Form No. 3329-833 Rev A

Z355

Z-Master® with 48 in. Mower and Bagger

Model No. 74805—Serial No. 240000001 and Up

Operator's Manual

Register your product at www.Toro.com

Original Instructions (EN)

Warning

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

Important The engine in this product is not equipped with a spark arrester muffler. It is a violation of California Public Resource Code Section 4442 to use or operate this engine on any forest-covered, brush-covered, or grass-covered land as defined in CPRC 4126. Other states or federal areas may have similar laws.

This spark ignition system complies with Canadian ICES-002.

Ce système d'allumage par étincelle de véhicule est conforme à la norme NMB-002 du Canada.

The enclosed Engine Owner's Manual is supplied for information regarding the U.S. Environmental Protection Agency (EPA) and the California Emission Control Regulation of emission systems, maintenance, and warranty.

Keep this Engine Owner's Manual with your unit. Should this Engine Owner's Manual become damaged or illegible, replace immediately. Replacements may be ordered through the engine manufacturer.

Contents

8111 Lyndale Avenue South
Bloomington, MN 55420-1196

Introduction

Read this manual carefully to learn how to operate and maintain your product properly. The information in this manual can help you and others avoid injury and product damage. Although Toro designs and produces safe products, you are responsible for operating the product properly and safely.

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 illustrates the location of the model and serial numbers on the product.

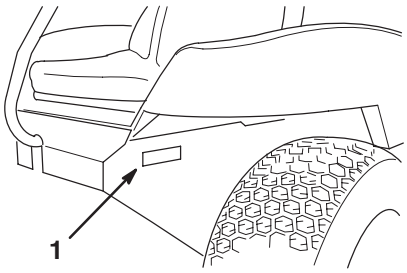

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Figure 1

1. Location of the model and serial numbers

Write the product model and serial numbers in the space below:

Model No. _____

Serial No. _____

This manual identifies potential hazards and has special safety messages that help you and others avoid personal injury and even death. ***Danger***, ***Warning***, and ***Caution*** are signal words used to identify the level of hazard. However, regardless of the hazard, be extremely careful.

Danger signals an extreme hazard that *will* cause serious injury or death if you do not follow the recommended precautions.

Warning signals a hazard that *may* cause serious injury or death if you do not follow the recommended precautions.

Caution signals a hazard that may cause minor or moderate injury if you do not follow the recommended precautions.

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

Safety

This machine meets or exceeds the B71.4 1999 specifications of the American National Standards Institute, in effect at time of production.

Note: The addition of attachments made by other manufacturers that do not meet American National Standards Institute certification will cause noncompliance of this machine.

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

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

This product is designed for cutting and recycling grass or, when equipped with a grass bagger, for catching cut grass. Any use for purposes other than these could prove dangerous to user and bystanders.

Safe Operating Practices

The following instructions are from ANSI standard B71.4—1999.

Training

- Read the Operator's Manual and other training material. If the operator(s) or mechanic(s) can not read English it is the owner's responsibility to explain this material to them.
- Become familiar with the safe operation of the equipment, operator controls, and safety signs.
- All operators and mechanics should be trained. The owner is responsible for training the users.
- Never let children or untrained people operate or service the equipment. Local regulations may restrict the age of the operator.
- The owner/user can prevent and is responsible for accidents or injuries occurring to himself or herself, other people or property.

Preparation

- Evaluate the terrain to determine what accessories and attachments are needed to properly and safely perform the job. Only use accessories and attachments approved by the manufacturer.
- Wear appropriate clothing including hard hat, safety glasses and hearing protection. Long hair, loose clothing or jewelry may get tangled in moving parts.
- Inspect the area where the equipment is to be used and remove all objects such as rocks, toys, and wire which can be thrown by the machine.
- Use extra care when handling gasoline and other fuels. They are flammable and vapors are explosive.
    - Use only an approved container
    - Never remove gas cap or add fuel with engine running. Allow engine to cool before refueling. Do not smoke.
    - Never refuel or drain the machine indoors.
- Check that operator's presence controls, safety switches, and shields are attached and functioning properly. Do not operate unless they are functioning properly.

Operation

- Never run an engine in an enclosed area.
- Only operate in good light, keeping away from holes and hidden hazards.
- Be sure all drives are in neutral and parking brake is engaged before starting engine. Start the engine only from the operator's position.
- Never raise a deck with the blades running.
- Never operate without the PTO shield, or other guards securely in place. Be sure all interlocks are functioning properly.
- Never operate with the discharge deflector raised, removed or altered, unless using a grass catcher.
- Do not change the engine governor setting or overspeed the engine.
- Stop on level ground, lower implements, disengage drives, engage parking brake, and shut off engine before leaving the operator's position for any reason including emptying the catchers or unclogging the chute.
- Stop equipment and inspect blades after striking objects or if an abnormal vibration occurs. Make necessary repairs before resuming operations.
- Keep hands and feet away from the cutting units.
- Never carry passengers and keep pets and bystanders away.
- Be alert, slow down and use caution when making turns. Look behind and to the side before changing directions.
- Slow down and use caution when crossing roads and sidewalks. Stop blades if not mowing.
- Be aware of the mower discharge direction and do not point it at anyone.
- Do not operate the mower under the influence of alcohol or drugs.
- Use extreme care when loading or unloading the machine into a trailer or truck.
- Use care when approaching blind corners, shrubs, trees, or other objects that may obscure vision.

Slope Operation

Slopes and ramps are a major factor related to loss-of-control and tip-over accidents, which can result in severe injury or death. All slopes and ramps require extra caution. If you cannot back up the slope or if you feel uneasy on it, do not mow it.

DO

- If a steep slope must be ascended, back up the hill, and drive forward down the hill.

- Remove obstacles such as rocks, tree limbs, etc., from the mowing area. Watch for holes, ruts or bumps, as uneven terrain could overturn the machine. Tall grass can hide obstacles.
- Use a walk behind mower and/or a hand trimmer near drop–offs, ditches, steep banks or water.
- Use slow speed so that you will not have to stop while on the slope.
- Use extra care with grass catchers or other attachments. These can change the stability of the machine.
- Keep all movement on slopes slow and gradual. Do not make sudden changes in speed or direction.
- Avoid starting or stopping on a slope. If tires lose traction, disengage the blades and proceed slowly straight down the slope.

DO NOT

- Do not mow across hillsides or slopes exceeding 5°.
- Do not mow down hillsides or slopes exceeding 10°.
- Do not mow up hillsides or slopes exceeding 15°.
- Avoid turning on slopes. If you must turn, turn slowly and gradually downhill, if possible.
- Do not mow near drop-offs, ditches, or embankments. The machine could suddenly turn over if a wheel goes over the edge of a cliff or ditch, or if an edge caves in.
- Do not mow on wet grass. Reduced traction could cause sliding.
- Do not use a grass catcher on steep slopes. Heavy grass bags could cause loss of control or overturn the machine.

