Form No. 3390-262 Rev B

TORO®

Count on it.

Operator's Manual

Commercial Walk-Behind Traction Unit

18HP Pistol-Grip Hydro Drive

Model No. 30069—Serial No. 315000001 and Up

Register at www.Toro.com.
Original Instructions (EN)

CE

3390-262 B

This product complies with all relevant European directives; for details, please see the separate product specific Declaration of Conformity (DOC) sheet.

Introduction

This rotary-blade, lawn mower is intended to be used by residential homeowners or professional, hired operators. It is designed primarily for cutting grass on well-maintained lawns on residential or commercial properties. It is not designed for cutting brush or for agricultural uses.

Read this information carefully to learn how to operate and maintain your product properly and to avoid injury and product damage. This manual should be considered as part of the machine, as it contains, safety, operational and maintenance information. The mower is a precision built machine designed solely for cutting grass and similar low lying ground vegetation within the limitations stated in this manual. You are responsible for operating the product properly and safely.

You may contact Toro directly for product and accessory information, help finding a dealer, or to register your product at Toro Commercial Products Service Department Spellbrook, Bishops Stortford, CM23 4BU, England, +44(0)1279 603019, Email: uk.service@toro.com.

Whenever you need service, genuine Toro parts, or additional information, contact an Authorized Service Dealer or Toro Customer Service and have the model and serial numbers of your product ready. Figure 1 and Figure 2 identify the location of the model and serial numbers on the product. Write the numbers in the space provided.

Figure 1

1. Model and serial number location

Model No. _____

Serial No. _____

Figure 2

1. Model and serial number location

Model No. _____

Serial No. _____

This manual identifies potential hazards and has safety messages identified by the safety alert symbol (Figure 3), which signals a hazard that may cause serious injury or death if you do not follow the recommended precautions.

Figure 3

1. Safety alert symbol

This manual uses 2 words to highlight information. **Important** calls attention to special mechanical information and **Note** emphasizes general information worthy of special attention.

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Safety

This machine has been designed in accordance with EN ISO 5395:2013.

Improperly using or maintaining this mower can result in injury. To reduce the potential for injury, comply with these safety instructions.

Toro designed and tested this mower for reasonably safe service; however, failure to comply with the following instructions may result in personal injury.

To ensure maximum safety, best performance, and to gain knowledge of the product, it is essential that you and any other operator of the mower read and understand the contents of this manual before the engine is ever started. Pay particular attention to the safety alert symbol (Figure 3) which means Caution, Warning, or Danger—"personal safety instruction." Read and understand the instruction because it has to do with safety. Failure to comply with the instruction may result in personal injury.

General Lawn Mower Safety

This cutting machine is capable of amputating hands and feet and throwing objects. Failure to observe the following safety instructions could result in serious injury or death.

Training

- Read the instructions carefully. Be familiar with the controls and the proper use of the equipment.
- Never allow children or people unfamiliar with these instructions to use the mower. Local regulations can restrict the age of the operator.
- Keep in mind that the operator or user is responsible for accidents or hazards occurring to other people or their property.
- Understand explanations for all pictograms used on the mower or in the instructions.

Gasoline

WARNING-Gasoline is highly flammable. Take the following precautions.

- Store fuel in containers specifically designed for this purpose.
- Refuel outdoors only and do not smoke while refueling.
- Add fuel before starting the engine. Never remove the cap of the fuel tank or add gasoline while the engine is running or when the engine is hot.
- If gasoline is spilled, do not attempt to start the engine but move the mower away from the area of spillage and avoid creating any source of ignition until gasoline vapors have dissipated.
- Replace all fuel tank and container caps securely.

Preparation

- While mowing, always wear substantial, slip-resistant footwear and long trousers. Do not operate the equipment when barefoot or wearing open sandals.
- Thoroughly inspect the area where the equipment is to be used and remove all stones, sticks, wires, bones and other foreign objects.
- Before using, always visually inspect to see that guards, and safety devices, such as deflectors are in place and working correctly.
- Before using, always visually inspect to see that the blades, blade bolts and cutter assembly are not worn or damaged. Replace worn or damaged blades and bolts in sets to preserve balance.

Starting

- Disengage all blade and drive clutches and place into neutral before starting the engine.
- Do not tilt mower when starting the engine or switching on the motor, unless the mower has to be tilted for starting. In this case, do not tilt it more than absolutely necessary and lift only the part, which is away from the operator.
- Start the engine or switch on the motor carefully according to instructions and with feet well away from the blade(s).

Operation

- Lightning can cause severe injury or death. If lightning is seen or thunder is heard in the area, do not operate the machine; seek shelter.
- Do not operate the engine in a confined space where dangerous carbon monoxide and other exhaust gasses can collect.
- Never mow while people, especially children, or pets are nearby.
- Mow only in daylight or in good artificial light.
- Avoid operating the lawn mower in wet grass, where feasible.
- Stay alert for holes in the terrain and other hidden hazards.
- Never direct discharge of material towards bystanders.
- Do not put hands or feet near or under rotating parts.
- Never pick up or carry a lawn mower while the engine is running.
- Use extreme caution when reversing or pulling a pedestrian controlled lawn mower towards you.
- Walk, never run.
- Slopes:
  - Do not mow excessively steep slopes.
  - Exercise extreme caution when on slopes.

- Mow across the face of slopes, never up and down and exercise extreme caution when changing direction on slopes.
- Always be sure of your footing on slopes.

- Never operate the lawn mower with damaged guards, or without safety devices, for example deflectors and/or grass catchers, in place.
- Use low throttle settings when engaging the traction-clutch, especially in high gears. Reduce speed on slopes and in sharp turns to prevent overturning or loss of control.
- Stop the blade if the lawn mower has to be tilted for transportation when crossing surfaces other than grass and when transporting the lawn mower to and from the area to be mowed.
- Do not operate the engine in a confined space where dangerous carbon monoxide fumes can collect.
- Stop the engine and where a key is fitted remove the key, make sure that all moving parts have come to a complete stop:
  - whenever you leave the lawn mower.
  - before refueling.
  - before removing the grass catcher.
  - before making height adjustment unless adjustment can be made from the operator's position.
- Stop the engine and where a key is fitted remove the key, make sure that all moving parts have come to a complete stop, and disconnect the spark plug wire:
  - before clearing blockages or unclogging chute.
  - before checking, cleaning or working on the lawn mower.
  - after striking a foreign object, inspect the lawn mower for damage and make repairs before restarting and operating the lawn mower.
  - if lawn mower starts to vibrate abnormally (check immediately).
- Reduce the throttle setting during engine shut down and, if the engine is provided with a shut-off valve, turn the fuel off at the conclusion of mowing.
- Use care when using sulkies, and
  - use only approved drawbar hitch points.
  - limit loads to those you can safely control.
  - do not turn sharply: use care when reversing.
  - do not carry passengers.
- Watch out for traffic when crossing or near roadways.
- Before leaving the operator's position
  - disengage the power take-off and lower the attachments.
  - place into neutral and set the parking brake.
  - stop the engine and remove the key.

Maintenance and Storage

- Keep all nuts, bolts and screws tight to be sure the equipment is in safe working condition.
- Do not use pressure cleaning equipment on machine.
- Never store the equipment with gasoline in the tank and inside a building where fumes can reach an open flame or spark.
- Allow the engine to cool before storing in any enclosure.
- To reduce the fire hazard, keep the engine, silencer, battery compartment and gasoline storage are free of grass, leaves, or excessive grease.
- Check the discharge guard frequently and replace with manufacturer's recommended parts, when necessary.
- Replace worn or damaged parts for safety.
- Replace faulty silencers.
- If the fuel tank has to be drained, do this out-doors.
- Do not change the engine governor settings or overspeed the engine. Operating an engine at excessive speed can increase the hazard of personal injury.
- On multibladed lawn mowers, take care as rotating one blade may cause others to rotate.
- Be careful during adjustment of the lawn mower to prevent entrapment of the fingers between moving blades and fixed parts of the lawn mower.
- **To ensure the best performance and safety, purchase only genuine Toro replacement parts and accessories. Do not use *will fit* parts and accessories; they may cause a safety hazard.**

Sound Pressure for the 32 RD, 36 RD and 48 RD

The 32 RD has a sound pressure level at the operator's ear of 87 dBA, which includes an Uncertainty Value (K) of 2 dBA.

The 36 RD has a sound pressure level at the operator's ear of 87 dBA, which includes an Uncertainty Value (K) of 2 dBA.

The 48 RD has a sound pressure level at the operator's ear of 92 dBA, which includes an Uncertainty Value (K) of 2 dBA.

The sound pressure level was determined according to the procedures outlined in EN ISO 5395:2013.

Sound Power for the 32 RD, 36 RD and 48 RD

The 32 RD and 36 RD has a guaranteed sound power level of 100 dBA, which includes an Uncertainty Value (K) of 1 dBA.

The 48 RD has a guaranteed sound power level of 105 dBA, which includes an Uncertainty Value (K) of 1 dBA.

The sound power level was determined according to the procedures outlined in ISO 11094.

Vibration Level for the 32 RD

Hand-Arm

Measured vibration level for right hand = 1.2 m/s^2

Measured vibration level for left hand = 2.0 m/s^2

Uncertainty Value (K) = 1.0 m/s^2

Measured values were determined according to the procedures outlined in EN ISO 5395:2013.

Vibration Level for the 36 RD

Hand-Arm

Measured vibration level for right hand = 1.3 m/s^2

Measured vibration level for left hand = 1.8 m/s^2

Uncertainty Value (K) = 1.0 m/s^2

Measured values were determined according to the procedures outlined in EN ISO 5395:2013.

Vibration Level for the 48 RD

Hand-Arm

Measured vibration level for right hand = 2.5 m/s^2

Measured vibration level for left hand = 3.1 m/s^2

Uncertainty Value (K) = 1.5 m/s^2

Measured values were determined according to the procedures outlined in EN ISO 5395:2013.

Slope Indicator

Figure 4

This page may be copied for personal use.

1. The maximum slope you can safely operate the machine on is **20 degrees**. Use the slope chart to determine the degree of slope of hills before operating. **Do not operate this machine on a slope greater than 20 degrees.** Fold along the appropriate line to match the recommended slope.
2. Align this edge with a vertical surface, a tree, building, fence pole, etc.
3. Example of how to compare slope with folded edge.

Safety and Instructional Decals

Safety decals and instructions are easily visible to the operator and are located near any area of potential danger. Keep safety signs clear and visible, replace any decal that is damaged or lost.

