

RT12/RT16/RT20/RT24

Operator's Manual



Overview

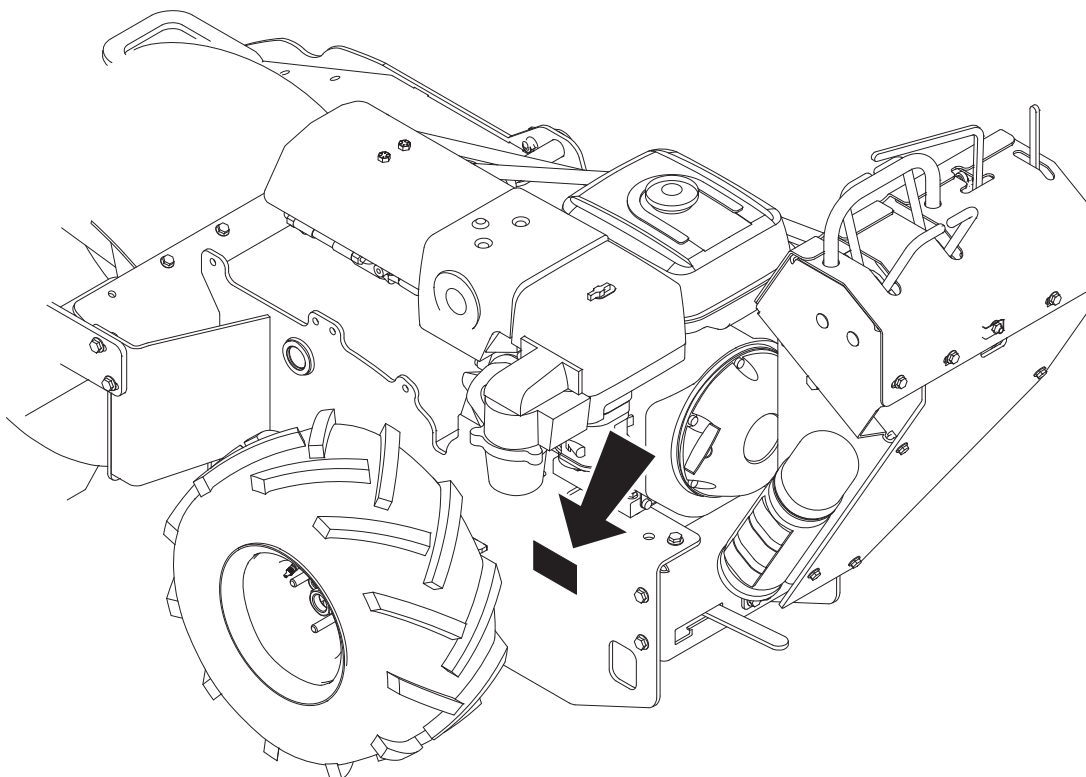


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Serial Number Location

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



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Item	
date of manufacture	
date of purchase	
trencher serial number	
trailer serial number	
engine serial number	

Intended Use

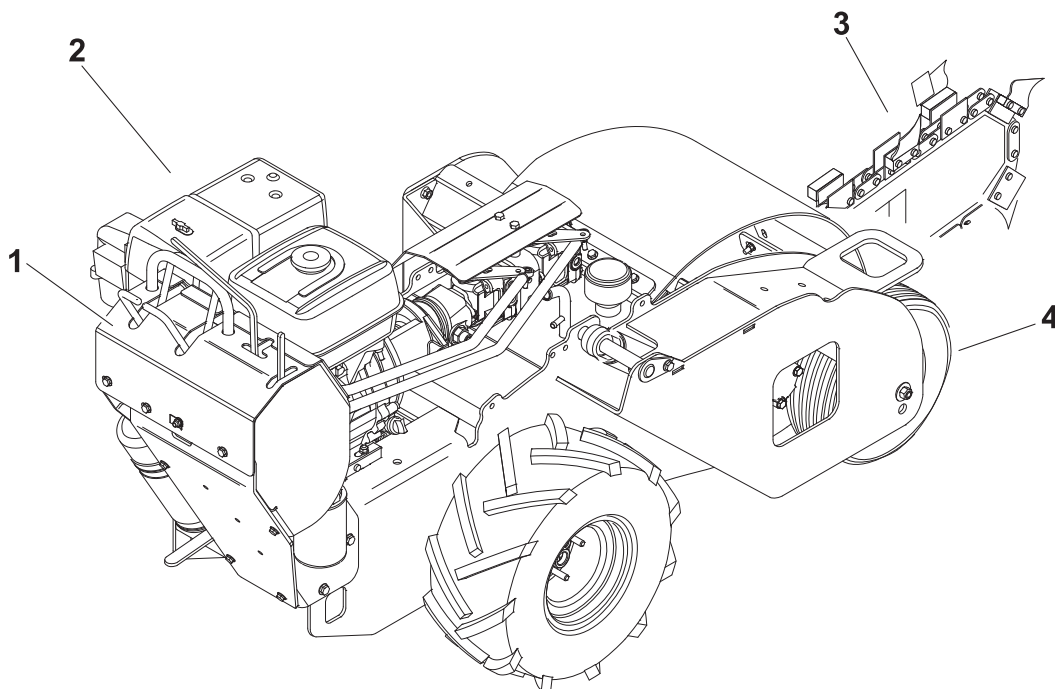
The RT12, RT16, RT20, and RT24 pedestrian trenchers are designed to install buried cable and pipe to depths of 48" (1220 mm) and widths of 8" (200 mm). These units are intended for operation in ambient temperatures from 20° to 115°F (-7° to 46°C). Use in any other way is considered contrary to the intended use.

RT12, RT16, RT20, and RT24 units should be used with genuine Ditch Witch chain, teeth, and sprockets. They should be operated, serviced, and repaired only by persons familiar with their particular characteristics and acquainted with the relevant safety procedures.

Equipment Modification

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

Unit Components

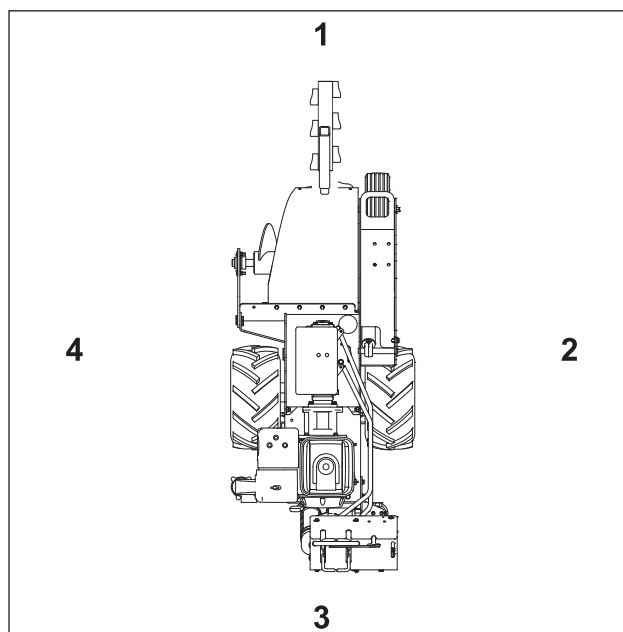


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- | | |
|--------------------|---------------------------|
| 1. Control console | 3. Digging boom and chain |
| 2. Engine | 4. Trail wheel |

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.



**RT12/RT16/RT20/RT24
Operator's Manual**

Issue number 1.0/OM-12/11

Part number 053-2439

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	<p>Specifications machine specifications including weights, measurements, power ratings, and fluid capacities</p>	<p>95</p>
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Safety

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Guidelines

Follow these guidelines before operating any jobsite equipment:


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


Safety Alert Classifications


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



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

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

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

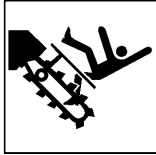
 **CAUTION** indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.

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

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

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

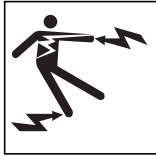
Safety Alerts



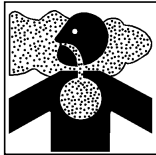
⚠ DANGER Moving digging teeth will kill you or cut off arm or leg. Stay away.



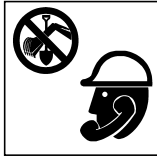
⚠ DANGER Turning shaft will kill you or crush arm or leg. Stay away.



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



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



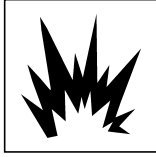
⚠ WARNING Jobsite hazards could cause death or serious injury. Use correct equipment and work methods. Use and maintain proper safety equipment.



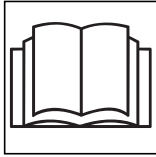
⚠ WARNING Crushing weight could cause death or serious injury. Use proper procedures and equipment or stay away.



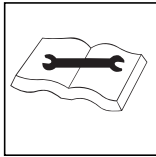
⚠ WARNING Moving parts could cut off hand or foot. Stay away.



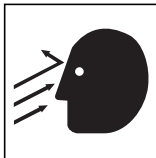
⚠ WARNING Explosion possible. Serious injury or equipment damage could occur. Follow directions carefully.



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



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



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



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



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



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

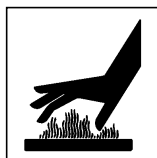




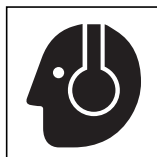
WARNING Hot pressurized cooling system fluid could cause serious burns. Allow to cool before servicing.



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



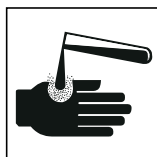
CAUTION Hot parts may cause burns. Do not touch until cool.



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



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



CAUTION Battery acid may cause burns. Avoid contact.



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

Emergency Procedures



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



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

EMERGENCY SHUTDOWN - Release all controls and turn ignition switch to STOP.

Electric Strike Description



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

When working near electric cables, remember the following:

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

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

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

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

If an Electric Line is Damaged

If you suspect an electric line has been damaged and you are **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.
- Do not allow anyone to touch equipment.

If a Gas Line is Damaged



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



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

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

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

If a Fiber Optic Cable is Damaged

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

If Machine Catches on Fire

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

- Immediately move battery disconnect switch (if equipped) 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.



Operation Overview



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Planning

1. Gather information about jobsite. See page 31.
2. Inspect jobsite. See page 33.
3. Classify jobsite. See page 34.
4. Select best chain type and tooth pattern for your application. See page 62.
5. Consider optional equipment, if necessary. See page 64.
6. Check supplies and prepare equipment. See page 36.
7. Load unit onto trailer. See page 43.

Trenching

1. Unload unit from trailer. See page 46.
2. Leave optional backfill blade, if equipped, in stowed position with digging boom low to ground.
3. Start unit. See page 38.
4. Drive to starting point of trench. See page 39.
5. Dig the trench. See page 51.
6. Shut down unit. See page 39.

Leaving Jobsite

1. Restore the jobsite. See page 70.
2. Rinse unit and stow tools. See page 70.
3. Load unit onto trailer. See page 43.

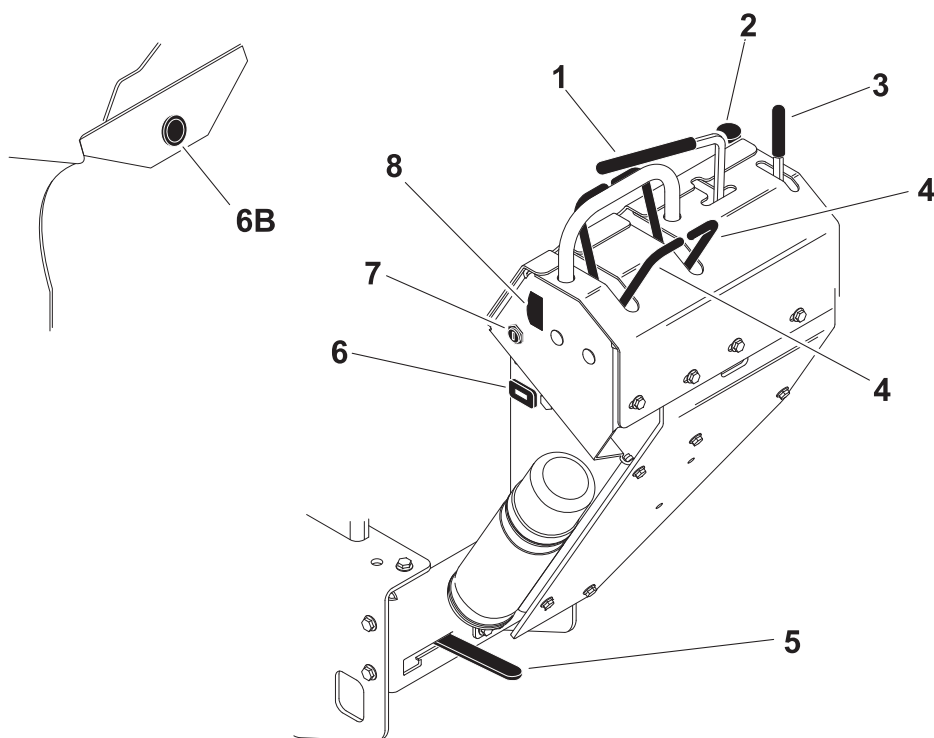
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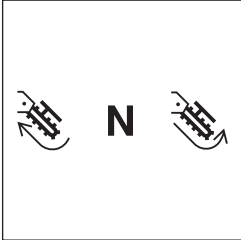
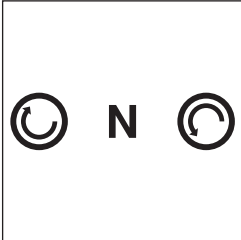
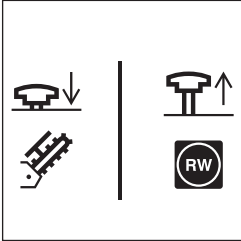
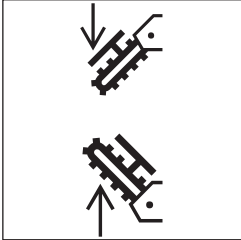


Control Console

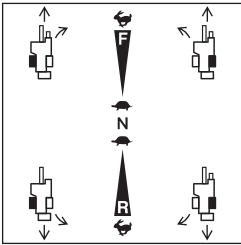
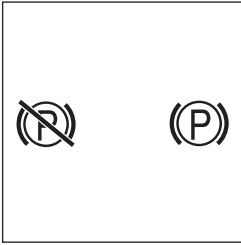


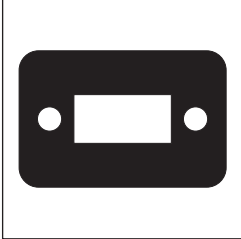
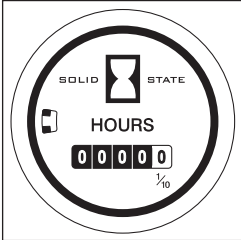
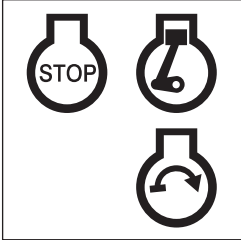
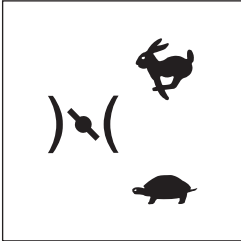
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|--|---------------------------------------|
| 1. Digging chain/Roto Witch [®] control | 6. Hourmeter/tachometer (RT16 option) |
| 2. Selector valve control (Roto Witch [®] option) | 6B. Hourmeter (RT 12 option) |
| 3. Boom lift control | 7. Ignition Switch (RT12) |
| 4. Speed/direction controls | 8. Throttle switch (RT12) |
| 5. Parking brake lever | |

Item	Description	Notes
<p>1. Digging chain control</p>  <p>c00ic553h.eps</p>  <p>c00ic559h.eps</p>	<p>To start digging chain, pull toward operator, then push down to dig position.</p> <p>To stop digging chain, release control.</p> <p>To dislodge a rock or other obstruction, pull up on control to reverse chain.</p> <p>IMPORTANT: This control changes function when equipped with optional Roto Witch.</p> <p>In drill mode:</p> <p>To drill clockwise, push down.</p> <p>To stop drill rotation, release control.</p> <p>To drill counterclockwise, pull up.</p>	<p>NOTICE: Trenching movement is always backward (toward you).</p> <p>NOTICE: To dislodge obstructions, reverse chain.</p> <p>NOTICE: Do not attempt to travel with digging chain control pulled up (chain in reverse position).</p>
<p>2. Selector valve control</p>  <p>c00ic563h.eps</p>	<p>Optional selector valve control used on units equipped with Roto Witch to change function of digging chain control.</p> <p>To select drill mode, pull up.</p> <p>To select dig mode, push down.</p>	
<p>3. Boom lift control</p>  <p>c00ic004c.eps</p>	<p>To lower boom, push.</p> <p>To raise boom, pull.</p>	<p>NOTICE: Keep digging boom low when operating on a slope or transporting. Drive slowly and cautiously at all times.</p>