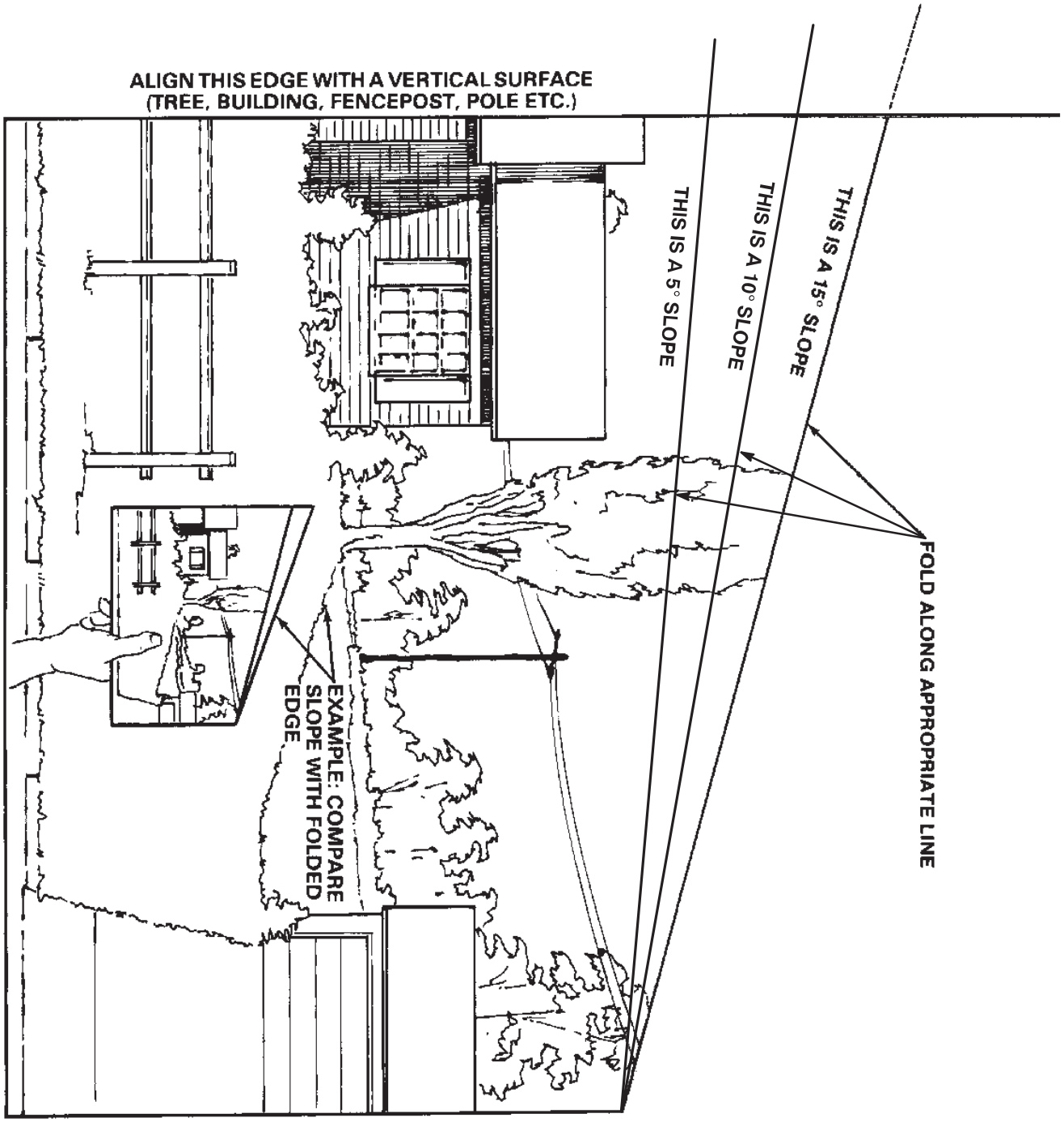
Using the Rollover Protection System (ROPS)

- A rollbar is available and its use is recommended for areas where there are slopes, drop–offs or water.
- When operating a machine with ROPS always use the seat belt.
- Be certain that the seat belt can be released quickly if the machine is driven or rolls into ponds or water.
- Check carefully for overhead clearances (i.e. branches, doorways, electrical wires) before driving under any objects and do not contact them.

Maintenance and storage

- Disengage drives, lower implement, set parking brake, stop engine, and remove key or disconnect spark plug wire. Wait for all movement to stop before adjusting, cleaning or repairing.
- Clean grass and debris from cutting units, drives, mufflers, and engine to help prevent fires. Clean up oil or fuel spillage.
- Let engine cool before storing and do not store near flame.
- Shut off fuel while storing or transporting. Do not store fuel near flames or drain indoors.
- Park machine on level ground. Never allow untrained personnel to service machine.
- Use jack stands to support components when required.
- Carefully release pressure from components with stored energy.
- Disconnect battery or remove spark plug wire before making any repairs. Disconnect the negative terminal first and the positive last. Reconnect positive first and negative last.
- Use care when checking blades. Wrap the blade(s) or wear gloves, and use caution when servicing them. Only replace blades. Never straighten or weld them.
- Keep hands and feet away from moving parts. If possible, do not make adjustments with the engine running.
- Charge batteries in an open well ventilated area, away from spark and flames. Unplug charger before connecting or disconnecting from battery. Wear protective clothing and use insulated tools.
- Keep all parts in good working condition and all hardware tightened. Replace all worn or damaged decals.
- Use only Toro-approved attachments. Warranty may be voided if used with unapproved attachments.
- Check brake operation frequently. Adjust and service as required.

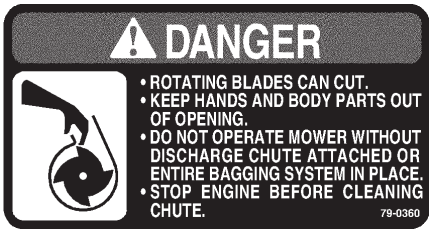
Slope Chart


ALIGN THIS EDGE WITH A VERTICAL SURFACE
(TREE, BUILDING, FENCEPOST, POLE ETC.)
THIS IS A 5° SLOPE
THIS IS A 10° SLOPE
THIS IS A 15° SLOPE
FOLD ALONG APPROPRIATE LINE
EXAMPLE: COMPARE SLOPE WITH FOLDED EDGE

Safety and Instruction Decals

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

1-523552



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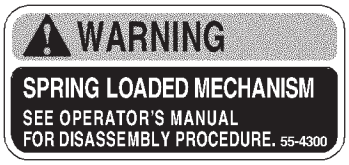
43-8480

80-8760

93-9198

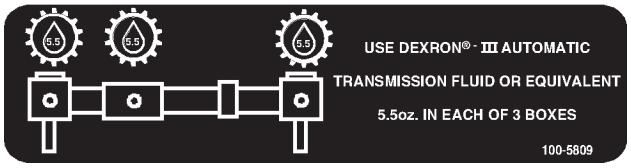


55-4300

98-4361

1. Entanglement, belt

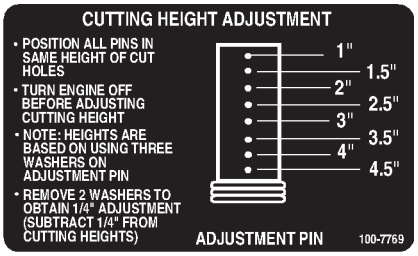
68-8340



100-5809

98-4387

1. Warning—wear hearing protection.



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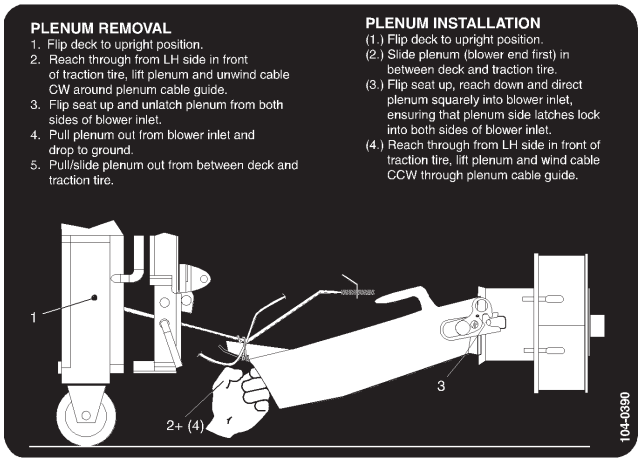
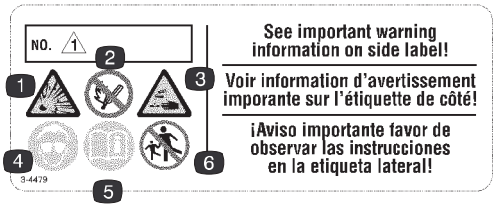
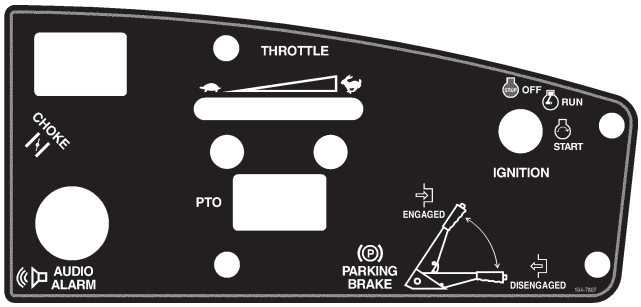


104-0390



104-4163

1. Explosion hazard
2. No fire, open flames, or smoking.
3. Caustic liquid/chemical burn hazard
4. Wear eye protection
5. Read the *Operator's Manual.*
6. Keep bystanders a safe distance from the battery.

