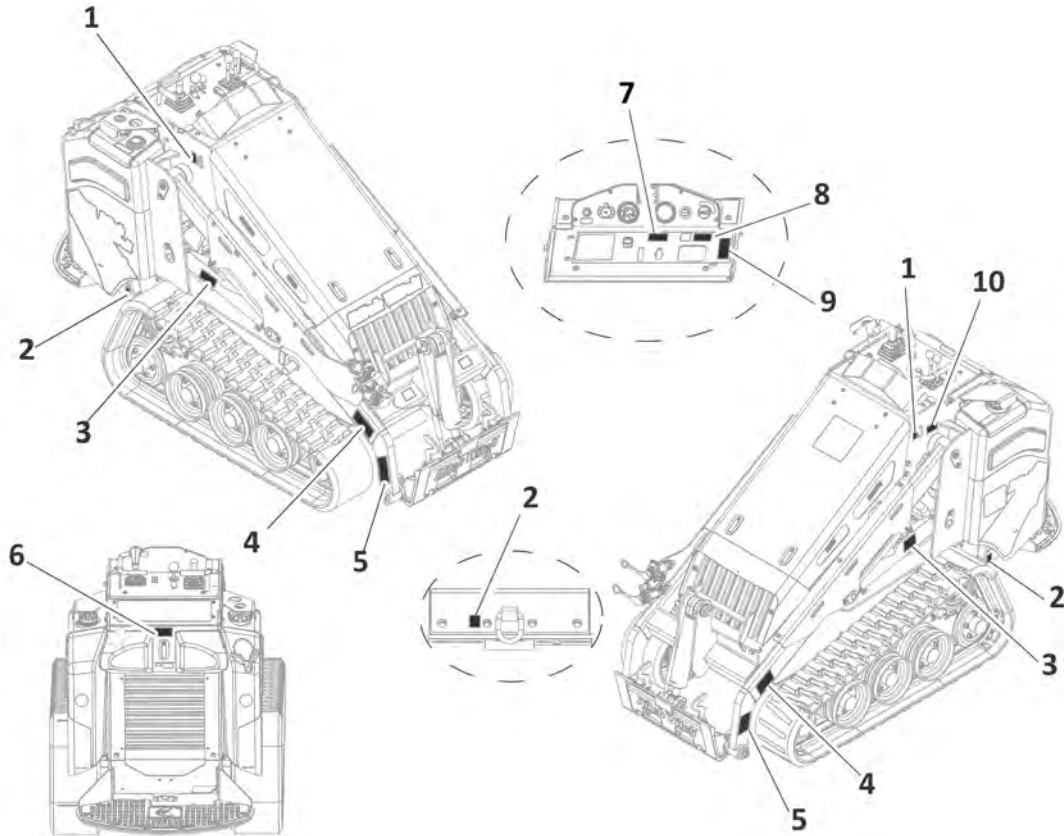
CAUTION indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.

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

NOTICE indicates information considered important, but not hazard-related (e.g., messages relating to property damage).

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

Machine Safety Alerts



Decal_SK800

1



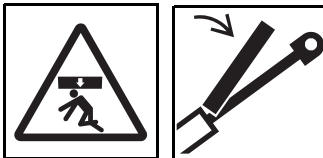
Lift point. See Transport chapter for more information.

2



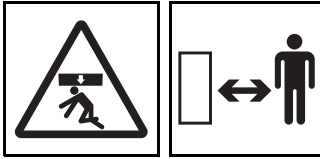
Tiedown location. See Transport chapter for more information.

3



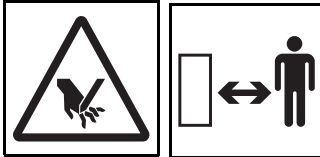
⚠ WARNING Raised component. Crushing can cause death or serious injury. Stay away or secure raised component with locking device. Use correct equipment and procedures.

4



⚠ WARNING Lifted load. Crushing can cause death or serious injury. Stay away from lifted load and its range of movement.

5



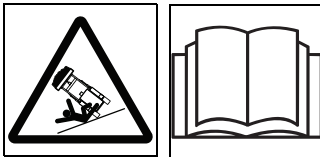
⚠ WARNING Moving parts. Contact can cause serious injury. Stay away.

6



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

7



⚠ WARNING Tip over. Crushing can cause death or serious injury. Follow procedures in operator's manual. Drive cautiously.

8



⚠ WARNING Underground utilities. Contact can cause death or serious injury. Locate and verify underground utilities before digging or drilling.

9



⚠ CAUTION High noise levels. Exposure can cause hearing loss. Wear hearing protection.