320006

1. Height of cut

40-13–010

1. Cutting hazard of hand
2. Cutting hazard of foot

95-5537

1. Read the *Operator's Manual* for instructions on operating the cutting blade
2. Push forward to engage
3. Pull back to disengage

95-5852

1. Warning—engage the parking brake and block the wheels when parking on a slope.

106-2733

1. Fast
2. Continuous variable setting
3. Slow

111-1979

Manufacturer's Mark

1. Indicates the blade is identified as a part from the original machine manufacturer.

115-1039

1. Parking brake—disengaged
2. Parking brake—engaged

115-4212

1. Hydraulic oil level
2. Read the *Operator's Manual*.
3. Warning—do not touch the hot surface.

119-6672

1. Forward
2. Neutral
3. Reverse
4. To turn the machine right engage Neutral on the right handle while the left handle is in the Forward position.
5. To turn the machine left engage Neutral on the left handle while the right handle is in the Forward position.
6. Fast
7. Continuous variable setting
8. Slow
9. Neutral
10. Warning—read the *Operator's Manual.*
11. Warning—do not operate this machine unless you are trained.
12. Thrown object hazard—keep deflector in place.
13. Thrown object hazard—keep bystanders a safe distance from the machine.
14. Warning—wear ear protection.
15. Warning—stop the engine and remove the spark plug wire before performing any maintenance on the machine.
16. Warning—stop the engine before leaving the machine.
17. Cutting, dismemberment hazard of hand—stay away from moving parts, keep all guards and shields in place.

130-8370

1. Neutral lock

130-8375

1. Read the *Operator's Manual*.
2. Increase left
3. Tracking adjustment
4. Increase right
5. Tracking adjustment knob

Setup

Loose Parts

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

Procedure	Description	Qty.	Use
1	No parts required	–	Check the fluids and tire pressure.
2	Operator's Manual Engine operator's manual Operator training material Oil drain hose	1 1 1 1	Read the Operator's Manual and watch the operator training material before operating the machine.

Note: Determine the left and right sides of the machine from the normal operating position.

1

Checking the Fluids and tire Pressure

No Parts Required

Procedure

- Before you start the engine and use the machine, check the oil level in the engine crankcase; refer to Checking the Engine Oil Level.
- Check the grease for the mower and mower deck.
- Check the tire pressure; refer to Checking the tire Pressure.

Note: The cutting blades are set to a 51 mm (2 inch) height-of-cut at initial purchase. The Axle position is **B**, with 2 spaces below the casters and 4 spaces below the spindle.

2

Reading the Manual and Viewing the Operator Training Material

Parts needed for this procedure:

1	*Operator's Manual*
1	*Engine operator's manual*
1	Operator training material
1	Oil drain hose

Procedure

- Read the *Operator's Manual*.
- View the operator training material before operating the machine. The DVD supplied is general training material and the machine may differ from that supplied.
- Use the oil drain hose when changing the engine oil.

Product Overview

Figure 5

1. Mower deck
2. Brake
3. Gas tank
4. Controls
5. Handle
6. Caster wheel

Figure 6

1. Throttle control
2. Speed control lever
3. Ignition switch
4. Choke
5. Neutral lock
6. Operator Presence Control levers (OPC)
7. Handle
8. Drive Lever
9. Blade control knob (PTO)
10. Fuel shut-off valve

Controls

Become familiar with all the controls (Figure 6) before you start the engine and operate the machine.

Throttle Control

The throttle control has two positions: **Fast** and **Slow**.

Operator Presence Control (OPC) Levers

When you squeeze the OPC levers against the handles, the OPC system senses that the operator is in the normal operating position. When you release the OPC levers, the OPC system senses that the operator has left the normal operating position, and the system will stop the engine if either the speed control lever is not in the **neutral** position or the blade control (PTO) knob is engaged.

Blade Control Knob (PTO)

The blade control knob (PTO) is used to engage and disengage the drive belt to drive the mower blades with the OPC levers pressed against the handles. Pull the knob up to engage the blades and push down to disengage the blades.

Ignition Switch

This switch is used in conjunction with recoil starter and has three positions: **Off, Run** and **Start**.

Speed Control Lever

This machine has a variable speed control with a neutral position. This controls how fast the machine will travel.

Drive Levers

Release drive levers to engage forward traction operation and squeeze the levers until an increase in force is felt to go into neutral position and continue to squeeze to go in reverse. Squeeze righthand drive lever to turn right and lefthand lever to turn left.

Neutral Lock

Squeeze drive levers until an increase in force is felt and move locks to the rear for neutral lock.

Fuel Shut-off Valve

Close the fuel shut-off valve when transporting or storing mower.

Choke

Use the choke to start a cold engine.

Specifications

Note: Specifications and design are subject to change without notice.

82 cm (32 inch) mowers:

Cutting width	82 cm (32 inches)
Width	89 cm (35 inches)
Length	203 cm (80 inches)
Height	112 cm (44 inches)
Weight	231 kg (509 lb)

91 cm (36 inch) mowers:

Cutting width	91 cm (36 inches)
Width	94 cm (37 inches)
Length	203 cm (80 inches)
Height	112 cm (44 inches)
Weight	232 kg (511 lb)

122 cm (48 inch) mowers:

Cutting width	122 cm (48 inches)
Width	126 cm (49-1/2 inches)
Length	194 cm (76-1/2 inches)
Height	112 cm (44 inches)
Weight	248 kg (547 lb)

Attachments/Acessories

A selection of Toro approved attachments and accessories are available for use with the machine to enhance and expand its capabilities. Contact your Authorized Service Dealer or Distributor for a list of all approved attachments and accessories.

Operation

Adding Fuel

- For best results, use only clean, fresh (less than 30 days old), unleaded gasoline with an octane rating of 87 or higher ((R+M)/2 rating method).
- **Ethanol**: Gasoline with up to 10% ethanol (gasohol) or 15% MTBE (methyl tertiary butyl ether) by volume is acceptable. Ethanol and MTBE are not the same. Gasoline with 15% ethanol (E15) by volume is not approved for use. **Never use gasoline that contains more than 10% ethanol by volume**, such as E15 (contains 15% ethanol), E20 (contains 20% ethanol), or E85 (contains up to 85% ethanol). Using unapproved gasoline may cause performance problems and/or engine damage which may not be covered under warranty.
- **Do not** use gasoline containing methanol.
- **Do not** store fuel either in the fuel tank or fuel containers over the winter unless a fuel stabilizer is used.
- **Do not** add oil to gasoline.

⚠ DANGER

In certain conditions, gasoline is extremely flammable and highly explosive. A fire or explosion from gasoline can burn you and others and can damage property.

- **Fill the fuel tank outdoors, in an open area, when the engine is cold. Wipe up any gasoline that spills.**
- **Never fill the fuel tank inside an enclosed trailer.**
- **Do not fill the fuel tank completely full. Add gasoline to the fuel tank until the level is 6 to 13 mm (1/4 to 1/2 inch) 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.**
- **Do not operate without entire exhaust system in place and in proper working condition.**

⚠ DANGER

In certain conditions during fueling, static electricity can be released causing a spark which can ignite the gasoline vapors. A fire or explosion from gasoline can burn you and others and can damage property.

- **Always place gasoline containers on the ground away from your vehicle before filling.**
- **Do not fill gasoline containers inside a vehicle or on a truck or trailer bed because interior carpets or plastic truck bed liners may insulate the container and slow the loss of any static charge.**
- **When practical, remove gas-powered equipment from the truck or trailer and refuel the equipment with its wheels on the ground.**
- **If this is not possible, then refuel such equipment on a truck or trailer from a portable container, rather than from a gasoline dispenser nozzle.**
- **If a gasoline dispenser nozzle must be used, keep the nozzle in contact with the rim of the fuel tank or container opening at all times until fueling is complete.**

⚠ WARNING

Gasoline is harmful or fatal if swallowed. Long-term exposure to vapors can cause serious injury and illness.

- **Avoid prolonged breathing of vapors.**
- **Keep face away from nozzle and gas tank or conditioner bottle opening.**
- **Avoid contact with skin; wash off spillage with soap and water.**

Using Stabilizer/Conditioner

Use a fuel stabilizer/conditioner in the machine to provide the following benefits:

- Keeps gasoline fresh during storage of 90 days or less. For longer storage it is recommended that the fuel tank be drained.
- Cleans the engine while it runs
- Eliminates gum-like varnish buildup in the fuel system, which causes hard starting

  Important: Do not use fuel additives containing methanol or ethanol.

  Add the correct amount of gas stabilizer/conditioner to the gas.

  Note: A fuel stabilizer/conditioner is most effective when mixed with fresh gasoline. To minimize the chance of varnish deposits in the fuel system, use fuel stabilizer at all times.

Filling the Fuel Tank

1. Shut the engine off and set the parking brake.
2. Clean around the fuel tank cap and remove the cap. Add unleaded regular gasoline to the fuel tank, until the level is 6 to 13 mm (1/4 to 1/2 inch) below the bottom of the filler neck. This space in the tank allows the 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.

Think Safety First

Carefully read all the safety instructions and decals in the safety section. Knowing this information could help you or any bystanders avoid injury.

The use of protective equipment for eyes, hearing, feet and head is recommended.

⚠ CAUTION

This machine produces sound levels in excess of 85 dBA at the operator's ear and can cause hearing loss through extended periods of exposure.

Wear hearing protection when operating this machine.

Figure 7

1. Warning—wear hearing protection.

Operating the Parking Brake

Always set the parking brake when you stop the machine or leave it unattended. Before each use, check the parking brake for proper operation.

If the parking brake does not hold securely, adjust it. Refer to Servicing the Parking Brake.

⚠ CAUTION

Children or bystanders may be injured if they move or attempt to operate the machine while it is unattended.

Always remove the ignition key and set the parking brake when leaving the machine unattended, even if just for a few minutes.

Setting the Parking Brake

Pull the parking brake lever rearward (Figure 8).

Figure 8

1. Parking brake lever (in the released position)

Releasing the Parking Brake

Push the parking brake lever forward.

Starting and Stopping the Engine

Starting the Engine

1. Connect the wires to the spark plugs.
2. Open the fuel valve.
3. Disengage the blade control knob (PTO) and move the speed control lever to neutral.
4. Move the drive levers to neutral and set the neutral locks.
5. Set the parking brake.
6. Turn the ignition key to the **run** position (Figure 6).
7. To start a cold engine, move the throttle control midway between the **fast** and **slow** positions.
8. To start a warm engine, move the throttle control to the **fast** position.
9. Pull the choke knob if the engine is cold (Figure 6).

   Note: A warm or hot engine usually does not require any choking.
10. Turn the ignition key to the start position to energize the starter. When the engine starts, release the key.

    Note: Do not engage the starter for more than 5 seconds at a time. If the engine fails to start, allow for a 15 second cool-down period between attempts. Failure to follow these instructions can burn out the starter motor.
11. Push the choke to off as the engine warms up (Figure 9).
12. If the engine is cold, allow it to warm up and then move the throttle control to the **fast** position.

Stopping the Engine

Important: In an emergency, you can stop the engine immediately by turning the ignition key to the *off* position.