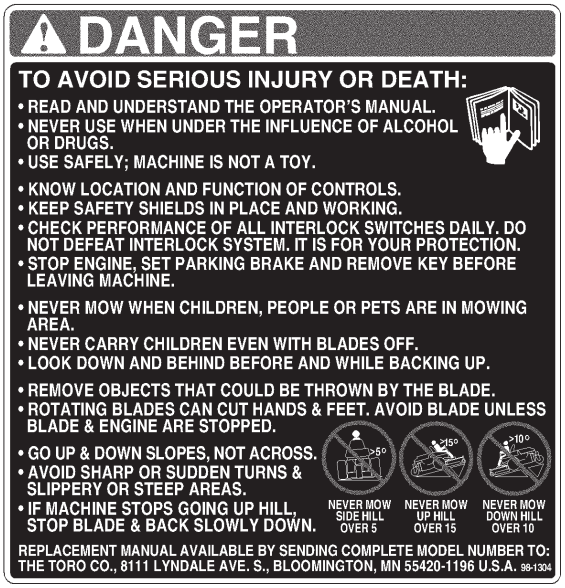


104-7807

104-8172

98-1313

1. Fast forward
2. Slow forward
3. Neutral
4. Slow reverse
5. Fast reverse
6. Continuous variable setting



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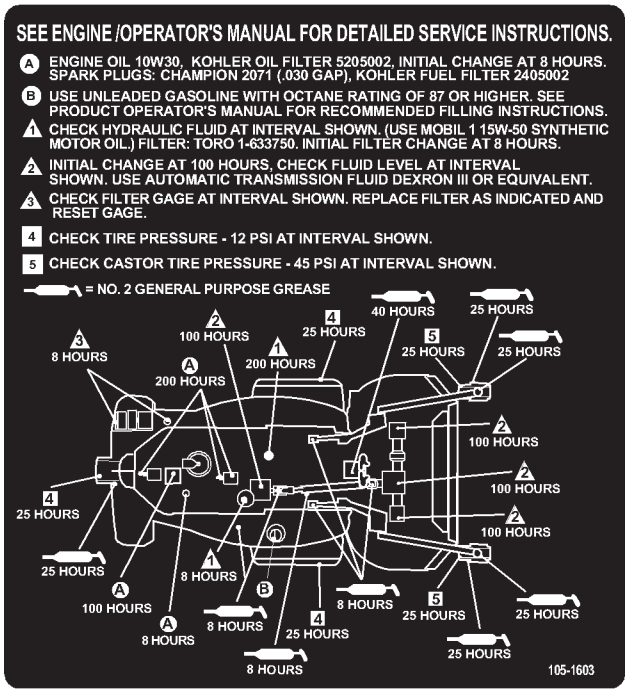


105-1603

104-5091

1. Contains lead; do not discard.
2. Recycle
3. Wear eye protection; explosive gases can cause blindness and other injuries
4. No sparks, flame, or smoking
5. Sulfuric acid can cause blindness or severe burns.
6. Flush eyes immediately with water and get medical help fast.
7. Maximum fill line
8. Minimum fill line
9. Instructions for activating the battery

Gasoline and Oil

Recommended Gasoline

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

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

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 1/4 to 1/2 inch (6 to 13 mm) below the bottom of the filler neck. This empty space in the tank allows gasoline to expand.**
- **Never smoke when handling gasoline, and stay away from an open flame or where gasoline fumes may be ignited by a spark.**
- **Store gasoline in an approved container and keep it out of the reach of children. Never buy more than a 30-day supply of gasoline.**
- **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 your face away from the nozzle and gas tank or conditioner opening.**
- **Keep gas away from eyes and skin.**

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 fuel tank cap and remove the cap. Add unleaded regular gasoline to fuel tank, until the level is 1/4 to 1/2 inch (6–13 mm) below the bottom of the filler neck. This space in the tank allows gasoline to expand. Do not fill the fuel tank completely full.
3. Install fuel tank cap securely. Wipe up any gasoline that may have spilled.

Check Engine Oil Level

Before you start the engine and use the machine, check the oil level in the engine crankcase; refer to Checking Oil Level, page 36.

Setup

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

Loose Parts

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

Description	Qty.	Use
Mulching baffle	1	For mulching mode
Key (1 spare)	2	Use in the ignition
Safety booklet Operator's manual Engine operator's manual	1 1 1	Read before operating the machine.
Parts catalog	1	
Registration card	1	Fill out and return to Toro.

Removing the bracket from Rear Tail Wheel

1. Remove locknut from bolt that fastens crate bracket to tail wheel (Fig. 2).
2. Remove crate bracket from wheel bolt. Install locknut on to bolt until fork clamps onto spacer (Fig. 2).

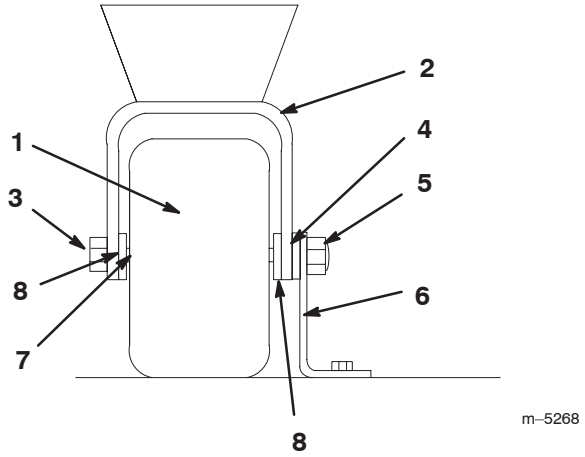


Figure 2

1. Tail wheel
2. Fork
3. Bolt head
4. Washer
5. Locknut
6. Crate bracket
7. Spacer
8. Shim Washers

Removing the Deck Banding

Remove any tie down banding that holds deck in place.

Checking the Tire Pressure

Check the air pressure in all tires; refer to Tire Pressure, page 45.

Activating the Battery

Bulk electrolyte with 1.265 specific gravity must be purchased from a local battery supply outlet.

Danger

Battery electrolyte contains sulfuric acid which is a deadly poison and causes severe burns.

- **Do not drink electrolyte and avoid contact with skin, eyes or clothing. Wear safety glasses to shield your eyes and robber gloves to protect your hands.**
- **Fill the battery where clean water is always available for flushing the skin.**
- **Follow all instructions and comply with all safety messages on the electrolyte container.**

1. Remove the battery from the machine. Refer to Removing the Battery on page 51.
2. Clean the top of the battery with a paper towel.

Note: Never fill the battery with electrolyte while the battery is installed in the machine. Electrolyte could be spilled on other parts and cause corrosion.

3. Remove the vent caps from the battery (Fig. 3).

4. Slowly pour electrolyte into each battery cell until the level is up to the **upper** line (Fig. 3) on the battery case.

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

5. Wait five to ten minutes after filling the battery cells. Add electrolyte, if necessary, until the electrolyte level is up to the **upper** line (Fig. 3) on the battery case.

6. Reinstall battery filler caps.

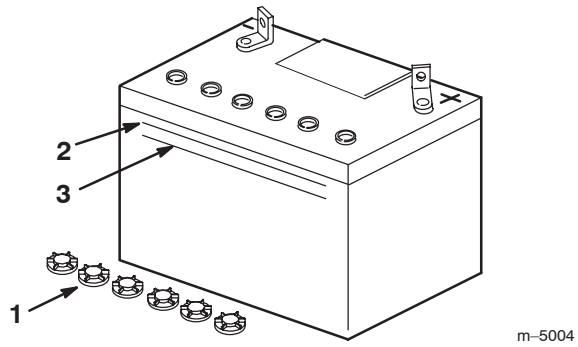


Figure 3

1. Filler caps
2. **Upper** line
3. **Lower** line

Warning

Charging battery produces gasses that can explode and cause serious injury.

- **Keep cigarettes, sparks and flames away from battery.**
- **Make sure the ignition switch is off.**
- **Ventilate when charging or using battery in an enclosed space.**

7. Charge the battery. Refer to Charging the Battery on page 51.

8. Install the battery into the machine. Refer to Installing the Battery on page 50.

Note: Do not run the machine with the battery disconnected, electrical damage may occur.

Checking the Hydraulic Fluid

Check the hydraulic fluid level before the engine is first started.

Refer to Checking the Hydraulic Fluid on page 45.

Check Engine Oil Level

Before you start the engine and use the machine, check the oil level in the engine crankcase; refer to Checking the Engine Oil Level, page 36.

Removing the Machine from the Crate

1. Tilt deck down and latch into position.

2. Machine can now be driven forward off the crate.

Operation

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

Think Safety First

Please read all safety instructions and symbols in the safety section. Knowing this information could help you or bystanders avoid injury.

Danger

Mowing on wet grass or steep slopes can cause sliding and loss of control.

Wheels dropping over edges can cause rollovers, which may result in serious injury, death or drowning.

A rollbar is available and its use is recommended for areas where there are slopes, drop–offs or water.

