



DINGO 222 Traction Unit

Model No. 22300 – 890001 & Up

Operator's Manual

IMPORTANT: Read this manual carefully. It contains information about your safety and the safety of others. Also become familiar with the controls and their proper use before you operate the product.

Introduction

Thank you for purchasing a Toro product.

All of us at Toro want you to be completely satisfied with your new product, so feel free to contact your local Authorized Service Dealer for help with service, genuine replacement parts, or other information you may require.

Whenever you contact your Authorized Service Dealer or the factory, always know the model and serial numbers of your product. These numbers will help the Service Dealer or Service Representative provide exact information about your specific product. The two numbers are stamped into a plate mounted on left rear side of frame.

For your convenience, write the product model and serial numbers in the space below.

Model No: _____
Serial No. _____

Read this manual carefully to learn how to operate and maintain your product correctly. Reading this manual will help you and others avoid personal injury and damage to the product. Although we design, produce and market safe, state-of-the-art products, you are responsible for using the product properly and safely. You are also responsible for training persons, who you allow to use the product, about safe operation.

The warning system in this manual identifies potential hazards and has special safety messages that help you and others avoid personal injury, even death. DANGER, WARNING and CAUTION are signal words used to identify the level of hazard. However, regardless of the hazard, be extremely careful.

DANGER signals an extreme hazard that will cause serious injury or death if the recommended precautions are not followed.

WARNING signals a hazard that may cause serious injury or death if the recommended precautions are not followed.

CAUTION signals a hazard that may cause minor or moderate injury if the recommended precautions are not followed.

Two other words are also used to highlight information. “Important” calls attention to special mechanical information and “Note” emphasizes general information worthy of special attention.

The left and right side of the machine is determined by standing on the platform in the normal operator’s position.



WARNING:



The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

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THE ENCLOSED ENGINE OWNER'S MANUAL IS SUPPLIED FOR CALIFORNIA EMISSION CONTROL REGULATION INFORMATION ON EMISSION SYSTEMS, MAINTENANCE AND WARRANTY.

KEEP THIS ENGINE OWNER'S MANUAL WITH YOUR UNIT. SHOULD THIS ENGINE OWNER'S MANUAL BECOME DAMAGED OR ILLEGIBLE, REPLACE IMMEDIATELY. REPLACEMENTS MAY BE ORDERED THROUGH THE ENGINE MANUFACTURER.

Safety

Improper use or maintenance by the operator or owner can result in injury. To reduce the potential for injury, comply with these safety instructions and always pay attention to the safety alert  symbol, which means CAUTION, WARNING, or DANGER—"personal safety instruction." Failure to comply with the instruction may result in personal injury or death.

Safe Operating Practices

This product is capable of amputating hands and feet. Always follow all safety instructions to avoid serious injury or death.

WARNING

POTENTIAL HAZARD

- Engine exhaust contains carbon monoxide, which is an odorless, deadly poison.

WHAT CAN HAPPEN

- Carbon monoxide can kill you and is also known to the State of California to cause birth defects.

HOW TO AVOID THE HAZARD

- Do not run engine indoors or in an enclosed area.

Note: This engine is NOT equipped with a spark arrestor muffler. Use or operation of this machine in the State of California on any forest-covered or unimproved grass-covered land, without an approved spark arrestor muffler, is a violation of the law. Other states may have similar laws.

General Operation

1. Read, understand, and follow all instructions in the operator's manual, in the video and on the machine before starting. Also, read attachments manual where supplied
2. Allow only responsible adults who are familiar with the instructions to operate the machine.
3. Do not operate machine or attachments while wearing sandals, tennis shoes, sneakers or shorts. Always wear long pants and substantial shoes. Wearing safety glasses, safety shoes, hearing protection and a hard hat are advisable and may be required by some local ordinances and insurance regulations.
4. Be sure the area is clear of other people before operating machine. Stop the machine if anyone enters the area.
5. Never carry passengers on attachments or on traction unit.
6. Always look down and behind before and while backing.
7. Do not place feet under the platform.
8. Slow down before turning. Sharp turns on any terrain may cause loss of control.
9. Never leave a running machine unattended. Always lower loader arms, stop engine, and remove key before dismounting.
10. Do not exceed rated operating capacity, as machine may become unstable which may result in loss of control.
11. Do not carry load with arms in a raised position. Always carry loads close to the ground. Do not step off platform with load raised.
12. Never jerk the control levers, use a steady motion.

13. Keep hands, feet, hair and loose clothing away from any moving parts while engine is running.
14. Stop the engine before leaving the operator's position.
15. Operate only in daylight or good artificial light.
16. Do not operate the machine while under the influence of alcohol or drugs.
17. Watch for traffic when operating near or crossing roadways.
18. Use extra care when loading or unloading the machine onto a trailer or truck.
19. Do not touch equipment or attachment parts which may be hot from operation. Allow to cool before attempting to maintain, adjust or service.

Slope Operation

Slopes are a major factor related to loss-of-control and tip-over accidents, which can result in severe injury or death. All slopes require extra caution.

DO

- Operate up and down slopes greater than 5°, not across.
- Operate up and down slopes with the heavy end of the machine uphill.
- Remove obstacles such as rocks, tree limbs, etc. from the work area. Watch for holes, ruts or bumps, as uneven terrain could overturn the machine. Tall grass can hide obstacles.
- Use slow speed. Before starting, put pump selector valve in slow (turtle) position so that you will not have to stop or shift while on the slope.
- Follow the manufacturer's recommendations for wheel weight or counterweights to improve stability.
- Use only Toro approved attachments. Attachments can change the stability and the operating characteristics of the machine. Warranty may be voided if used with un-approved attachments.
- Keep all movement on slopes slow and gradual. Do not make sudden changes in speed or direction.
- Avoid starting or stopping on a slope. If tires lose traction proceed slowly straight down the slope.
- Check carefully for overhead clearances (i.e. branches, doorways, electrical wires) before driving under any objects and do not contact them.

DO NOT

- Do not operate machine on hillsides or slopes exceeding 15°.
- Avoid turning on slopes. If you must turn, turn slowly and keep the heavy end of the machine uphill.
- Do not operate near drop-offs, ditches, or embankments. The machine could suddenly turn over if a wheel goes over the edge of a cliff or ditch, or if an edge caves in.
- Do not operate on wet grass. Reduced traction could cause sliding.
- Do not park machine on a hillside or slope without lowering the loader arms and attachment to the ground and chocking the wheels.
- Do not try to stabilize the machine by putting your foot on the ground.

Children

Tragic accidents can occur if the operator is not alert to the presence of children. Children are often attracted to the machine and the work activity. Never assume that children will remain where you last saw them. The following requirements must be followed to prevent injury to children.

1. Keep children out of the work area and under the watchful care of another responsible adult.
2. Be alert and turn the machine off if children enter the area.
3. Before and while backing, look behind and down for small children.
4. Never carry children. They may fall off and be seriously injured or interfere with safe machine operation.
5. Never allow children to operate the machine.
6. Use extra care when approaching blind corners, shrubs, trees, the end of a fence or other objects that may obscure vision.