1. Move the drive levers to neutral and set the neutral locks.
2. Move the throttle lever to slow (Figure 9).
3. Disengage the blade control knob (PTO) and move the speed control lever to neutral.
4. Let engine idle for 30 to 60 seconds before turning the engine off.
5. To stop the engine, turn the ignition key to off.
6. Set the parking brakes and remove the key.

   Important: Close the fuel shut-off valve before transporting or the storing the machine to prevent fuel leakage.

Figure 9

1. Throttle lever
2. Ignition switch
3. Choke

Important: Close the fuel shut-off valve before transporting or the storing the machine to prevent fuel leakage.

Operating the Neutral Locks

Always set the neutral lock when you stop the machine. Set the parking brake if it is left unattended.

Setting the Neutral Lock

1. Squeeze the drive levers back until an increase in force is felt.

2. Place thumbs on the upper part of the locks and move them back until the pins are in the neutral position (Figure 10).

Figure 10

1. Handle
2. Neutral lock
3. Neutral position
4. Drive lever
5. Full speed forward
6. Reverse position

Releasing the Neutral Lock

1. Squeeze the drive levers back until an increase in force is felt.
2. Place thumbs on the upper part of locks and move them forward until the pins are in the forward slot (Figure 11).

Figure 11

1. Handle
2. Neutral lock
3. Drive lever
4. Pin in full speed forward
5. Handle
6. Forward slot

Operating the Blade Control Knob (PTO)

The blade control knob (PTO) is used in conjunction with the Operator Presence Control (OPC) levers to engage and disengage the mower blades.

Engaging the Mower Blades (PTO)

1. To engage blades, squeeze the Operator Presence Control (OPC) levers against handle grips (Figure 12).
2. Pull blade control knob (PTO) up. Hold the OPC levers against handle grip.

   Note: Releasing the OPC levers with the mower blades running will kill the engine.
3. Restart the engine and repeat the procedure to engage the mower blades if the operator presence control (OPC) levers are released.

Figure 12

1. Throttle lever
2. Operator Presence Control levers (OPC)
3. Handle
4. Drive Lever
5. Blade control knob (PTO)

Disengaging the Mower Blades (PTO)

The mower blades can be disengaged by one of the following steps.

1. Push the blade control knob (PTO) down to off (Figure 12).
2. Releasing the Operator Presence Control (OPC) levers will kill the engine and stop the blades (Figure 12) with the blade control lever engaged.

The Safety Interlock System

⚠ CAUTION

If safety interlock switches are disconnected or damaged the machine could operate unexpectedly causing personal injury.

- **Do not tamper with the interlock switches.**
- **Check the operation of the interlock switches daily and replace any damaged switches before operating the machine.**

Understanding the Safety Interlock System

The safety interlock system is designed to prevent the mower from starting unless:

- The blade control knob (PTO) is pushed off.
- The speed control lever is in neutral.

The safety interlock system is designed to kill the engine when:

- The Operator Presence Control (OPC) levers are released with the mower engaged and/or the speed control is out of neutral.
- The speed control lever is shifted out of neutral without holding OPC levers or with the brake engaged.
- The blade control knob (PTO) is pulled up without holding the OPC levers.

Testing the Safety Interlock System

Service Interval: Before each use or daily

Test the safety interlock system before you use the machine each time. If the safety system does not operate as described, have an Authorized Service Dealer repair the safety system immediately.

⚠ WARNING

While testing the safety interlock system, the machine may move forward and cause personal injury or property damage.

- **Perform the safety interlock test in an open area.**
- **Ensure no one is standing in front of the machine while performing the safety interlock test.**

1. Set the neutral locks and place speed control lever in neutral.
2. Start the engine; refer to Starting and Stopping the Engine.
3. Without holding the Operator Presence Control (OPC) levers, pull the blade control knob (PTO) up. The engine should kill.
4. Push the blade control knob down to off.
5. With engine running, hold down the OPC levers. Pull the blade control knob (PTO) up. The drive belt should engage and the mower blades begin rotating.
6. Release the OPC levers. The engine should kill.
7. With the engine running, move the speed control lever forward. Release the OPC levers. The engine should kill.
8. If all the above conditions are not met have an Authorized Service Dealer repair the safety system immediately.

Driving the Machine Forward and 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 mowing performance.

Driving Forward

1. Release the parking brake.
2. To go forward, move the speed control lever to desired speed.
3. Release the neutral lock. Refer to Releasing the Neutral Lock.
4. Slowly release the drive levers to move forward (Figure 13).

   To go straight, release drive levers equally (Figure 13).

   To turn, squeeze the drive lever on the side and direction you want to turn (Figure 13).

Figure 13

1. Drive lever
2. Speed control lever

Driving Backward

Slowly squeeze the drive levers to the handle to move rearward (Figure 13).

Bringing the Machine to Neutral Position

Always set the neutral lock and parking brake when you stop the machine.

1. Squeeze the drive levers to neutral position.
2. Set the neutral locks. Refer to Operating Neutral Locks.
3. Move speed control lever to neutral position.

Stopping the Machine

1. To stop the machine, squeeze the drive levers to neutral position and engage neutral locks.
2. Move speed control lever into neutral.
3. Stop the engine; refer to Stopping the Engine.
4. Wait for all moving parts to stop before leaving the operating position. Set the parking brake.

⚠ CAUTION

Children or bystanders may be injured if they move or attempt to operate the machine while it is unattended.

Always remove the ignition key and set the parking brake when leaving the machine unattended, even if just for a few minutes.

Pushing the Machine by Hand

The by-pass valves allow the machine to be pushed by hand without the engine running.

Important: Always push the machine by hand. Never tow the machine because hydraulic damage may occur.

To Push the Machine

1. Disengage the PTO, move the motion control levers to the neutral locked position and set the parking brake.
2. Open the by-pass valves by turning them counter clockwise 1 to 2. This allows hydraulic fluid to by-pass the pumps and the wheels to turn (Figure 14).
3. Release the parking brake.
4. Push the machine to the desired location.
5. Set the parking brake.
6. Close the by-pass valves, but do not overtighten them.

   Note: Rotate the by-pass valves a maximum of 2 turns so the valve does not come out of the body causing fluid to run out.

   Important: Do not start or operate the machine with the by-pass valves open. Damage to system may occur.

Figure 14

1. Hydraulic pump
2. By-pass valve

Transporting the Machine

Use a heavy-duty trailer or truck to transport the machine. Ensure that the trailer or truck has all necessary lighting and marking as required by law. Please carefully read all the safety instructions. Knowing this information could help you, your family, pets or bystanders avoid injury.

To transport the machine:

- Stop the engine, remove the key, set the brake, and close the fuel valve.
- Securely fasten the machine to the trailer or truck with straps, chains, cable, or ropes.
- Secure a trailer to towing vehicle with safety chains.

Adjusting the Height-of-Cut

This machine has a 26 to 108 mm (1 to 4-1/4 inch) range for height-of-cut. Adjust the blade spacers, rear axle height or front caster spacers to get the correct height-of-cut. Use the Height-of-Cut chart to select the combination of adjustments required

Adjusting the Blade Height

Adjust the blades by using the 4 spacers (1/4 inch) spacers on the blade spindle bolts. This allows for a 25 mm (1 inch) adjustment range of cutting height, in 6 mm (1/4 inch) increments, in any axle position. Use the same number of blade spacers on all blades to achieve a level cut (2 above and 2 below, 1 above and 3 below, etc.).

1. Disengage the PTO and pull the throttle to the slow position.
2. Turn the ignition switch to off.
3. Wait for all moving parts to stop before leaving the operating position. Set the parking brake.
4. Hold the blade bolt and remove the nut. Slide the bolt down through the spindle, and change the spacers as needed (Figure 15).

Figure 15

1. Blade
2. Blade bolt
3. Curved washer
4. Spacer
5. Thin washer
6. Nut

5. Install the bolt, curved washer, blade, add extra spacers, and secure them with a thin washer and a nut (Figure 15).
6. Torque the blade bolt to 101-108 N-m (75-80 ft.-lb.).

Adjusting the Axle Height

Adjust the axle position to the selected height-of-cut setting. Refer to the Height-of-Cut Chart.

1. Disengage the PTO and pull the throttle to the stop position.
2. Wait for all moving parts to stop before leaving the operating position and then set the parking brake.
3. Place a jack under the engine frame. Raise the back end of the engine frame up enough to remove the drive wheels.
4. Remove the drive wheels.
5. Loosen, but do not remove, the 2 top axle bolts (Figure 16).
6. Remove the 2 lower axle bolts (Figure 16).

Figure 16

1. Top axle bolt
2. Lower axle bolt

7. Raise or lower the mounting bracket, so that you can install the 2 axle adjustment bolts in the desired hole location (Figure 16). A tapered punch can be used to help align the holes.
8. Tighten all 4 bolts.
9. Install drive wheels and lower the mower.

Adjusting the Caster Position

1. Using the Height-of-Cut Chart, adjust the caster spacers to match with the axle hole selected (Figure 17).

Figure 17

1. Latch pin
2. Spacer, 5 mm (3/16 inch)
3. Spacer, 13 mm (1/2 inch)

2. Remove the latch pin, slide the caster from the support, and change the spacers (Figure 17).
3. Install the caster in the support and insert the latch pin (Figure 17).

Adjusting the Handle Height

The handle position can be adjusted to match the operator's height preference.

1. Remove the hairpin cotter pins and clevis pins from the drive levers and neutral locks (Figure 18).

Figure 18

1. Control rod
2. Clevis pin
3. Drive lever
4. Operator Presence Control lever (OPC)
5. Left handle shown
6. Neutral lock
7. Hairpin cotter pin

2. Loosen the upper flange bolts (3/8 x 1-1/4 inches) and flange nut securing handle to rear frame (Figure 19).
3. Remove the lower flange bolts (3/8 x 1 inch) and flange nuts securing handle to rear frame (Figure 19).
4. Pivot handle to desired operating position and install lower flange bolts (3/8 x 1 inch) and flange nuts into mounting holes. Tighten all flange bolts.

Figure 19

1. Control rod fitting
2. Lower mounting holes
3. Rear frame
4. Lower flange bolt (3/8 x 1 inch)
5. Upper flange bolt (3/8 x 1-1/4 inches)
6. High position
7. Lower position
8. Upper mounting hole
9. Handle
10. Flange nut (3/8 inch)

5. Adjust the control rod length by rotating the control rod in the rod fitting (Figure 18 and Figure 19).
6. Install hairpin cotter between drive levers and neutral locks and into clevis pins (Figure 18).

   Note: Make sure the clevis pins are inserted into the neutral locks.
7. Perform the hydraulic linkage adjustments when the handle height is changed; refer Hydraulic Linkage Adjustments.