To avoid loss of control and possibility of rollover:

- **Do not mow near drop–offs or near water.**
- **Do not mow slopes greater than 15 degrees.**
- **Reduce speed and use extreme caution on slopes.**
- **Avoid sudden turns or rapid speed changes.**

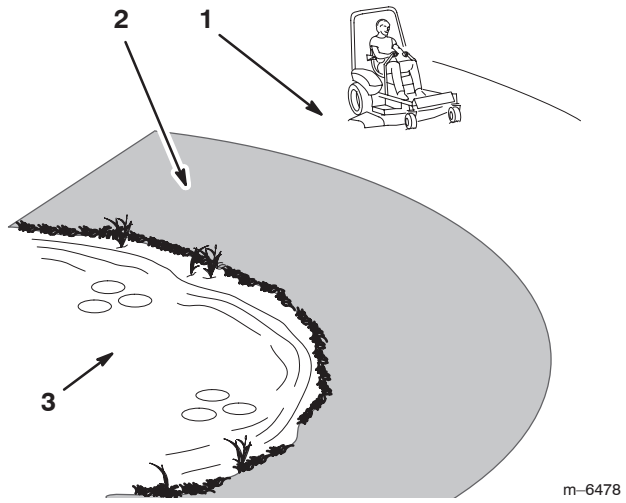


Figure 4

1. Safe Zone—use the Z Master here on slopes less than 15 degrees or flat areas.
2. Use walk behind mower and/or hand trimmer near drop–offs and water.
3. Water or drop-off

The use of protective equipment for eyes, ears, 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 5

1. Warning—wear hearing protection.

Controls

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

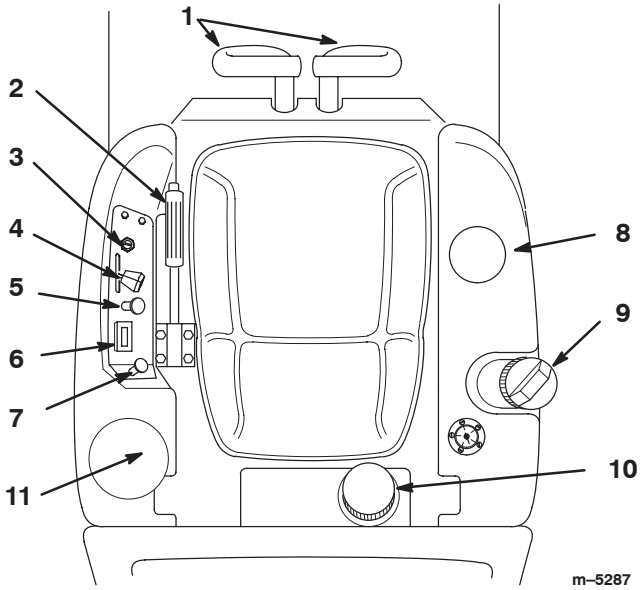


Figure 6

1. Motion control lever
2. Parking brake
3. Ignition switch
4. Throttle
5. Power take off (PTO)
6. Hourmeter
7. Choke
8. Drink holder
9. Fuel cap
10. Hydro reservoir cap
11. Engine air intake

Hour Meter

The hour meter records the number of hours the engine has operated. It operates when the engine is running. Use these times for scheduling regular maintenance.

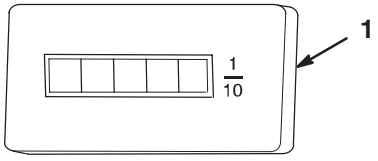


Figure 7

1. Hour meter

Operating the Parking Brake

Always set the parking brake when you stop the machine or leave it unattended.

Setting the Parking Brake

1. Move the motion control levers to neutral (Fig. 6).
2. Pull up on the parking brake lever to set the parking brake (Fig. 8). The parking brake lever should stay firmly in the set position.

Releasing the Parking Brake

1. Push in on the button and lower parking brake lever to off (Fig. 8).

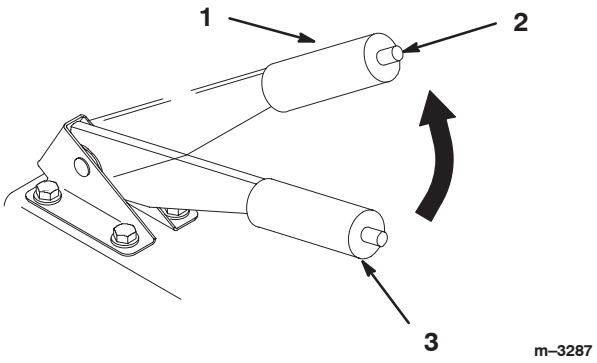


Figure 8

1. Parking brake—Set
2. Button
3. Parking brake—Off

Starting and Stopping the Engine

Starting the Engine

1. Sit down on the seat and set the parking brake; refer to Setting the Parking Brake, page 16.
2. Move the motion control levers to neutral.
3. Move the PTO (power take off) switch to off (Fig. 9).
4. Move the throttle control midway between slow and fast positions before starting a cold engine.
5. Move the choke control to the on position before starting a cold engine.

Note: A warm or hot engine may not require choking. After engine starts, move choke control to the off position.

6. Turn ignition key to the start position to energize starter. When engine starts, release key.

Note: If starter does not crank, move the motion control levers slightly forward or backward to locate neutral.

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

7. After the engine starts, gradually move the choke to the Off position (Fig. 10). If the engine stalls or hesitates, move the choke back to the on position for a few seconds. Then move the throttle lever to desired setting. Repeat this as required.

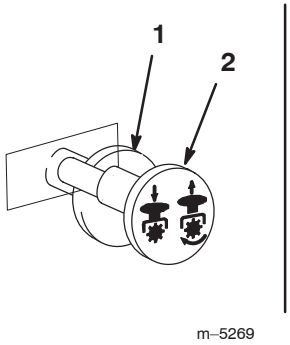


Figure 9

1. PTO-Off
2. PTO-On

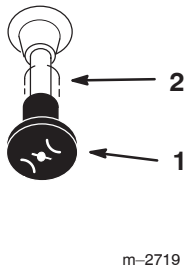


Figure 10

1. Choke–On
2. Choke–Off

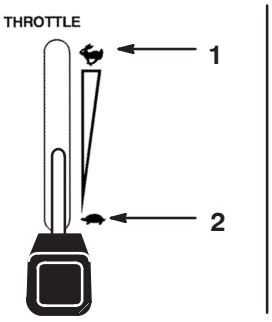


Figure 11

1. Fast
2. Slow

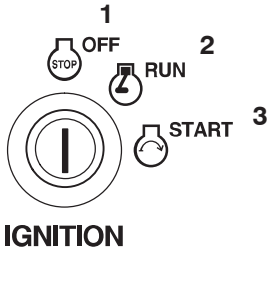


Figure 12

1. Off
2. Run
3. Start

Stopping the Engine

1. Move the throttle lever to slow (Fig. 11).
2. Set the parking brake.
3. Turn the ignition key to off (Fig. 12).

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

4. Close fuel shut off valve under rightside of the hopper before transporting or storing machine.

Important Make sure fuel shut off valve is closed before transporting or storing machine, as fuel leakage may occur.

Operating the Power Take Off (PTO)

The power take off (PTO) switch engages and disengages power to the attachment clutch (mower blades).

Engaging the Power Take Off (PTO)

1. With engine running, move motion control levers to neutral to stop the machine.
2. To prevent engine stalling, from heavy load, move throttle to the fast position.
3. Pull the power take off (PTO) switch to the on position to engage (Fig. 13).

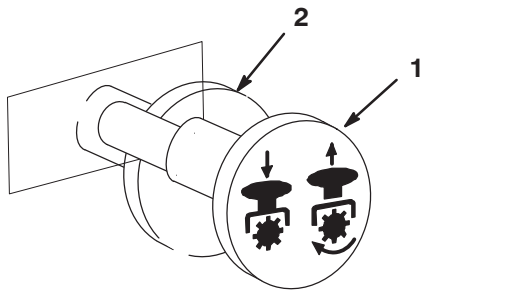


Figure 13

1. On-Engaged
2. Off-Disengaged

Disengaging the Power Take Off (PTO)

1. Push the power take off (PTO) switch in. This moves the switch to the Off position to disengage (Fig. 13).

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 engine from starting unless:

- The parking brake is set.
- The power take off (PTO) is disengaged or off.
- The motion control levers are in neutral position.

The safety interlock system also is designed to stop the engine when:

- The motion control levers are moved out of neutral with the parking brake is set.
- You rise from the seat when the power take off (PTO) is on or the motion control levers are not in neutral
- The motion control levers are moved out of neutral or PTO is engaged with the hopper tilted up

Testing the Safety Interlock System

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

While sitting in the mower seat:

1. Set the parking brake and move power take off (PTO) to on. Try starting the engine; the engine should not crank.
2. Set the parking brake and move power take off (PTO) to off. Move one then the other motion control lever forward or reverse. Try starting the engine; the engine should not crank.
3. Set the parking brake, move power take off (PTO) to off and hold the motion control levers in neutral. Now start the engine. While the engine is running engage the power take off (PTO) and rise slightly from the seat; the engine should stop.

4. Set the parking brake, move power take off (PTO) to off and hold the motion control levers in neutral. Now start the engine. While the engine is running, move the motion control levers forward or reverse; the engine should stop.

5. Tilt the hopper up, set the parking brake, move power take off (PTO) to off and hold the motion control levers in neutral. Now start the engine. While the engine is running, move the motion control levers forward or reverse; the engine should stop.