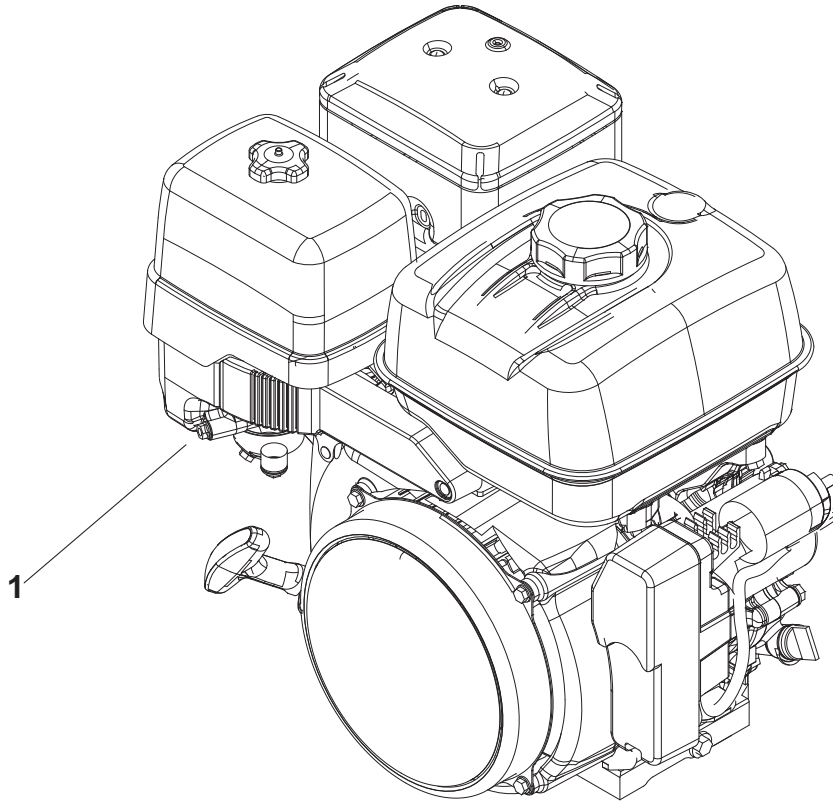


Item	Description	Notes
<p>4. Speed/direction controls</p>  <p>c00ic551h.eps</p>	<p>To drive straight forward, push BOTH controls slowly forward.</p> <p>To drive straight in reverse, pull BOTH controls slowly rearward.</p> <p>To turn left, move RIGHT speed/direction control for forward or reverse.</p> <p>To turn right, move LEFT speed/direction control for forward or reverse.</p> <p>To go faster in any direction, move controls farther from neutral position.</p> <p>To stop, release controls.</p>	<p>NOTICE: Trenching movement is always backward (toward you).</p>
<p>5. Parking brake</p>  <p>c00ic554h.eps</p>	<p>To engage parking brake, move lever to the right.</p> <p>To disengage parking brake, move lever left to notch.</p>	<p>IMPORTANT:</p> <ul style="list-style-type: none"> • Move unit slightly to ensure parking brake pins are engaged. • It might be necessary to move unit slightly to disengage parking brake.

Item	Description	Notes
<p>6. Hourmeter/tachometer (RT16 option)</p>  <p>c00ic556h.eps</p>	<p>Displays engine operating time and engine speed.</p>	<p>Use engine operating times to schedule service.</p>
<p>6B. (RT12 option)</p>  <p>c00ic259h.eps</p>		
<p>7. Ignition switch (RT12)</p>  <p>c00ic065h.eps</p>	<p>To start engine, turn key all the way clockwise. Release key as engine starts.</p> <p>To stop engine, turn key counterclockwise.</p>	
<p>8. Throttle control (RT12)</p>  <p>c00ic243h.eps</p>	<p>To increase engine speed, press bottom.</p> <p>To decrease engine speed, press top.</p>	<p>Start unit with throttle switch in the low position.</p>




RT12 Engine Controls

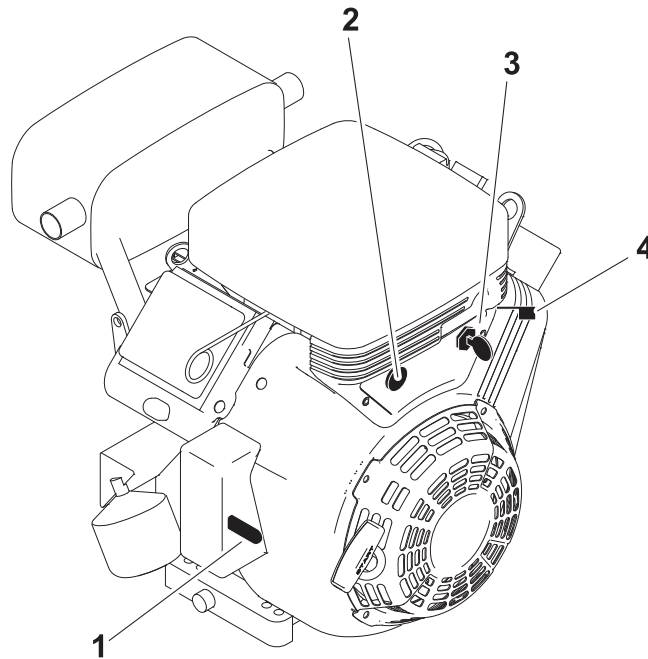


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1. Fuel shut-off valve

Item	Description	Notes
<p>1. Fuel shut-off valve</p>  <p>c00ic562h.eps</p>	<p>To stop fuel flow from fuel tank to engine, slide lever away from engine.</p> <p>To allow fuel flow, slide lever toward engine.</p>	<p>Close valve when transporting unit to or from jobsite, or whenever machine is parked.</p>

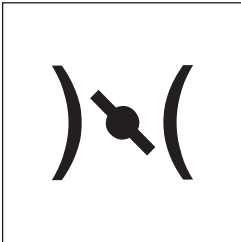
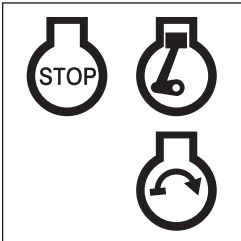

RT16 Engine Controls



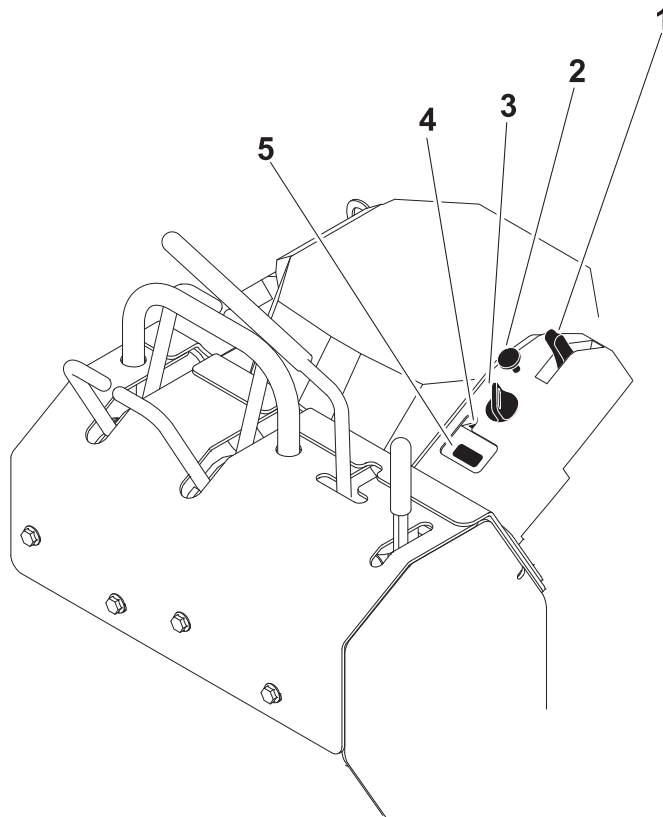
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|---------------------|------------------------|
| 1. Throttle control | 3. Ignition switch |
| 2. Choke control | 4. Fuel shut-off valve |

Item	Description	Notes
1. Throttle control <p>c00ic243h.eps</p>	To increase engine speed, pull up. To decrease engine speed, push down.	

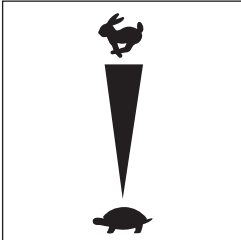
Item	Description	Notes
<p>2. Choke control</p>  <p>c00ic557h.eps</p>	<p>To close choke valve, pull choke control.</p>	<p>This valve can be closed to enrich air/fuel mixture and help start cold engine.</p> <p>Open choke valve after engine runs for a few seconds.</p>
<p>3. Ignition switch</p>  <p>c00ic065h.eps</p>	<p>To start engine, turn key all the way clockwise. Release key as engine starts.</p> <p>To stop engine, turn key counterclockwise.</p>	
<p>4. Fuel shut-off valve</p>  <p>c00ic562h.eps</p>	<p>To stop fuel flow from fuel tank to engine, turn valve clockwise.</p> <p>To allow fuel flow, turn valve counterclockwise.</p>	<p>Close valve when transporting unit to or from jobsite, or whenever machine is parked.</p>

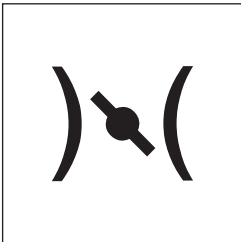
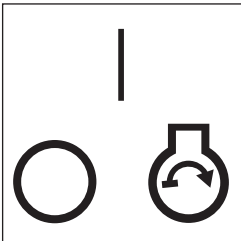

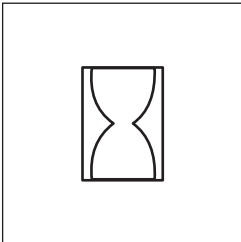
RT20/RT24 Engine Controls



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- | | |
|---------------------|---------------------------|
| 1. Throttle control | 4. Oil pressure indicator |
| 2. Choke control | 5. Hourmeter |
| 3. Ignition switch | |

Item	Description	Notes
1. Throttle control  <small>c00ic571h.eps</small>	To increase engine speed, pull up. To decrease engine speed, push down.	

Item	Description	Notes
<p>2. Choke control</p>  <p>c00ic557h.eps</p>	<p>To close choke valve, pull choke control.</p>	<p>This valve can be closed to enrich air/fuel mixture and help start cold engine.</p> <p>Open choke valve after engine runs for a few seconds.</p>
<p>3. Ignition switch</p>  <p>c00ic587h.eps</p>	<p>To start engine, turn key all the way clockwise. Release key as engine starts.</p> <p>To stop engine, turn key counterclockwise.</p>	
<p>4. Oil alert Indicator</p>  <p>c00ic586h.eps</p>	<p>Lights when oil level is too low. Engine will not start.</p>	<p>Check oil level. Add oil as needed.</p>
<p>5. Hourmeter</p>  <p>c00ic585h.eps</p>	<p>Displays number of hours engine has operated.</p>	

Prepare

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Gather Information

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

Review Job Plan

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

Notify One-Call Services

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

Arrange for Traffic Control

If working near a road or other traffic area, contact local authorities about safety procedures and regulations.

Plan for Emergency Services

Have the telephone numbers for local emergency and medical facilities on hand. Check that you will have access to a telephone.

Inspect Site

Inspect jobsite before transporting equipment. Check for the following:

- changes in elevation such as hills or other open trenches
- obstacles such as buildings, railroad crossings, or streams
- signs of utilities (See "Inspect Jobsite" on page 34.)
- traffic
- access
- soil type and condition

Identify Hazards

Identify safety hazards and classify jobsite. See "Classify Jobsite" on page 34.



⚠ WARNING

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

NOTICE:

- Wear personal protective equipment including hard hat, safety eye wear, and hearing protection.
- Do not wear jewelry or loose clothing.
- Notify One-Call and companies which do not subscribe to One-Call.
- Comply with all utility notification regulations before digging or drilling.
- Verify location of previously marked underground hazards.
- Mark jobsite clearly and keep spectators away.

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



Classify Jobsite

Inspect Jobsite

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

Select a Classification

Jobsites are classified according to underground hazards present.

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

NOTICE: If you have any doubt about jobsite classification, or if jobsite might contain unmarked hazards, take steps outlined previously to identify hazards and classify jobsite before working.

Apply Precautions

Once classified, precautions appropriate for jobsite must be taken.

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

NOTICE: Cutting, drilling, or working materials such as concrete, sand, or rock containing quartz may result in exposure to silica dust. Use water spray or other means to control dust. If workers are exposed to dust they must wear appropriate breathing protection. Silica dust may cause lung disease and is known to the State of California to cause cancer.

Other Jobsite Precautions

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

Check Supplies and Prepare Equipment

Supplies

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

Fluid Levels

- fuel
- hydraulic fluid (SAE15W40)
- battery charge
- engine oil

Condition and Function

- digging chain and teeth
- filters (air, oil, hydraulic, and fuel if equipped)
- tires and tracks
- pumps and motors
- hoses and valves
- signs, guards, and shields

Accessories

Fire Extinguisher

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

Drive

Chapter Contents

Start Unit 38

Drive..... 39

Shut Down 39



Start Unit

1. Check that all controls are in neutral.
2. If necessary, use choke control to start cold engine.



WARNING Explosion possible.

Using starting fluids will cause ignition in the intake manifold.

3. Move throttle to 1/4 open.
RT12: Set throttle switch to low.
4. Turn ignition switch to START position to crank engine.
5. Release key when engine starts.

IMPORTANT: If engine does not start, turn ignition switch to OFF position and check for fuel blockage or electrical system problems.

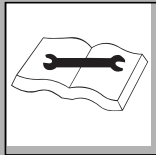
6. Run engine at half throttle or less for five minutes before operating trencher. During warm-up, check that all controls work properly.

EMERGENCY SHUTDOWN: Release controls and turn ignition switch to OFF position.

Drive

NOTICE: Keep digging boom low when operating on a slope or transporting. Drive slowly and cautiously at all times.

1. Disengage parking brake.



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

2. Pull boom control to raise digging boom.
3. Move throttle to 3/4 open.
RT12: Set throttle switch to high/full.
4. Move speed/direction control in direction of preferred travel. Ground speed increases with control movement.



Shut Down

1. Release speed/direction controls.
2. Push boom control to lower digging boom, if space allows.
3. Run engine at low idle for three minutes to cool.
4. Turn ignition switch to OFF position.
5. Close fuel shut-off valve.
6. Remove key.

NOTICE: Machine should not be parked on a slope unless chocked, blocked, or parking brake engaged.

Transport

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• Points	42
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Lift



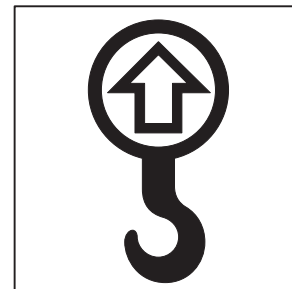
WARNING Crushing weight. If load falls or moves it could kill or crush you. Use proper procedures and equipment or stay away.

Points

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

Procedure

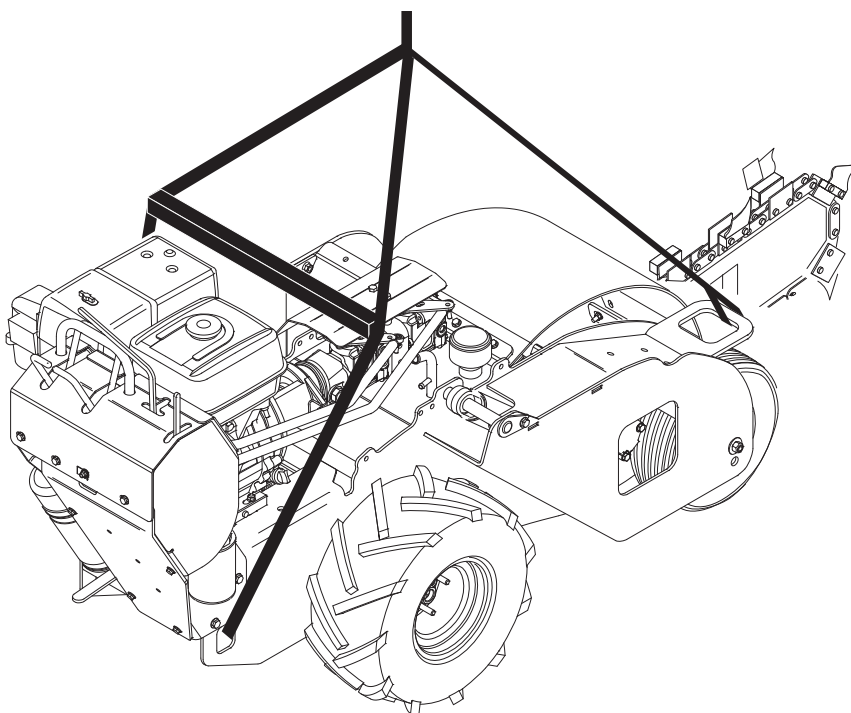
Use a hoist and straps or chains capable of supporting the equipment's size and weight. See "Specifications" on page 95 or measure and weigh equipment before lifting.