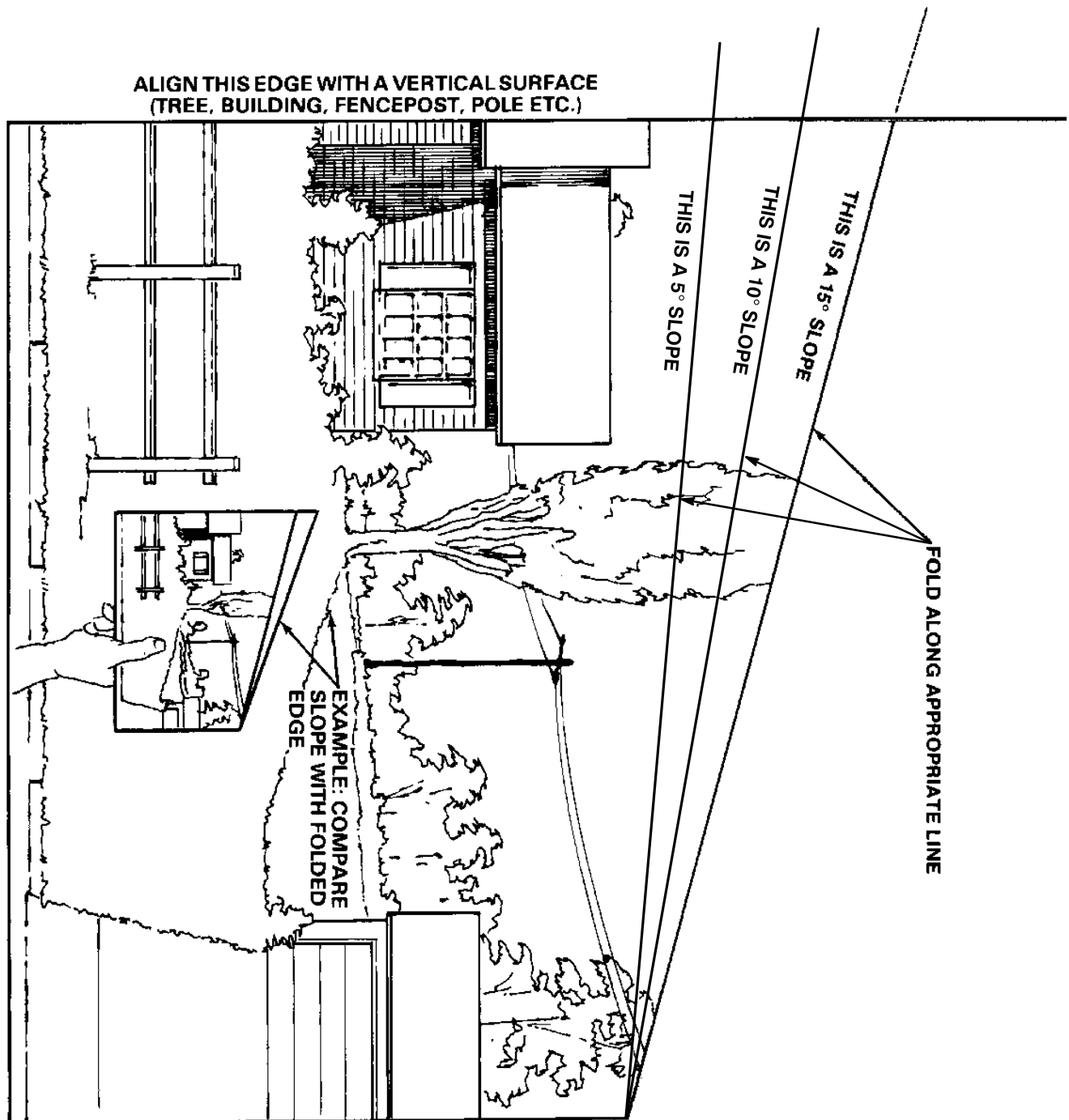
Service

1. Stop the engine and disconnect spark plug wire(s) before performing any service, repairs, maintenance or adjustments.
2. Perform all maintenance with the loader arms in the lowered position. If any maintenance or repair requires the loader arms to be in the raised position, secure the arms in the raised position with the loader arm hydraulic cylinder locks included with machine.
3. Never run a machine inside a closed area.
4. Keep nuts and bolts tight. Keep equipment in good condition.
5. Never tamper with safety devices. Check safety systems for proper operation before each use.

6. Keep the machine free of grass, leaves, or other debris build-up. Clean up oil or fuel spillage. Allow the machine to cool before storing.
7. Use extra care when handling gasoline and other fuels. They are flammable and vapors are explosive.
 - A. Use only an approved container.
 - B. Never remove the gas cap or add fuel when the engine is running. Allow the engine to cool before refueling. Do not smoke.
 - C. Never refuel the machine indoors.
 - D. Never store the machine or fuel container inside where there is an open flame, such as near a water heater or furnace.
 - E. Never fill a container while it is inside a vehicle, trunk, pick-up bed or any surface other than the ground.
 - F. Keep container nozzle in contact with the tank during filling.
8. Stop and inspect the equipment if you strike an object. Repair, if necessary, before restarting.
9. Use only genuine replacement parts to ensure that original standards are maintained.
10. Battery acid is poisonous and can cause burns. Avoid contact with skin, eyes and clothing. Protect your face, eyes and clothing when working with a battery.
11. Battery gases can explode. Keep cigarettes, sparks and flames away from battery.
12. Hydraulic fluid escaping under pressure can penetrate the skin and cause injury. Use cardboard or paper to find hydraulic leaks. Never use your hands to search for hydraulic leaks!

Slope Chart

Read all safety instructions on pages 2–4.



Safety and Instruction Decals



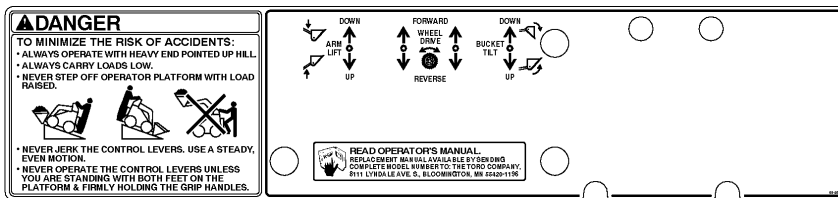
Safety decals and instructions are easily visible to the operator and are located near any area of potential danger. Replace any decal that is damaged or lost.



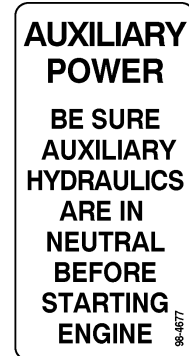
On Loader Cross Bar
(Part No. 98-4682)



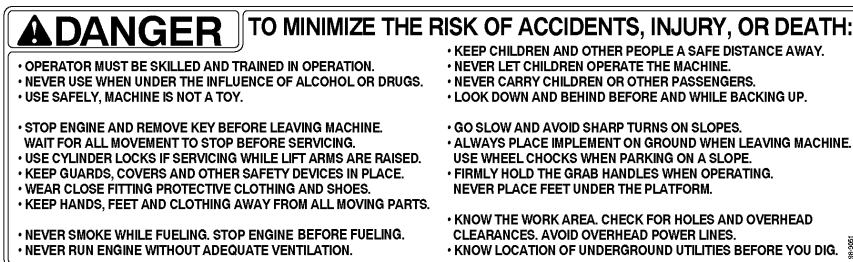
Near Oil Fill
(Part No. 85-4730)



On Control Panel
(Part No. 98-4676)



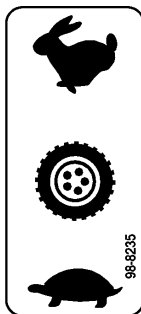
On Front Control Panel
(Part No. 98-4677)



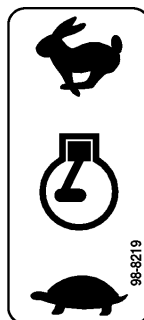
On Upper Arms (2)
(Part No. 98-9051)



On Front Control Panel
(Part No. 98-8220)



On Front Control Panel
(Part No. 98-8235)



On Control Panel
(Part No. 98-8219)



On Both Sides of Frame (2)
(Part No. 80-8010)

Assembly

Loose Parts

Note: Use the chart below to verify all parts have been shipped.

DESCRIPTION	QTY.	USE
Loader Arm Cylinder Locks	2	Use to lock loader arms during maintenance
Clevis Pin	2	
Cotter Pin	2	
Valve Lever	2	Install valve levers
Key	2	View before operating machine Read before operating machine Fill out and return to Toro
Training Video	1	
Operator's Manual	1	
Engine Operator's Manual	1	
Registration card	1	

Install Valve Levers

1. Thread a lever into the auxiliary hydraulics valve and pump selector valve (Fig. 1) Levers to be installed with bend toward operator.
2. Tighten jam nut on each lever to lock in position.