Driving Forward or Backward

The throttle control regulates the engine speed as measured in rpm (revolutions per minute). Place the throttle control in the fast position for best attachment performance. Always operate in the full throttle position when operating.

Driving Forward

1. Release the parking brake; refer to Setting the Parking Brake, page 16.

2. To go forward, slowly push the motion control levers forward (Fig. 14).

Note: Engine will stop if motion control levers are moved with parking brake engaged.

To go straight, move both motion control levers the same distance (Fig. 14).

To turn move the motion control lever toward neutral, on the side you want to turn toward (Fig. 14).

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

To slow or stop move the motion control levers to neutral.

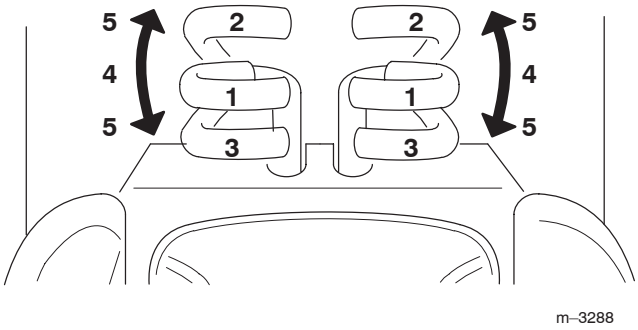


Figure 14

1. Motion control lever-neutral position
2. Forward
3. Backward
4. Slow
5. Fast

Driving Backward

1. Release the parking brake; refer to Setting the Parking Brake, page 16.

2. To go backward, slowly pull the motion control levers rearward (Fig. 14).

To go straight, move both motion control levers the same distance (Fig. 14).

To turn move the motion control lever toward neutral, on the side you want to turn toward (Fig. 14).

To slow or stop move the motion control levers to neutral.

Stopping the Machine

To stop the machine, move the motion control levers to neutral, disengage the power take off (PTO), turn the ignition to off, and remove the key. Also set the parking brake when you leave the machine; refer to Setting the Parking Brake, page 16.

Caution

Children or bystanders may be injured if they move or attempt to operate the tractor 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.

Positioning the Seat

The seat can move forward and backward. Position the seat where you have the best control of the machine and are most comfortable.

1. To adjust, remove the hairpin cotter and washer, and tip seat forward (Fig. 15).

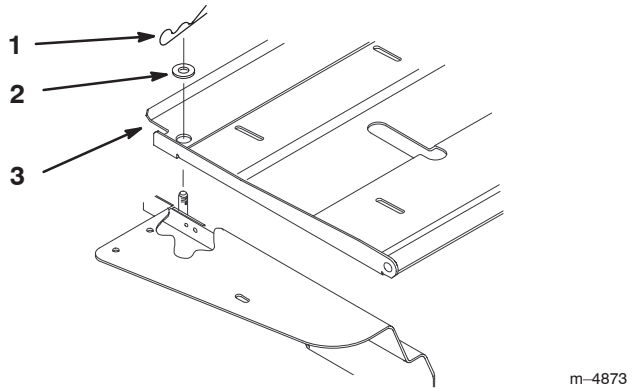


Figure 15

1. Hairpin cotter
2. Washer
3. Seat base

2. Loosen the seat mounting bolts slide seat to the desired position in the adjusting slots, and tighten the mounting bolts (Fig. 16).

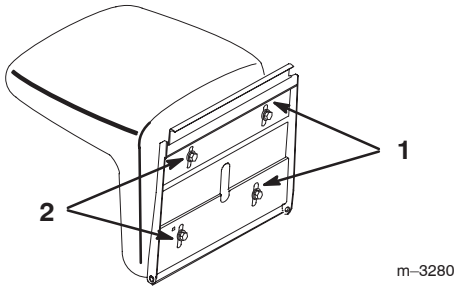


Figure 16

1. Adjustment slot
2. Mounting bolt

3. Lower the seat and secure with washer and hairpin cotter (Fig. 15).

Note: Seat must be secured as described in step 3 if you are using the ROPS and seat belt.

Adjusting the Height-of-Cut

The height-of-cut can be adjusted from 1 to 4-1/2 inch in 1/2 inch increments by relocating four hairpin cotter pins in different hole locations.

Note: Fine adjustment can be done by removing washers.

1. To adjust, remove hairpin cotter from height-of-cut post (Fig. 17).

2. Select hole in height-of-cut post corresponding to the height-of-cut desired. Lift on side of deck to align holes and insert hairpin cotter (Fig. 17).

Important All four hairpin cotter pins must be in the same hole location for a level cut.

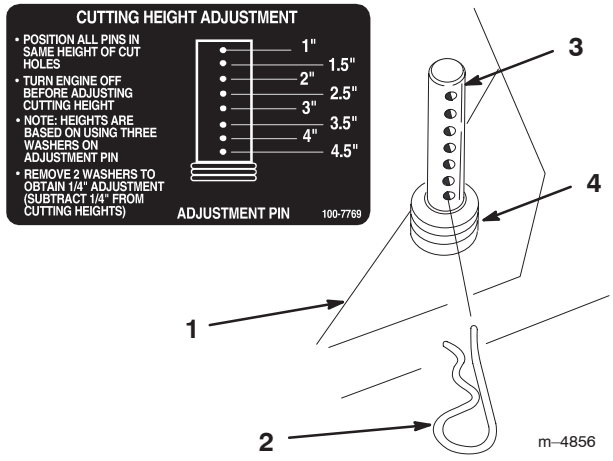


Figure 17

1. Carrier frame
2. Hairpin cotter
3. Height–of–Cut post
4. Washers

Tilting the Mower

The mower can be tilted up for ease of service or to shorten unit length for transport and storage.

Caution

The mower deck is heavy and could injure someone while raising or lowering the deck.

- **Use caution when raising or or lowering deck.**

Raising the Mower

1. Disengage the power take off (PTO), set the parking brake, and turn the ignition key to off. Remove the key.
2. Lift on side of carrier frame near latch to release weight on latch pin.
3. Pull out on latch pin to release and rotate into notch to hold in the unlocked position (Fig. 18). Repeat on the other side.

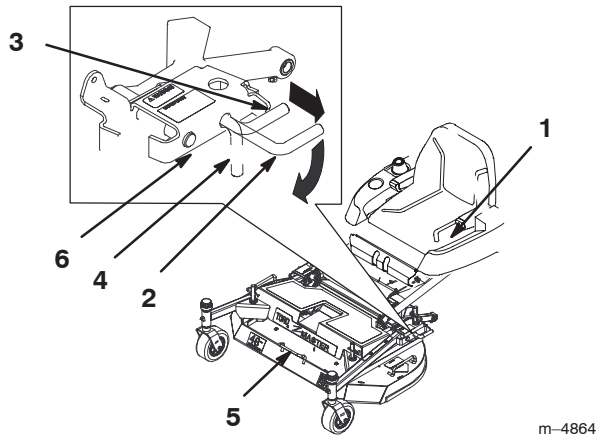


Figure 18

1. Parking brake
2. Latch pin
3. Unlocked position
4. Locked position
5. Deck handle
6. Lift here – after lowering

4. Rotate latch pins into released position after deck has been lowered onto rear rollers.
5. Standing in front of the mower, lift up on deck handle and push rearward on front to raise mower (Fig. 19).

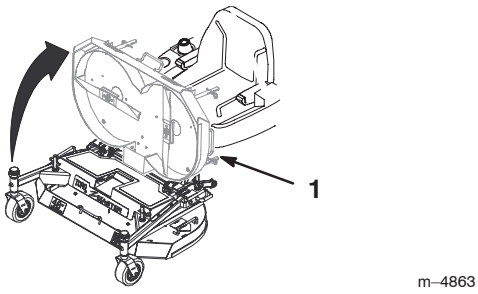


Figure 19

1. Mower up

6. Raise the mower until it stops and latch pins snap into locked position.

Lowering the Mower

1. Pull out the latch pins and rotate into notch to hold in the unlocked position (Fig. 18).
2. Standing in front of the mower, pull the front deck handle forward and lower mower (Fig. 19).
3. Rotate latch pins into released position and lift on side of carrier frame near latch pin until latch pin engages (Fig. 18). Repeat on the other side.

Dumping the Hopper

The hopper is equipped with a sensor that checks for a full condition. When the alarm buzzer sounds the PTO must be moved to the off position immediately and the hopper needs to be emptied.

Important The hopper is interlocked with the PTO and the engine will stop if these steps are not followed before dumping the hopper or getting out of the seat.

1. Position the traction unit so the hopper door is located where you want to dump the clippings.
2. Ensure that the PTO switch is off, move the traction controls to neutral and set the parking brake.
3. Unhook the rear door latch and then the front latch on hopper (Fig. 20).
4. Lift up on the hopper in the lower front and dump the clippings (Fig. 20).