10



⚠ WARNING Pre-heater. Fire or explosion can cause death or serious injury. Never use starter fluid.

Prepare

Chapter Contents

	For additional precautions, see "Safety" chapter.
---	---

Prepare Jobsite 20

- Review Job Plan 20
- Select Start and End Points 20
- Identify Hazards 21
- Locate Utilities 22
- Classify Jobsite 23
- Arrange for Traffic Control 24

Prepare Operator 25

Prepare Equipment 26

- Check Supplies 26
- Check Equipment 26
- Assemble Accessories 27
- Connect Attachment 27

Prepare Jobsite



WARNING

Underground utilities. Contact can cause death or serious injury. Locate and verify underground utilities before digging or drilling.

To help avoid injury:

- Expose lines by careful hand digging or soft excavation before operating equipment. Use appropriate equipment and procedures for exposing utility lines.
- Classify jobsite and follow precautions based on classification.
- Follow local regulations for digging near utilities.

A successful job begins before working. 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.

Select Start and End Points

Select one end to use as a starting point. Consider the following when selecting a starting point:

Slope

Equipment should be parked on a level site. Consider how slope will affect setup and operation. Assess the risks on each slope to determine if factors affecting risks create an unsafe condition for working. See “Slope Guidelines” on page 52.

Space

Check that starting and ending points allow enough space for working.

Comfort

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

Identify Hazards

Inspect jobsite before transporting equipment. Check for the following:

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

Identify safety hazards and classify jobsite if attachment will penetrate ground. See “Classify Jobsite” on page 23.

Locate Utilities

Notify One-Call Services


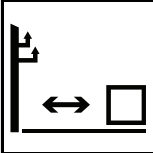
Mark proposed path with white paint and have underground utilities located before working.

- In the US or Canada, call 811 (US) or 888-258-0808 (US and Canada). Also contact any local utilities that do not participate in the One-Call service.
- In countries that do not have a One-Call service, contact all local utility companies to have underground utilities located.

Verify Underground Utilities

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

Locate Overhead Lines

		⚠ DANGER Overhead electrical lines. Contact will cause death or serious injury. Know location of lines. Stay away.
--	--	---

Note location and height of all overhead lines in jobsite and ensure that equipment maintains proper distance from live lines.

Classify Jobsite


Select a Classification

Jobsites are classified according to underground hazards present, not by line being installed. Jobsite may have more than one classification.

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

Classify jobsite as electric if jobsite is in question or if the possibility of unmarked electric utilities exists.

Apply Precautions



⚠ WARNING Underground utilities. Contact can cause death or serious injury. Locate and verify underground utilities before digging or drilling.

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

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

Position equipment upwind from gas lines and 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 gas company test lines before returning them to service.

Crystalline Dust Jobsite Precautions

		CAUTION Silica dust. Exposure can cause lung disease or cancer. Use breathing protection.
---	---	--

Crystalline silica dust is a naturally occurring substance found in soil, sand, concrete, granite, and quartz.

To reduce exposure when cutting, drilling, or working these materials:

- Use water spray or other means to control dust.
- Refer to US Occupational Safety and Health Administration (OSHA) guidelines or other applicable regulating guidelines for appropriate breathing protection or dust control methods.

Other Jobsite Precautions

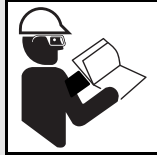
You may need to use different methods to safely avoid other underground hazards. Talk with those knowledgeable about hazards present at each site to determine which precautions should be taken or if job should be attempted.

Clear objects such as landscaping fabric, cable, and wire from the work area. These objects may be underground or partially buried.

Arrange for Traffic Control

Vehicle and pedestrian traffic must be a safe distance from equipment. Evaluate jobsite and allow an appropriate buffer zone around equipment. If working near a road or other traffic area, contact local authorities about safety procedures and regulations.

Prepare Operator



⚠ WARNING Jobsite hazards. Exposure can cause death or serious injury. Use correct equipment and work methods. Use and maintain appropriate safety equipment.

To help avoid injury:

- Wear personal protective equipment including hard hat, safety eye wear, foot protection, hearing protection, and gloves (except when near rotating equipment).
- Remove jewelry.
- Wear close-fitting, high visibility clothing.
- Have other personal protective equipment, such as insulated boots and gloves, breathing protection, and face shield, etc. available for use depending on jobsite hazards or requirements.

Follow these guidelines before operating any jobsite equipment:

- Complete proper training and read operator's manual before using equipment.
- 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.
- 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 or at www.ditchwitch.com/safe. Safety Data Sheets (SDS) are available at www.ditchwitch.com/support.
- Use equipment carefully. Stop operation and investigate anything that does not look or feel right.