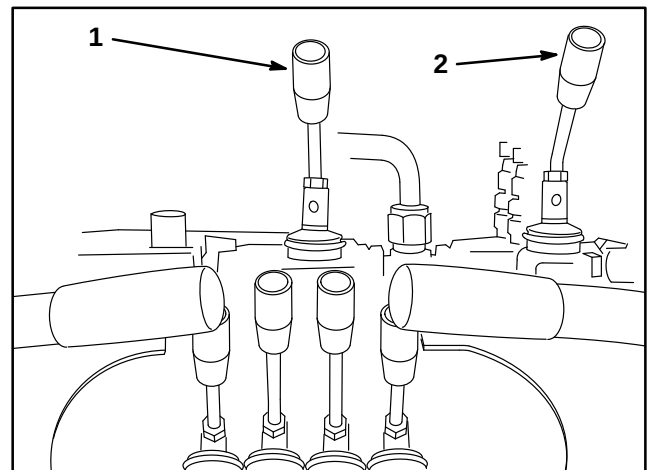


Figure 1

1. Auxiliary hydraulics lever 2. Pump selector lever

Specifications

General Specifications:

(without operator and without attachments)

Overall width	40.5 inches	(103 cm)
Overall length	60.0 inches	(152 cm)
Overall height	49.0 inches	(125 cm)
Weight	1565 lbs	(710kg)
Rated operating capacity (with 200 lb operator)	515 lbs	(234 kg)
Tipping capacity (with 200 lb operator)	1030lbs	(467kg)
Wheelbase	28.5 inches	(72 cm)
Dump height (with std. bucket)	48.75 inches	(124 cm)
Reach – fully raised (with std. bucket)	26.0 inches	(66 cm)
Height to hinge pin (std bucket in highest position)	66.0 inches	(168 cm)

Specifications and design subject to change without notice.

Approved Attachments

IMPORTANT: Use only Toro approved attachments. Contact your local Toro Dealer for additional approved attachments.

Standard Bucket	Model No. 22409
Loose Material Bucket	Model No. 22410
Leveler	Model No. 22419
Forks	Model No. 22418
Auger Power Head	Model No. 22400
Trencher	Model No. 22447
Multi-Purpose Tool	Model No. 22423
Tiller	Model No. 22445
”Eliminator“ (Scarifier/Rake)	Model No. 22443
Blade	Model No. 22414
Boring Unit	Model No. 22420

Before Operating

Each time before operating your machine, check the following:

- Fuel level
- Engine oil level
- Remove debris from machine
- Tire pressure
- Be sure the work area is clear of other people and children.
- Be sure the work area is clear of debris and all utility line locations are known and clearly marked.

Adding Fuel

Use UNLEADED Regular Gasoline suitable for automotive use (85 pump octane minimum). Leaded regular gasoline may be used if unleaded regular is not available.

IMPORTANT: Never use methanol, gasoline containing methanol, or gasohol containing more than 10% ethanol because the fuel system could be damaged. Do not mix oil with gasoline.

IMPORTANT: Never use fuel additives containing methanol or ethanol.

Filling the Fuel Tank

1. Park the machine on a level surface, lower the loader arms and turn the ignition key to “OFF” to stop the engine. Remove the key.
2. Clean around the fuel tank cap and remove the cap. Use a funnel and add unleaded regular gasoline to the fuel tank, until the level is 1/4 to 1/2 inch (6 mm to 13 mm) below the bottom of

the filler neck. This space in the tank allows gasoline to expand. Do not fill the fuel tank completely full.

3. Install the fuel tank cap securely. Wipe up any gasoline that may have spilled.

DANGER

POTENTIAL HAZARD

- In certain conditions gasoline is extremely flammable and highly explosive.

WHAT CAN HAPPEN

- A fire or explosion from gasoline can burn you, others, and cause property damage.

HOW TO AVOID THE HAZARD

- Use a funnel and fill the fuel tank outdoors, in an open area, when the engine is cold. Wipe up any gasoline that spills.
- Do not fill the fuel tank completely full. Add gasoline to the fuel tank until the level is 1/4” to 1/2” (6 mm to 13 mm) below the bottom of the filler neck. This empty space in the tank allows gasoline to expand.
- Never smoke when handling gasoline, and stay away from an open flame or where gasoline fumes may be ignited by a spark.
- Store gasoline in an approved container and keep it out of the reach of children. Never buy more than a 30-day supply of gasoline.

Open Fuel Cap Vent

1. Rotate screw on fuel cap to open vent before operating.
2. Close fuel cap vent when transporting machine on trailer to prevent fuel spillage.

Checking Oil Level

1. Park the machine on a level surface, lower the loader arms and turn the ignition key to “OFF” to stop the engine. Remove the key.
2. Clean around the oil dipstick (Fig. 2) so dirt cannot fall into the filler hole and damage the engine.
3. Pull out the oil dipstick and wipe the metal end clean (Fig. 2).
4. Slide the oil dipstick fully into the filler tube (Fig. 2). Pull the dipstick out and look at the metal end. If oil level is low, slowly pour only enough oil into the filler tube to raise the level to the “FULL” mark.

IMPORTANT: Do not overfill the crankcase with oil because the engine may be damaged.

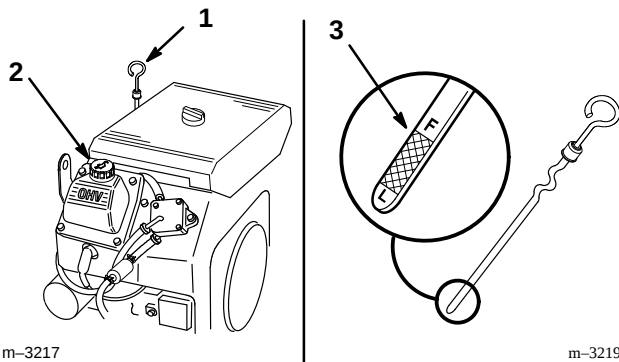


Figure 2

- | | |
|-----------------|--------------|
| 1. Oil dipstick | 3. Metal end |
| 2. Filler tube | |

Remove Debris From Machine

IMPORTANT: Operating the engine with a blocked grass screen, dirty or plugged cooling fins, and/or cooling shrouds removed, will result in engine damage from overheating.

1. Park the machine on a level surface, lower the loader arms and turn the ignition key to “OFF” to stop the engine. Remove the key.
2. Check for debris on the air filter pre-cleaner. Wipe away debris before each use and/or during use, if required.
3. Debris can build up in the engine area. Clean any debris build-up with a brush or blower before each use.

IMPORTANT: It is preferable to blow dirt out, rather than washing it out. If water is used, keep it away from electrical items.

IMPORTANT: DO NOT HIGH-PRESSURE WASH. High-pressure washing can damage the electrical system or deplete grease.

Check Hydraulic Fluid

Check the hydraulic fluid level before engine is first started and after every 25 operating hours.

Fluid Type: Mobil Fluid 424 (ISO 46) or equivalent anti-wear hydraulic fluid.

IMPORTANT: Use only group 1 hydraulic oils specified. Other fluids could cause system damage.

Group 1 Hydraulic Fluid (Recommended for ambient temperatures consistently below 100° F):

- **ISO type 46/68 anti-wear hydraulic fluid**
- Mobil Mobil Fluid 424
- Amoco Amoco 1000
- International Harvester Hy-Tran
- Texaco TDH
- Shell Donax TD
- Union Oil Hydraulic/Tractor Fluid
- Chevron Tractor Hydraulic Fluid
- BP Oil BP HYD TF
- Boron Oil Eldoran UTH
- Exxon Torque Fluid
- Conoco Power-Tran 3
- Kendall Hyken 052
- Phillips HG Fluid

Note: The fluids within this group are interchangeable.

Hydraulic Tank Capacity: 16 gal. (61 l)

1. Position machine on a level surface, lower the loader arms and stop the engine.
2. Clean area around filler neck of hydraulic tank
3. Remove cap from filler neck and check fluid level. Fluid level should be up to green mark on dipstick.
4. If level is low, add enough fluid to raise to proper level.
5. Install cap on filler neck.

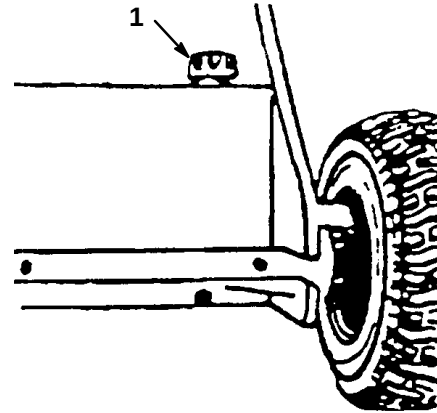


Figure 3

1. Filler neck cap

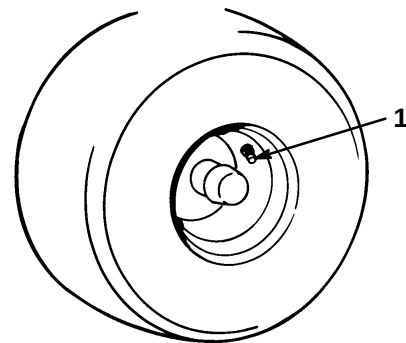
Tire pressure

Maintain the air pressure in the tires as specified. Check the tires when they are cold to get the most accurate pressure reading.