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Standard Lift Points (Using Spreader Bar)

IMPORTANT: Lower boom (as shown) before lifting to achieve proper balance.



t27om049h.eps

Haul

IMPORTANT:

- Unit should be hauled by trailer.
- Transport unit with optional backfill blade, if equipped, in “stowed” position and digging boom lowered.

Load



WARNING

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

NOTICE:

- Load unit with engine in low idle and boom as low as possible.
- Load trailer on level ground.
- Incorrect loading can cause trailer swaying.
- Attach trailer to vehicle before loading or unloading.
- If loading onto a tilt-bed trailer, ensure that tilt latch is secured in the correct position.
- Ten to fifteen percent of total vehicle weight (equipment plus trailer) must be on tongue to help prevent trailer sway.

1. Disengage parking brake.
2. Start engine.
3. Pull boom control to raise digging boom, but keep it as low as possible.
4. Move unit to rear of trailer and align with ramps or center of trailer bed.

IMPORTANT: Boom should be facing ramps on trailer.

5. Slow engine to low throttle.
6. Move speed/direction control slowly and push to desired speed.
7. Drive unit onto trailer, digging boom first, until tiedown position is reached.

NOTICE: If loading onto tilt-bed trailer, be prepared for trailer to tilt. Load trencher as far to the front of the trailer as possible.

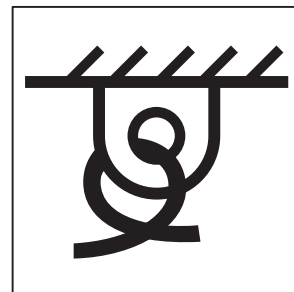
8. Push boom control to lower digging boom, if space allows.
9. Engage parking brake and shutdown unit.
10. Turn fuel shut-off to off position.
11. Tie down unit.



Tie Down

Points

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

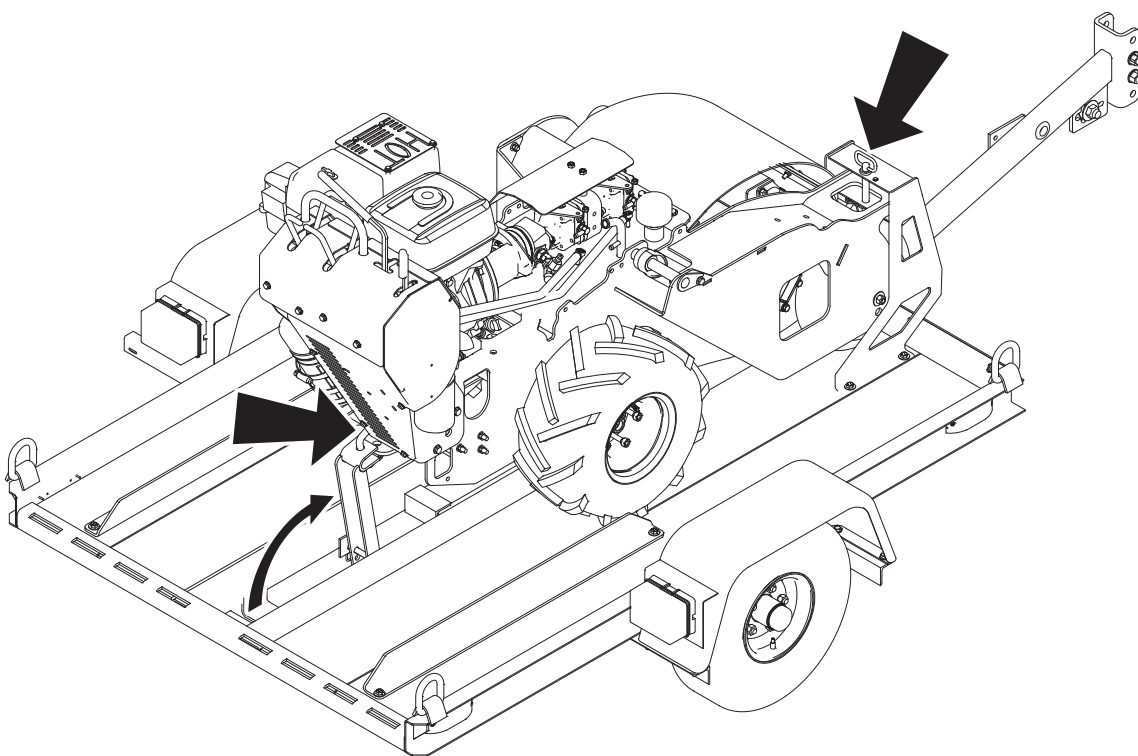


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Procedure

With Tie-Down Kit on S1A or S2A Trailer

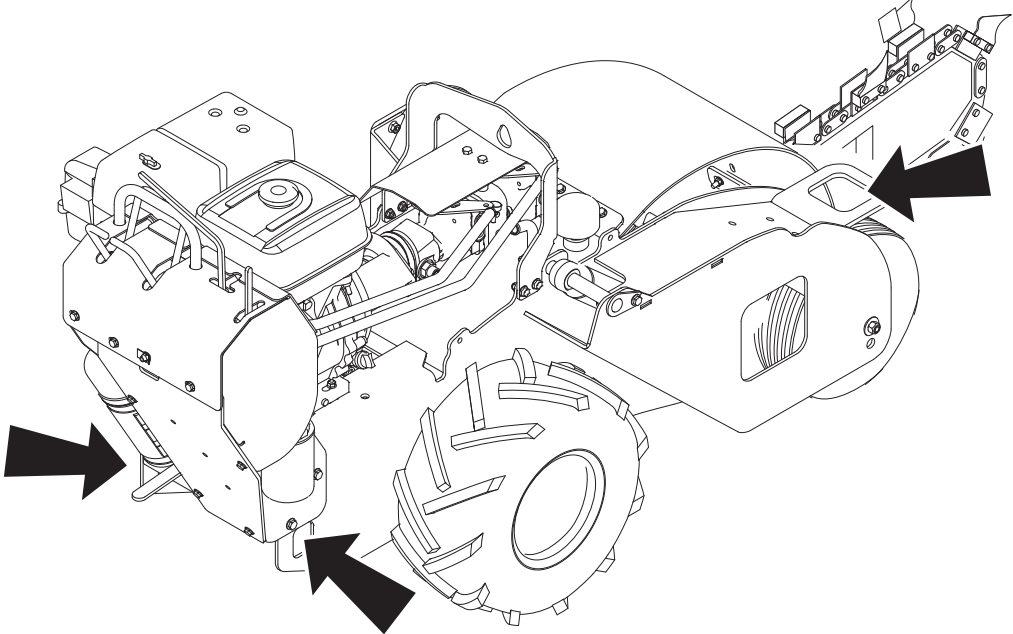
Use pins (shown) to secure front and rear of unit to trailer.



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Without Tie-Down Kit

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



t27om009h.eps



Unload



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

NOTICE:

- Unload unit with engine in low idle and boom as low as possible.
- Unload trailer on level ground.
- Attach trailer to vehicle before loading or unloading.
- If trailer tilts, ensure that tilt latch is secured in the correct position.

1. Lower trailer or ramps.
2. Remove tiedowns.
3. Open fuel shut-off valve.
4. Start engine.
5. Disengage parking brake.
6. Pull boom control to raise digging boom, but keep it as low as possible.
7. 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.

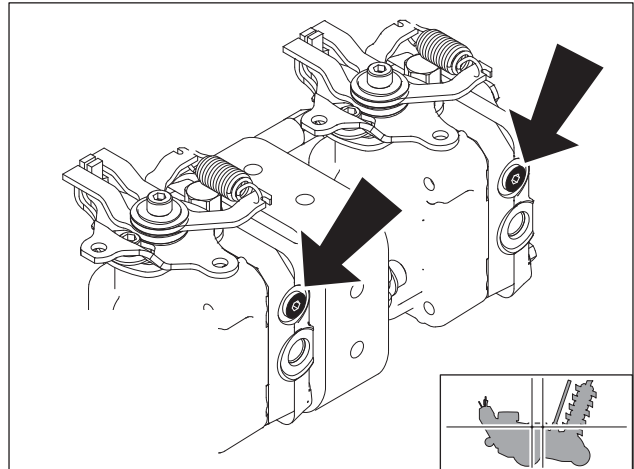
Tow

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

- tow for short distances at less than 1 mph (1.6 km/h)
- do not tow for more than 100' (30 m)
- use no more than 1,300 lb (5800 N) of towing force

Prepare Unit for Towing

1. Ensure parking brake is engaged.
2. Block wheels.
3. Connect to tow point.
4. Turn tow valves (shown) counterclockwise two turns.
5. Unblock wheels.
6. Disengage parking brake.



t27om041h.eps

Return Unit to Normal Operation

1. Engage parking brake.
2. Block wheels.
3. Disconnect from tow point.
4. Turn tow valves clockwise two turns.
5. Unblock wheels.
6. Disengage parking brake.



Trench



Chapter Contents

Trench 51



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

NOTICE: Cutting, drilling or working materials such as concrete, sand, or rock containing quartz may result in exposure to silica dust. Use water spray or other means to control dust. If workers are exposed to dust, they must wear appropriate breathing protection. Silica dust may cause lung disease and is known to the State of California to cause cancer.



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

NOTICE: Cutting high voltage cable can cause electrocution. Expose lines by hand before digging.



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

NOTICE:

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



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

Trench



IMPORTANT:

- Position backfill blade in upright "stowed" position for transporting, keeping digging boom low to the ground. Remove blade for trenching and reinstall for backfilling.
- See "Counterweights" on page 66 for proper counterweights for your unit configuration.

1. Remove backfill blade, if equipped.
2. Drive trencher to starting point. Move in line with planned trench.
3. Move throttle to half open.
4. Push boom control to lower digging boom to just above ground.



DANGER

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

NOTICE:

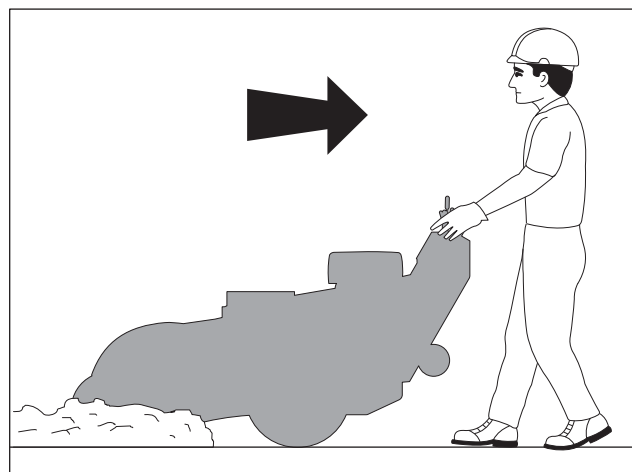
- Keep everyone at least 6' (2 m) from machine, digging boom, and its range of movement.
- Machine may move when chain starts to dig. Allow 3' (1 m) between end of chain and obstacle.
- Digging chain on top side of boom can catch on root or rock, forcing handlebar down suddenly. Stand back from console and hold controls loosely.

5. Push digging chain control to dig position.
DIGGING CHAIN WILL MOVE.

EMERGENCY STOP: Release controls and turn ignition switch to OFF position.

IMPORTANT: Trenching movement is toward you.

6. Increase engine speed to **full throttle**.



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7. Push boom control to slowly lower digging boom to desired trench depth.
8. Move speed/direction control slowly to desired speed.

IMPORTANT:

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

9. When trench is complete, release speed/direction controls.
10. Move throttle to half open.
11. Pull boom control to raise digging boom to top of trench.
12. Release digging chain control.
13. Reinstall backfill blade in work position for backfilling. After backfilling is completed, position blade in upright "stowed" position for transporting, keeping digging boom low to ground.
14. Drive away from trench.
15. See page 39 for shutdown procedure.

Drill



Chapter Contents

- Drilling Attachment 55**
- Prepare Jobsite and Equipment 55**
 - Approach Trench 55
 - Target Trench 55
 - Drill Rod and Equipment 56
- Drill 57**
 - Using Drill String Guide 58
- Add Rod 59**
- Backream 59**
- Disassemble Joints 60**



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

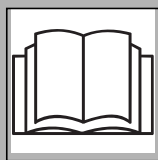
NOTICE:

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

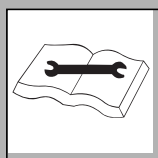


⚠ WARNING Jobsite hazards could cause death or serious injury. Use correct equipment and work methods. Use and maintain proper safety equipment.

NOTICE: Set up warning barriers and keep people away from equipment and jobsite while drilling.



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



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

NOTICE:

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

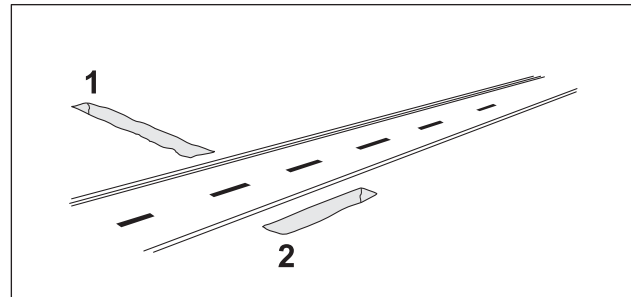
Prepare Jobsite and Equipment

Approach Trench (1)

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

IMPORTANT: The approach trench should be at least:

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



Drill_Attchmnt_Prep_Job.eps



Target Trench (2)

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

IMPORTANT:

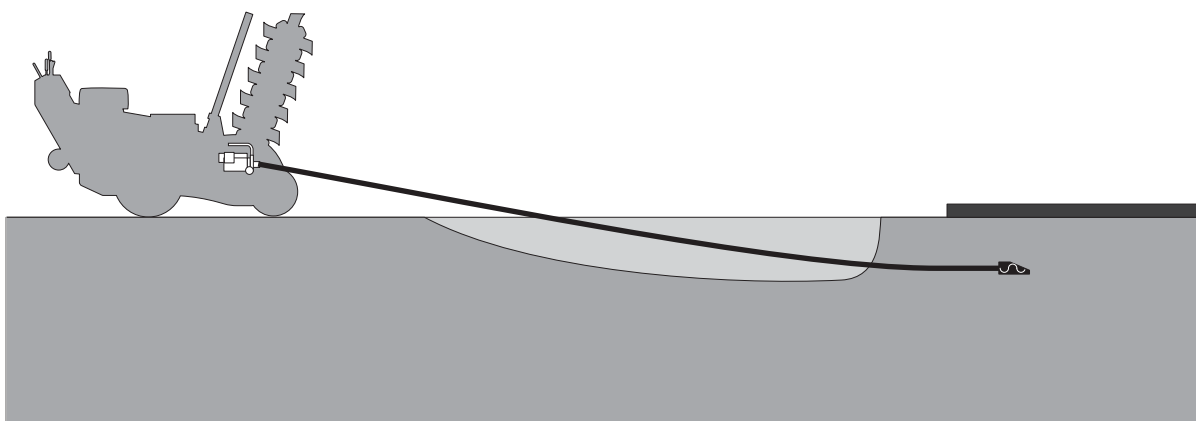
- The actual length of the target trench depends on soil conditions and length of pipe sections. Make it deep enough for drill bit to enter slightly above the trench floor.
- See "Counterweights" on page 66 for proper counterweights for your unit configuration.

Drill Rod and Equipment

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

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

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



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Drill

IMPORTANT: For location and description of drilling controls see "Control Console" on page 22.

EMERGENCY SHUTDOWN: Release all controls and turn ignition switch to OFF position.



1. Pull selector valve upward to select drill mode.
2. Start engine and begin clockwise (forward) rotation.
3. Slowly advance machine while maintaining clockwise rotation.