Prepare Equipment

Check Supplies

- fuel
- diesel exhaust fluid (DEF), if needed
- marking flags or paint
- notepad and pencil
- spare fuses
- lubricants

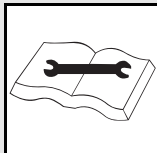
Check Equipment

Fluid Levels

- fuel
- engine oil
- diesel exhaust fluid (DEF), if needed
- hydraulic fluid
- engine coolant

Condition and Function

- all controls



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

- battery
- hoses and valves
- pumps and motors
- tires or tracks
- signs, guards, and shields
- filters (air, oil, hydraulic, fuel)
- belts

Assemble Accessories

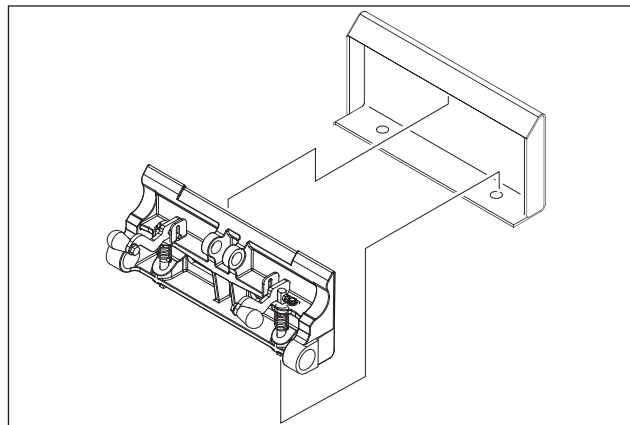
If required, mount fire extinguisher near the power unit but away from possible points of ignition. The fire extinguisher should always be classified for both oil and electric fires. It should meet legal and regulatory requirements.

Connect Attachment

NOTICE: Use only Ditch Witch-approved attachments. Attachments can change the stability and operating characteristics of the machine. See attachment operation manual for instructions regarding proper operation of attachments.

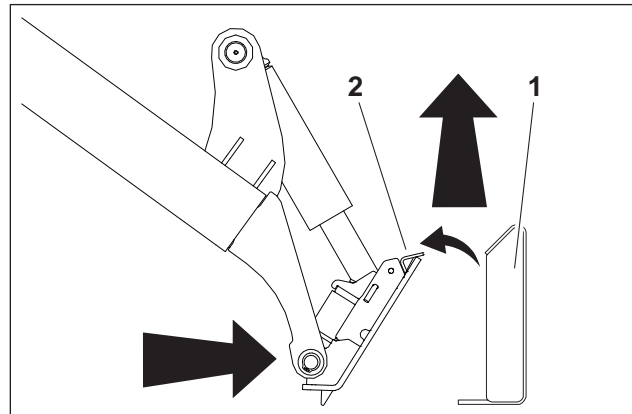
IMPORTANT: Before connecting attachment to machine, ensure that attachment and receiver plates are free of dirt and debris.

1. Position attachment on level surface with enough space behind it to accommodate machine.
2. Start engine.



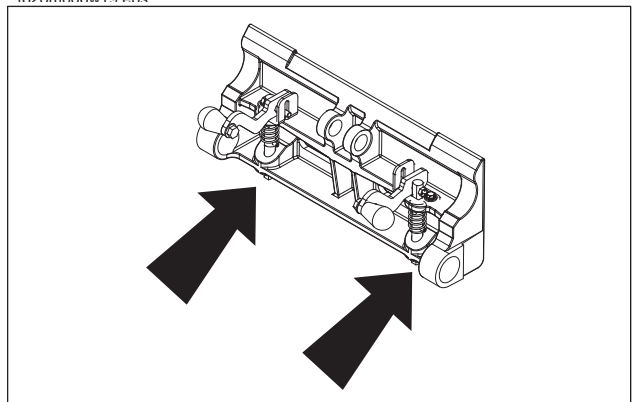
Prepare Equipment

3. Tilt attachment plate (2) forward.
4. Position attachment plate in upper lip of receiver plate (1) on attachment.
5. Raise lift arms while tilting back attachment plate to engage pins.



t62nm006w19 ens

6. Ensure pins are engaged by rotating attachment down.



t43om007w.eps

Hydraulic Connection

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



⚠ WARNING Pressurized fluid or air. Injection can cause death or serious injury. Refer to operator's manual for correct use.