Pressure: 15–22 psi

Note: It may be beneficial to use lower tire pressure when operating in sandy soil conditions.

Note: Tires are filled with a water/anti-freeze mixture for additional ballast.



m-1872

Figure 4

1. Valve stem

Operation

Think Safety First

Please carefully read all the safety instructions on pages 2–8 and view the training video. Following these instructions could help you or bystanders avoid injury.

Controls

Become familiar with all the controls (Fig. 5) before you start the engine and operate the machine.

CAUTION

POTENTIAL HAZARD

- Operator could fall off platform.

WHAT CAN HAPPEN

- Operator could be seriously injured.

HOW TO AVOID THE HAZARD

- Do not move any of the control levers unless standing with both feet on the platform and hands holding the hand grips.

Key Switch

The key switch, used to start and stop the engine, has three positions: OFF, RUN and START. Rotate key clockwise — START position — to engage starter motor. Release key when engine starts. The key will move automatically to the ON position. To shut engine off, rotate key counterclockwise to OFF position.

Throttle

Move control forward to increase engine speed, rearward to decrease speed.

Choke

To start engine, close carburetor choke by pulling choke control out to ON position. After engine starts, regulate choke to keep engine running smoothly. As soon as possible, open the choke by pushing it in to the OFF position. A warm engine requires little or no choking.

Traction control levers

To go forward, slowly push the traction control levers forward.

To go straight, apply equal pressure to both traction control levers.

To turn, decrease pressure on the traction control lever toward the direction you want to turn.

The farther you move the traction control levers in either direction, the faster the machine will move in that direction.

To slow or stop, move the traction control levers to neutral.

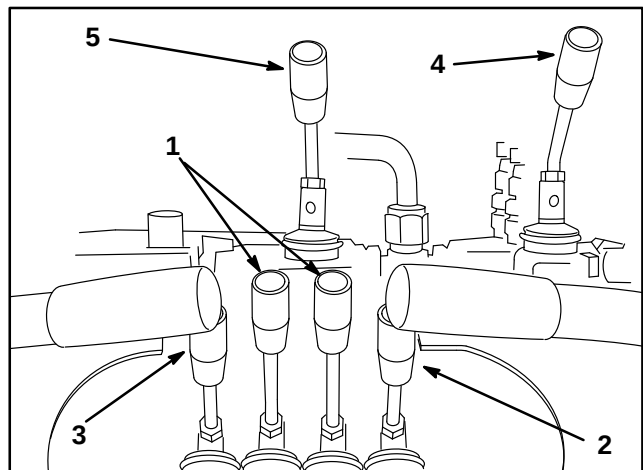


Figure 5

- | | |
|----------------------------|-------------------------------|
| 1. Traction control levers | 4. Auxiliary hydraulics lever |
| 2. Attachment tilt lever | 5. Pump selector lever |
| 3. Loader arm lever | |

Attachment tilt lever

To tilt attachment forward, slowly push the attachment tilt lever forward.

To tilt attachment rearward, slowly pull the attachment tilt lever rearward.

Loader arm lever

To lower loader arms, slowly push loader arm lever forward.

To raise loader arms, slowly pull loader arm lever rearward.

Auxiliary hydraulics lever

WARNING

POTENTIAL HAZARD

- Attachment may move during starting

WHAT CAN HAPPEN

- Operator or bystander may be injured by attachment

HOW TO AVOID THE HAZARD

- Make sure auxiliary hydraulic lever is in neutral position during engine starting.

To operate attachment in forward direction, slowly pull auxiliary hydraulics lever rearward.

To operate attachment in reverse direction, slowly push auxiliary hydraulics lever forward.

Pump selector lever

When faster ground speed and lifting speed is required more than attachment speed and power, push pump selector lever to the full forward position.

When faster attachment speed and power is required more than ground speed and lifting speed, pull pump selector lever to the full rearward position.

Flow divider control

Move flow divider control to twelve-o'clock position (normal operating position) for no flow division.

When moving control to nine-o'clock position, flow is diverted to the attachments and less is available to the wheels and loader arms. This allows for greater concentration of power where it's needed most.

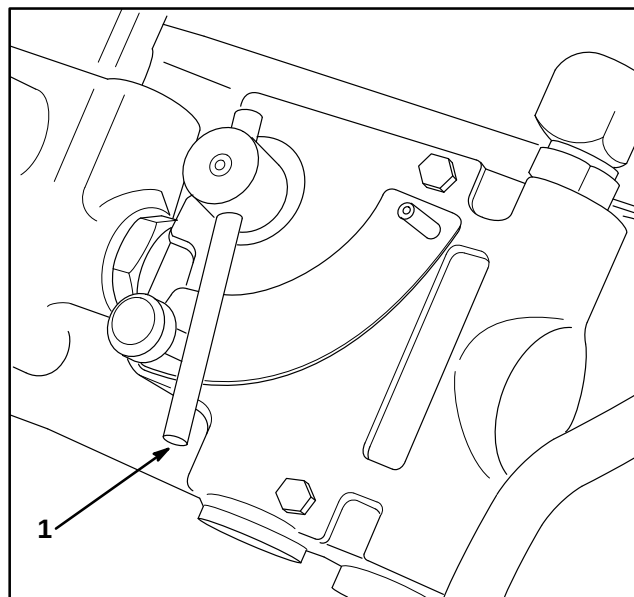


Figure 6

1. Flow divider control

Starting and Stopping Engine

Starting

1. Stand on platform.
2. Open fuel cap vent.
3. Move the auxiliary hydraulics valve lever to neutral.

WARNING

POTENTIAL HAZARD

- Attachment may move during starting

WHAT CAN HAPPEN

- Operator or bystander may be injured by attachment

HOW TO AVOID THE HAZARD

- Make sure auxiliary hydraulic lever is in neutral position during engine starting.

4. Move the throttle control midway between “SLOW” and “FAST” positions before starting a cold engine.
5. Move the choke control to “ON” position before starting a cold engine.

Note: A warm or hot engine may require choking. After engine starts, move choke control to “OFF” position.

6. Turn ignition key to “START” to energize starter. When engine starts, release key.

IMPORTANT: Do not engage starter for more than 10 seconds at a time. If engine fails to start allow 30 second cool-down period between attempts. Failure to follow these instructions can burn out starter motor.

7. After the engine starts, gradually move the choke to “OFF”. If the engine stalls or hesitates, move the choke back to “ON” for a few seconds. Then move the throttle lever to desired setting. Repeat this as required.

Stopping

1. Move the throttle lever to “SLOW”.
2. Lower loader arms to the ground.
3. Turn the ignition key to “OFF”.

Note: If the engine has been working hard or is hot, let it idle for a minute before turning the ignition key “OFF.” This helps cool the engine before it is stopped. In an emergency, the engine may be stopped by turning the ignition key to “OFF.”

Driving Forward or Backward

The throttle control regulates the engine speed as measured in rpm (revolutions per minute). Place the throttle control in the “FAST” position for best performance.

Note: Throttle position can be utilized to operate at slower speeds.

Forward

1. To go forward, slowly push the traction control levers forward (Fig. 5).

To go straight, apply equal pressure to both traction control levers (Fig. 5).

To turn, decrease pressure on the traction control lever toward the direction you want to turn (Fig. 5).

The farther you move the traction control levers in either direction, the faster the machine will move in that direction.

To slow or stop, move the traction control levers to neutral.

Backward

1. To go backward, slowly pull the traction control levers rearward (Fig. 5).

To go straight, apply equal pressure to both traction control levers (Fig. 5).

To turn, decrease pressure on the traction control lever toward the direction you want to turn (Fig. 5).

To slow or stop, move the traction control levers to neutral.

Stopping the Machine

To stop the machine, move the traction control levers to neutral, lower loader arms to the ground, and turn the ignition key to “OFF” to stop the engine. Remember to remove the key from the key switch.

CAUTION

POTENTIAL HAZARD

- Someone could move or attempt to operate the machine while it is unattended.

WHAT CAN HAPPEN

- Children or bystanders may be injured if they use the machine.

HOW TO AVOID THE HAZARD

- Always remove the ignition key when leaving the machine, even if just for a few minutes.