Height of Cut Chart

Axle Position	Number of spacers below caster		Number of 6 mm (1/4 inch) blade spacers below spindle				
	13mm (1/2 inch)	5mm (3/16 inch)	4	3	2	1	0
A	0	0	26 mm (1 inch)	32 mm (1–1/4 inch)	38 mm (1–1/2 inch)	45 mm (1–3/4 inch)	51 mm (2 inch)
A	0	1	29 mm (1–1/8 inch)	35 mm (1–3/8 inch)	41 mm (1–5/8 inch)	48 mm (1–7/8 inch)	54 mm (2–1/8 inch)
A	1	0	35 mm (1–3/8 inch)	41 mm (1–5/8 inch)	48 mm (1–7/8 inch)	54 mm (2–1/8 inch)	60 mm (2–3/8 inch)
B	0	1	35 mm (1–3/8 inch)	41 mm (1–5/8 inch)	48 mm (1–7/8 inch)	54 mm (2–1/8 inch)	60 mm (2–3/8 inch)
B	1	0	41 mm (1–5/8 inch)	48 mm (1–7/8 inch)	54 mm (2–1/8 inch)	60 mm (2–3/8 inch)	67 mm (2–5/8 inch)
B	1	1	45 mm (1–3/4 inch)	51 mm (2 inch)	57 mm (2–1/4 inch)	64 mm (2–1/2 inch)	70 mm (2–3/4 inch)
B	2	0	51 mm (2 inch)	57 mm (2–1/4 inch)	64 mm (2–1/2 inch)	70 mm (2–3/4 inch)	76 mm (3 inch)
C	1	1	48 mm (1–7/8 inch)	54 mm (2–1/8 inch)	60 mm (2–3/8 inch)	67 mm (2–5/8 inch)	73 mm (2–7/8 inch)
C	2	0	54 mm (2–1/8 inch)	60 mm (2–3/8 inch)	67 mm (2–5/8 inch)	73 mm (2–7/8 inch)	79 mm (3–1/8 inch)
C	2	1	57 mm (2–1/4 inch)	64 mm (2–1/2 inch)	70 mm (2–3/4 inch)	76 mm (3 inch)	83 mm (3–1/4 inch)
C	3	0	64 mm (2–1/2 inch)	70 mm (2–3/4 inch)	76 mm (3 inch)	83 mm (3–1/4 inch)	89 mm (3–1/2 inch)
D	2	1	60 mm (2–3/8 inch)	67 mm (2–5/8 inch)	73 mm (2–7/8 inch)	79 mm (3–1/8 inch)	86 mm (3–3/8 inch)
D	3	0	64 mm (2–1/2 inch)	70 mm (2–3/4 inch)	76 mm (3 inch)	83 mm (3–1/4 inch)	89 mm (3–1/2 inch)
D	3	1	70 mm (2–3/4 inch)	76 mm (3 inch)	83 mm (3–1/4 inch)	89 mm (3–1/2 inch)	95 mm (3–3/4 inch)
D	4	0	76 mm (3 inch)	83 mm (3–1/4 inch)	89 mm (3–1/2 inch)	95 mm (3–3/4 inch)	102 mm (4 inch)
E	3	1	73 mm (2–7/8 inch)	79 mm (3–1/8 inch)	86 mm (3–3/8 inch)	92 mm (3–5/8 inch)	98 mm (3–7/8 inch)

E	4	0	79 mm (3–1/8 inch)	86 mm (3–3/8 inch)	92 mm (3–5/8 inch)	98 mm (3–7/8 inch)	105 mm (4–1/8 inch)
E	4	1	83 mm (3–1/4 inch)	89 mm (3–1/2 inch)	95 mm (3–3/4 inch)	102 mm (4 inch)	108 mm (4–1/4 inch)

Maintenance

Note: Determine the left and right sides of the machine from the normal operating position.

Recommended Maintenance Schedule(s)

Maintenance Service Interval	Maintenance Procedure
After the first 8 hours	• Check the mower belt tension. • Check the hydraulic fluid level. • Replace the hydraulic oil filter.
After the first 25 hours	• Check the mower belt tension.
Before each use or daily	• Check the safety system. • Grease the caster wheels and caster pivot. • Clean the air intake screen. • Inspect the blades. • Clean the mower deck.
Every 25 hours	• Clean foam air cleaner element. • Check the hydraulic fluid level.
Every 50 hours	• Grease the mower belt idler. • Grease the pump drive idler pivot. • Grease the pump control. • Check the paper air cleaner element. • Check the tire pressure. • Check the belts. • Check the mower belt tension.
Every 100 hours	• Grease the blade engagement bellcrank. • Check the spark plugs. • Check hydraulic lines and hoses.
Every 200 hours	• Replace the paper air cleaner element. • Replace the fuel filter. • Replace the hydraulic oil filter.
Every 400 hours	• Lubricate the cam lock with Never-Seez®.
Before storage	• Paint chipped surfaces. • Perform all maintenance procedures listed above before storage.

Important: **Refer to your engine operator's manual for additional maintenance procedures.**

⚠ CAUTION

If you leave the key in the ignition switch, someone could accidently start the engine and seriously injure you or other bystanders.

Remove the key from the ignition and disconnect the spark plug wire from the spark plug(s) before you do any maintenance. Set the wire aside so that it does not accidentally contact the spark plug.

Lubrication

Use Figure 20 for locating the grease points on the machine.

Grease with No. 2 general-purpose, lithium-based or molybdenum-based grease.

1. Disengage the PTO and set the parking brake.
2. Stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Clean the grease fittings with a rag. Make sure to scrape any paint off the front of the fitting(s).
4. Connect a grease gun to the fitting. Pump grease into the fittings until grease begins to ooze out of the bearings.
5. Wipe up any excess grease.

Figure 20

1. Pump drive idler arm
2. Pump control arm
3. Bellcrank
4. Mower belt idler arm
5. Caster wheel bearing
6. Caster pivot

Lubricating the Caster and Wheel Bearings

Service Interval: Before each use or daily

Lubricate the front wheel bearings and front spindles (Figure 20).

Greasing the Mower Belt Idler

Service Interval: Every 50 hours

Grease the fitting on the mower belt idler arm pivot (Figure 20).

Note: Remove the mower deck cover to access the grease fitting for the mower belt idler arm.

Greasing the Pump Control and Bell Crank

Service Interval: Every 50 hours—Grease the pump drive idler pivot.

Every 50 hours—Grease the pump control.

Every 100 hours—Grease the blade engagement bellcrank.

Every 400 hours—Lubricate the cam lock with Never-Seez®.

Grease the fitting on the pump drive idler pivot and the pump control.

Grease the blade engagement (PTO) bellcrank (Figure 20).

Lubricate cam lock with Never-Seez® or equivalent lubricant.

Note: Remove the guards fitted under the machine to access the grease fitting on the pump drive idler pivot.

Engine Maintenance

Servicing the Air Cleaner

Service Interval/Specification

Service Interval: Every 25 hours

Every 50 hours

Every 200 hours/Yearly (whichever comes first)

Inspect the foam and paper elements and replace them if they are damaged or excessively dirty.

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

Important: Do not oil the foam or paper element.

Removing the Foam and Paper Elements

1. Disengage the PTO and set the parking brake.
2. Stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Clean around the air cleaner to prevent dirt from getting into the engine and causing damage (Figure 21).
4. Unscrew the cover knobs and remove the air cleaner cover (Figure 21).
5. Unscrew the hose clamp and remove the air cleaner assembly (Figure 21).
6. Carefully pull the foam element off the paper element (Figure 21).

Figure 21

1. Cover
2. Hose clamp
3. Paper element
4. Foam element

Cleaning the Foam Air Cleaner Element

1. Wash the foam element in liquid soap and warm water. When the element is clean, rinse it thoroughly.
2. Dry the element by squeezing it in a clean cloth.

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

Servicing the Paper Air Cleaner Element

1. Do not clean the paper filter. Replace it (Figure 21).
2. Inspect the element for tears, an oily film, or damage to the rubber seal.
3. Replace the paper element if it is damaged.

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 (Figure 21).
2. Place the air cleaner assembly onto the air cleaner base and secure it with the 2 wing nuts (Figure 21).
3. Place the air cleaner cover into position and tighten the cover knob (Figure 21).

Servicing the Engine Oil

Checking the Engine-Oil Level

1. Park the machine on a level surface.
2. Disengage the PTO and set the parking brake.
3. Stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
4. Clean around the oil dipstick (Figure 22) so that dirt cannot fall into the filler hole and damage the engine.

Figure 22

1. Oil dipstick
2. Filler tube

5. Unscrew the oil dipstick and wipe the end clean (Figure 22).
6. Slide the oil dipstick fully into the filler tube, but do not thread onto tube (Figure 22).
7. Pull the dipstick out and look at the end. If the 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 and run the engine; engine damage can result.

Changing the Oil

1. Park the machine so that the drain side is slightly lower than the opposite side to assure the oil drains completely.
2. Disengage the PTO and set the parking brake.
3. Stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
4. Slide the drain hose over the oil drain valve.
5. Place a pan below the drain hose. Rotate oil drain valve to allow oil to drain (Figure 23).
6. When oil has drained completely, close the drain valve.
7. Remove the drain hose (Figure 23).

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

Figure 23

1. Oil drain valve
2. Oil drain hose

8. Slowly pour approximately 80% of the specified oil into the filler tube (Figure 22).
9. Check the oil level; refer to Checking the Engine Oil Level.
10. Slowly add the additional oil to bring it to the **Full** mark.

Changing the Oil Filter

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

1. Drain the oil from the engine; refer to Changing the Engine Oil.
2. Remove the old filter (Figure 24).

Figure 24

1. Oil filter
2. Adapter

3. Apply a thin coat of new oil to the rubber gasket on the replacement filter (Figure 24).
4. 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 3/4 turn (Figure 24).
5. Fill the crankcase with the proper type of new oil; refer to Servicing the Engine Oil.
6. Run the engine for about 3 minutes, stop the engine, and check for oil leaks around the oil filter and drain valve.
7. Check the engine oil level and add oil if needed.
8. Wipe up any spilled oil.

Servicing the Spark Plugs

Service Interval/Specification

Service Interval: Every 100 hours

Ensure that 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 plugs and a gapping tool/feeler gauge to check and adjust the air gap. Install a new spark plugs if necessary.

Type: Champion® RCJ8Y or equivalent Air Gap: 0.75 mm (0.030 inch)

Removing the Spark Plugs

1. Disengage the PTO and set the parking brake.
2. Stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Disconnect the wires from the spark plugs (Figure 25).

Figure 25

1. Spark-plug wire/spark plug

4. Clean around the spark plugs to prevent dirt from falling into the engine and potentially causing damage.
5. Remove the spark plugs and the metal washers.