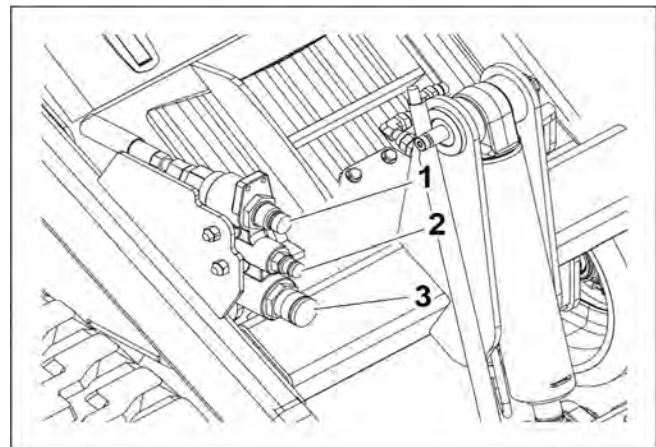
To help avoid injury:

- Use a piece of cardboard or wood, rather than hands, to check for leaks.
- Before disconnecting a hydraulic line, turn engine off and operate all controls to relieve pressure.
- Lower, block, or support any raised component with a hoist.
- Cover connection with heavy cloth and loosen connector nut slightly to relieve residual pressure. Catch all fluid in a container.
- Before using system, check that all connections are tight and all lines are undamaged.
- If you are injured, seek immediate medical attention from a doctor familiar with this type of injury.



⚠ CAUTION Hot parts. Contact can cause burns. Only touch when cool or wear gloves.

1. Ensure machine is shut off.
2. Activate accessories using ignition switch.
3. Operate auxiliary controls to relieve residual pressure at hydraulic couplers.
4. Remove dirt and debris from hydraulic couplers.
5. Connect male coupler from attachment to female coupler (3) on machine.
6. Connect female coupler from attachment to male coupler (1) on machine.
7. If needed, connect attachment case drain hose to case drain connector (2).
8. Ensure that connections are secure by pulling on hoses.

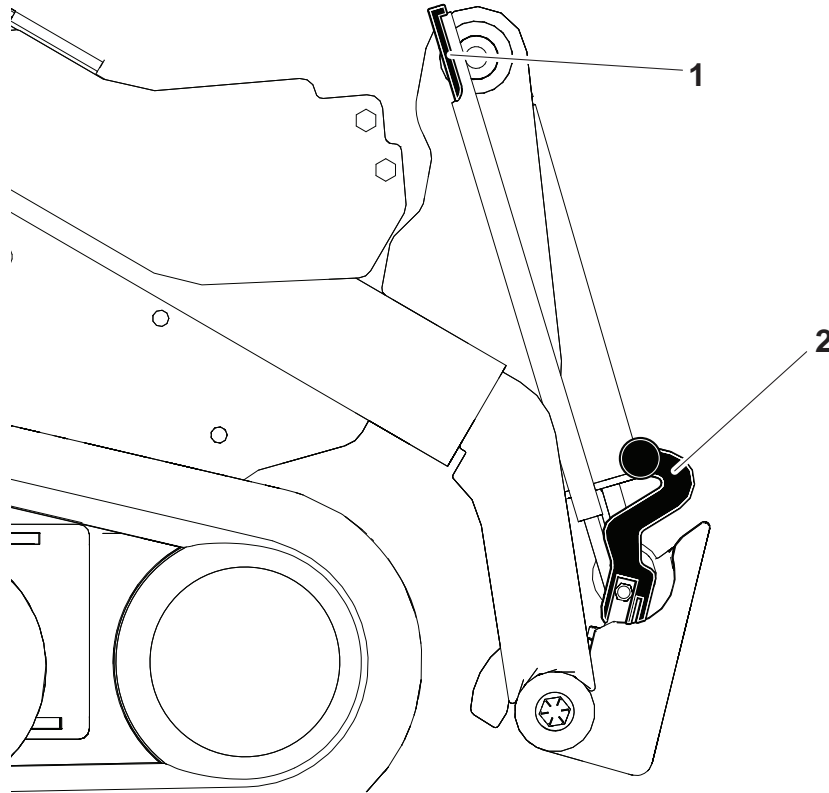


Controls

Chapter Contents

Attachment Plate	32
Battery Disconnect	33
Gauges and Indicators	34
Operator Station	37