Moving A Non Functioning Machine

IMPORTANT: Never tow the machine without disconnecting the traction drive chains because hydraulic damage may occur.

To Move the Machine

1. Turn the ignition key to “OFF” to stop the engine.
2. Remove traction drive chains secured to front and rear wheels.
3. Lift the rear wheels off the ground and then tow or push the machine.

or

1. Turn the ignition key to “OFF” to stop the engine.
2. Lift entire machine off the ground and move machine.

Using Cylinder Locks

IMPORTANT: Normal maintenance should be completed with loader arms lowered. If maintenance or repair requires the loader arms raised, use the cylinder locks.

WARNING

POTENTIAL HAZARD

- Loader arms may lower when in the raised position.

WHAT CAN HAPPEN

- Anyone under loader arms may be injured or crushed.

HOW TO AVOID THE HAZARD

- Always install cylinder locks when doing maintenance that requires raised loader arms.

Installation

1. Start engine.
2. Raise loader arms to fully raised position.
3. Turn the ignition key to “OFF” to stop the engine.
4. Position a loader arm cylinder arm lock over each hydraulic cylinder rod.
5. Secure each loader arm cylinder arm lock with a clevis pin and cotter pin.
6. Start engine.
7. Slowly lower the loader arms until cylinder locks contact the cylinder body and rod end.
8. Turn the ignition key to “OFF” to stop the engine.

Removal

1. Start engine.
2. Raise loader arms to fully raised position.
3. Turn the ignition key to “OFF” to stop the engine.
4. Remove clevis pin and cotter pin securing each loader arm cylinder arm lock. Remove loader arm cylinder arm lock.

Attachments

Connecting

IMPORTANT: Use only Toro approved attachments. Attachments can change the stability and the operating characteristics of the machine. The warranty of the machine may be voided if used with un-approved attachments.

IMPORTANT: Before connecting any attachments to machine, make sure mount plates are free of any dirt or debris.

1. Move pump control lever to slow (turtle) position. Start engine.
2. Slowly push the attachment tilt lever forward to tilt the attachment mount plate forward.
3. Position mount plate into the upper lip of the attachments receiver plate.
4. Raise the loader arms while tilting back the mount plate at the same time.

IMPORTANT: The attachment should be raised enough to clear the ground and the mount plate tilted all the way back.

5. Turn the ignition key to “OFF” to stop the engine.
6. Engage the attachment lock pins.

Note: Lock pins are located on the operator side of the mount plate and should be turned toward the inside to engage.

Note: Proceed to next step if auxiliary hydraulics are required with attachment.

IMPORTANT: Make sure all foreign matter is cleaned from hydraulic connections before making connections.

7. Move the auxiliary hydraulics lever to the forward, backward and back to neutral position to relieve hydraulic pressure at the hydraulic couplers.
8. Remove protective covers from hydraulic couplers on machine. Connect covers together to prevent contamination during operation.
9. Slide collar back on hydraulic coupler and connect attachment couplers to machine couplers.
10. Confirm that connection is secure by pulling on hoses.

Disconnecting

1. Start engine and lower the attachment to the ground or onto a trailer.
2. Turn the ignition key to “OFF” to stop the engine.
3. Disengage the attachment lock pins by turning them to the outside.
4. Slide collar back on hydraulic coupler and disconnect attachment couplers from machine couplers.

IMPORTANT: Connect attachment hoses together to prevent hydraulic system contamination during storage.

5. Install protective covers onto machines hydraulic couplers.
6. Start engine, tilt the mount plate forward and back machine away from attachment.

Transporting and Securing

IMPORTANT: Do not operate or drive machine on roadways.

IMPORTANT: When transporting machine on a trailer, always use the following procedure:

1. Lower the loader arms.
2. Turn the ignition key to “OFF” to stop the engine.
3. Secure the machine to the trailer with chains or straps using the rear platform support openings to secure rear of machine and loader arms/mount plate to secure front of machine.
4. Close the fuel vent cap before transporting machine.

Maintenance

Service Interval Chart

Service Operation	Each Use	8 Hours	25 Hours	50 Hours	100 Hours	200 Hours	400 Hours
Hydraulic Fluid—check level	Initial		X				
Hydraulic Fluid—change							X
Hydraulic Filter—change		Initial					X
Engine Oil—check level	X						
Engine Oil—change*		Initial			X		
Engine Oil Filter—change (200 hours or every other oil change)						X	
Traction Drive Chain Tension—check		Initial		X			
Wheel Nuts—tighten		Initial					
Traction Drive Chain—lubrication				X			
Chassis—grease**		X					
Foam Air Cleaner—service*			X				
Paper Air Cleaner—replace*					X		
Spark Plug(s)—check						X	
Engine RPM (idle & full throttle)—check							X
Gasoline—drain***							
Hydraulic lines—check					X		
Battery—check electrolyte			X				
Battery—charge, Disconnect cables***							
Fuel Filter—replace						X	
Tires—check pressure				X			
Chipped Surfaces—paint***							
* More often in dusty, dirty conditions ** Immediately <u>after</u> every washing *** Storage Service							

! CAUTION

POTENTIAL HAZARD

- If you leave the key in the ignition switch, someone could start the engine.

WHAT CAN HAPPEN

- Accidental starting of the engine could seriously injure you or other bystanders.

HOW TO AVOID THE HAZARD

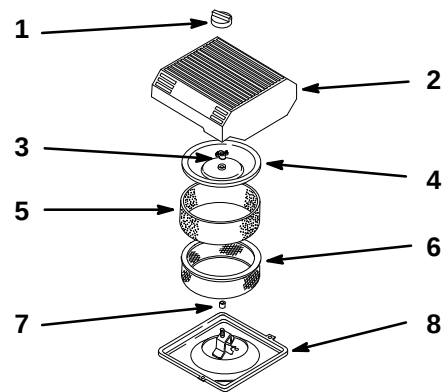
- Remove the key from the ignition switch and disconnect negative battery cable from battery before you do any maintenance.

Air Cleaner

Foam Element: Clean and re-oil after every 25 operating hours.

Paper Element: Replace after every 100 operating hours.

Note: Service the air cleaner more frequently (every few hours) if operating conditions are extremely dusty or sandy.



m-3214

Figure 7

Removing the Foam and Paper Elements

1. Lower the loader arms and turn the ignition key to "OFF" to stop the engine. Remove the key.
2. Clean around the air cleaner to prevent dirt from getting into the engine and causing damage. Unscrew the knob and remove the air cleaner cover (Fig. 7).

- | | |
|----------------------|---------------------|
| 1. Knob | 5. Foam element |
| 2. Air cleaner cover | 6. Paper element |
| 3. Cover nut | 7. Rubber seal |
| 4. Cover | 8. Air cleaner base |

3. Carefully slide the foam element off the paper element (Fig. 7).
4. Unscrew the cover nut and remove the cover and paper element (Fig. 7).

Cleaning the Foam and Paper Elements

1. Foam Element

- A. Wash the foam element in liquid soap and warm water. When the element is clean, rinse it thoroughly.
- B. Dry the element by squeezing it in a clean cloth (do not wring).
- C. Put one or two ounces of oil on the element (Fig. 8). Squeeze the element to distribute the oil.

IMPORTANT: Replace the foam element if it is torn or worn.

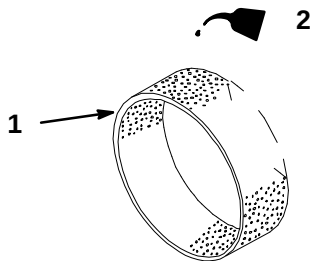


Figure 8

1. Foam element
2. Oil

2. Paper Element

- A. Lightly tap the element on a flat surface to remove dust and dirt (Fig. 9).
- B. Inspect the element for tears, an oily film, and damage to the rubber seal.

IMPORTANT: Never clean the paper element with pressurized air or liquids, such as solvent, gas, or kerosene. Replace the paper element if it is damaged, defective, or cannot be cleaned thoroughly.