Checking the Spark Plugs

1. Look at the center of the spark plugs (Figure 26). If you see light brown or gray on the insulator, the engine is operating properly. A black coating on the insulator usually means that the air cleaner is dirty.
2. If needed, clean the spark plug with a wire brush to remove carbon deposits.

Figure 26

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

Important: Always replace the spark plugs when it has worn electrodes, an oily film on it, or has cracks in the porcelain.

3. Check the gap between the center and side electrodes (Figure 26). Bend the side electrode (Figure 26) if the gap is not correct.

Installing the Spark Plugs

1. Install the spark plugs and the metal washer. Ensure that the air gap is set correctly.
2. Tighten the spark plugs to 16 ft-lb (22 N-m).
3. Connect the wires to the spark plugs (Figure 26).

Fuel System Maintenance

Servicing the Fuel Tank

⚠ DANGER

In certain conditions, gasoline is extremely flammable and highly explosive. A fire or explosion from gasoline can burn you and others and can damage property.

- **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 smoke when draining gasoline, and stay away from an open flame or where a spark may ignite the gasoline fumes.**

Draining the Fuel Tank

1. Park the machine on a level surface, to assure fuel tank drains completely. Then disengage the power take off (PTO), set the parking brake, and turn the ignition key to **off**. Remove the key.
2. Close the fuel shut-off valve at the fuel tank (Figure 27).
3. Squeeze the ends of the hose clamp together and slide it up the fuel line away from fuel filter (Figure 27).
4. Pull the fuel line off the fuel filter (Figure 27). Open the fuel shut-off valve and allow the 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. Refer to Replacing the Fuel Filter.
5. Install the fuel line onto the fuel filter. Slide the hose clamp close to the valve to secure the fuel line.

Figure 27

1. Fuel shut-off valve
2. Fuel filter

Servicing the Fuel Filter

Replacing the Fuel Filter

Service Interval: Every 200 hours/Yearly (whichever comes first)

Never install a dirty filter if it is removed from the fuel line.

Note: Note how the fuel filter is installed in order to install the new filter correctly.

Note: Wipe up any spilled fuel.

1. Disengage the PTO and set the parking brake.
2. Stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Close fuel shut-off valve at the fuel tank (Figure 27).
4. Squeeze the ends of the hose clamps together and slide them away from the filter (Figure 28).

Figure 28

1. Hose clamp
2. Fuel line
3. Filter

5. Remove the filter from the fuel lines.
6. Install a new filter and move the hose clamps close to the filter.
7. Open fuel shut-off valve at fuel tank (Figure 27).
8. Check for fuel leaks and repair if needed.
9. Wipe up any spilled fuel.

Drive System Maintenance

Perform the following linkage adjustments when the machine needs maintenance. Perform steps Adjust the Speed Control Linkage through Adjusting the Tracking. If any adjustment is needed , do them in the order that they are listed.

Adjusting the Speed Control Linkage

1. Disengage the PTO and set the parking brake.
2. Stop the engine and wait for all moving parts to stop before leaving the operating position.
3. Move the speed control lever (located on the console) to the full forward position.
4. Check the orientation of the tabs on the ends of the speed control crank. Ensure these tabs are pointing straight down at the 6 o'clock position approximately (Figure 29).
5. Adjust the threaded yoke at the bottom of the speed control linkage until the tabs are at the 6 o'clock position (Figure 29).

Figure 29

1. Speed control rod
2. Yoke
3. Speed control crank
4. Tabs, 6 o'clock position
5. Jam nut

6. Pull the speed control lever back to neutral.
7. Check to make sure the safety switch is depressed and there is a 8 mm (5/16 inch) space between the actuating tab and the switch. (Figure 30).
8. If needed, adjust switch location to create the 8 mm (5/16 inch) space (Figure 30).

Figure 30

1. Safety switch
2. 8 mm (5/16 inch) space
3. Actuating tab

Adjusting the Neutral Control Linkages

⚠ WARNING

The engine must be running so control linkage adjustments can be performed. Contact with moving parts or hot surfaces may cause personal injury.

Keep hands, feet, face, clothing and other body parts away from rotating parts, muffler and other hot surfaces.

⚠ WARNING

Mechanical or hydraulic jacks may fail to support machine and cause a serious injury.

- **Use jack stands when supporting machine.**
- **Do not use hydraulic jacks.**

1. Disengage the PTO and set the parking brake.
2. Stop the engine and wait for all moving parts to stop before leaving the operating position.
3. Raise the rear of the machine onto jack stands to raise the drive wheels off the ground.
4. Disengage the parking brake.
5. Start the engine and move the throttle ahead to the full throttle position.
6. Place the neutral locks in the full forward position and move the speed control lever to the medium speed position.
7. Hold OPC levers down.

   Note: Hold the OPC levers down whenever the speed control lever is out of the neutral position or the engine will kill.

   ⚠ WARNING

   Electrical system will not perform proper safety shut off with Operator Presence Control (OPC) levers held down in place.

   - **Make sure Operator Presence Control (OPC) levers are working when adjustment is completed.**
   - **Never operate this unit with Operator Presence Control (OPC) levers held down in place.**

8. Squeeze one drive lever until an increased resistance is felt. This is neutral position.

   Note: Make sure you have not reached the end of the neutral lock slot. If you have, shorten the control lever linkage. Refer to Adjusting the Control Rod.

9. If the wheel turns while holding the drive lever in neutral, the neutral control linkages need adjustment (Figure 31). If the wheel stops then go to step 12.
10. Loosen the nut against the neutral control linkage yoke (Figure 31).
11. Adjust the neutral control linkage until the respective drive wheel stops while the drive lever is pulled against the neutral spring (neutral position) (Figure 31).
12. Turn the adjusting bolt approximately 1/4 turn clockwise if the wheel is turning in reverse or turn the bolt approximately 1/4 turn counter-clockwise if the wheel is turning forward (Figure 31).
13. Release the drive lever to the forward drive position and squeeze back into the neutral position. Check to see if the wheel stops. If not, repeat the above adjustment procedure.
14. After adjustments are made, tighten the nuts against the yokes.
15. Repeat this procedure for the opposite side.

Figure 31

1. Neutral control linkage
2. Yoke
3. Adjusting bolt
4. Nut

Adjusting the Hydro Control Linkages

⚠ WARNING

The engine must be running so control linkage adjustments can be performed. Contact with moving parts or hot surfaces may cause personal injury.

Keep hands, feet, face, clothing and other body parts away from rotating parts, muffler and other hot surfaces.

⚠ WARNING

Mechanical or hydraulic jacks may fail to support machine and cause a serious injury.

- **Use jack stands when supporting machine.**
- **Do not use hydraulic jacks.**

Adjusting the Left Side Linkage

1. Disengage the PTO and set the parking brake.
2. Stop the engine and wait for all moving parts to stop before leaving the operating position.
3. Raise the rear of the machine onto jack stands high enough to raise the drive wheels off of the ground.
4. Disengage the parking brake.
5. Start the engine and move the throttle ahead to the full throttle position.
6. Place the left drive lever in the full forward position.
7. Place the speed control lever in the neutral position.

⚠ WARNING

Electrical system will not perform proper safety shut off with Operator Presence Control (OPC) levers held in place.

- **Make sure Operator Presence Control (OPC) levers are working when adjustment is completed.**
- **Never operate this unit with Operator Presence Control (OPC) levers held in place.**

8. Loosen the front adjusting nut on left hydro control linkage as shown in Figure 33.
9. Turn the left rear adjusting nut counter-clockwise until wheel rotates forward (Figure 33).
10. Turn the rear adjusting nut clockwise 1/4 of a turn at a time. Then move the speed control lever forward and back to neutral. Repeat this until left wheel stops rotating forward (Figure 33).
11. Turn the rear nut an additional 1/2 turn and tighten the front adjusting nut.

    Note: Make sure flat part of linkage is perpendicular to pin part of swivel (Figure 32).

Figure 32

1. Hydraulic control linkage
2. Swivel with pin
3. Incorrect position for hydraulic control linkage
4. Correct position for Hydraulic control linkage, 90 degrees

12. After adjusting the left hydro control linkage, move the speed control lever forward and then back to the neutral position.

13. Hold the OPC levers down.

    Note: Hold the OPC levers down whenever the speed control lever is out of the neutral position or the engine will kill.

14. Make sure the speed control lever is in the neutral position and the tire does not rotate.
15. Repeat the adjustment if needed.

Figure 33

1. Hydro control linkage
2. Front adjustingnut
3. Rear adjusting nut
4. Control arm

Note: If inconsistent neutral occurs, ensure both springs are properly tightened on the speed control lever under the console, especially the rear pivot spring. Repeat the adjustments above if necessary (Figure 34).

Figure 34

1. Speed control lever
2. Rear pivot spring
3. spring

Adjusting the Right Side Linkage

1. Place the speed control lever in the neutral position.
2. Place the right drive lever in the full forward position.
3. Adjust the right side linkage by turning the quick track knob counterclockwise until the tire begins to rotate forward (Figure 35).
4. Turn the knob clockwise 1/4 of a turn at a time. Then move the speed control forward and back to neutral. Repeat this until right wheel stops rotating forward (Figure 35).
5. Hold the OPC levers down.

   Note: Hold the OPC levers down whenever the speed control lever is out of the neutral position or the engine will kill.

6. The spring that keeps tension on the knob should normally not need adjustment. However if an adjustment is needed, adjust the length of spring to 26 mm (1 inch) between the washers (Figure 35).
7. Adjust spring length by turning nut at front of spring (Figure 35).

Figure 35

1. Hydro control linkage
2. Spring
3. Quick track knob
4. 26 mm (1 inch)

Adjusting the Control Rod

Checking the Control Rod

1. With rear of machine still on jack stands and engine running at full throttle, move the speed control lever to the medium speed position.

   Note: Hold the OPC levers down whenever the speed control lever is out of the neutral position or the engine will kill.

2. Move the respective drive lever upward until it reaches the neutral position and engage neutral locks.
3. If the tire rotates in either direction, adjust the length of the control rod .

Adjusting the Control Rod

1. Adjust the rod length by releasing the drive lever and removing the hairpin cotter pin and clevis pin. Rotate the rod in the rod fitting (Figure 36).
2. Lengthen the control rod if the tire is turning in reverse and shorten the rod if the tire is turning forward.
3. Rotate the rod several turns if the tire is rotating fast. Then, adjust the rod in 1/2 turn increments.
4. Place the clevis pin into the drive lever (Figure 36).

Figure 36

1. Control rod
2. Clevis pin
3. Drive lever
4. Operator Presence Control lever (OPC)
5. Left handle shown
6. Neutral lock
7. Hairpin cotter pin

5. Release and engage neutral lock checking that the tire does not rotate (Figure 37). Continue this process until the tire does not rotate.
6. Install the hairpin cotter pin between the drive levers and the neutral locks and into the clevis pins (Figure 36).
7. Repeat this adjustment for the opposite side.