Attachment Plate



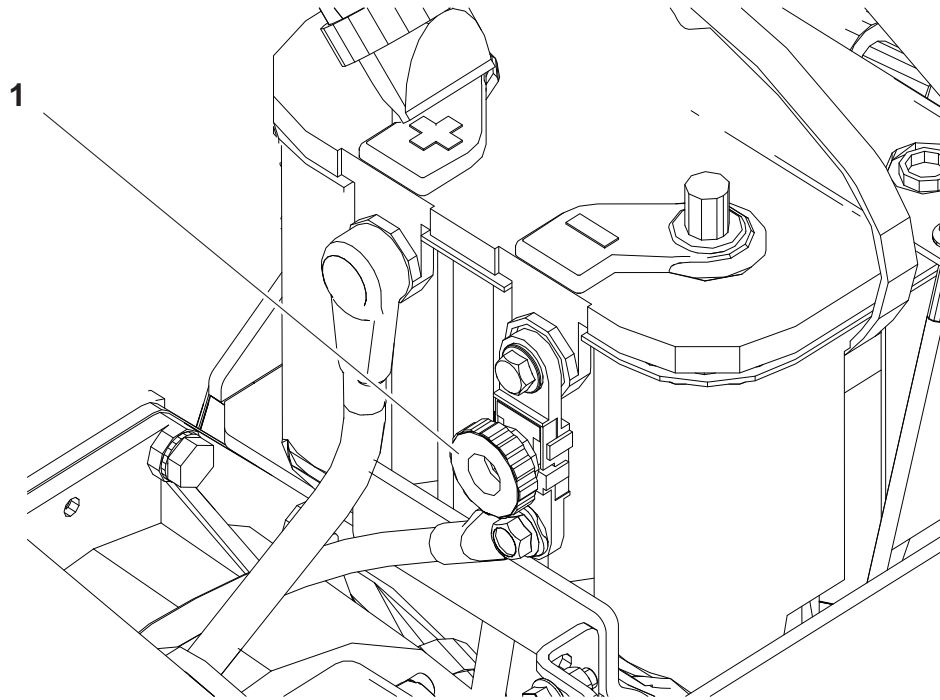
t51om034w.eps

1. Level indicator

2. Attachment latches

Item	Description	IMPORTANT
1. Level indicator	To level bucket, adjust bucket position until indicator is at top of sleeve.	To level other attachments, adjust attachment position until it is level. Mark indicator position on sleeve. Use mark to indicate when attachment is level.
2. Attachment latches	To lock attachment, ensure latch is down after attachment is connected. To unlock, move latch up.	See "Connect Attachment" on page 27.

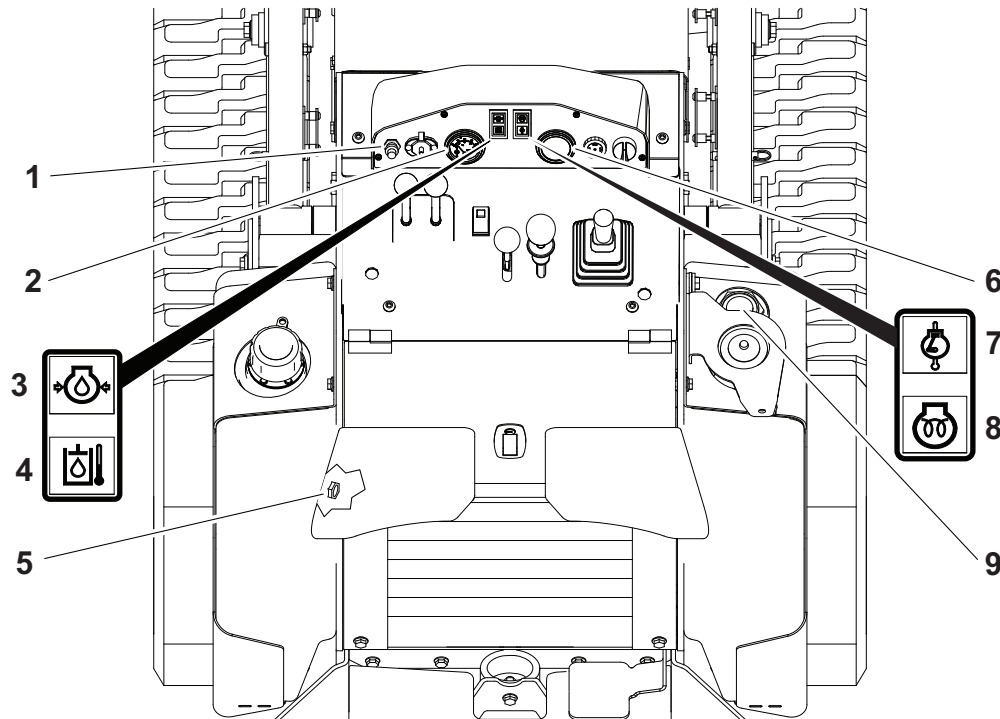
Battery Disconnect



t46om003w.eps

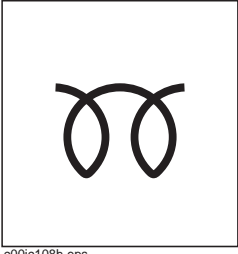
Item	Description	IMPORTANT
<p>Battery disconnect switch</p>	<p>To disconnect, move left.</p> <p>To connect, move right.</p>	<p>NOTICE:</p> <ul style="list-style-type: none"> • Do not disconnect with engine running. • To avoid equipment damage, wait two minutes after turning engine off before disconnecting battery.