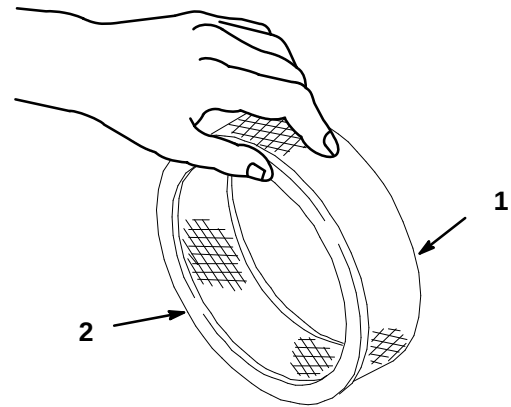


Figure 9

1. Paper element
2. Rubber seal

Installing the Foam and Paper Elements

1. Installing the Foam and Paper Elements

IMPORTANT: To prevent engine damage, always operate the engine with the complete foam and paper air cleaner assembly installed.

1. Carefully slide the foam element onto the paper air cleaner element (Fig. 7).
2. Place the air cleaner assembly onto the air cleaner base (Fig. 7).
3. Install the air cleaner cover and secure with cover nut (Fig. 7).

Engine Oil

Change oil:

- After the first 8 operating hours.
- After every 100 operating hours.

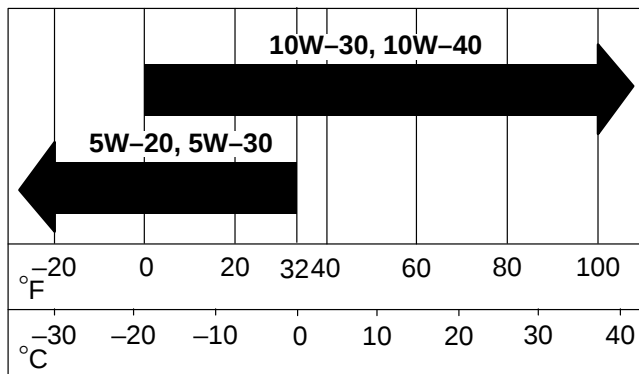
Note: Change oil more frequently when operating conditions are extremely dusty or sandy.

Oil Type: Detergent oil (API service SG or SH)

Crankcase Capacity: w/filter, 2.1 qt. (2 l)

Viscosity: See table below

USE THESE SAE VISCOSITY OILS



Changing/Draining Oil

1. Start the engine and let it run five minutes. This warms the oil so it drains better.
2. Park the machine so that the drain side is slightly lower than the opposite side to assure the oil drains completely. Then lower the loader arms, chock the wheels and turn the ignition key to "OFF" to stop the engine. Remove the key.
3. Place a pan below the oil drain. Remove the oil drain cap (Fig. 10).
4. When oil has drained completely, install the drain cap.

Note: Dispose of the used oil at a certified recycling center.

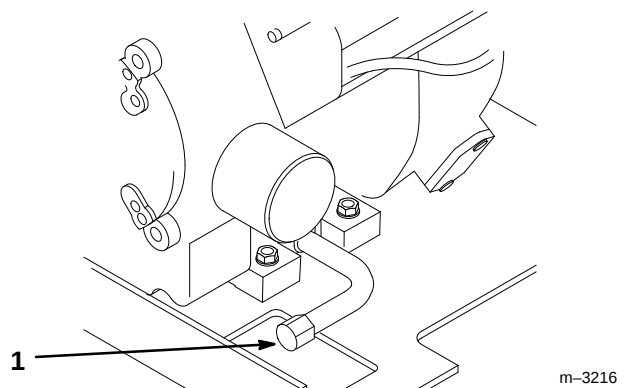


Figure 10

1. Oil drain cap

5. Slowly pour approximately 80% of the specified amount of oil specified, page 22, into the filler tube. Now check the oil level; refer to Checking Oil Level, page 10. Slowly add additional oil to bring to "FULL" mark on dipstick.

Change Oil Filter

Replace the oil filter every 200 hours or every other oil change.

Note: Change oil filter more frequently when operating conditions are extremely dusty or sandy.

1. Drain the oil from the engine; refer to Changing/Draining Oil, page 22.
2. Remove the old filter and wipe the filter adapter (Fig. 11) gasket surface.
3. Pour new oil of the proper type in through the center hole. Stop pouring when the oil reaches the bottom of the threads. Allow a minute or two for the oil to be absorbed by filter material.
4. Apply a thin coat of new oil to the rubber gasket on the replacement filter (Fig. 11).

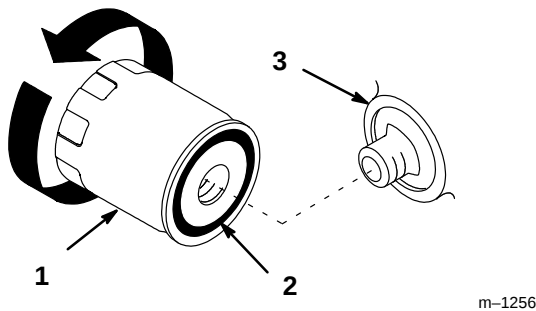


Figure 11

- | | |
|---------------|------------|
| 1. Oil filter | 3. Adapter |
| 2. Gasket | |

5. Install the replacement oil filter to the filter adapter. Turn the oil filter clockwise until the rubber gasket contacts the filter adapter, then tighten the filter an additional 1/2 turn (Fig. 11).
6. Fill the crankcase with the proper type of new oil; refer to Changing/Draining Oil, page 22.

Spark Plug

Check the spark plug(s) after every 200 operating hours. Make sure the air gap between the center and side electrodes is correct before installing the spark plug. Use a spark plug wrench for removing and installing the spark plug(s) and a gapping tool/feeler gauge to check and adjust the air gap. Install a new spark plug(s) if necessary.

Type: Champion RC12YC (or equivalent) Air Gap: 0.030 in. (0.76 mm)

Removing the Spark Plug(s)

1. Lower the loader arms and turn the ignition key to "OFF" to stop the engine. Remove the key.
2. Pull the wire(s) off the spark plug(s) (Fig. 12). Now clean around the spark plug(s) to prevent dirt from falling into the engine and potentially causing damage.
3. Remove the spark plug(s) and metal washer.

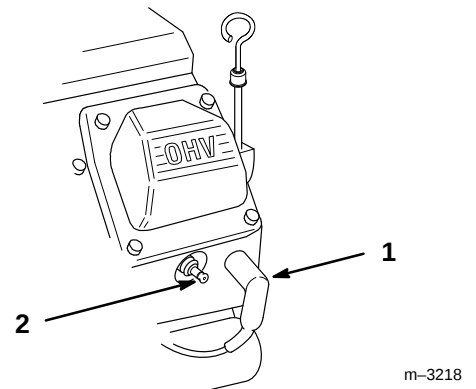


Figure 12

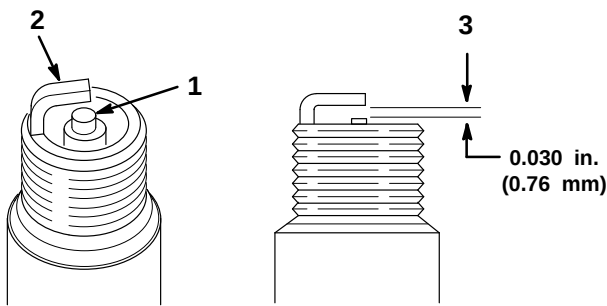
- | | |
|--------------------|---------------|
| 1. Spark plug wire | 2. Spark plug |
|--------------------|---------------|

Checking the Spark Plug

1. Look at the center of the spark plug(s) (Fig. 13). If you see light brown or gray on the insulator, the engine is operating properly. A black coating on the insulator usually means the air cleaner is dirty.

IMPORTANT: Never clean the spark plug(s). Always replace the spark plug(s) when it has: a black coating, worn electrodes, an oily film, or cracks.

2. Check the gap between the center and side electrodes (Fig. 13). Bend the side electrode (Fig. 13) if the gap is not correct.



m-3215

Figure 13

- | | |
|-------------------------------|---------------------------|
| 1. Center electrode insulator | 3. Air gap (not to scale) |
| 2. Side electrode | |

Installing the Spark Plug(s)

1. Make sure the air gap is set correctly and install the spark plug(s).
2. Tighten the spark plug(s) to 20 ft-lb (27 N.m).
3. Push the wire(s) onto the spark plug(s) (Fig. 12).

Greasing and Lubrication

Grease all bearings, bushings and pivot joints every 8 operating hours. Grease more frequently when operating conditions are extremely dusty or sandy and immediately after every washing.

Grease Type: General-purpose grease.