Figure 37

1. Handle
2. Neutral lock
3. Handle
4. Neutral lock slot
5. Neutral position
6. Drive lever
7. Full speed forward
8. Control rod

Adjusting the Tracking

1. Remove machine from any jack stands.
2. Check the rear tire pressure. Refer to Checking the tire Pressure.
3. Run the unit and observe the tracking on a level, smooth, hard surface such as concrete or asphalt.
4. If the unit tracks to one side or the other, turn the quick track knob. Turn the knob right to steer right and turn the knob left to steer left (Figure 38).

Figure 38

1. Quick track knob

Adjusting the Spring Anchor Links

For medium or heavy duty drive conditions, such as operating with a sulky on steep slopes, a higher spring force may be required on the hydro pump control arms to prevent the drive system from stalling.

1. Disengage the PTO and set the parking brake.
2. Stop the engine and wait for all moving parts to stop before leaving the operating position.

3. For a heavier drive setting, relocate the spring anchor links to either the medium or heavy duty positions (Figure 39). The spring anchor links are attached to the upper rear corner of the hydro drive shields on the left and right sides of the machine.

   Note: In the medium or heavy duty positions, the drive lever forces at the upper handle will also be increased

Figure 39

1. Spring anchor
2. Standard setting
3. Medium setting
4. Heavy duty setting

Checking the Tire Pressure

Service Interval: Every 50 hours/Monthly (whichever comes first)

Maintain the air pressure in the rear tires as specified. Check the pressure at the valve stem (Figure 40).

Rear Tire Pressure: 15 psi (1 bar)

Figure 40

Cooling System Maintenance

Cleaning the Air Intake Screen

Service Interval: Before each use or daily

Before each use remove any buildup of grass, dirt or other debris from the cylinder and cylinder head cooling fins, air intake screen on flywheel end, and carburetor-governor levers and linkage. This will help insure adequate cooling and correct engine speed and will reduce the possibility of overheating and mechanical damage to the engine.

Brake Maintenance

Servicing the Brake

Before each use, check the parking brake for proper operation.

Always set the parking brake when you stop the machine or leave it unattended. If the parking brake does not hold securely, adjust it.

Checking the Parking Brake

1. Move the machine onto a level surface.
2. Disengage the power take off (PTO) and stop the engine.
3. Set the parking brake.

   Note: Setting the parking brake should take a reasonable amount of force. If it engages too hard or too easily, an adjustment is required. Refer to Adjusting the Parking Brake.

Adjusting the Parking Brake

The parking brake lever is on the right side of the machine. If the parking brake does not hold securely, adjust it.

1. Check the parking brake before you adjust it; refer to Checking the Parking Brake.
2. Release the parking brake; refer to Releasing the Parking Brake.
3. Remove the spring hair pin from the lower brake link (Figure 41).

Figure 41

1. Brake linkage yoke	4. Lower brake link
2. Lower brake lever	5. 6 mm (1/4 inch)
3. Spring clevis pin	6. Hair pin

4. Rotate the lower brake link yoke clockwise into the yoke to tighten the parking brake; rotate the brake link yoke counterclockwise out of the yoke out to loosen the parking brake (Figure 41).

   Note: With the parking brake in the released position, the clearance between the tire and the flat bar is approximately 6 mm (1/4 inch) (Figure 41).
5. Secure the lower link to the lower brake lever with the hair pin cotter and the clevis pin (Figure 41).
6. Check the brake operation again; refer to Checking the Parking Brake.

Belt Maintenance

Checking the Belts

Service Interval: Every 50 hours/Monthly (whichever comes first)

Check the belts for squealing when the belt is rotating, blades slipping when cutting grass, frayed belt edges, burn marks and cracks are signs of a worn mower belt. Replace the mower belt if any of these conditions are evident.

Replacing the Mower Belt

1. Disengage the blade control (PTO) lever and set the parking brakes.
2. Stop the engine and wait for all moving parts to stop before leaving the operating position.
3. Remove the knobs and the belt cover on the mower.
4. Remove the idler pulley and the worn belt (Figure 42).
5. Install the new mower belt.
6. Install the idler pulley.
7. Engage the blade control (PTO) lever and check the belt tension. Refer to Adjusting the Mower Belt Tension.

   Note: The proper mower belt tension is 10-15 lbf. (44-67 N) with the belt deflected 13 mm (1/2 inch) halfway between the pulleys (Figure 42).

Figure 42

1. Idler pulley
2. Mower belt with 13 mm (1/2 inch) deflection

Adjusting the Mower Belt Tension

Adjusting the Tension

Service Interval: After the first 8 hours

After the first 25 hours

Every 50 hours

Important: When the belt tension or the brake linkage is adjusted, the brake needs adjustment.

Important: The belt must be tight enough to not slip during heavy loads while cutting grass. Over tensioning the belt will reduce the spindle bearing life, the belt life and the idler pulley life.

The belt must be tight enough so it does not slip during heavy loads while cutting grass and over-tensioning will reduce belt and spindle bearing life.

1. Disengage the blade control (PTO) lever and set the parking brakes.
2. Stop the engine and wait for all moving parts to stop before leaving the operating position.
3. Loosen the locknut on the turnbuckle (Figure 43).
4. Rotate the turnbuckle toward the rear of the mower to increase the tension on the belt. Rotate the turnbuckle toward the front of the mower to decrease the tension on the belt (Figure 43).

   Note: Ensure the eyebolt threads on both ends of the turnbuckle are engaged a minimum of 8 mm (5/16 inch).

Figure 43

1. Locknut
2. Turnbuckle
3. Front stop
4. Assist arm
5. 13 mm (1/2 inch) deflection here

5. Engage the blade control lever (PTO) and check the belt tension.

6. If there is no adjustment left in the turnbuckle and the belt is still loose, position the rear idler pulley in the middle or front hole (Figure 44). Use the hole that will give the correct adjustment.

7. When the idler pulley is moved the belt guide must be moved. Move the belt guide to the front position (Figure 44).

Figure 44

1. Rear idler pulley
2. Middle hole
3. Front hole
4. Belt guide in back position
5. Front idler pulley (122 cm (48 inch) mower deck only)

8. Check the belt guide under the engine frame for proper adjustment (Figure 45).

Note: When the mower belt is engaged, ensure the distance between the belt guide and the mower belt is 19 mm (3/4 inch) (Figure 45). Adjust the mower belt guide as necessary. The disengaged belt should not drag or fall off the pulley when the guides are properly adjusted.

Figure 45

1. Belt guide

9. Check the blade brake adjustment; refer to Adjusting the Blade Brake.

Adjusting the PTO Engagement Linkage

The PTO engagement linkage adjustment is located beneath the front left hand corner of the engine deck.

1. Disengage the blade control (PTO) lever and set the parking brakes.
2. Stop the engine and wait for all moving parts to stop before leaving the operating position.
3. Engage the blade control lever (PTO).
4. Adjust the linkage length to where the lower end of the bellcrank just clears the axle support gusset (Figure 46).

Figure 46

1. Bellcrank
2. Safety switch located under engine deck
3. Bellcrank just clears the gusset with the PTO engageded
4. Yoke
5. Nut
6. Assist arm link

5. Make sure the assist arm is against the rear assist arm stop on the deck (Figure 47).
6. Push the blade control lever (PTO) down to the disengaged position.
7. The assist arm should contact the front assist arm stop on the deck. If it does not contact, adjust the bellcrank so it is closer to the gusset (Figure 47).

Figure 47

1. Assist arm
2. Front assist arm stop
3. Rear assist arm stop
4. Turnbuckle
5. Assist arm link
6. Yoke
7. Hairpin cotter pin

8. To adjust the assist arm link, remove the hairpin cotter pin from the assist arm (Figure 47).
9. Loosen the nut against the yoke (Figure 46).
10. Remove the assist arm link from the assist arm and rotate the link to adjust the length.
11. Install the assist arm link into the assist arm and secure it with the hairpin cotter pin (Figure 47).
12. Check if the assist arm hits against the stops correctly.

Adjusting the PTO Safety Switch

1. Disengage the blade control (PTO) lever and set the parking brakes.
2. Stop the engine and wait for all moving parts to stop before leaving the operating position.
3. Disengage the blade control lever (PTO). Make sure the assist arm is against the front assist stop arm.
4. If needed, adjust the blade safety switch by loosening the bolts holding the switch bracket (Figure 48).
5. Move the mounting bracket until the bellcrank depresses the plunger by a 6 mm (1/4 inch).
6.

   Note: Make sure the bellcrank **does not** touch the switch body or damage to the switch could occur (Figure 48).
   Tighten the switch mounting bracket.

Figure 48

1. Bellcrank
2. Bolts and nuts
3. Switch mounting bracket
4. Switch body

Hydraulic System Maintenance

Servicing the Hydraulic System

Checking the Hydraulic Fluid

Service Interval: After the first 8 hours

Every 25 hours

Fluid Type: Mobil 1 15W-50 synthetic motor oil or equivalent synthetic oil.

Important: Use oil specified or equivalent. Other fluids could cause system damage.

Hydraulic System Oil Capacity: 77 oz. (2.3 l)

Note: There are two ways of checking the hydraulic oil. One is when the oil is warm and one is when the oil is cold. The baffle inside the tank has two levels depending if the oil is warm or cold.

1. Position machine on a level surface.
2. Disengage the power take off (PTO) and shut off the engine.
3. Wait for all moving parts to stop before leaving the operating position and then set the parking brake.
4. Clean area around cap and filler neck of hydraulic tank (Figure 49).

Figure 49

1. Cap
2. Baffle
3. Cold fluid level—full
4. Hot fluid level—full

5. Remove cap from filler neck. Look inside to check if there is fluid in the reservoir. (Figure 49).
6. If there is no fluid, add fluid to the reservoir until it reaches the cold level of the baffle.
7. Run the machine at low idle for 15 minutes to allow any air to purge out of the system and warm fluid. Refer to Starting and Stopping the Engine.
8. Recheck the fluid level while the fluid is warm. If required, add fluid to the reservoir until it reaches the hot level of the baffle.

   Note: When the fluid is warm, the fluid level is at the top of the hot level of the baffle (Figure 49).
9. Install cap on filler neck.

⚠ WARNING

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

- **If hydraulic fluid is injected into the skin it must be surgically removed within a few hours by a doctor familiar with this type of injury. Gangrene may result if this is not done.**
- **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.**
- **Safely relieve all pressure in the hydraulic system before performing any work on the hydraulic system.**
- **Make sure all hydraulic fluid hoses and lines are in good condition and all hydraulic connections and fittings are tight before applying pressure to hydraulic system.**

Replacing the Hydraulic-Oil Filter

Service Interval: After the first 8 hours

Every 200 hours

1. Disengage the PTO and set the parking brake.
2. Stop the engine and wait for all moving parts to stop before leaving the operating position.