NOTICE:

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

Using Drill String Guide



⚠ DANGER

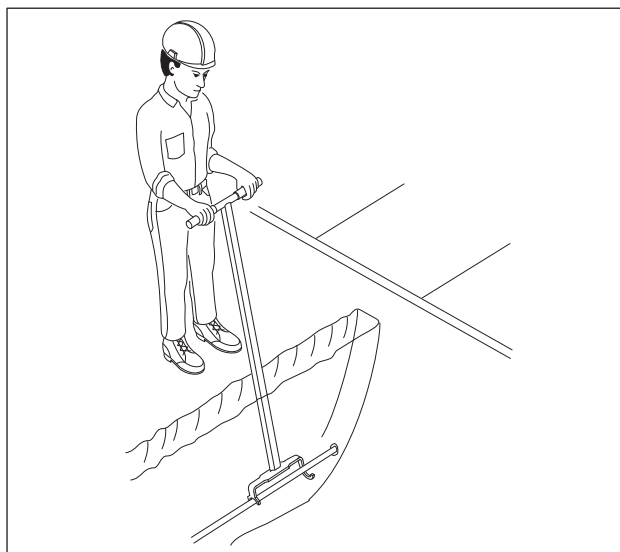
Turning shaft will kill you or crush arm or leg. Stay away.

NOTICE:

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

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

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



DrillStringGuide.eps

Add Rod

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

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



Backream

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

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

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

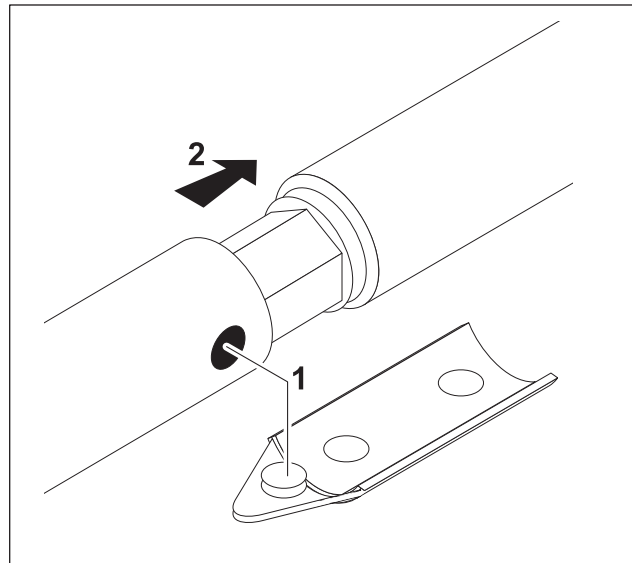
4. Slowly back up machine while maintaining rotation.
5. When backreamer exits the bore hole, stop rotation immediately.

IMPORTANT:

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

Disassemble Joints

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



Drill_Attchmnt_RodJoints.eps

Systems and Equipment

Chapter Contents

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- Chain and Tooth Maintenance 62
- Chain Types 62
- Chain Selection 63

Optional Equipment 64

- Backfill blade 65
- Drilling attachment 65
- Counterweights 66



Chain, Teeth, and Sprockets

Chain and Tooth Maintenance

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

Chain Types

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

Chain Selection

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

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



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

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

Optional Equipment

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

NOTICE: Adding or removing optional equipment changes counterweight requirement. See chart on page 67 or page 68 to ensure you have the correct counterweights for your configuration.

Equipment	Description
booms	provide depth options of 24" (610-mm), 30" (760-mm), or 48" (1220 mm); each length is available with either an adjustment screw or grease cylinder for tensioning the digging chain
mechanical trench cleaner	removes spoils from the trench floor
remote air filter	option on RT12 or RT16, provides extra filtering capacity for dusty conditions
turf tires	minimize turf disturbance
hourmeter/tachometer	displays engine operating times and engine speed
backfill blade	cover trench using machine
drilling attachment	drill under sidewalks and driveways
counterbalance weights	customize unit balance in various configurations
10-tooth sprocket	slows digging chain speed to allow teeth time to penetrate into the ground and increase performance in rocky or extremely hard soil
wheel tracks	improve traction over rough terrain

Backfill Blade

The optional backfill blade slides onto a mounting stub (2). When transporting, it is stowed and latched in the upright position using a single pin (1). Remove blade for trenching and reinstall in work position for backfilling.

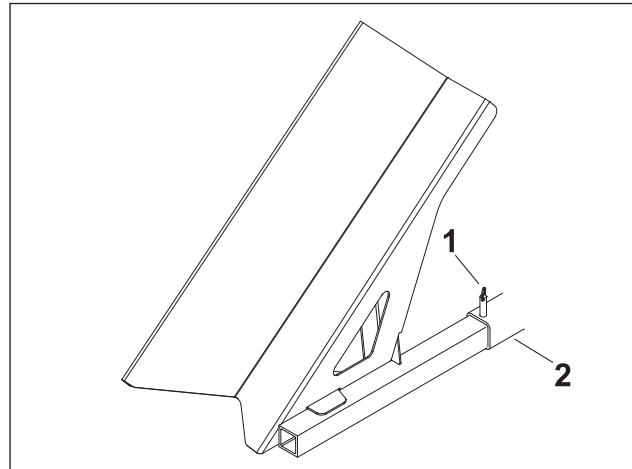
NOTICE: Position backfill blade in upright "stowed" position for transporting, keeping digging boom low to the ground. Remove blade for trenching and reinstall for backfilling.

To use the backfill blade, remove pin (1), slide the blade onto the stub (2) in work position, then secure with pin.

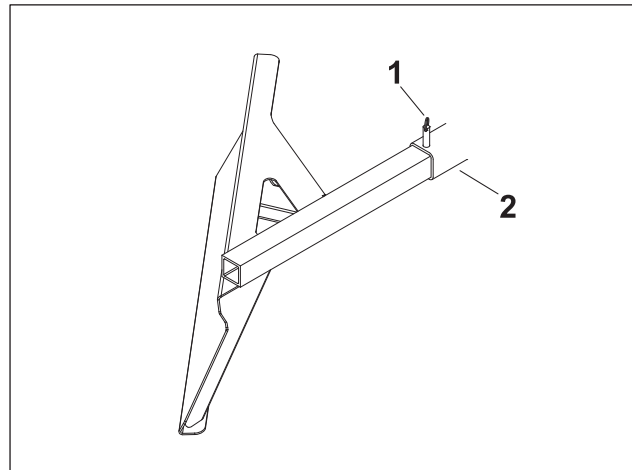
After backfilling is completed, position blade in upright "stowed" position and low to the ground for transporting.

Drilling Attachment

The optional drilling attachment option can be used to drill under obstructions such as sidewalks and driveways. For operational information, see "Drill" on page 53.



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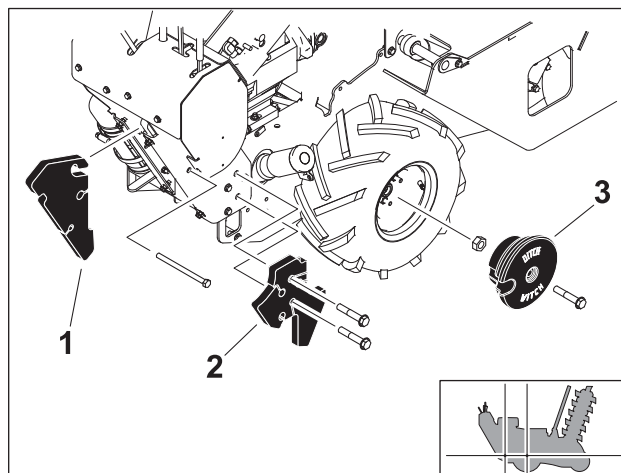


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Counterweights

Select the appropriate counterweights to balance the trenching unit for optimum performance. Use the appropriate chart to determine correct number of counterweights required for unit configuration. Adding tracks, wheel weights, or urethane-filled tires where they are not required reduces the counterweight requirement.



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Ref.	Weight	Description
1	tower weights	primary counterweight to balance front and rear of unit. IMPORTANT: Units come standard with two tower weights. Up to three additional tower weights may be required, depending on configuration. No configuration takes more than five tower weights.
2	low frame weights (RT20 and RT24 only)	provide additional counterweighting and traction during trenching
3	wheel weights	provide additional counterweighting and traction during trenching.

Selecting Counterweights for the RT12 and RT16

IMPORTANT: Units come standard with two tower weights. Up to three additional tower weights may be required, depending on configuration. No configuration takes more than five tower weights. Do not add more counterweight in rear than is necessary.

Option	Chain Type	Required Modification
24 in boom	Cup tooth: 4 in width	none
	Cup tooth: 6 in width	add 1 tower weight
	Shark/Alligator/Other: 4-6 in width	add 1 tower weight
30 in boom	Cup tooth: 4 in width	add 1 tower weight
	Cup tooth: 6 in width	add 1 tower weight
	Shark/Alligator/Other: 4-6 in width	add 2 tower weights
36 in boom	Cup tooth: 4 in width	add 3 tower weights ¹
	Cup tooth: 6 in width	add 3 tower weights and tracks or urethane-filled tires
	Shark/Alligator/Other: 4 in width	add 3 tower weights ²
Wheel weights	any	remove 1 tower weight
Urethane-filled tires	any (except as required for 36" boom)	remove 1 tower weight
Tracks	any (except as required for 36" boom)	remove 1 tower weight
Drilling attachment	any	add 1 tower weight
Backfill blade	any	add 1 tower weight
Trench cleaner	any	add 1 tower weight

¹ Requires tracks or urethane-filled tires IF configured with two or more front options.

² Requires wheel weights IF configured with all three front options.



Selecting Counterweights for the RT20 and RT24

IMPORTANT: Units come standard with two tower weights. Up to three additional tower weights may be required, depending on configuration. No configuration takes more than five tower weights. Do not add more counterweight in rear than is necessary.

Option	Chain Type	Required Modification
24 in boom	Cup tooth: 4 in width	none
	Cup tooth: 6 in width	add 1 tower weight
	Cup tooth: 8 in width (RT24 only)	add 2 tower weights
	Shark/Alligator/Other: 4-6 in width	add 1 tower weight
	Shark/Alligator/Other: 8 in width (RT24 only)	add 3 tower weights
30 in boom	Cup tooth: 4-6 in width	add 1 tower weight
	Cup tooth: 8 in width (RT24 only)	add 2 tower weights
	Shark/Alligator/Other: 4-6 in width	add 2 tower weights
	Shark/Alligator/Other: 8 in width (RT24 only)	add 3 tower weights and tracks or urethane-filled tires
36 in boom	Cup tooth: 4 in width	add 3 tower weights ¹
	Cup tooth: 6 in width	add 3 tower weights and tracks or urethane-filled tires
	Cup tooth: 8 in width (RT24 only)	add 3 tower weights and tracks or urethane-filled tires ²
	Shark/Alligator/Other: 4 in width	add 3 tower weights and tracks or urethane-filled tires ²
48 in boom (RT24 only)	Cup tooth: 4-6 in width	add 3 tower weights and tracks or urethane-filled tires and wheel weights
	Cup tooth: 8 in width	add 3 tower weights and tracks or urethane-filled tires and wheel weights and low frame weights
	Shark/Alligator/Other: 4 in width	add 3 tower weights and tracks or urethane-filled tires and wheel weights and low frame weights
Wheel weights	any (except as required for 48" boom)	remove 1 tower weight
Urethane-filled tires	any (except as required for 36" boom)	remove 1 tower weight
Tracks	any (except as required for 36" boom)	remove 1 tower weight
Drilling attachment	any	add 1 tower weight
Backfill blade	any	add 1 tower weight
Trench cleaner	any	add 1 tower weight

¹ Requires tracks or urethane-filled tires IF configured with two or more front options.

² Requires wheel weights IF configured with all three front options.

Complete the Job

Chapter Contents

Restore Jobsite 70

Rinse Equipment 70

Stow Tools 70



Restore Jobsite

After product is installed, return spoils to the trench with optional backfill blade, shovels, or small earth-moving equipment. See optional backfill blade on page 65.

Rinse Equipment

Spray water onto equipment to remove dirt and mud. Lubricate all zerks.

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

Stow Tools

Make sure all bits, pullback devices, and other tools are loaded and properly secured on trailer.

Service

Chapter Contents

Precautions 72

Recommended Lubricants/Service Key 73

Oil Temperature Chart 74

Each Use 76

10 Hour 83

50 Hour 88

100 Hour 89

250 Hour 92

As Needed 93



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.

Welding Precaution









NOTICE: Welding can damage electronics.

- Disconnect battery at battery disconnect switch before welding to prevent damage to battery.
- Connect welder ground clamp close to welding point and make sure no electronic components are in the ground path.

Cleaning Precaution

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

Recommended Lubricants/Service Key

Item	Description
 DEO	Diesel engine oil meeting API service classification CF-4 or E1-96 and SAE viscosity recommended by engine manufacturer (SAE15W40)
 GEO	Gasoline engine oil meeting or exceeding API SJ. See oil temperature chart for recommended viscosity grade for each model.
 MPG	Multipurpose grease meeting ASTM D217 and NLGI 2
 MPL	Multipurpose gear oil meeting API service classification GL-5 (SAE 80W90)
	Check level of fluid or lubricant
	Check condition
	Filter
	Change, replace, adjust, service or test



Proper lubrication and maintenance protects Ditch Witch equipment from damage and failure. Service intervals listed are for minimum requirements. In extreme conditions, service machine more frequently. Use only recommended lubricants.

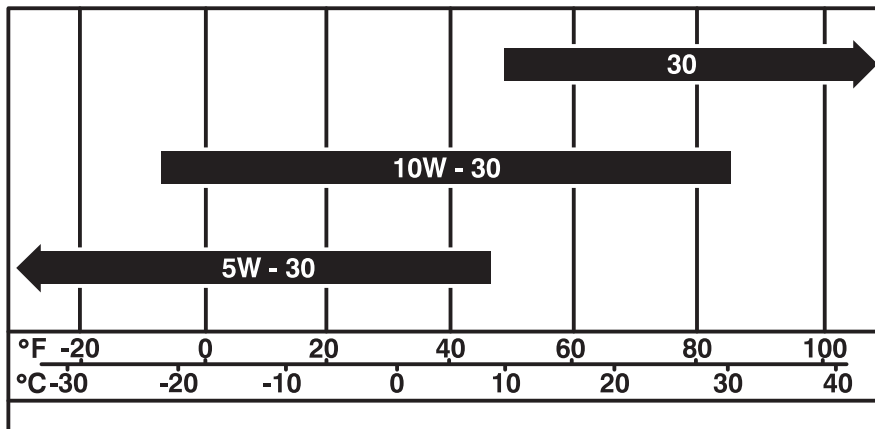
For more information on engine lubrication and maintenance, see your engine manual.

NOTICE:

- Use only genuine Ditch Witch parts, filters, approved lubricants, TJC, and approved coolants to maintain warranty.
- Use the “Service Record” on page 113 to record all required service to your machine.

Engine Oil Temperature Chart

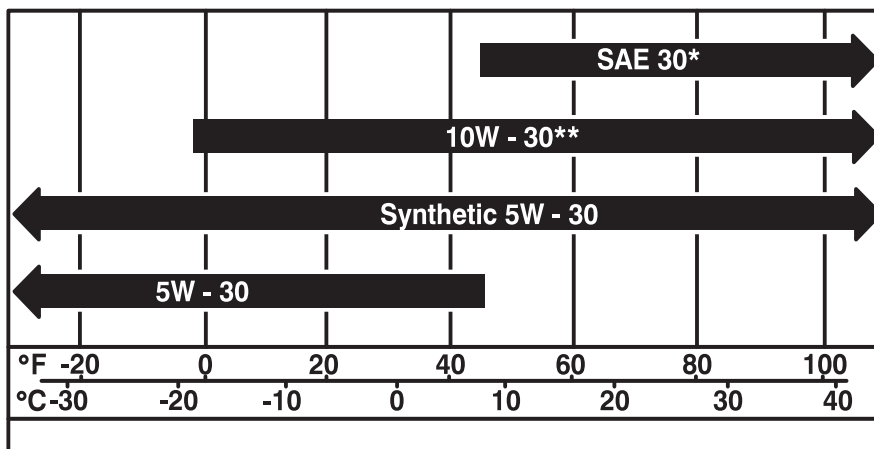
RT12 Honda IGX390



t27om060h.eps

Temperature range anticipated before next oil change

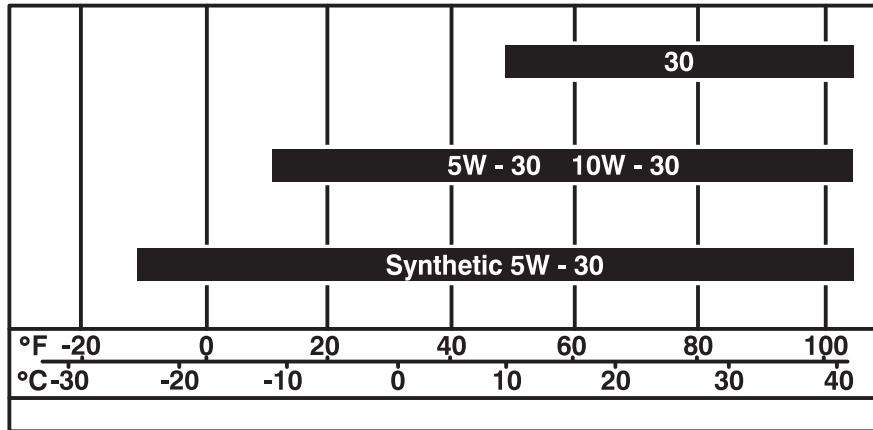
RT16 Briggs & Stratton



t27om036h.eps

Temperature range anticipated before next oil change

RT20 Honda GX630 and RT24 Honda GX690



t27om054h.eps

Temperature range anticipated before next oil change

*Below 40° F (4° C) the use of SAE 30 will result in hard starting.