How to Grease

1. Lower the loader arms and turn the ignition key to “OFF” to stop the engine. Remove the key.
2. Clean the grease fittings with a rag. Make sure to scrape any paint off the front of the fitting(s).
3. Connect a grease gun to the fitting. Pump grease into the fittings until grease begins to ooze out of the bearings.
4. Wipe up any excess grease.

Lubricating Traction Drive Chain

1. Lower the loader arms and turn the ignition key to “OFF” to stop the engine. Remove the key.
2. Apply a general purpose oil (10W30) onto upper and lower chain spans.
3. Start the machine and slowly move it forward to expose un-lubed upper and lower chain spans.
4. Turn the ignition key to “OFF” to stop the engine. Remove the key.
5. Apply oil to newly exposed un-lubed chain spans.

Fuel Filter

Replace the fuel filter after every 200 operating hours or yearly, whichever occurs first.

Replacing the Fuel Filter

Never re-install a dirty filter.

1. Lower the loader arms and turn the ignition key to "OFF" to stop the engine. Remove the key.
2. Clamp fuel line between fuel tank and fuel filter to block fuel flow.
3. Squeeze the ends of the hose clamps together and slide them away from the filter (Fig. 14).
4. Remove the filter from the fuel lines.
5. Install a new filter and move the hose clamps close to the filter.
6. Remove clamp blocking fuel flow.

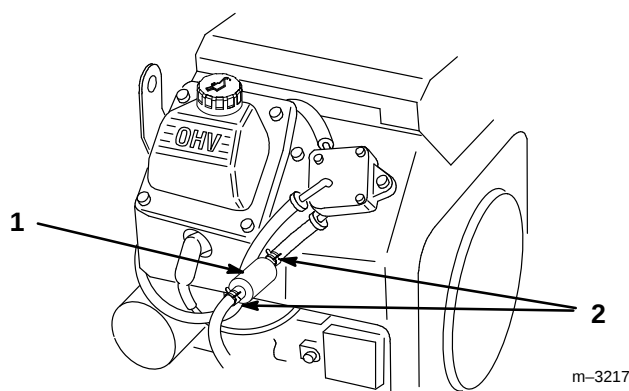


Figure 14

1. Filter 2. Hose clamp

Fuel Tank

Draining The Fuel Tank

DANGER

POTENTIAL HAZARD

- In certain conditions gasoline is extremely flammable and highly explosive.

WHAT CAN HAPPEN

- A fire or explosion from gasoline can burn you, others, and cause property damage.

HOW TO AVOID THE HAZARD

- Drain gasoline from the fuel tank when the engine is cold. Do this outdoors in an open area. Wipe up any gasoline that spills.
- Never drain gasoline near an open flame or where gasoline fumes may be ignited by a spark.
- Never smoke while handling fuel.

1. Park the machine on a level surface, to assure fuel tank drains completely. Then lower the loader arms and turn the ignition key to "OFF" to stop the engine. Remove the key.
2. Loosen the hose clamp and slide it up the fuel line away from the fuel filter.
3. Pull the fuel line off fuel filter and allow gasoline to drain into a gas can or drain pan.

Note: Now is the best time to install a new fuel filter because the fuel tank is empty.

4. Install the fuel line onto the fuel filter. Slide the hose clamp close to the fuel filter to secure the fuel line.

Hydraulic System

Replacing the Hydraulic Filter

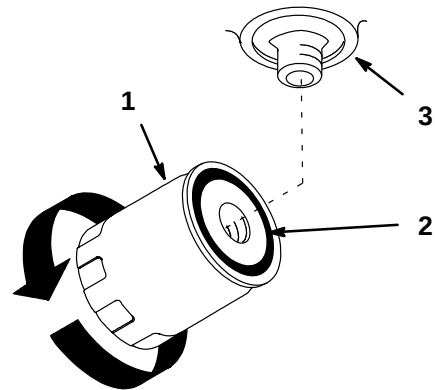
Change the hydraulic filter:

- After the first 8 operating hours.
- After every 400 operating hours.

1. Position machine on a level surface, lower the loader arms, stop the engine, and remove key from ignition switch.

IMPORTANT: Do not substitute automotive oil filter or severe hydraulic system damage may result.

2. Place drain pan under filter, remove the old filter and wipe the filter adapter gasket surface clean.
3. Apply a thin coat hydro fluid to the rubber gasket on the replacement filter (Fig. 15).
4. Install replacement hydraulic filter onto the filter adapter. Tighten clockwise until the rubber gasket contacts the filter adapter, then tighten the filter an additional 1/2 turn (Fig. 15).
5. Clean up any spilled fluid.
6. Start engine and let run for about two minutes to purge air from the system. Stop the engine and check for leaks.
7. Check fluid level in hydraulic tank and add to raise level to mark on dipstick. DO NOT OVER FILL.



m-1256

Figure 15

1. Hydraulic filter
2. Gasket
3. Adapter

Check Hydraulic Lines

After every 100 operating hours, check hydraulic lines and hoses for leaks, loose fittings, kinked lines, loose mounting supports, wear, weather and chemical deterioration. Replace all moving hydraulic hoses every 1500 hours or 2 years, which ever come first. Make necessary repairs before operating.

WARNING

POTENTIAL HAZARD

- Hydraulic fluid escaping under pressure can penetrate skin and cause injury.

WHAT CAN HAPPEN

- Fluid accidentally injected into the skin must be surgically removed within a few hours by a doctor familiar with this form of injury or gangrene may result.

HOW TO AVOID THE HAZARD

- Keep body and hands away from pin hole leaks or nozzles that eject high pressure hydraulic fluid.
- Use cardboard or paper to find hydraulic leaks, never use your hands.

Adjusting Traction Drive Chains

Check Drive Chain Tension. Drive chains should have about 1–1/2 to 2–1/2 inches of slack at the bottom. Chain tensioner is at front of machine (Fig. 16).

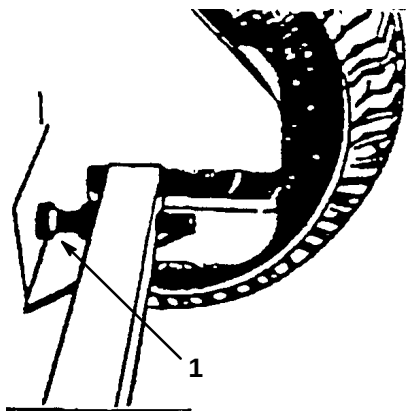


Figure 16

1. Chain tensioner

IMPORTANT: Always tension both chains equally to maintain front end alignment. Under some sandy conditions, the sand can build up on the sprockets as little shells. This enlarges the size of the sprocket and the chain tightens. Under these conditions run the chains considerably looser.

Battery

Check the electrolyte level in the battery every 25 hours. Always keep the battery clean and fully charged. Use a paper towel to clean the battery case. If the battery terminals are corroded, clean them with a solution of four parts water and one part baking soda. Apply a light coating of grease to the battery terminals to reduce corrosion.

Voltage: 12 v, 280 Cold Cranking Amps

Checking Electrolyte Level

1. Open covers to see into the cells. The electrolyte must be up to the lower part of the tube (Fig. 17). Do not allow the electrolyte to get below the plates. (Fig. 17).
2. If the electrolyte is low, add the required amount of distilled water; refer to Adding Water to the Battery, page 28.

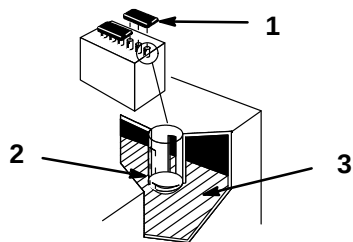


Figure 17

1. Filler caps
2. Lower part of tube
3. Plates

Adding Water to the Battery

The best time to add distilled water to the battery is just before you operate the machine. This lets the water mix thoroughly with the electrolyte solution.

1. Clean the top of the battery with a paper towel.
2. Lift off the filler caps (Fig. 17).
3. Slowly pour distilled water into each battery cell until the level is up to the lower part of the tube (Fig. 17).

IMPORTANT: Do not overfill the battery because electrolyte (sulfuric acid) can cause severe corrosion and damage to the chassis.

4. Press the filler caps onto the battery.

Charging the Battery

IMPORTANT: Always keep the battery fully charged (1.260 specific gravity). This is especially important to prevent battery damage when the temperature is below 32°F (0°C).