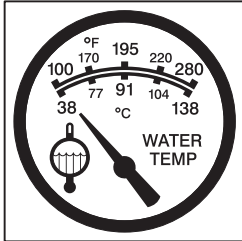
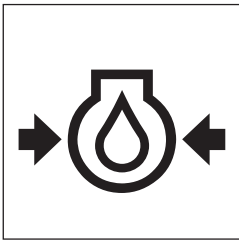
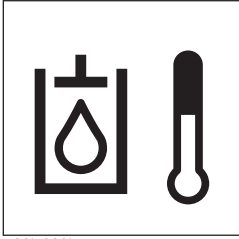
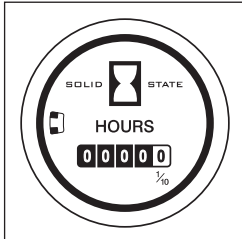
Gauges and Indicators

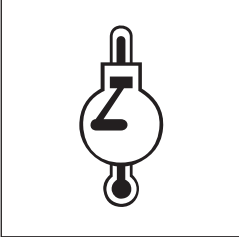



t46om001w.eps

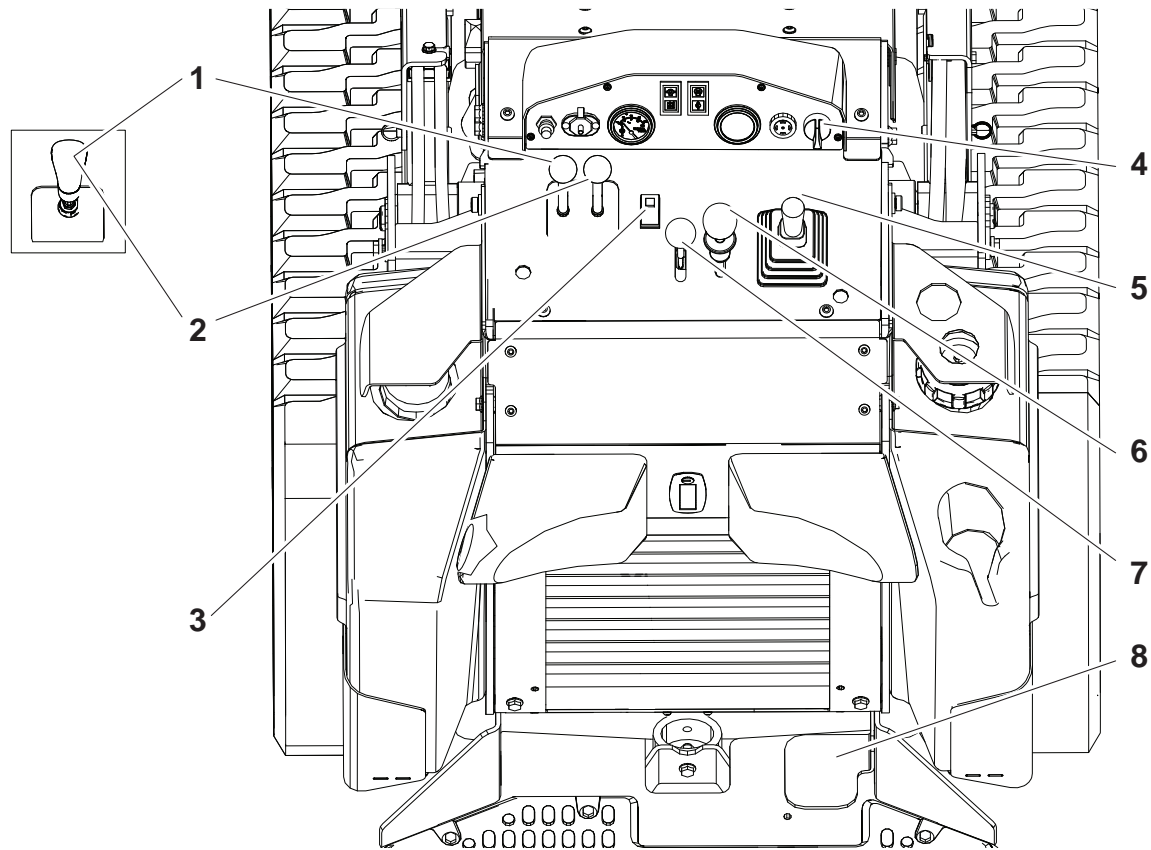
- | | |
|--|---|
| 1. Glow plug button | 6. Hourmeter |
| 2. Engine coolant temperature gauge | 7. Engine coolant temperature indicator |
| 3. Engine oil pressure indicator | 8. Glow plug indicator |
| 4. Hydraulic fluid temperature indicator | 9. Fuel gauge |
| 5. Hydraulic fluid level sight glass | |