** Above 80° F (27° C) the use of 10W30 may cause increased oil consumption. Check oil level more frequently.



Each Use

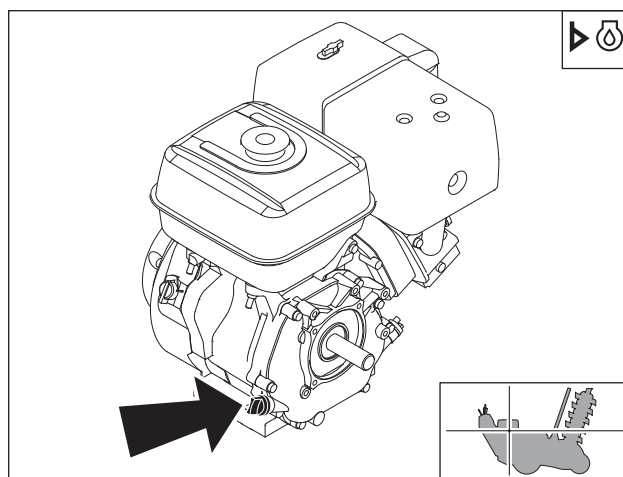
Location	Task	Notes
Engine	Check engine oil level	GEO
	Check air filter elements	
Trencher	Check hydraulic fluid level	DEO (15W30 with PowerUp additive)
	Check hydraulic fluid cooler	
	Check hydraulic hoses	
	Check rear tire pressures	15 psi (1 bar) bar lug tires 22 psi (1.5 bar) turf tires
	Check lug nut torque	85 ft•lb (115 N•m)
	Check parking brake operation	

Check Engine Oil Level

RT12 Honda iGX390

Check engine oil at dipstick before each use. If low, add GEO until oil level is at highest line on dipstick.

IMPORTANT: For more information on engine oil, see "Recommended Lubricants/Service Key" on page 73 or see engine manual.

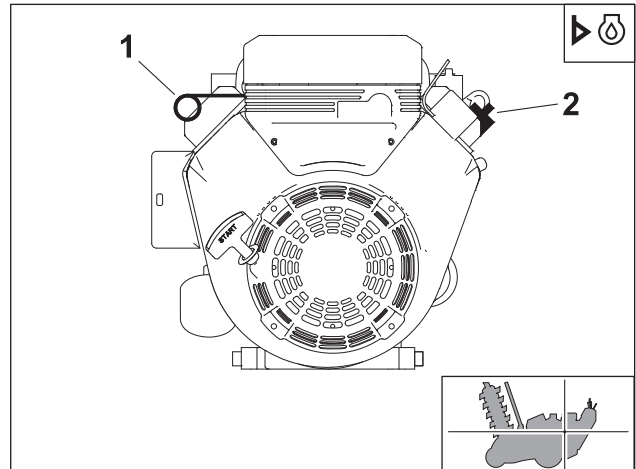


t27om013h.eps

RT16 Briggs & Stratton

Check engine oil at dipstick (1) before each use. If low, add GEO at oil fill (2) until oil level is at FULL mark on dipstick.

IMPORTANT: For more information on engine oil, see "Recommended Lubricants/Service Key" on page 73 or see engine manual.



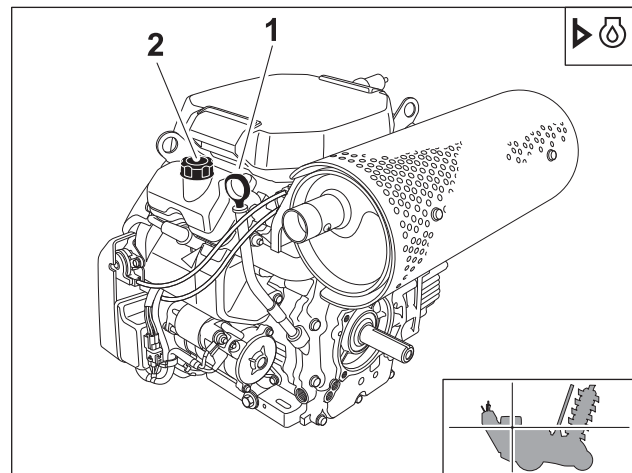
t27om030h.eps

RT20 Honda GX630 and RT24 Honda GX690

Check engine oil at dipstick (1) before each use. If low, add GEO at oil fill (2) until oil level is at FULL mark on dipstick.

NOTICE: DO NOT overfill. Keep oil level at FULL mark.

IMPORTANT: For more information on engine oil, see "Recommended Lubricants/Service Key" on page 73 or see engine manual.



t27om051h.eps



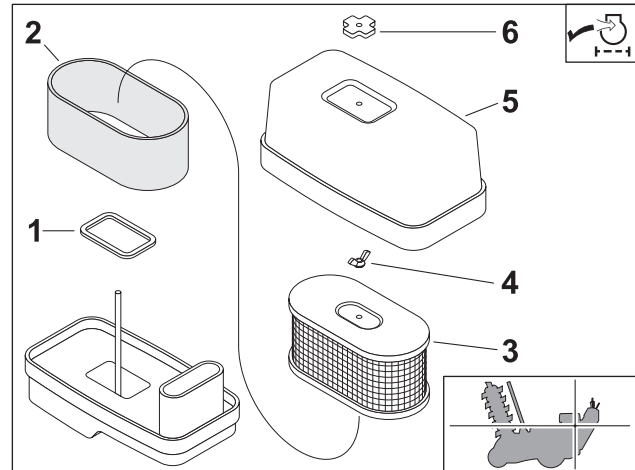
Check Air Filter Elements

RT12

Check air filter element before each use. Replace element if it is dirty or damaged.

To check:

1. Remove air cleaner cover nut and air cleaner cover.
2. Remove wing nut, air cleaner elements (paper and foam), and air cleaner elbow packing and separate them.
3. Inspect elements for wear and replace if damaged.
4. Inspect air cleaner elbow packing for deterioration and replace if damaged.



t27om059h.eps

NOTICE: Change the elements. Do not attempt to clean them.

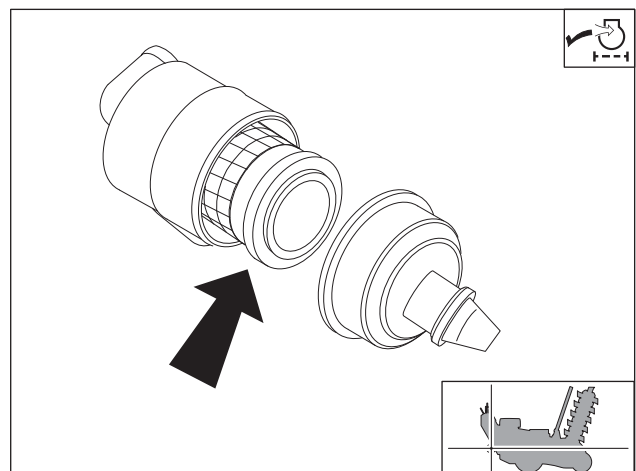
- Compressed air or water may damage the elements.
- Tapping filter elements to loosen dirt may damage the elements.

RT12 Optional Air Filter

Replace optional air filter as needed.

NOTICE: Change the elements,. Do not attempt to clean them.

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



t27om019h.eps

RT16

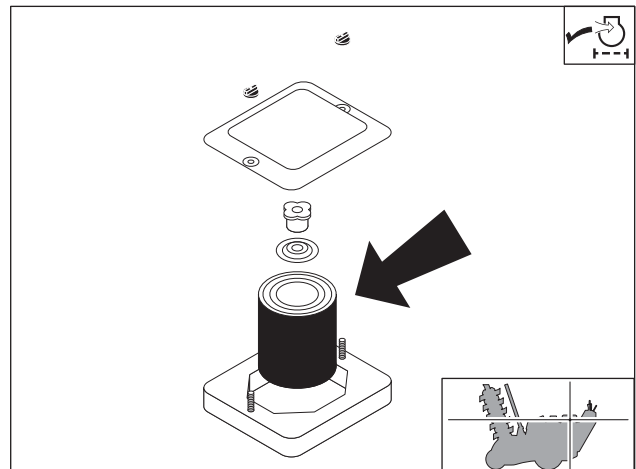
Check air filter element before each use. Replace element if it is dirty or damaged.

To check:

1. Remove wing nuts and air cleaner cover.
2. Remove element and replace if dirty.

NOTICE: Change the elements. Do not attempt to clean them.

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



t27om029h.eps



RT20 and RT24

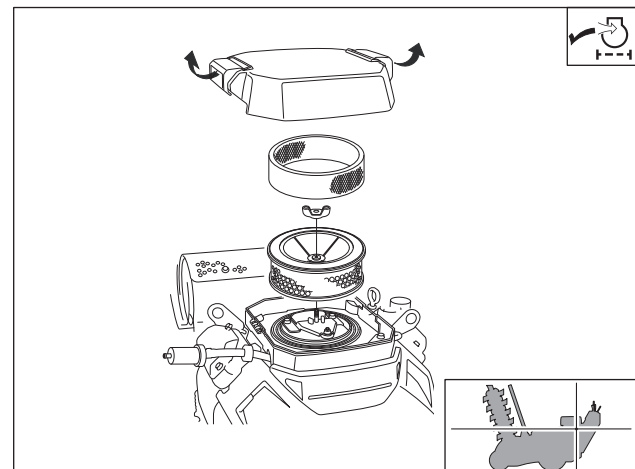
Check air filter element before each use. Replace element if it is dirty or damaged.

To check:

1. Lift latches on plastic cover and remove.
2. Remove wing nut and air cleaner cover.
3. Inspect paper and foam elements. Replace if dirty.

NOTICE: Change the elements. Do not attempt to clean them.

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



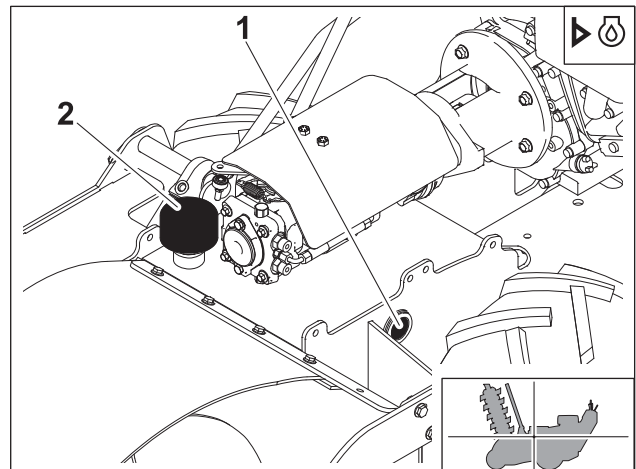
t27om053h.eps

Check Hydraulic Fluid Level

With digging boom fully raised, check hydraulic fluid at sight glass (1) before each use. If low, add SAE15W40 with PowerUp additive until fluid level is at mid-level in sight glass. Clean dust from cap (2) by blowing with low pressure air.

NOTICE:

- Hydraulic reservoir can become pressurized. OPEN SLOWLY.
- Use SAE15W40 with additive for hydraulic fluid in these machines.
- Contact your Ditch Witch dealer for Power Up additive.

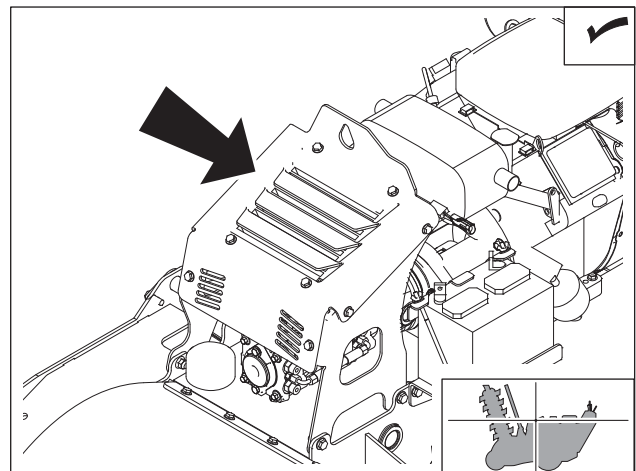


t27om014h.eps

Add 16 oz (0.47 L) of Power Up oil additive or equivalent to 8 gal (30.28 L) of SAE15W40 for use as hydraulic fluid. Fill hydraulic reservoir to correct level on sight glass.

Check Hydraulic Fluid Cooler

Check hydraulic fluid cooler before each use. If dirty, clean by blowing with low pressure air. For extensive cleaning, remove cover.



t27om032h.eps

Check Hydraulic Hoses



WARNING

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

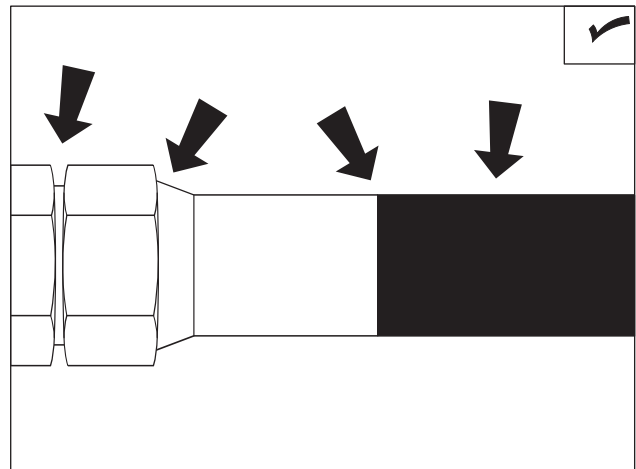
NOTICE: Escaping pressurized fluid can cause injury or pierce skin and poison.

- 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.



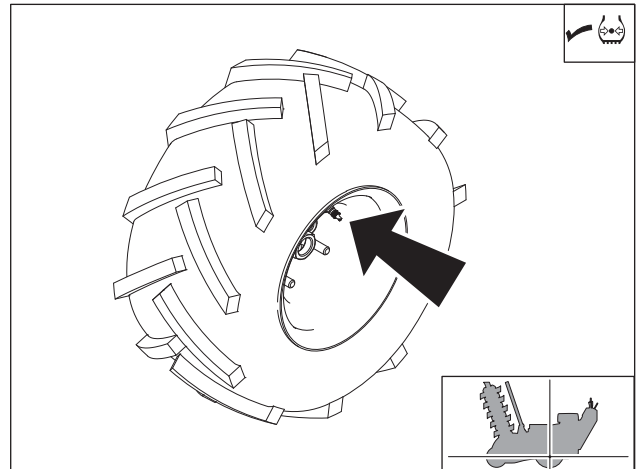
Check hydraulic hoses for leaks every 10 hours.



CheckHoses.eps

Check Rear Tire Pressures

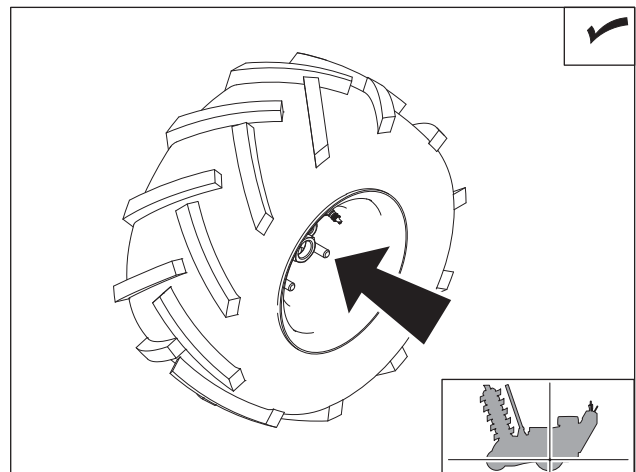
Check rear tire pressures before each use. Maintain pressure at 15 psi (1.0 bar) for bar lug tires or 22 psi (1.5 bar) for turf tires.



t27om042h.eps

Check Lug Nut Torque

Check wheel lug nut torque before each use. Tighten to 85 ft•lb (115 N•m).