1. Check the electrolyte level; refer to Checking Electrolyte Level, page 28.
2. Remove the filler caps from the battery and connect a 3 to 4 amp battery charger to the battery posts. Charge the battery at a rate of 4 amperes or less for 4 hours (12 volts). Do not overcharge the battery. Install the filler caps after the battery is fully charged.

WARNING

POTENTIAL HAZARD

- Charging the battery produces gasses.

WHAT CAN HAPPEN

- Battery gasses can explode.

HOW TO AVOID THE HAZARD

- Keep cigarettes, sparks and flames away from battery.

Cleaning and Storage

1. Lower the loader arms and turn the ignition key to "OFF" to stop the engine. Remove the key.
2. Remove dirt and grime from the external parts of the entire machine, especially the engine. Clean dirt and chaff from the outside of the engine's cylinder head fins and blower housing.

IMPORTANT: You can wash the machine with mild detergent and water. Do not pressure wash the machine. Avoid excessive use of water, especially near the control panel, engine, hydraulic pumps and motors.

3. Service the air cleaner; refer to Air Cleaner, page 20.
4. Grease the machine; refer to Greasing and Lubrication, page 24.
5. Change the crankcase oil; refer to Engine Oil, page 22.
6. Change the hydraulic fluid; refer to Hydraulic System, page 26.
7. Remove the spark plug(s) and check its condition; refer to Spark Plug, page 23. With the spark plug(s) removed from the engine, pour two tablespoons of engine oil into the spark plug hole. Now use the starter to crank the engine and distribute the oil inside the cylinder. Install the spark plug(s). Do not install the wire on the spark plug(s).
8. Check the tire pressure; refer to Tire Pressure.
9. Charge the battery; refer to Battery page 28.

10. For long-term storage (more than 90 days) add stabilizer/conditioner additive to fuel in the tank (1 oz. per gallon).
 - A. Run engine to distribute conditioned fuel through the fuel system (5 minutes).
 - B. Stop engine, allow to cool and drain the fuel tank; refer to Fuel Tank, page 25.
 - C. Restart engine and run until it stops. Repeat, on "CHOKE" until engine will not restart.
 - D. Dispose of fuel properly. Recycle according to local codes.

Note: Do not store stabilizer/conditioned gasoline over 90 days.

11. Check and tighten all bolts, nuts, and screws. Repair or replace any part that is damaged or defective.
12. Paint all scratched or bare metal surfaces. Paint is available from your Authorized Service Dealer.
13. Store the machine in a clean, dry garage or storage area. Remove the key from the ignition switch and keep it in a memorable place. Cover the machine to protect it and keep it clean.

Troubleshooting

PROBLEM	POSSIBLE CAUSES	CORRECTIVE ACTION
Starter does not crank	1. Battery is dead. 2. Electrical connections are corroded or loose. 3. Relay or switch is defective.	1. Charge the battery. 2. Check electrical connections for good contact. 3. Contact Authorized Service Dealer.
Engine will not start, starts hard, or fails to keep running.	1. Auxiliary hydraulics lever is not in neutral position. 2. Fuel tank is empty. 3. Choke is not ON. 4. Air cleaner is dirty. 5. Spark plug wires is loose or disconnected. 6. Spark plugs are pitted, fouled, or gap is incorrect. 7. Dirt in fuel filter. 8. Dirt, water, or stale fuel is in fuel system.	1. Move lever to neutral position. 2. Fill fuel tank with gasoline. 3. Move choke lever to ON. 4. Clean or replace air cleaner element. 5. Install wires on spark plug. 6. Install new, correctly gapped spark plugs. 7. Replace fuel filter. 8. Contact Authorized Service Dealer.
Engine loses power.	1. Engine load is excessive. 2. Air cleaner is dirty. 3. Oil level in crankcase is low. 4. Cooling fins and air passages under engine blower housing are plugged. 5. Spark plugs are pitted, fouled, or gap is incorrect. 6. Dirt in fuel filter. 7. Dirt, water, or stale fuel is in fuel system.	1. Reduce ground speed. 2. Clean air cleaner element. 3. Add oil to crankcase. 4. Remove obstruction from cooling fins and air passages. 5. Install new, correctly gapped spark plugs. 6. Replace fuel filter. 7. Contact Authorized Service Dealer.
Engine overheats.	1. Engine load is excessive. 2. Oil level in crankcase is low. 3. Cooling fins and air passages under engine blower housing are plugged.	1. Reduce ground speed. 2. Add oil to crankcase. 3. Remove obstruction from cooling fins and air passages.
Abnormal vibration.	1. Engine mounting bolts are loose.	1. Tighten engine mounting bolts.

PROBLEM	POSSIBLE CAUSES	CORRECTIVE ACTION
Machine does not drive.	1. Traction pump drive coupler is loose or broken. 2. Hydro fluid level low. 3. Pump and/or wheel motor is defective or damaged. 4. Control valve is defective or damaged. 5. Relief valve is defective or damaged. 6. Flow divider valve lever is in 9 o'clock position.	1. Contact Authorized Service Dealer. 2. Add hydro fluid to reservoir. 3. Contact Service Dealer 4. Contact Service Dealer 5. Contact Service Dealer 6. Move lever to 12 o'clock to 10 o'clock position.

The Toro Sitework™ Systems Product Line

One Year Limited Warranty

The Toro Company warrants your Toro Sitework™ Systems Product ("Product") to be free from defects in materials or workmanship for the period of time listed below. Where a warrantable condition exists, Toro will repair the Product at no cost to you including diagnosis, labor, parts, and transportation. This warranty begins on the date the Product is delivered to the original retail purchaser.

Warranty Duration: One year or 500 operational hours, whichever occurs first.

Owner Responsibilities:

As the Product owner, you are responsible for required maintenance and adjustments stated in your Owner's Manual. Failure to perform required maintenance and adjustments can be grounds for disallowing a warranty claim.

Instructions for Obtaining Warranty Service:

You are responsible for notifying the Toro Sitework Systems Distributor or Authorized Toro Sitework™ Systems Dealer from whom you purchased the Product as soon as you believe a warrantable condition exists.

If you need help locating a Toro Sitework™ Systems Distributor or Authorized Dealer, or if you have questions regarding your warranty rights or responsibilities, you may contact us at:

Toro LCG Products Service Department
8111 Lyndale Avenue South
Minneapolis, MN, 55420-1196
Telephone: (612) 888-8801
Facsimile: (612) 887-8258

Maintenance Parts:

Parts scheduled for replacement as required maintenance ("Maintenance Parts"), are warranted for the period of time up to the scheduled replacement time for that part.

Items/Conditions Not Covered:

Not all product failures or malfunctions that occur during the warranty period are defects in materials or workmanship. The items / conditions listed below are not covered by this warranty:

- Product failures which result from the use of non-Toro replacement parts, or from installation and use of add-on, modified, or unapproved accessories are not covered.
- Product failures which result from failure to perform required maintenance and/or adjustments are not covered.
- Product failures which result from operating the Product in an abusive, negligent or reckless manner are not covered.

- This warranty does not apply to parts subject to consumption through use unless found to be defective. Examples of parts which are consumed, or used up, during normal Product operation include, but are not limited to, digging teeth, tines, spark plugs, tires, filters, chains, etc.
- This warranty does not apply to failures caused by outside influence. Items considered to be outside influence include, but are not limited to, weather, storage practices, contamination, use of unapproved coolants, lubricants, additives, or chemicals, etc.
- This warranty does not apply to normal "wear and tear" items. Normal "Wear and Tear" includes, but is not limited to, worn painted surfaces, scratched decals or windows, etc.

Other Legal Disclaimers:

The above remedy of product defects through repair by an authorized distributor or dealer is the purchaser's sole remedy for any defect. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Except for the Emissions warranty referenced below, if applicable, there is no other express warranty. All implied warranties of merchantability and fitness for use are limited to the duration of the express warranty.

Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

The Toro Company is not liable for indirect, incidental or consequential damages in connection with the use of the Product, including any cost or expense of providing substitute Product or service during periods of malfunction or non-use.

Some states do not allow the exclusion of incidental or consequential damages, so the above exclusion may not apply to you.

Note to California residents: The Emissions Control System on your Product may be covered by a separate warranty meeting requirements established by the U.S. Environmental Protection Agency (EPA), or the California Air Resources Board (CARB). The hour limitations set forth above do not apply to the Emissions Control System Warranty. Refer to the California Emission Control Warranty Statement printed in your Owner's Manual or contained in the engine manufacturer's documentation for details.