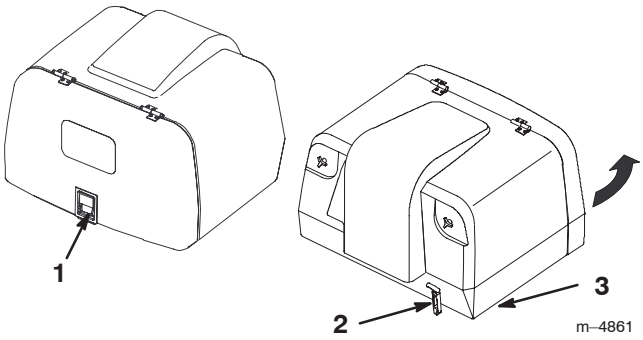


Figure 20

1. Rear Door latch
2. Front Hopper latch
3. Lift here

5. Lower the hopper. Firmly secure the hopper door so it latches and secure the front hopper latch (Fig. 20).

Important The front hopper latch must be secured to prevent hopper from accidently tilting during transport. Ensure the hopper door latch is fully closed.

Pushing the Machine by Hand

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

Pushing the Machine

1. Disengage the power take off (PTO) and turn the ignition key to off.
2. Rotate pump by-pass valves counterclockwise 2 turns. This allows hydraulic fluid to by-pass the pump enabling the wheels to turn freely (Fig. 21).

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

3. Release the parking brake.
4. Push the machine.

Operating the Machine

1. Turn the by-pass valves clockwise until they are tight. Do not over tighten (Fig. 21).

Note: The machine will not drive unless by-pass valves are turned in completely.

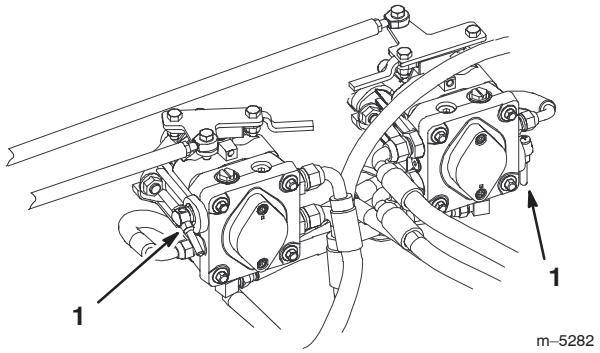


Figure 21

1. By-pass valve

Removing the Deck and Carrier Frame

This procedure is performed when installing optional attachments.

1. Disengage the power take off (PTO), set the parking brake, and turn the ignition key to off. Remove the key.
2. Remove plenum from traction unit. Refer to Installing and Removing the Plenum on page 26.
3. Raise seat, to gain access to plenum cable. Remove washer and nut from plenum cable end (Fig. 22).

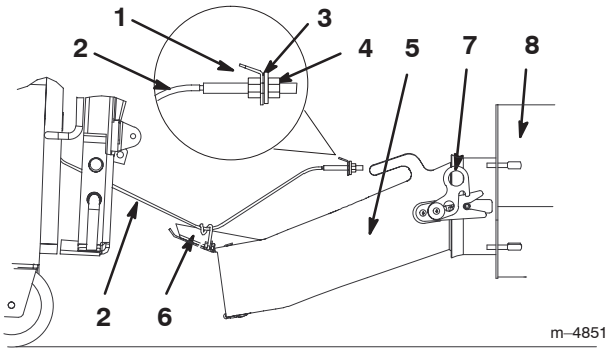


Figure 22

1. Bracket
2. Plenum cable
3. Washer
4. Nut
5. Plenum
6. Plenum cable guide
7. Plenum latches
8. Blower housing

4. Tilt the deck back to the down position, refer to Lowering the Mower on page 20.
5. Lifting slightly on the deck handles, remove hairpin cotters from the height-of-cut posts and separate mower from carrier frame (Fig. 23).

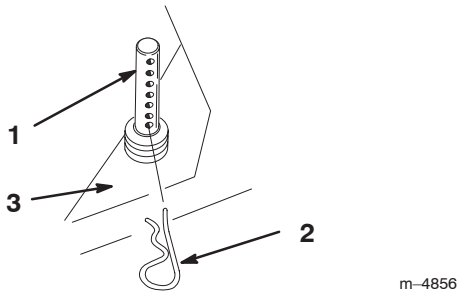


Figure 23

1. Height –of–cut post
2. Hairpin cotter
3. Carrier frame

6. Tilt carrier frame into its upright position. Refer to Tilting the Mower on page 19.
7. Place a block, approximately 4 inches high, under the carrier frame. This will raise the frame vertically.
8. Check to see if tension has been removed from the spring assemblies. If tension remains add blocks to raise carrier frame higher. If there is too much tension use a smaller block (Fig. 24).

9. Remove shoulder bolts (3/8 x 7/8 inch) and locknuts (3/8 inch) securing spring end plate assemblies to carrier frame (Fig. 24).

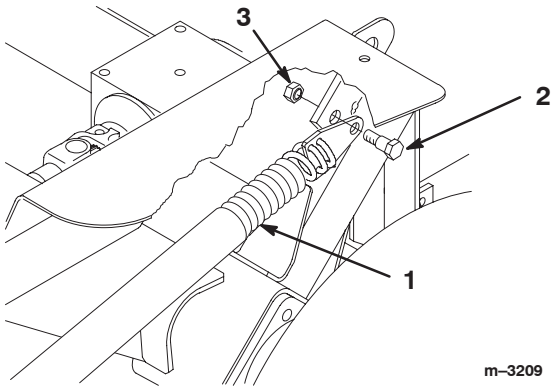


Figure 24

1. Spring assembly
2. Shoulder bolt, 3/8 x 7/8 inch
3. Locknut, 3/8 inch

10. Remove the block under the carrier frame.

11. Tilt carrier frame down.

12. Remove the two nuts and bolts that hold the bar for rubber guard. The bar is under the motion control levers. Fold the rubber guard onto the footrest (Fig. 25).

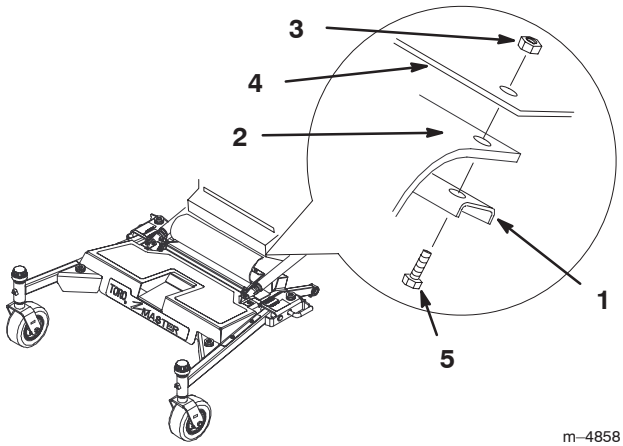


Figure 25

1. Bar
2. Rubber guard
3. Nut
4. Machine panel
5. Screw

13. Remove hairpin cotters and pivot pin assemblies from push arms at traction unit pivot brackets (Fig. 26).

Note: Save all hardware for use when installing mower. Items 3 and 4 are part of traction unit.

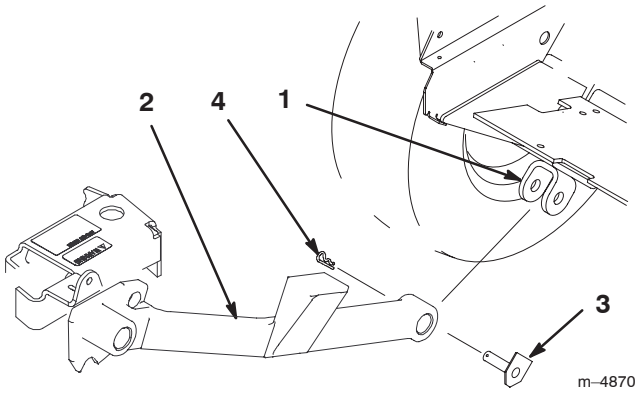


Figure 26

1. Pivot bracket
2. Push arm
3. Pivot pin assembly–flat
4. Hairpin cotter

Note: Drive shaft remains with traction unit.