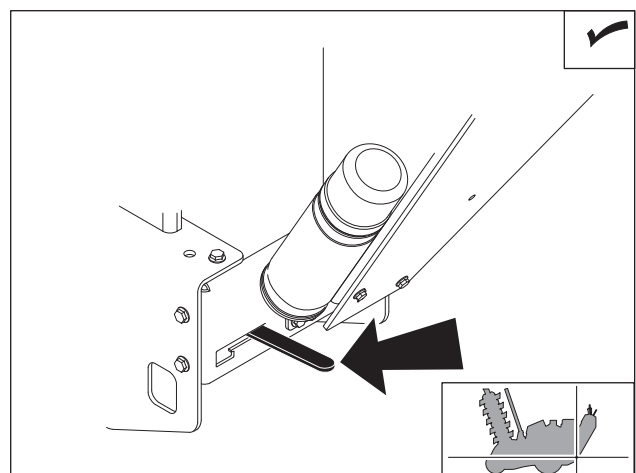
t27om017h.eps

Check Parking Brake Operation

Check parking brake operation before each use. To engage parking brake, move lever to the right. To disengage parking brake, move lever left to notch.

IMPORTANT:

- Move unit slightly to ensure parking brake pins are engaged.
- It might be necessary to move unit slightly to disengage parking brake.



t27om046h.eps

10 Hour Service

Location	Task	Notes
Engine	Change engine oil	Initial, GEO
Trencher	Lube pivot	MPG
	Lube trail wheel	MPG
	Lube auger bearing	MPG
	Lube wheel tracks, if equipped	MPG
	Check digging chain tension	MPG

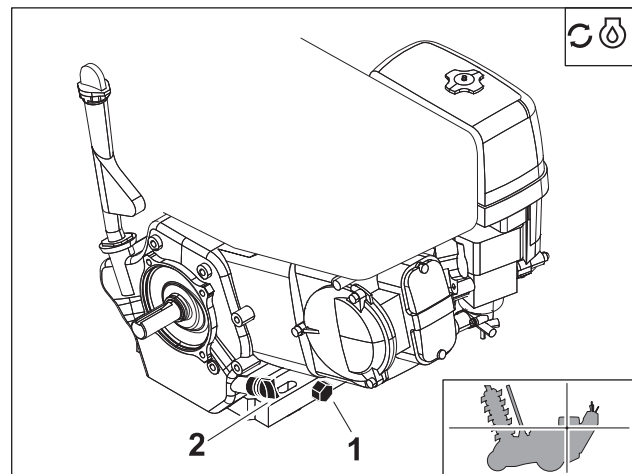
Change Engine Oil

RT12

Change engine oil after the first 10 hours of operation and every 100 hours thereafter.

1. Drain at plug (1) while oil is still warm.
2. Replace plug.
3. Slowly add GEO at fill (2).

IMPORTANT: Engine oil capacity is 1.16 qts (1.1 L). Do not overfill.



t27om058h.eps

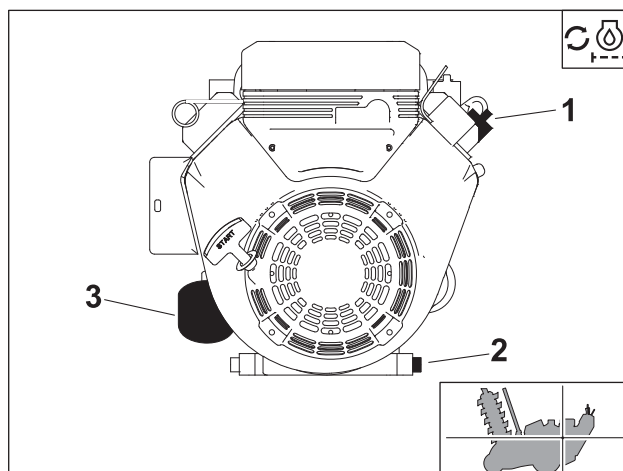


RT16 Briggs & Stratton

Change engine oil and filter after the first 10 hours of operation and every 50 hours thereafter.

1. Drain at plug (2) while oil is still warm.
2. Replace plug.
3. Change oil filter (3).
4. Slowly add GEO at fill cap (1) until level rises to FULL mark on dipstick. Tighten dipstick.

IMPORTANT: Engine oil capacity with filter change is 57.5 oz (1.7 L). Do not overfill.



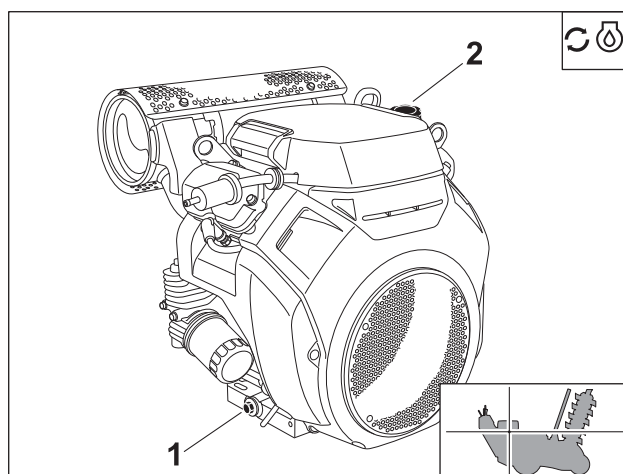
t27om031h.eps

RT20 and RT24

Change engine oil after the first 10 hours of operation and every 100 hours thereafter.

1. Drain at plug (1) while oil is still warm.
2. Replace plug.
3. Slowly add GEO at fill (2).

IMPORTANT: Engine oil capacity is 2.10 qts (1.99 L). Do not overfill.



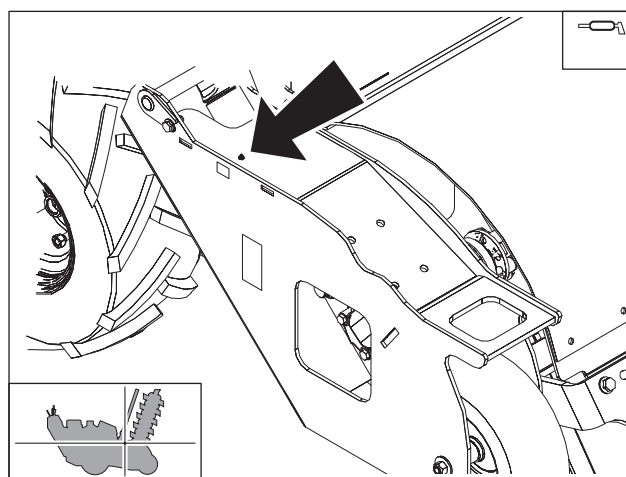
t27om052h.eps

Lube Pivot Headshaft Bearing

Lube pivot headshaft bearing zerk with MPG every 10 hours.

To lube:

1. Pump MPG into zerk (shown) until grease is visible at pivot.
2. Operate boom lift controls to ensure proper function of boom and to distribute grease along bearing plate.
3. Pump additional MPG into zerk until grease is again visible at pivot.



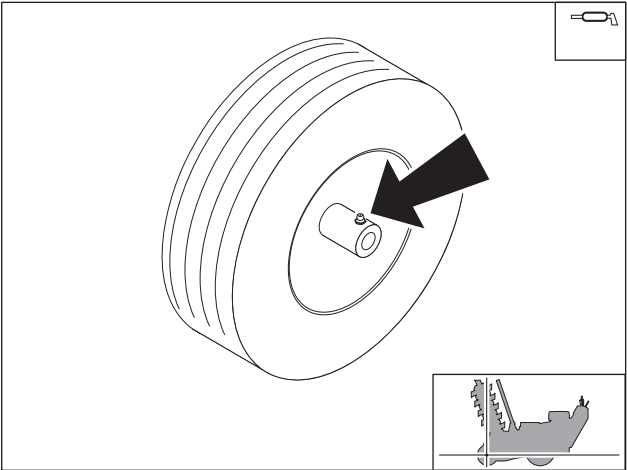
t27om069h.eps

Lube Pivot Bushing

Lube pivot bushing zerk with MPG every 10 hours.

Lube Trail Wheel

Lube trail wheel zerk with MPG every 10 hours.

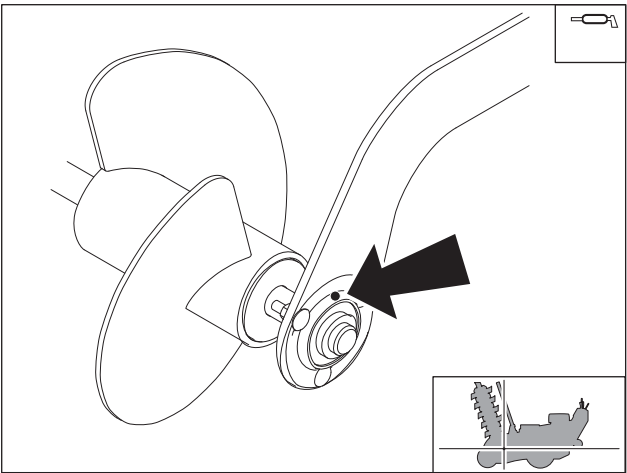


t27om016h.eps



Lube Auger Bearing

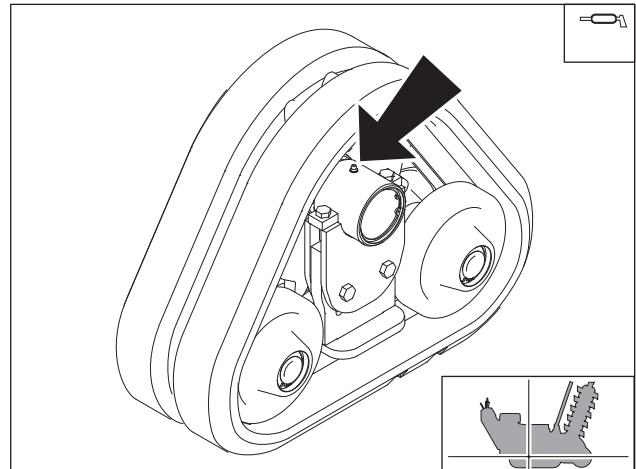
Lube auger bearing zerk with MPG every 10 hours.



t27om034h.eps

Lube Wheel Tracks

Lube wheel tracks, if equipped, at zerk with MPG every 10 hours.

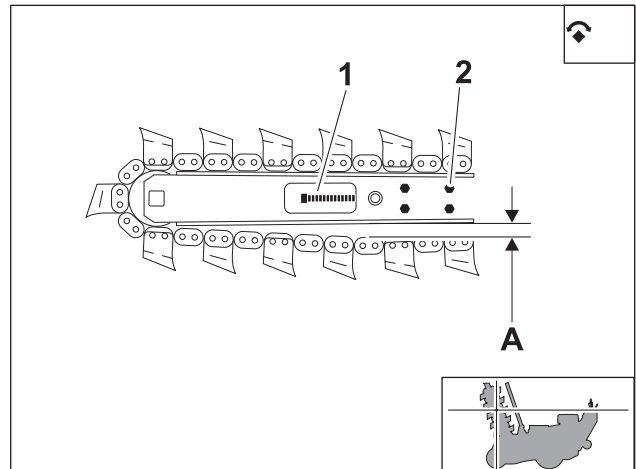


t27om026h.eps

Check Digging Chain Tension

Check digging chain tension every 10 hours and adjust as needed. With boom horizontal, measure distance A from bottom of boom to chain. When properly tensioned, distance A should be 1.5-2.0" (38-51 mm).

NOTICE: Do **not** overtighten chain. Overtightening will cause chain stretch, loss of machine performance, and possible premature chain failure.



t27om020h.eps

Adjustment Screw:

1. Loosen four clamp bolts (2) so that boom slides freely.
2. Loosen jam nut on adjustment screw (1).
3. To tighten digging chain, turn adjustment screw clockwise. To loosen digging chain, turn counterclockwise.
4. When proper tension is reached, tighten jam nut.
5. Torque clamp bolts to 75 ft•lb (102 N•m).

Grease Cylinder:



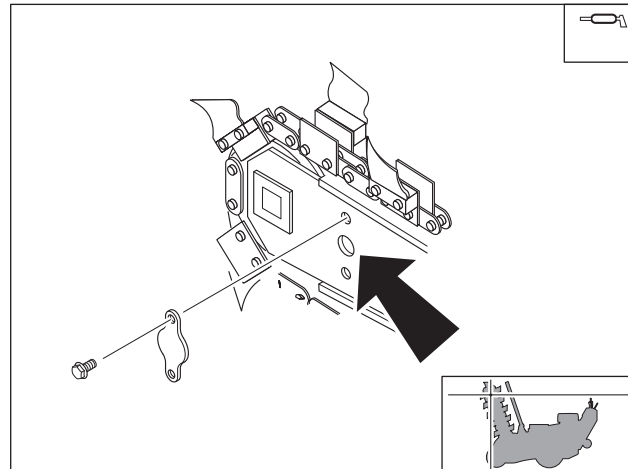
WARNING Fluid pressure could pierce skin and cause injury or death. Stay away.

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

To tighten digging chain, pump MPG into cylinder at check valve zerk.

NOTICE: Do **not** overtighten chain. Overtightening will cause chain stretch, loss of machine performance, and possible premature chain failure.

To loosen digging chain, stand on opposite side of boom and unscrew check valve zerk to release grease.



t27om021h.eps



50 Hour Service

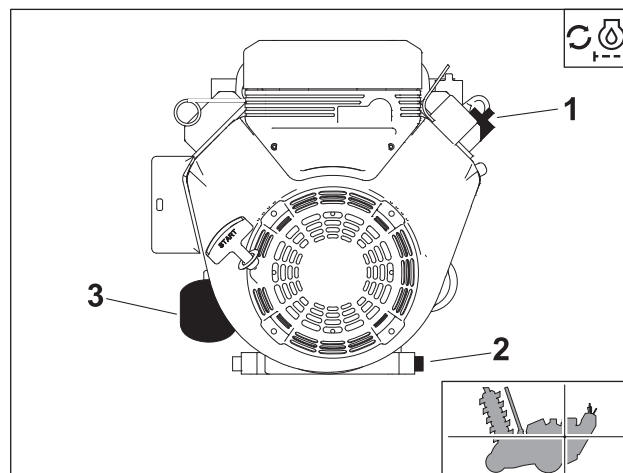
Location	Task	Notes
Engine	Change engine oil and filter	RT16 only, GEO

Change Engine Oil and Filter (RT16)

Change engine oil and filter every 50 hours.

1. Drain at plug (2) while oil is still warm.
2. Replace plug.
3. Change oil filter (3).
4. Slowly add GEO at fill cap (1) until level rises to FULL mark on dipstick. Tighten dipstick.

IMPORTANT: Engine oil capacity with filter change is 57.5 oz (1.7 L). Do not overfill.



t27om031h.eps

100 Hour Service

Location	Task	Notes
Engine	Change engine oil	Honda engines, GEO
	Change air filter elements	
	Check spark plug	

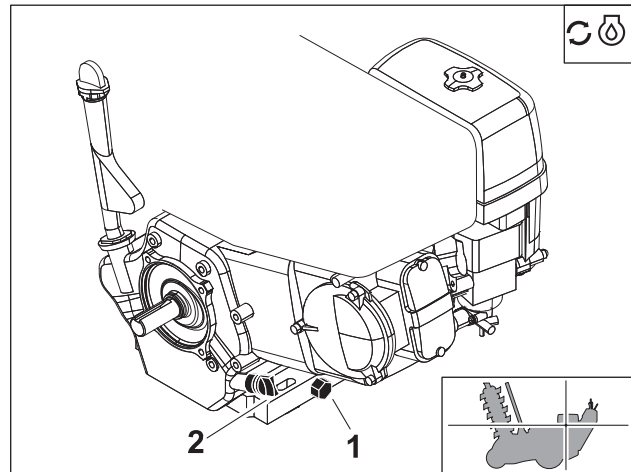
Change Engine Oil

RT12

Change engine oil after the first 10 hours of operation and every 100 hours thereafter.

1. Drain at plug (1) while oil is still warm.
2. Replace plug.
3. Slowly add GEO at fill (2).

IMPORTANT: Engine oil capacity is 1.16 qts (1.10 L). Do not overfill.