   Important: Do not substitute automotive oil filter or severe hydraulic system damage may result.
3. Remove hydraulic reservoir cap and temporarily cover opening with a plastic bag and rubber band to prevent all hydro fluid from draining out.
4. Locate filter under engine base and place drain pan under filter (Figure 50).
5. Remove the old filter and wipe the filter adapter gasket surface clean (Figure 50).

Figure 50

1. Hydraulic filter
2. Gasket
3. Adapter

6. Apply a thin coat hydro fluid to the rubber gasket on the replacement filter.
7. Install replacement hydraulic filter onto the filter adapter. Do not tighten.
8. Remove plastic bag from reservoir opening and allow filter to fill with hydraulic fluid.
9. When the hydraulic filter is full, turn the oil filter clockwise until the rubber gasket contacts the filter adapter, then tighten the filter an additional 1/2 turn (Figure 50).
10. Clean up any spilled fluid.
11. If there is no fluid, add Mobil 1 15W-50 synthetic motor oil or equivalent synthetic oil to approximately 6 mm (1/4 inch) below the top of reservoir baffle.

    Important: Use oil specified or equivalent. Other fluids could cause system damage.
12. Start engine and let run for about two minutes to purge air from the system. Stop the engine and check for leaks. If one or both wheels will not drive, refer to Bleeding Hydraulic System.
13. Recheck level and add fluid, if required. Do not overfill.

Bleeding the Hydraulic System

The traction system is self bleeding, however, it may be necessary to bleed the system if fluid is changed or after work is performed on the system.

Purge the air from the hydraulic system when any hydraulic components, including oil filter, are removed or any of the hydraulic lines are disconnected. The critical area for purging air from the hydraulic system is between the oil reservoir and each charge pump located on the top of each variable displacement pump. Air in other parts of the hydraulic system will be purged through normal operation once the charge pump is primed.

1. Disengage the PTO and set the parking brake.
2. Stop the engine and wait for all moving parts to stop before leaving the operating position.
3. Raise the rear of the machine up onto jack stands high enough to raise the drive wheels off the ground.
4. Check the hydraulic fluid level.
5. Start the engine and move the throttle control to the full throttle position. Move the speed control lever to the middle speed position and place the drive levers into the drive position.

   If either drive wheel does not rotate, it is possible to assist the purging of the charge pump by carefully rotating the tire in the forward direction.

   Note: It is necessary to lightly touch the charge pump cap with your hand to check the pump temperature. If the cap is too hot to touch, turn off engine. The pumps may be damaged if the pump becomes too hot. If either drive wheel still does not rotate continue to next step.

Figure 51

1. Socket head screw
2. Charge pump cap

6. Thoroughly clean the area around each of the charge pump housings.
7. To prime the charge pump, loosen two hex socket head capscrews (Figure 51) 1-1/2 turns only. Make sure engine is not running. Lift charge pump housing upward and wait for a steady flow of oil to flow out from under housing. Retighten capscrews. Do this for both pumps.

   Note: Hydraulic reservoir can be pressurized to up to 5 psi (0.35 bar) to speed this process.
8. If either drive wheel still does not rotate, stop and repeat steps 4 and 5 on the respective pump. If wheels rotate slowly, the system may prime after additional running. Recheck hydraulic fluid level.
9. Allow unit to run several minutes after the charge pumps are primed with drive system in the full speed position.
10. Check the hydro control linkage adjustment. Refer to Adjusting the Hydro Control Linkages.

Checking the Hydraulic Lines

Service Interval: Every 100 hours

Check the hydraulic lines and hoses for leaks, loose fittings, kinked lines, loose mounting supports, wear, weather and chemical deterioration. Make necessary repairs before operating.

Note: Keep areas around hydraulic system clean from grass and debris build up.

⚠ WARNING

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

- **If hydraulic fluid is injected into the skin it must be surgically removed within a few hours by a doctor familiar with this type of injury. Gangrene may result if this is not done.**
- **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.**
- **Safely relieve all pressure in the hydraulic system before performing any work on the hydraulic system.**
- **Make sure all hydraulic fluid hoses and lines are in good condition and all hydraulic connections and fittings are tight before applying pressure to hydraulic system.**

Mower Deck Maintenance

Servicing the Cutting Blades

To ensure a superior quality of cut, keep the blades sharp. For convenient sharpening and replacement, you may want to keep extra blades on hand.

⚠ WARNING

A worn or damaged blade can break, and a piece of the blade could be thrown into the operator's or bystander's area, resulting in serious personal injury or death.

- **Inspect the blade periodically for wear or damage.**
- **Replace a worn or damaged blade.**

Before Inspecting or Servicing the Blades

Park the machine on a level surface, disengage the blade control PTO and set the parking brake. Turn the ignition key to off. Remove the key and disconnect the spark plug wire(s) from the spark plug(s).

Inspecting the Blades

Service Interval: Before each use or daily

1. Inspect the cutting edges (Figure 52). If the edges are not sharp or have nicks, remove and sharpen the blades. Refer to Sharpening the Blades.

Figure 52

1. Cutting Edge
2. Curved Area
3. Wear/slot Forming
4. Crack

2. Inspect the blades, especially the curved area (Figure 52). If you notice any damage, wear, or a slot forming in this area (Figure 52), immediately install a new blade.

Checking for Bent Blades

1. Rotate the blades until the ends face forward and backward (Figure 53).

Figure 53

Figure 54

1. Measure from cutting edge to a level surface

2. Measure from a level surface to the cutting edge, position A, of the blades (Figure 54). Note this dimension.
3. Rotate the opposite ends of the blades forward.
4. Measure from a level surface to the cutting edge of the blades at the same position as in step 1. The difference between the dimensions obtained in steps 1 and 2 must not exceed 3 mm (1/8 inch). If this dimension exceeds 3 mm (1/8 inch), the blade is bent and must be replaced. Refer to Removing the Blades and Installing the Blades.

⚠ WARNING

A blade that is bent or damaged could break apart and could seriously injure or kill you or bystanders.

- **Always replace bent or damaged blade with a new blade.**
- **Never file or create sharp notches in the edges or surfaces of blade.**

Removing the Blades

Replace the blades if you hit a solid object or if the blades are out of balance or bent. To ensure optimum performance and continued safety conformance of the machine, use genuine Toro replacement blades. Replacement blades made by other manufacturers may result in non-conformance with safety standards.

1. Hold the blade bolt with a wrench.
2. Remove the nut, blade bolt, curved washer, blade, spacers, and thin washer from the spindle (Figure 55).

Figure 55

1. Blade
2. Blade bolt
3. Curved washer
4. Spacer
5. Thin washer
6. Nut

Sharpening the Blades

1. Use a file to sharpen the cutting edge at both ends of the blade (Figure 56). Maintain the original angle. The blade retains its balance if the same amount of material is removed from both cutting edges.

Figure 56

1. Sharpen at original angle

2. Check the balance of the blade by putting it on a blade balancer (Figure 57). If the blade stays in a horizontal position, the blade is balanced and can be used. If the blade is not balanced, file some metal off the end of the sail area only (Figure 57). Repeat this procedure until the blade is balanced.

Figure 57

1. Blade
2. Balancer

Installing the Blades

1. Install the bolt, curved washer, and blade. Select the proper number of spacer(s) for the height-of-cut, and slide the bolt into the spindle (Figure 55).

   Important: The curved part of the blade must point upward toward the inside of the mower to ensure proper cutting.

2. Install the remaining spacer(s) and secure them with a thin washer and a nut (Figure 55).
3. Torque the blade bolt to 75-80 ft-lb (101-108 N-m).

Adjusting the Blade Brake

1. Disengage the PTO, turn the ignition key to off, and remove the key.
2. Wait for all moving parts to stop before leaving the operating position and then set the parking brakes.
3. If necessary, adjust the spring mounting bolts so that the blade brake pad rubs against both sides of the pulley groove (Figure 58).
4. Adjust the nut at the end of the blade brake rod until there is 3-5 mm (1/8-3/16 inch) between the nut and spacer (Figure 58).
5. Engage the blades. Ensure the blade brake pad no longer contacts the pulley groove.

Figure 58

1. Spring mounting bolts
2. Blade brake pad
3. 3-5 mm (1/8-3/16 inch)

Storage

1. Disengage the power take off (PTO), set the parking brake, and turn the ignition key to off. Remove the key.
2. Remove grass clippings, 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 shift lever plate, and engine.
3. Check the brake; refer to Servicing the Brake in Brake Maintenance (page 34).
4. Service the air cleaner; refer to Servicing the Air Cleaner.
5. Grease the machine; refer to Greasing and Lubrication in Lubrication (page 23).
6. Change the crankcase oil; refer to Servicing the Engine in.
7. Check the tire pressure; refer to Checking the tire Pressure in Drive System Maintenance (page 28).
8. For long-term storage:
   A. Add stabilizer/conditioner additive to fuel in the tank.
   B. Run engine to distribute conditioned fuel through the fuel system (5 minutes).
   C. Stop engine, allow to cool and drain the fuel tank; refer to Servicing the Fuel Tank in Fuel System Maintenance (page 27), or operate engine until it stops.
   D. Restart engine and run until it stops. Repeat, on Choke until engine will not restart.
   E. Dispose of fuel properly. Recycle as per local codes.