Item	Description	IMPORTANT
<p>1. Glow plug button</p>  <p>c00ic108h.eps</p>	To turn on, press and hold.	<p>To help start cold engine, press glow plug button according to ambient temperatures below.</p> <ul style="list-style-type: none"> • If below 40°F (4°C), press and hold for 5 seconds. • If below 20°F (-7°C), press and hold for 10 seconds. • Do not press and hold for more than 20 seconds continuously.

Item	Description	IMPORTANT
<p>2. Engine coolant temperature gauge</p>  <p>c00ic086a.eps</p>	<p>Displays coolant temperature.</p>	
<p>3. Engine oil pressure indicator</p>  <p>c00ic119h.eps</p>	<p>Lights when engine oil pressure is low.</p>	<p>Lights briefly when engine is started.</p>
<p>4. Hydraulic fluid temperature indicator</p>  <p>c00ic023h.eps</p>	<p>Lights when hydraulic fluid temperature is too high.</p>	<p>When indicator lights, alarm will sound.</p>
<p>5. Hydraulic fluid level sight glass</p>	<p>Shows level of hydraulic fluid.</p>	
<p>6. Hourmeter</p>  <p>c00ic019h.eps</p>	<p>Displays engine operating time.</p>	<p>Use these times to schedule service.</p>

Item	Description	IMPORTANT
<p>7. Engine coolant temperature indicator</p>  <p>c00ic274h.eps</p>	<p>Lights when engine coolant temperature is too high.</p>	<p>When indicator lights, alarm will sound.</p>
<p>8. Glow plug indicator</p>  <p>c00ic180h.eps</p>	<p>Lights when ignition switch is on and glow plug button is pressed.</p>	
<p>9. Fuel gauge</p>	<p>Shows level of fuel.</p>	<p>See "Approved Fuel" on page 62.</p>

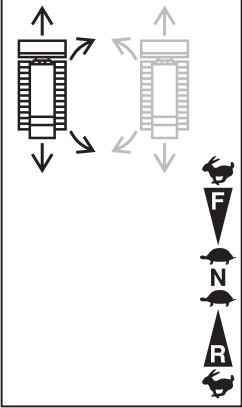
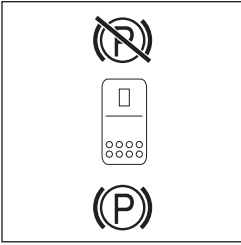
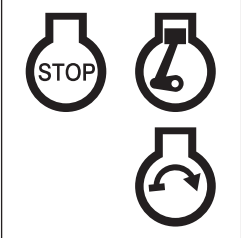
Operator Station

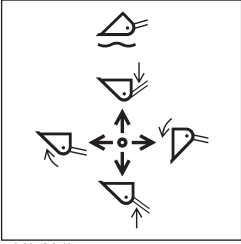
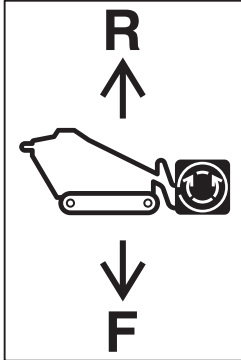
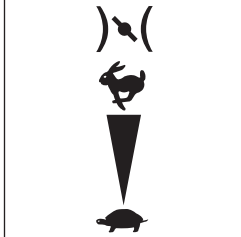


t46om002w.eps

- | | |
|--|----------------------------------|
| 1. Left track drive control/track drive joystick* | 5. Lift arm control |
| 2. Right track drive control/track drive joystick* | 6. Attachment drive control |
| 3. Parking brake | 7. Throttle |
| 4. Ignition switch | 8. Attachment drive foot control |