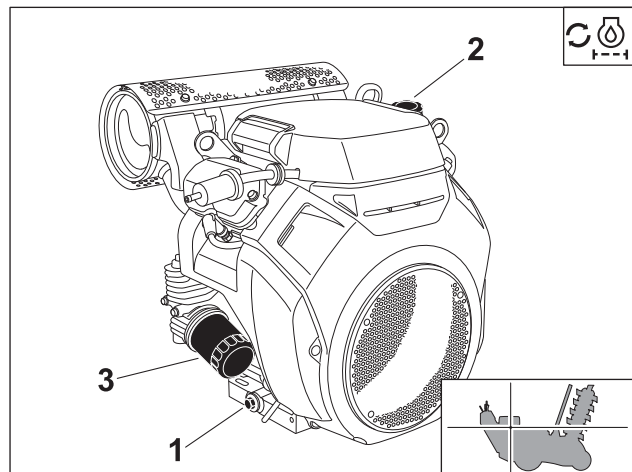
t27om058h.eps

RT20 and RT24

Change engine oil and filter after the first 10 hours of operation and every 100 hours thereafter.

1. Drain at plug (1) while oil is still warm.
2. Replace plug.
3. Change spin-on oil filter, (3).
4. Slowly add GEO at fill (2).

IMPORTANT: Engine oil capacity is 2.10 qts (1.99 L). Do not overfill.



t27om064h.eps

Change Air Filter Elements

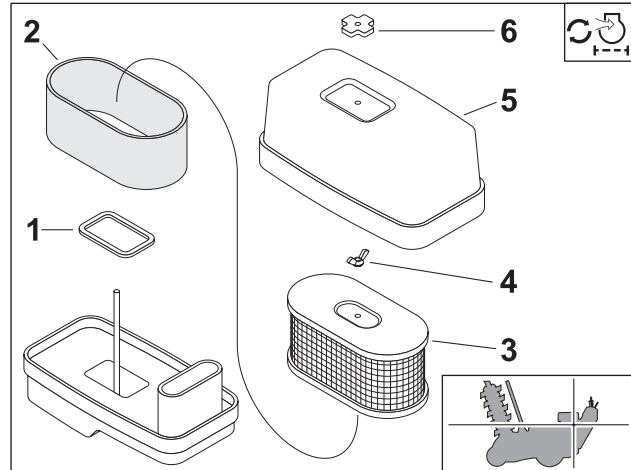
RT12 Standard Air Filter

Change air filter elements every 100 hours.

IMPORTANT: If operating in extremely dusty conditions, change filter more frequently.

To change:

1. Remove wing nut (6) and air cleaner cover (5).
2. Remove wing nut (4) and remove elements (2, 3).
3. Reverse procedure to install new elements. Ensure gasket (1) is seated properly.



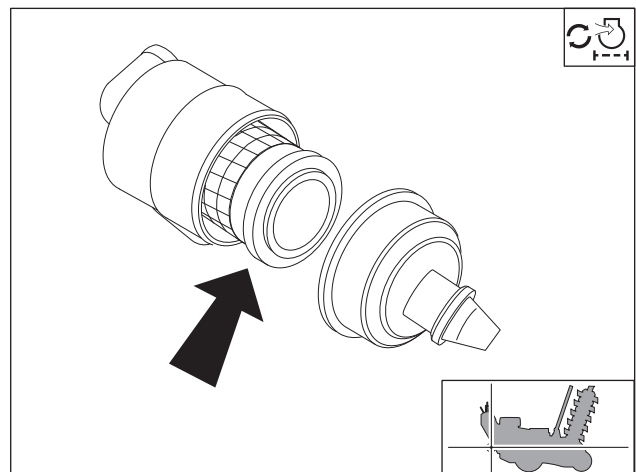
t27om063h.eps

RT12 Optional Air Filter

Change optional air filter elements, if equipped, every 100 hours.

NOTICE: Change the elements. Do not attempt to clean them.

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



t27om039h.eps

RT16

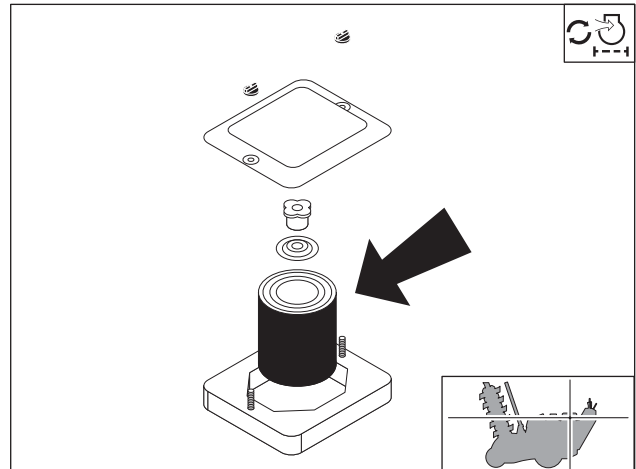
Change air filter element every 100 hours.

To change:

1. Remove wing nuts and air cleaner cover.
2. Remove element and replace.
3. Reverse procedure to install.

NOTICE: Change the elements. Do not attempt to clean them.

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



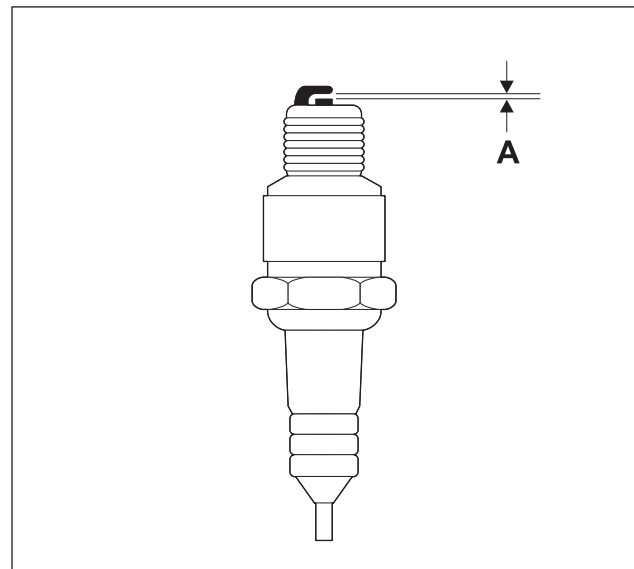
t27om038h.eps



Check Spark Plug

Check spark plug gap every 100 hours. Correct spark plug gap (A) is 0.030" (0.76 mm).

See engine service manual for specific procedure and recommended replacement spark plugs.



SparkPlug.eps

500 Hour Service

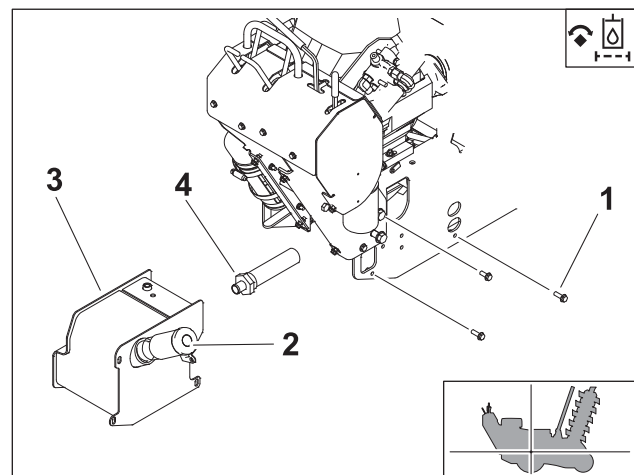
Location	Task	Notes
Trencher	Change hydraulic fluid and filter	DEO (SAE15W40) with Power Up additive

Change Hydraulic Fluid and Filter

Change hydraulic oil and filter every 500 hours.

RT24 Drain Fluid

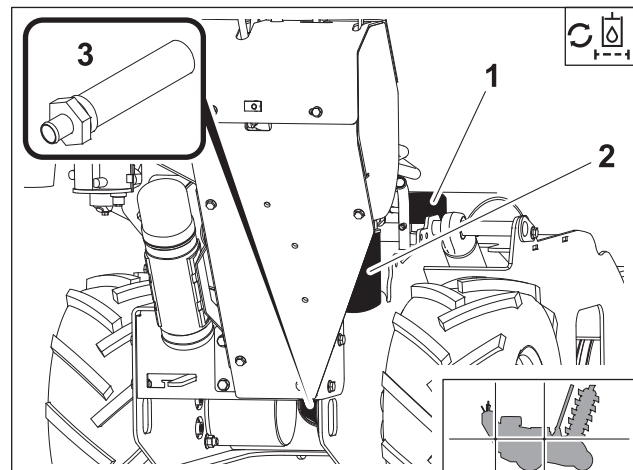
1. Remove fuel filler neck (2) and three bolts (1) to remove fuel tank (3) from frame.
2. Drain hydraulic oil by removing suction hose from strainer (4) at bottom of unit.
3. Remove and clean strainer.
4. Reinstall strainer and hose.
5. Use steps 4-6 below to change filter and fluid.



t27om067h.eps

RT10/12 Change fluid and filter

1. Drain fluid by removing hose from strainer (3) at bottom of unit.
2. Remove and clean strainer.
3. Reinstall strainer and hose.
4. Change filter (2).
5. Add 16 oz (0.47 L) of Power Up oil additive to 8 gal (30.28 L) of SAE15W40.
6. Add SAE15W40 oil at hydraulic reservoir at fill cap (1) and fill to correct level on sight glass.



t27om025h.eps

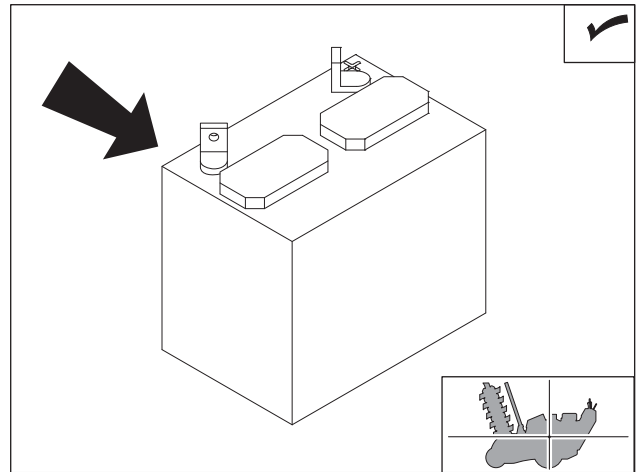
IMPORTANT: Contact your Ditch Witch dealer for Power Up additive.

As Needed

Location	Task	Notes
Engine	Check battery	
	Replace in-line fuel filter	
Trencher	Adjust wheel track tension	(if equipped)

Check Battery

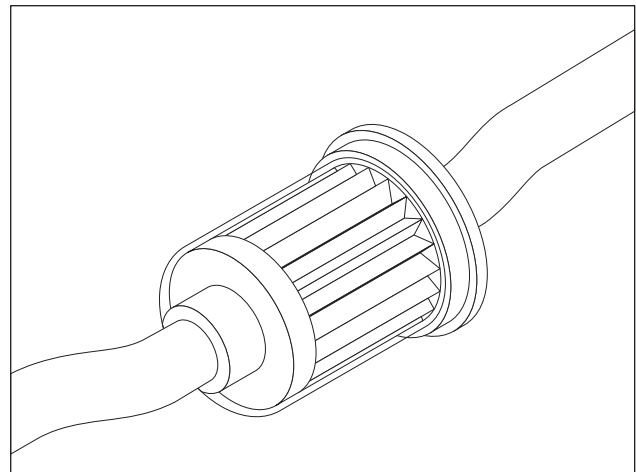
Keep battery case and terminals clean. Remove all corrosion from terminals with a wire brush, or use a weak solution of baking soda and water to clean terminals. Check battery charge frequently during cold weather.



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Replace In-Line Fuel Filter

See engine service manual for procedure.



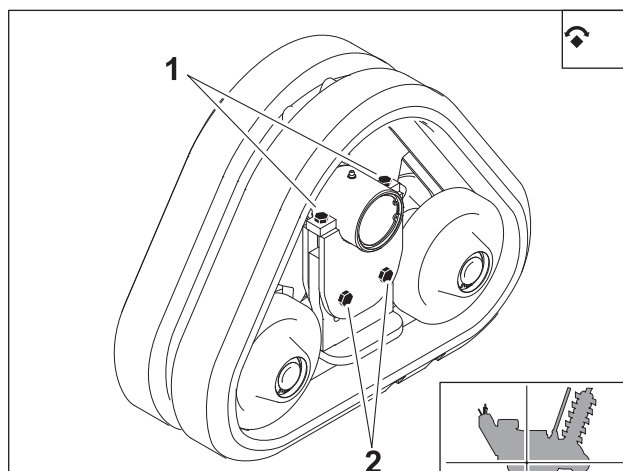
InLineFilter.eps

Adjust Wheel Track Tension

Adjust wheel track tension, if equipped, when tracks are replaced.

To adjust:

1. Loosen clamp screws (2) and locknuts.
2. Tighten tension screws (1) to 38 ft•lb (52 N•m).
3. Tighten clamp screws (2) and locknuts to 67 ft•lb (90.8 N•m).

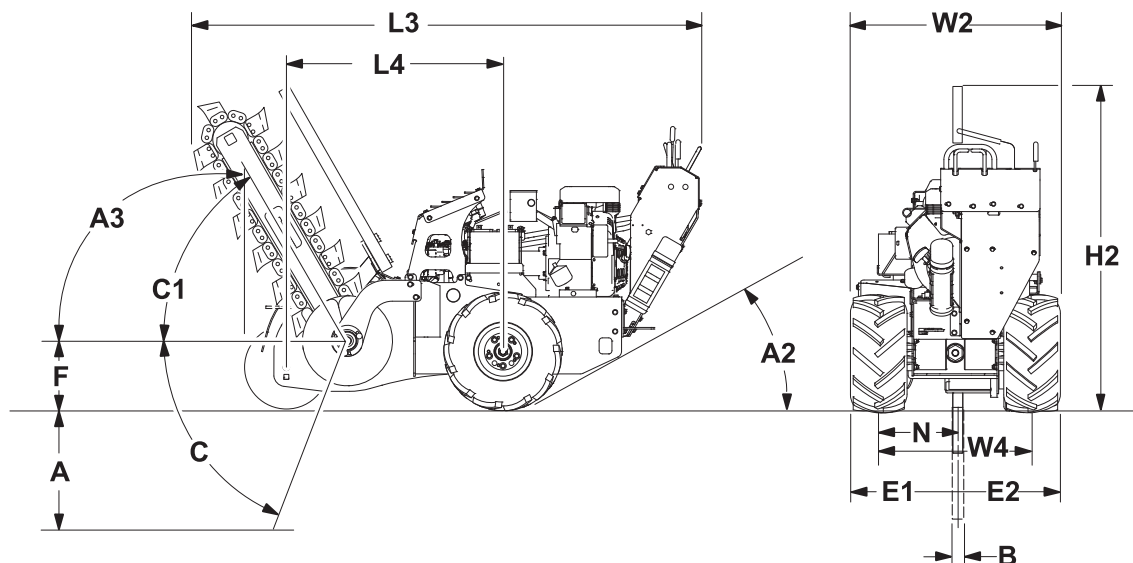


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Specifications



RT12



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Dimensions		U.S.	Metric
A	Trench depth, maximum	36 in	915 mm
B	Trench width	4.3 - 6 in	110-150 mm
C	Boom travel down	60°	60°
C1	Boom travel up	60°	60°
F	Headshaft height, digging chain	8.6 in	220 mm
L3	Length	84 in	2.1 m
W2	Width	33 in	840 mm
H2	Height	47 in	1.2 m
W4	Tread	26 in	660 mm
A2	Angle of departure	35°	35°
L4	Wheelbase	32 in	810 mm
E1	Centerline trench to outside edge of machine, left	15 in	381 mm
E2	Centerline trench to outside edge of machine, right	18 in	457 mm
N	Spoil discharge reach	10.6 in	270 mm
A3	Angle of approach	85°	85°

Unless otherwise noted, dimensions are based on 18x9.50x8 tires and 24" (610-mm) boom in transport position.

General

Ditch Witch model RT12, self-propelled, hydrostatic, pedestrian, skid steered, two wheel drive rigid frame, chain type trencher.