      Note: Do not store stabilizer/conditioned gasoline over 90 days.
9. Remove the spark plug(s) and check its condition; refer to Servicing the Spark Plug. 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 spark plug wires onto the spark plug(s).
10. Check and tighten all bolts, nuts, and screws. Repair or replace any part that is damaged or defective.
11. Paint all scratched or bare metal surfaces. Paint is available from your Authorized Service Dealer.
12. 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 Cause	Corrective Action
The engine will not start, starts hard, or fails to keep running.	1. The fuel tank is empty. 2. The fuel shutoff valve is closed. 3. The choke is not on. 4. The air cleaner is dirty. 5. A spark plug wire is loose or disconnected. 6. A spark plug is pitted, fouled, or the gap is incorrect. 7. Dirt is in the fuel filter. 8. Dirt, water, or stale fuel is in the fuel system.	1. Fill the fuel tank with gasoline. 2. Open the fuel shutoff valve. 3. Apply the choke. 4. Clean or replace the air cleaner element. 5. Install the wire on the spark plug. 6. Install a new, correctly gapped spark plug. 7. Replace the fuel filter. 8. Contact an Authorized Service Dealer.
The engine loses power.	1. The engine load is excessive. 2. The air cleaner is dirty. 3. The oil level in the crankcase is low. 4. Cooling fins and air passages under the engine blower housing are plugged. 5. A spark plug is pitted, fouled, or the gap is incorrect. 6. The vent hole in the fuel cap is plugged. 7. Dirt is in the fuel filter. 8. Dirt, water, or stale fuel is in the fuel system.	1. Reduce the ground speed. 2. Clean the air cleaner element. 3. Add oil to the crankcase. 4. Remove the obstruction from the cooling fins and air passages. 5. Install a new, correctly gapped spark plug. 6. Clean or replace the fuel cap. 7. Replace the fuel filter. 8. Contact an Authorized Service Dealer.
The engine overheats.	1. The engine load is excessive. 2. The oil level in the crankcase is low. 3. Cooling fins and air passages under the engine blower housing are plugged.	1. Reduce the ground speed. 2. Add oil to the crankcase. 3. Remove the obstruction from the cooling fins and air passages.
The machine does not drive.	1. The speed control lever is in the neutral position. 2. A traction belt is worn, loose, or broken. 3. A traction belt is off a pulley. 4. An idler spring is broken or missing.	1. Move the speed control lever out of the neutral position. 2. Change the belt. 3. Change the belt. 4. Replace the spring.
The machine is vibrating abnormally.	1. A cutting blade is bent or unbalanced. 2. A blade mounting bolt is loose. 3. Engine mounting bolts are loose. 4. An engine pulley, idler pulley, or blade pulley is loose. 5. An engine pulley is damaged. 6. The blade spindle is bent.	1. Install a new cutting blade. 2. Tighten the blade mounting bolt. 3. Tighten the engine mounting bolts. 4. Tighten the appropriate pulley. 5. Contact an Authorized Service Dealer. 6. Contact an Authorized Service Dealer.
The cutting height is uneven.	1. Blade(s) is/are not sharp. 2. Cutting blade(s) is/are bent. 3. The mower is not level. 4. The underside of the mower is dirty. 5. Tire pressure is not correct. 6. A blade spindle is bent.	1. Sharpen the blade(s). 2. Install new cutting blade(s). 3. Level the mower from side-to-side and front-to-rear. 4. Clean the underside of the mower. 5. Adjust the tire pressure. 6. Contact an Authorized Service Dealer.

Problem	Possible Cause	Corrective Action
The blades do not rotate.	1. The mower deck belt is worn or loose.	1. Check the belt tension.
	2. The mower deck belt is broken.	2. Install a new deck belt.
	3. The mower deck belt is off a pulley.	3. Inspect the belt and replace if damaged. Check the pulleys and idlers and adjust the belt tension.
	4. An idler spring is broken or missing.	4. Replace the spring.

Schematics

Electrical Schematic (Rev. A)

Hydraulic Schematic (Rev. A)

International Distributor List

Distributor:	Country:	Phone Number:	Distributor:	Country:	Phone Number:
Agrolanc Kft	Hungary	36 27 539 640	Maquiver S.A.	Colombia	57 1 236 4079
Balama Prima Engineering Equip.	Hong Kong	852 2155 2163	Maruyama Mfg. Co. Inc.	Japan	81 3 3252 2285
B-Ray Corporation	Korea	82 32 551 2076	Mountfield a.s.	Czech Republic	420 255 704 220
Casco Sales Company	Puerto Rico	787 788 8383	Mountfield a.s.	Slovakia	420 255 704 220
Ceres S.A.	Costa Rica	506 239 1138	Munditol S.A.	Argentina	54 11 4 821 9999
CSSC Turf Equipment (pvt) Ltd.	Sri Lanka	94 11 2746100	Norma Garden	Russia	7 495 411 61 20
Cyril Johnston & Co.	Northern Ireland	44 2890 813 121	Oslinger Turf Equipment SA	Ecuador	593 4 239 6970
Cyril Johnston & Co.	Republic of Ireland	44 2890 813 121	Oy Hako Ground and Garden Ab	Finland	358 987 00733
Equiver	Mexico	52 55 539 95444	Parkland Products Ltd.	New Zealand	64 3 34 93760
Femco S.A.	Guatemala	502 442 3277	Perfetto	Poland	48 61 8 208 416
ForGarder OU	Estonia	372 384 6060	Pratoverde SRL.	Italy	39 049 9128 128
G.Y.K. Company Ltd.	Japan	81 726 325 861	Prochaska & Cie	Austria	43 1 278 5100
Geomechaniki of Athens	Greece	30 10 935 0054	RT Cohen 2004 Ltd.	Israel	972 986 17979
Golf international Turizm	Turkey	90 216 336 5993	Riversa	Spain	34 9 52 83 7500
Guandong Golden Star	China	86 20 876 51338	Lely Turfcare	Denmark	45 66 109 200
Hako Ground and Garden	Sweden	46 35 10 0000	Solvert S.A.S.	France	33 1 30 81 77 00
Hako Ground and Garden	Norway	47 22 90 7760	Spypros Stavrinides Limited	Cyprus	357 22 434131
Hayter Limited (U.K.)	United Kingdom	44 1279 723 444	Surge Systems India Limited	India	91 1 292299901
Hydroturf Int. Co Dubai	United Arab Emirates	97 14 347 9479	T-Markt Logistics Ltd.	Hungary	36 26 525 500
Hydroturf Egypt LLC	Egypt	202 519 4308	Toro Australia	Australia	61 3 9580 7355
Irrimac	Portugal	351 21 238 8260	Toro Europe NV	Belgium	32 14 562 960
Irrigation Products Int'l Pvt Ltd.	India	0091 44 2449 4387	Valtech	Morocco	212 5 3766 3636
Jean Heybroek b.v.	Netherlands	31 30 639 4611	Victus Emak	Poland	48 61 823 8369

European Privacy Notice

The Information Toro Collects
Toro Warranty Company (Toro) respects your privacy. In order to process your warranty claim and contact you in the event of a product recall, we ask you to share certain personal information with us, either directly or through your local Toro company or dealer.

The Toro warranty system is hosted on servers located within the United States where privacy law may not provide the same protection as applies in your country.

BY SHARING YOUR PERSONAL INFORMATION WITH US, YOU ARE CONSENTING TO THE PROCESSING OF YOUR PERSONAL INFORMATION AS DESCRIBED IN THIS PRIVACY NOTICE.

The Way Toro Uses Information
Toro may use your personal information to process warranty claims, to contact you in the event of a product recall and for any other purpose which we tell you about. Toro may share your information with Toro's affiliates, dealers or other business partners in connection with any of these activities. We will not sell your personal information to any other company. We reserve the right to disclose personal information in order to comply with applicable laws and with requests by the appropriate authorities, to operate our systems properly or for our own protection or that of other users.

Retention of your Personal Information
We will keep your personal information as long as we need it for the purposes for which it was originally collected or for other legitimate purposes (such as regulatory compliance), or as required by applicable law.

Toro's Commitment to Security of Your Personal Information
We take reasonable precautions in order to protect the security of your personal information. We also take steps to maintain the accuracy and current status of personal information.

Access and Correction of your Personal Information
If you would like to review or correct your personal information, please contact us by email at legal@toro.com.

Australian Consumer Law

Australian customers will find details relating to the Australian Consumer Law either inside the box or at your local Toro Dealer.

The Toro Total Warranty

Landscape
Contractor
Equipment (LCE)

Conditions and Products Covered

The Toro Company and its affiliate, Toro Warranty Company, pursuant to an agreement between them, jointly promise to the original purchaser to repair the Toro Products listed below if defective in materials or workmanship.

The following time periods apply from the date of purchase by the original owner:

Products	Warranty Period
Walk Behind Mowers	
53 cm Mowers – Residential use[1]	2 years
53 cm Mowers – Commercial use	1 year
76 cm Mowers – Residential use[1]	2 years
76 cm Mowers – Commercial use	1 year
Mid-Size Walk-Behind Mowers	2 years
• Engine	2 years[2]
Grand Stand® Mowers	5 years or 1,200 hours[3]
• Engine	2 years
• Frame	Lifetime (original owner only)[4]
Z Master® 2000 Series Mowers	4 years or 500 hours [3]
• Engine	2 years[2]
• Frame	Lifetime (original owner only)[4]
Z Master® 3000 Series Mowers	5 years or 1,200 hours[3]
• Engine	2 years[2]
• Frame	Lifetime (original owner only)[4]
Z Master® 5000 and 6000 Series Mowers	5 years or 1,200 hours[3]
• Engine	2 years[2]
• Frame	Lifetime (original owner only)[4]
Z Master® 7000 Series Mowers	5 years or 1,200 hours[3]
• Engine	2 years[2]
• Frame	Lifetime (original owner only)[4]
All Mowers	
• Battery	2 years
• Attachments	2 years

[1]Residential use means use of the product on the same lot as your home. Use at more than one location is considered commercial use and the commercial warranty would apply.

[2]Some engines used on Toro LCE Products are warranted by the engine manufacturer.

[3]Whichever occurs first.

[4]Lifetime Frame Warranty - If the main frame, consisting of the parts welded together to form the tractor structure that other components such as the engine are secured to, cracks or breaks in normal use, it will be repaired or replaced under warranty at no cost for parts and labor. Frame failure due to misuse or abuse and failure or repair required due to rust or corrosion are not covered.

This warranty includes the cost of parts and labor, but you must pay transportation costs.

Instructions for Obtaining Warranty Service

If you think that your Toro Product contains a defect in materials or workmanship, follow this procedure:

1. Contact your seller to arrange service of the product. If for any reason it is impossible for you to contact your seller, you may contact any Toro Authorized Distributor to arrange service.
2. Bring the product and your proof of purchase (sales receipt) to the Service Dealer.
3. If for any reason you are dissatisfied with the Service Dealer's analysis or with the assistance provided, contact us at:

   RLC Customer Care Department

   Toro Warranty Company
   8111 Lyndale Avenue South
   Bloomington, MN 55420-1196
   001-952-948-4707

   See attached Distributor List.

Owner Responsibilities

You must maintain your Toro Product by following the maintenance procedures described in the *Operator's Manual*. Such routine maintenance, whether performed by a dealer or by you, is at your expense.

Items and Conditions Not Covered

There is no other express warranty except for special emission system coverage and engine warranty coverage on some products. This express warranty does not cover the following:

- Cost of regular maintenance service or parts, such as filters, fuel, lubricants, oil changes, spark plugs, air filters blade sharpening or worn blades, cable/linkage adjustments, or brake and clutch adjustments
- Components failing due to normal wear
- Any product or part which has been altered or misused or neglected and requires replacement or repair due to accidents or lack of proper maintenance
- Pickup and delivery charges
- Repairs or attempted repairs by anyone other than an Authorized Toro Service Dealer
- Repairs necessary due to failure to follow recommended fuel procedure (consult *Operator's Manual* for more details)
  - Removing contaminants from the fuel system is not covered
  - Use of old fuel (more than one month old) or fuel which contains more than 10% ethanol or more that 15% MTBE
  - Failure to drain the fuel system prior to any period of non-use over one month

General Conditions

The purchaser is covered by the national laws of each country. The rights to which the purchaser is entitled with the support of these laws are not restricted by this warranty.