* If equipped

Item	Description	IMPORTANT
<p>1. Left track drive control</p> <p>2. Right track drive control</p>  <p>c00ic087a.eps</p>	<p>To drive forward, push both controls forward.</p> <p>To drive in reverse, pull back.</p> <p>To go faster in either direction, move control farther from neutral position.</p> <p>To steer, move left or right.</p>	<p>See "Steer" on page 43.</p>
<p>Track drive joystick (if equipped)</p>	<p>To drive forward, push.</p> <p>To drive in reverse, pull.</p> <p>To go faster in any direction, move farther from neutral position.</p> <p>To steer, move left or right.</p>	<p>See "Steer" on page 43.</p>
<p>3. Parking brake switch</p>  <p>c00ic097w.eps</p>	<p>To set, move red switch toward operator and press bottom.</p> <p>To release, move red switch toward operator and press top.</p>	<p>Do not set parking brake when machine is moving.</p>
<p>4. Ignition switch</p>  <p>c00ic065h.eps</p>	<p>To activate accessories, turn right.</p> <p>To start engine on, turn right and hold.</p> <p>To shut off machine, turn left.</p>	

Item	Description	IMPORTANT
<p>5. Lift arm control</p>  <p>c00ic284h.eps</p>	<p>To move lift arms down, push.</p> <p>To float, push to end.</p> <p>To move lift arms up, pull.</p> <p>To curl attachment up, move left.</p> <p>To curl attachment down, move right.</p>	
<p>6. Attachment drive control</p>  <p>c00ic090a.eps</p>	<p>To engage attachment drive in reverse, push.</p> <p>To engage in forward, pull.</p>	<p>Use attachment drive foot control to hold in engaged position when hands are busy operating other controls.</p>
<p>7. Throttle</p>  <p>c00ic007c.eps</p>	<p>To increase engine speed, push.</p> <p>To decrease, pull.</p>	<p>Increasing engine speed also increases attachment speed.</p>
<p>8. Attachment drive foot control</p>	<p>To hold attachment drive control in forward or reverse, lift lever lock, move lever in desired direction, and press pedal.</p>	<p>Use when hands are needed to operate other controls.</p>

Drive

Chapter Contents

 For additional precautions, see “Safety” and “Prepare” chapters.

IMPORTANT: For more information on how to operate controls, see “Controls” chapter.

Start **42**

Steer **43**

- Single Joystick Ground Drive 43
- Dual Lever Ground Drive 43

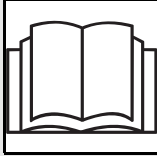
Operate **43**

- Slope Guidelines 44
- Reduce Track Wear 45

Shut Down **45**

Start

EMERGENCY SHUTDOWN: Shut off machine or press remote engine stop button (if equipped).



⚠ WARNING

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

To help avoid injury:

- Allow hydraulic fluid time to warm before operating in cold weather. Cold hydraulic fluid can lengthen ground drive stopping time.
- For starting in extreme temperatures, contact your Ditch Witch dealer.



⚠ WARNING

Pre-heater. Fire or explosion can cause death or serious injury. Never use starter fluid.

NOTICE: If engine turns but does not start within 10 seconds, allow starter to cool. Wait at least 30 seconds and try again.

1. Ensure all controls are in neutral.
2. Set parking brake.
3. Activate accessories using ignition switch.
4. **If starting machine in normal conditions,** start engine and run at low throttle under light load for at least one minute before applying heavier load.

If starting machine in cold weather:

1. Start engine.
2. Set parking brake.
3. Warm engine and hydraulic fluid by gradually increasing engine speed for up to 30 minutes.
4. After warmup, carefully operate all hydraulic controls at low throttle until controls operate as described in controls chapter.

Steer

Single Joystick Ground Drive

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

To steer while moving in reverse, pull joystick and then move left or right. Machine will gradually turn.

For tight steering at low speed, release joystick and then move left or right. Tracks will counter-rotate and machine will turn in a tight circle.

Dual Control Ground Drive

To steer while moving forward, move one control slightly more than the other to turn in desired direction. Machine will gradually turn.

To steer while moving in reverse, move one control slightly more than the other to turn in desired direction. Machine will gradually turn.

For tight steering at low speed, pull one control and push the other to turn in desired direction. Tracks will counter-rotate and machine will turn in a tight circle.

Operate

NOTICE:

- Drive carefully in congested areas. Know machine's clearance and turning radius.
- Survey field of vision when operating machine.

EMERGENCY EXIT: Release controls and step off platform.

1. Release parking brake.
2. Raise attachment off ground.
3. Drive machine.
4. Adjust throttle as needed.
5. See attachment operation manual for instructions regarding proper operation of attachments.