14. Drive roll pin through hole in PTO drive shaft to separate from gearbox shaft (Fig. 27).

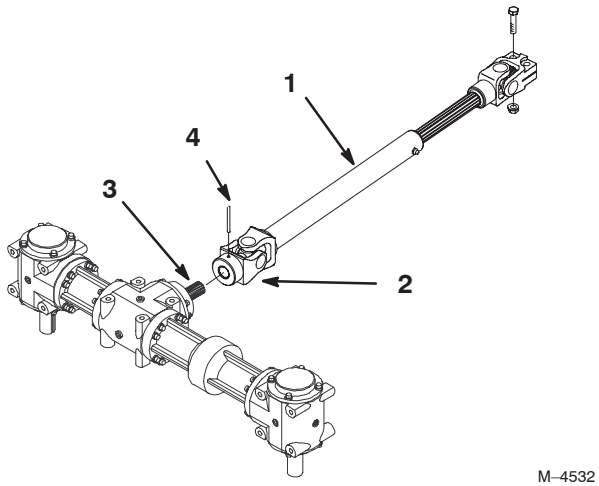


Figure 27

1. PTO drive shaft
2. Universal joint
3. Gearbox shaft
4. Roll pin

15. Move deck and carrier frame away from traction unit.

Important Remove drive shaft from gearbox shaft if you do not hook up a deck immediately or when putting on optional attachments.

16. Remove 2 bolts (3/8 x 1-5/8 inch) and locknuts (3/8 inch) from universal joint and slide the drive shaft off gearbox shaft (Fig. 28).

Note: Save all hardware for use when installing mower.

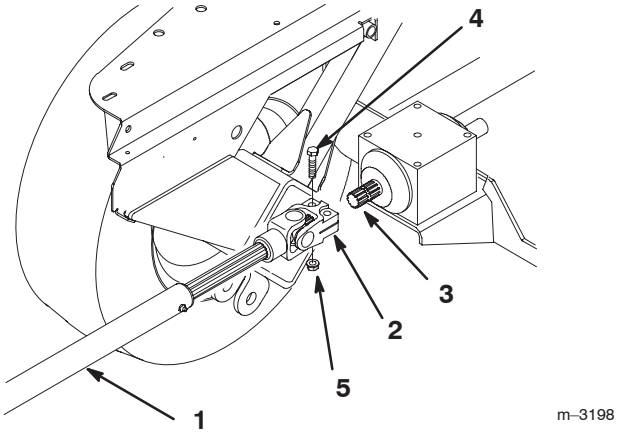


Figure 28

1. PTO drive shaft
2. Universal joint
3. Gearbox shaft
4. Bolt, 3/8 x 1-5/8 inch
5. Locknut, 3/8 inch

Installing Deck and Carrier Frame

Note: Install drive shaft to gearbox shaft if it is not hooked up. Proceed to step 2 if the drive shaft is hooked up.

1. Slide the drive shaft on gearbox shaft. Install 2 bolts (3/8 x 1-5/8 inch) and locknuts (3/8 inch) in universal joint (Fig. 29).

Note: The gearbox shaft has a spline to correctly align gearbox and PTO drive shaft. Align the spline and slide the PTO drive shaft onto gearbox.

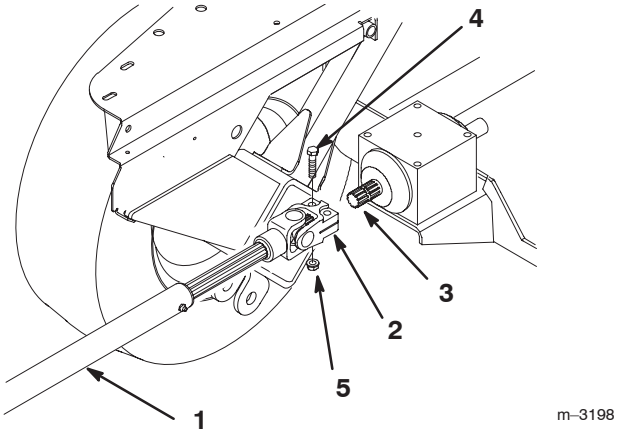


Figure 29

1. PTO drive shaft
2. Universal joint
3. Gearbox shaft
4. Bolt, 3/8 x 1-5/8 inch
5. Locknut, 3/8 inch

2. Position carrier frame in front of traction unit and place push arms into clevises (Fig. 30).

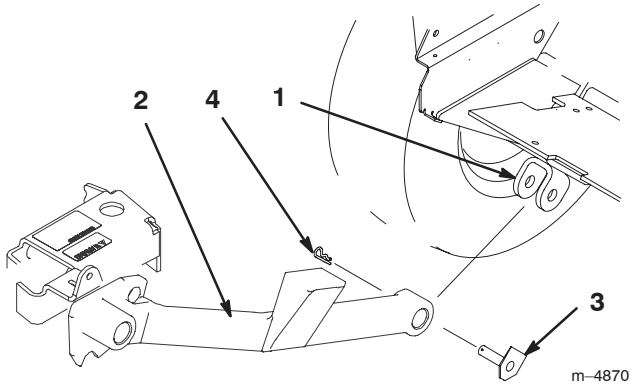


Figure 30

1. Clevis
2. Push arm
3. Pivot pin assembly–flat
4. Hairpin cotter

3. Install push arms with pivot pin assemblies, aligned with flat against frame, and secure with hairpin cotters (Fig. 30).

Note: Pivot pin assemblies and hairpin cotters are part of traction unit.

4. Tilt carrier frame into its upright position. Refer to Tilting the Mower on page 19.

5. Place a block, approximately 4 inches high, under the carrier frame. This will raise the frame vertically.

6. Secure spring end plate assembly to carrier frame with a shoulder bolt (3/8 x 7/8 inch) and a locknut (3/8 inch) (Fig. 31).

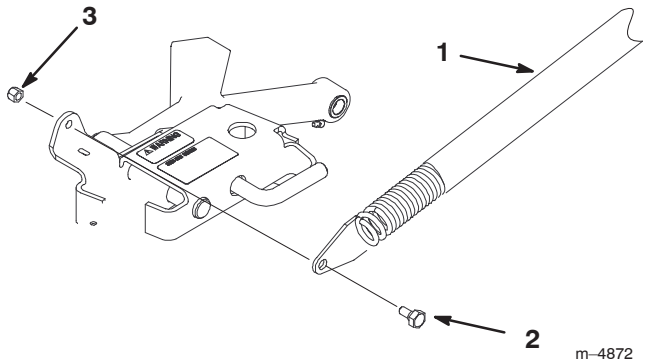


Figure 31

1. Spring assembly
2. Shoulder bolt, 3/8 x 7/8 inch
3. Locknut, 3/8 inch

Note: You may have to install spring to traction unit if it is not installed.

7. Install shoulder bolts (3/8 x 7/8 inch) and locknuts (3/8 inch) securing spring end plate assemblies to traction unit (Fig. 32).

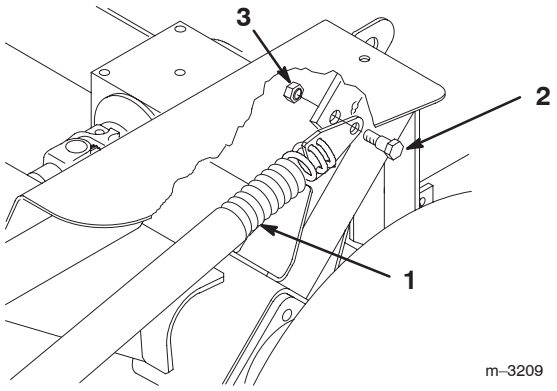


Figure 32

1. Spring assembly
2. Shoulder bolt, 3/8 x 7/8 inch
3. Locknut, 3/8 inch

8. Position the mower in front of traction unit.

9. Rotate PTO drive shaft so holes align with hole in gearbox shaft and slide together (Fig. 33).

10. Drive roll pin through hole to secure PTO drive shaft to gearbox shaft (Fig. 33).

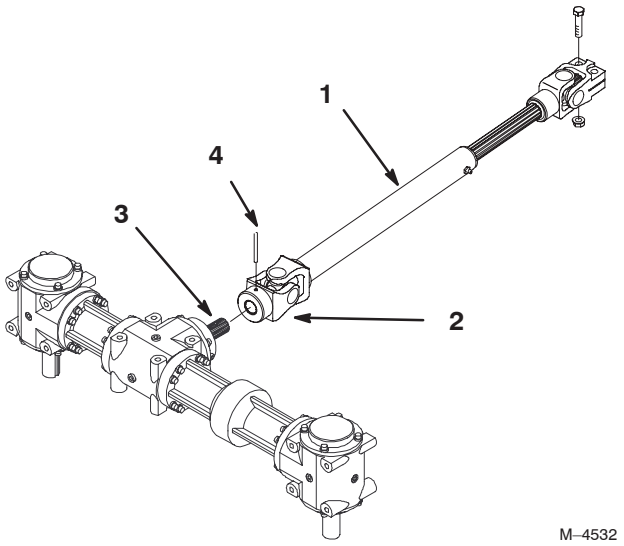


Figure 33

1. PTO drive shaft
2. Universal joint
3. Gearbox shaft
4. Roll pin

11. Remove the 4 inch block. Release the latch levers and push carrier frame down. Latch pins should lock.

12. Select hole in height–of–cut post corresponding to the height-of-cut desired. Lift on side and front to align holes and hairpin cotter (Fig. 34).