Operational	U.S.	Metric
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Vehicle speeds

Equipped with tires:

	Maximum transit forward	280 fpm	85.3 m/min
	Maximum transit reverse	114 fpm	34.7 m/min

Equipped with wheel tracks:

	Maximum transit forward	198 fpm	60 m/min
	Maximum transit reverse	97 fpm	29.5 m/min

Digging chain speed:

	10 tooth sprocket	324 fpm	98.7 m/min
	12 tooth sprocket	389 fpm	118.5 m/min

Spoils handling (single, open-end auger):

	Outer diameter	12 in	305 mm
	Inner diameter	4 in	102mm
	Length	9 in	229 mm

Operating weight (with 33,000-lb [14 969-kg] test, two-pitch digging chain and 24" [610-mm] roller boom)

	1020 lb	463 kg
--	---------	--------

Operating weight (with 35,000-lb [15 876-kg] test, 4.6" [117 mm] Combo Shark digging chain, RotoWitch, backfill blade, tracks and trench cleaner)

	1461 lb	664 kg
--	---------	--------

Power	U.S.	Metric
--------------	-------------	---------------

Engine: Honda 11.7hp iGX390, gasoline

Cooling medium: air

Number of cylinders: one

Displacement	23.7 in ³	389 cm ³
Torque @ 2500 rpm	19.5 ft-lb	26.4 N-m
Gross power @ 3600 rpm	11.7 hp	8.7 kW
Rated speed	3600 rpm	3600 rpm



Power	U.S.	Metric
Maximum tilt angle*	20°	20°

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

Battery

200 CCA, 12V, reserve capacity 32 min

Power Train	U.S.	Metric
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Ground drive transmission: hydrostatic, infinitely variable from zero to maximum, speed and direction controlled with dual levers

Digging chain drive: hydraulic direct drive, lever-operated, one speed forward and reverse

Trencher drive: hydraulic direct drive

Pump drive: direct drive from engine

Spoils handling drive: mechanical, attached to and rotates with headshaft

Tires:

Drive: 18x9.50x8 bar lug	12 psi	83 kPa
Drive: 18x9.50x8 turf NHS	22 psi	152 kPa
Trail: 13x5.00x6		

Hydraulic System	U.S.	Metric
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Tandem pump capacity @ 3600 rpm:

To digging drive	7.8 gpm	29.5 L/min
To ground drive	11.4 gpm	43 L/min
Total	19.2 gpm	72.5 L/min

Fluid Capacities	U.S.	Metric
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Hydraulic reservoir	8 gal	30 L
Hydraulic system	8.5 gal	32 L
Fuel tank	1.7 gal	6.4 L
Engine oil	1.6 qt	1.1 L

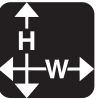
Noise Levels

Operator ear 90 dBA sound pressure per ISO 6394

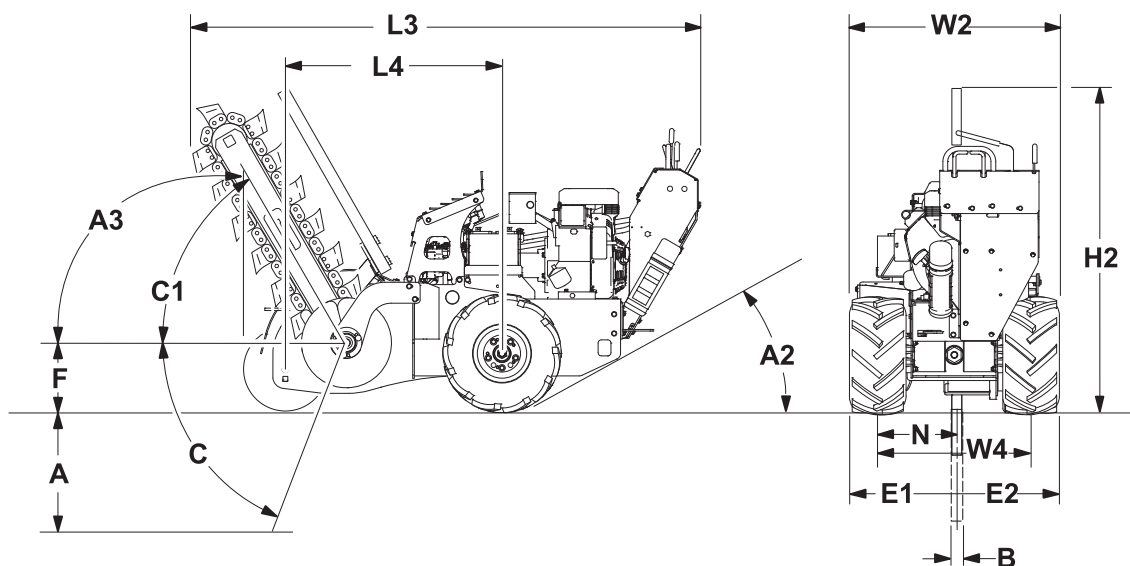
Exterior 102 dBA sound power per ISO 6393

Vibration Levels

Vibration at the operator's hand during normal operation is 6.639 m/s^2



RT16



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Dimensions		U.S.	Metric
A	Trench depth, maximum	36 in	915 mm
B	Trench width	4.3 - 6 in	110-150 mm
C	Boom travel down	60°	60°
C1	Boom travel up	60°	60°
F	Headshaft height, digging chain	8.6 in	220 mm
L3	Length	84 in	2.1 m
W2	Width	33 in	840 mm
H2	Height	47 in	1.2 m
W4	Tread	26 in	660 mm
A2	Angle of departure	35°	35°
L4	Wheelbase	32 in	810 mm
E1	Centerline trench to outside edge of machine, left	15 in	381 mm
E2	Centerline trench to outside edge of machine, right	18 in	457 mm
N	Spoil discharge reach	10.6 in	270 mm
A3	Angle of approach	85°	85°

Unless otherwise noted, dimensions are based on 18x9.50x8 tires and 24" (610-mm) boom in transport position.

General

Ditch Witch model RT16, self-propelled, hydrostatic, pedestrian, skid steered, two wheel drive rigid frame, chain type trencher.

Operational	U.S.	Metric
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Vehicle speeds

Equipped with tires:

Maximum transit forward	280 fpm	85.3 m/min
Maximum transit reverse	114 fpm	34.7 m/min

Equipped with wheel tracks:

Maximum transit forward	198 fpm	60 m/min
Maximum transit reverse	97 fpm	29.5 m/min

Digging chain speed:

10 tooth sprocket	324 fpm	98.7 m/min
12 tooth sprocket	389 fpm	118.5 m/min

Spoils handling (single, open-end auger):

Outer diameter	12 in	305 mm
Inner diameter	4 in	102mm
Length	9 in	229 mm

Operating weight (with 33,000-lb [14 969-kg] test, 4.4" [112 mm] four-pitch digging chain and 24" [610-mm] roller boom)

962 lb	437 kg
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Operating weight (with 35,000-lb [15 876-kg] test, 4.6" [117 mm] Combo Shark digging chain, RotoWitch, backfill blade, tracks and trench cleaner)

1461 lb	664 kg
---------	--------

Power	U.S.	Metric
--------------	-------------	---------------

Engine: Briggs & Stratton Vanguard™ V-Twin 4 stroke overhead valve

Fuel: gasoline

Cooling medium: air

Number of cylinders: two

Displacement	29.23 in ³	479 cm ³
Bore	2.68 in	68 mm
Stroke	2.60 in	66 mm



Power	U.S.	Metric
Gross power @ 3600 rpm	16 hp	11.9 kW
Rated speed	3600 rpm	3600 rpm
Maximum tilt angle*	20°	20°

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

Battery

200 CCA, 12V, reserve capacity 32 min

Power Train	U.S.	Metric
Ground drive transmission: hydrostatic, infinitely variable from zero to maximum, speed and direction controlled with dual levers		
Digging chain drive: hydraulic direct drive, lever-operated, one speed forward and reverse		
Trencher drive: hydraulic direct drive		
Pump drive: direct drive from engine		
Spoils handling drive: mechanical, attached to and rotates with headshaft		
Tires:		
Drive: 18x9.50x8 bar lug	12 psi	83 kPa
Drive: 18x9.50x8 turf NHS	22 psi	152 kPa
Trail: 13x5.00x6		

Hydraulic System	U.S.	Metric
Tandem pump capacity @ 3600 rpm:		
To digging drive	7.8 gpm	29.5 L/min
To ground drive	11.4 gpm	43 L/min
Total	19.2 gpm	72.5 L/min

Fluid Capacities	U.S.	Metric
Hydraulic reservoir	8 gal	30 L
Hydraulic system	8.5 gal	32 L
Fuel tank	2.3 gal	6.5 L
Engine oil	57.5 oz	1.7 L

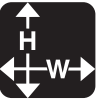
Noise Levels

Operator 96 dBA sound pressure per ISO 6394

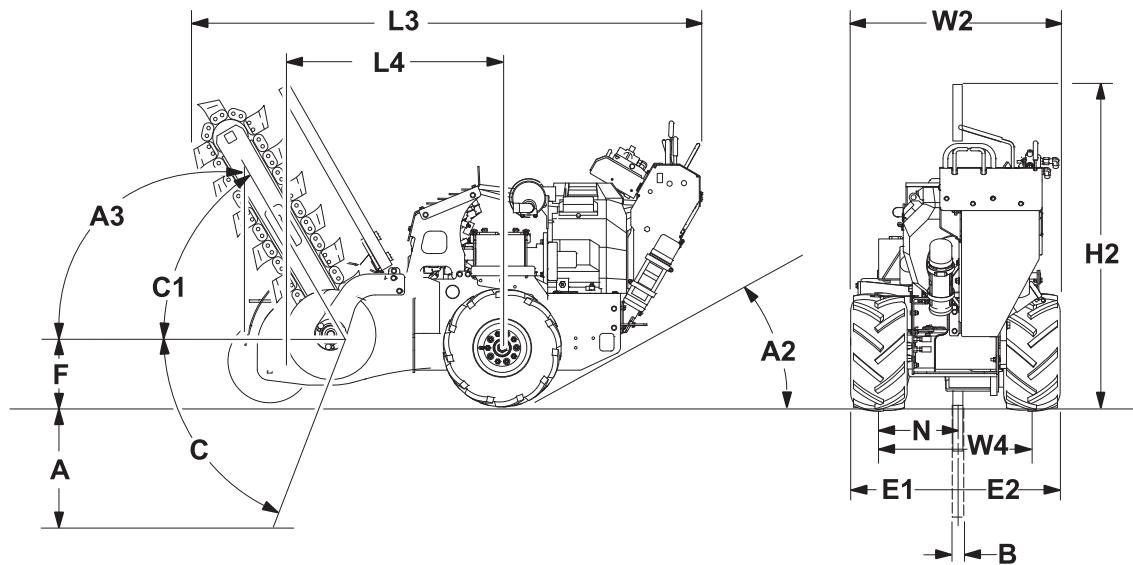
Exterior 100 dBA sound power per ISO 6393

Vibration Levels

Vibration at the operator's hand during normal operation is 3.387 m/s^2



RT20 and RT24



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Dimensions		U.S.	Metric
A	Trench depth, maximum	48 in	762 mm
B	Trench width	4.3 - 8 in	110-150 mm
C	Boom travel down	60°	60°
C1	Boom travel up	60°	60°
F	Headshaft height, digging chain	8.6 in	220 mm
L3	Length	84 in	2.1 m
W2	Width	33 in	840 mm
H2	Height	47 in	1.2 m
W4	Tread	26 in	660 mm
A2	Angle of departure	35°	35°
L4	Wheelbase	32 in	810 mm
E1	Centerline trench to outside edge of machine, left	15 in	381 mm
E2	Centerline trench to outside edge of machine, right	18 in	457 mm
N	Spoil discharge reach	10.6 in	270 mm
A3	Angle of approach	85°	85°

Unless otherwise noted, dimensions are based on 18x9.50x8 tires and 24" (610-mm) boom in transport position.

General

Ditch Witch model RT24, self-propelled, hydrostatic, pedestrian, skid steered, two-wheel drive, rigid frame, chain-type trencher.

Operational

U.S.

Metric

Vehicle speeds

Equipped with 18" tires:

	Maximum transit forward	243 fpm	74 m/min
	Maximum transit reverse	97 fpm	30 m/min

Equipped with tracks:

	Maximum transit forward	169 fpm	51 m/min
	Maximum transit reverse	68 fpm	21 m/min

Digging chain speed at 3600 rpm

420 fpm

12/m/min

Spoils handling (single, open-end auger):

	Outer diameter	17 in	432 mm
	Inner diameter	4 in	101 mm
	Length	8.75 in	222 mm

Operating weight, maximum (with 33,000-lb [14 969-kg] test, 8" two-pitch cup-tooth digging chain on 48" boom, RotoWitch, backfill blade, 3 tower weights, tracks, trench cleaner, and low frame weight)

1601 lb

726 kg

Operating weight, minimum (with 33,000-lb [14 969-kg] test, 4.4" two-pitch digging chain on 24" roller boom, and 18" tires)

1079 lb

489 kg

Power

U.S.

Metric

RT20 Engine: Honda GX630

RT24 Engine: Honda GX690

Fuel: gasoline

Cooling medium: air

Number of cylinders: two

Displacement	42 in ³	688 cm ³
Bore	3.1 in	78 mm
Stroke	2.8 in	72 mm
RT24: Manufacturer's net power rating	22.3 hp	16.6 kW
RT20: Manufacturer's net power rating	20.8 hp	15.5 kW



Power	U.S.	Metric
Net torque @ 2500 rpm	35.6 lb-ft	48.3 N-m
Rated speed	3600 rpm	3600 rpm
Fuel consumption @3600 rpm	1.77 gph	6.7 Lph

Battery

340 CCA, 12V, reserve capacity 41 min

Power Train	U.S.	Metric
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Ground drive transmission: hydrostatic, infinitely variable from zero to maximum, speed and direction controlled with dual levers

Digging chain drive: hydraulic direct drive, lever-operated, one speed forward and reverse

Pump drive: direct drive from engine

Digging teeth: Bolt-on cup teeth with hard-surfaced edge of tungsten carbide

Spoils handling drive: mechanical, attached to and rotates with headshaft

Tires:

Drive: 18x9.50x8 bar lug	12 psi	83 kPa
Drive: 18x9.50x8 turf NHS	22 psi	152 kPa
Trail: 13x5.00x6		

Hydraulic System	U.S.	Metric
-------------------------	-------------	---------------

Ground drive dual hydrostatic pump capacity @ 3600 rpm:

Pressure	2320 psi	160 bar
Ground drive pump 2x	0.4 in ³	6.6 cm ³
Ground drive motor 2x	20.6 in ³	337 cm ³

Digging drive pump capacity @ 3600 rpm:

Pressure	3190 psi	220 bar
Auxiliary pump	0.84 in ³	13.8 cm ³
Auxiliary motor	11.9 in ³	195 cm ³

Fluid Capacities	U.S.	Metric
Hydraulic reservoir	8 gal	30 L
Hydraulic system	8.5 gal	32 L
Fuel tank	3.5 gal	13 L
Engine oil	2.10 qts	1.99 L

Noise Levels

Operator 93 dBA sound pressure per ISO 6394

Exterior 102 dBA sound power per ISO 6393

Vibration Levels

Vibration at the operator's hand during normal operation is 5.82 m/s^2



Support



Procedure

Notify your dealer immediately of any malfunction or failure of Ditch Witch equipment.

Always give model, serial number, and approximate date of your equipment purchase. This information should be recorded and placed on file by the owner at the time of purchase.

Return damaged parts to dealer for inspection and warranty consideration if in warranty time frame.

Order genuine Ditch Witch replacement or repair parts from your authorized Ditch Witch dealer. Use of another manufacturer's parts may void warranty consideration.

Resources

Publications

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

Ditch Witch Training

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

Warranty

Ditch Witch Equipment and Replacement Parts Limited Warranty Policy

Subject to the limitation and exclusions herein, free replacement parts will be provided at any authorized Ditch Witch dealership for any Ditch Witch equipment or parts manufactured by The Charles Machine Works, Inc. (CMW) that fail due to a defect in material or workmanship within one (1) year of first commercial use (Exception: 2 years for all SK5 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. The customer is responsible for transporting their equipment to an authorized Ditch Witch dealership for all warranty work.

Exclusions from Product Warranty

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

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

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

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

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

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

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

First version: 1/91; Latest version: 7/05

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

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

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

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

Thanks for using Ditch Witch equipment.

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



**NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES**



BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 23 PERRY OKLAHOMA

POSTAGE WILL BE PAID BY

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



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

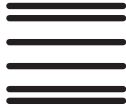
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POSTAGE WILL BE PAID BY

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



Ditch Witch® Registration Card

Please Type or Print All Information

Purchaser's Company Name

Attention

Street Address or P.O. Box

City County

State Zip Nation

()

Phone Number With Area Code

Model Serial Number

Attachments/Accessories Serial Numbers

Attachments/Accessories Serial Numbers

Attachments/Accessories Serial Numbers

Name of Ditch Witch Dealership

Your Signature

Ditch Witch® Registration Card

Please Type or Print All Information

Purchaser's Company Name

Attention

Street Address or P.O. Box

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()

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