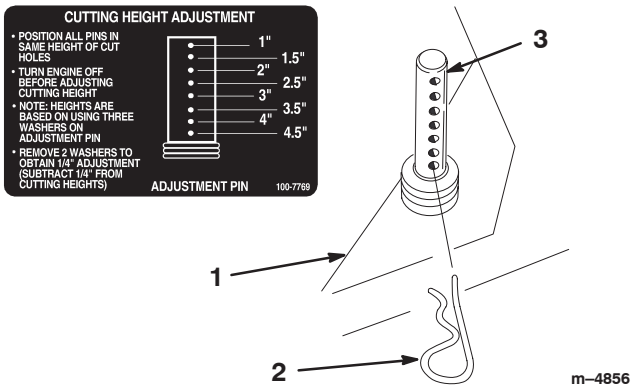


Figure 34

1. Carrier frame
2. Hairpin cotter
3. Height–of–cut post

Note: All four hairpin cotters should be in the same hole location for a level cut.

13. Tilt carrier frame into its upright position. Refer to Tilting the Mower on page 19.

14. Route plenum cable under seat. Raise seat, to gain access to plenum cable. Install cable into bracket and install washer and nut (Fig. 35).

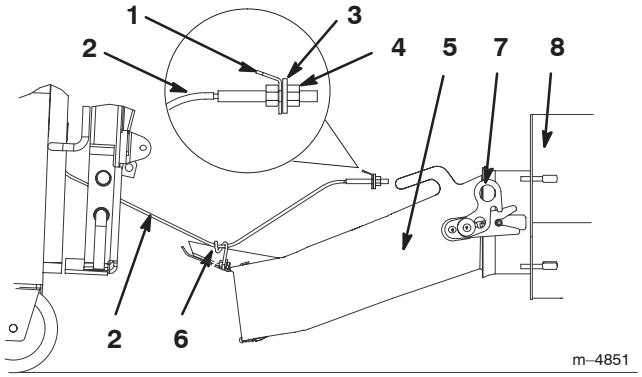


Figure 35

1. Bracket
2. Plenum cable
3. Washer
4. Nut
5. Plenum
6. Plenum cable guide
7. Plenum latches
8. Blower housing

15. Install plenum to blower housing and wrap cable around guide. Refer to Installing and Removing the Plenum on page 26.

16. Install the rubber guard with bar, nuts and bolts under the motion control levers. (Fig. 36).

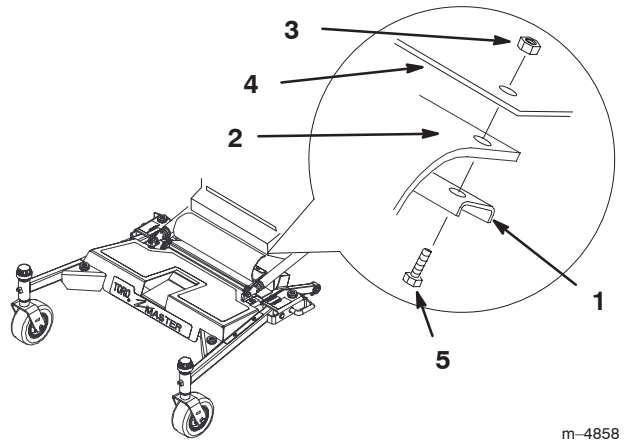


Figure 36

1. Bar
2. Rubber guard
3. Nut
4. Machine panel
5. Screw

Install the Mulching Baffle

Hardware to install mulching baffle is installed in deck.

1. Tilt mower into the vertical position, refer to; Tilting the Mower, page 19.

2. Remove screws, washers, left and right bagger baffles locknuts, carriage bolts, and left and right discharge baffles from the mower (Fig. 39).

Note: Reinstall all hardware into deck for use when reinstalling bagging baffles and safety.

3. Remove screws and washers that are installed into deck for securing mulching baffle (Fig. 37).

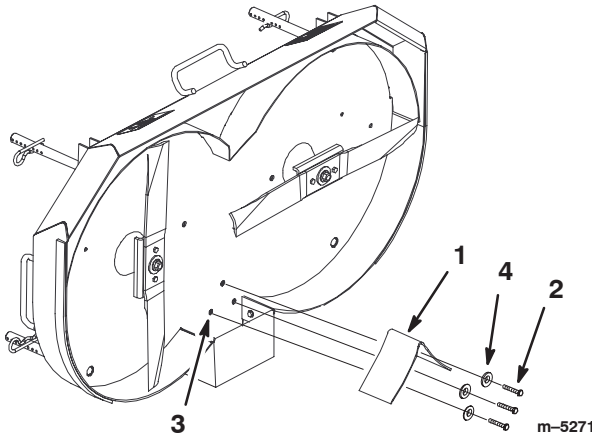


Figure 37

1. Mulching baffle
2. Cap Screw
3. Retainer Nut (On top side of deck)
4. Washer

4. Install baffle using hardware that was removed. (Fig. 37).

Important All bagging and discharge baffles must be removed when mulching (Fig. 39).

Operating with Mulching Baffle

When operating the mower with the mulching baffle installed, you must disengage the blower drive belt.

1. Stop the engine, remove the key.

2. Remove hairpin cotter and clevis pin from idler arm (Fig. 38).

3. Pull up on the spring loaded idler arm, behind blower on lefthand side of unit, to relax pressure on blower belt (Fig. 38).

4. Align hole in idler arm with slot in frame and insert clevis pin. Secure with hairpin cotter to hold in position.

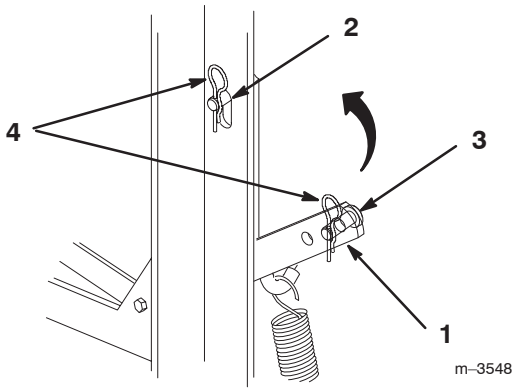


Figure 38

1. Idler arm
2. Frame slot
3. Clevis pin
4. Hairpin cotter

5. When operating in mulching mode, the plenum can be removed to prevent damage to it. Refer to Installing and Removing the Plenum on page 26.

Installing the Bagger and Discharge Baffles

When changing from mulching to bagging, baffles must be removed and replaced

1. Tilt mower into the vertical position, refer to Tilting the Mower on page 19.

2. Remove screws, washers and mulching baffle from the mower (Fig. 37).

Note: Reinstall cap screws into deck for use when installing mulching baffle and safety.

3. Position the left and right front bagger baffles inside the mower and secure with screws into the retainer nuts (Fig. 39).

4. Position the left and right rear discharge baffles inside the mower. Secure with screws and washers through the bottom and carriage bolts inside of mower rear discharge. Secure carriage bolts with locknuts (Fig. 39).

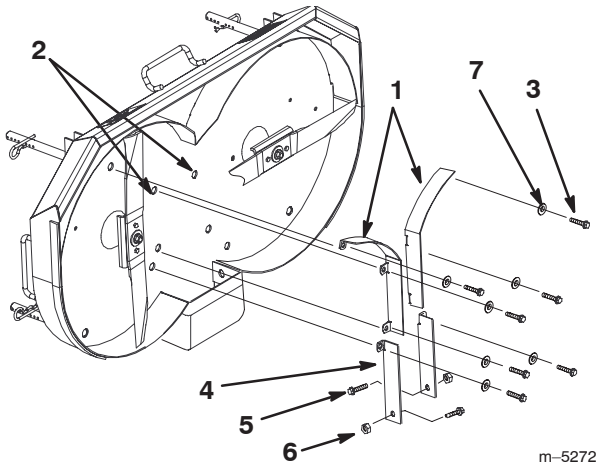


Figure 39

1. Bagger baffle
2. Retainer nut
3. Cap screw
4. Discharge baffle
5. Carriage bolt
6. Lock nut
7. Washer

Important All bagging baffles and discharge baffles must be in place when bagging.

Operating with Bagger

When operating the mower with bagger baffles installed you must engage the blower drive belt.

1. Stop the engine, remove the key.
2. Ensure belt is around blower, idler and PTO gearbox.
3. Push up on the spring loaded idler arm, behind blower on lefthand side of unit, to relax pressure on clevis pin (Fig. 40).
4. Remove hairpin cotter and clevis pin from slot in frame and allow idler down, to tension belt (Fig. 40).
5. Install hairpin cotter and clevis pin in outer hole of idler arm for storage (Fig. 40).

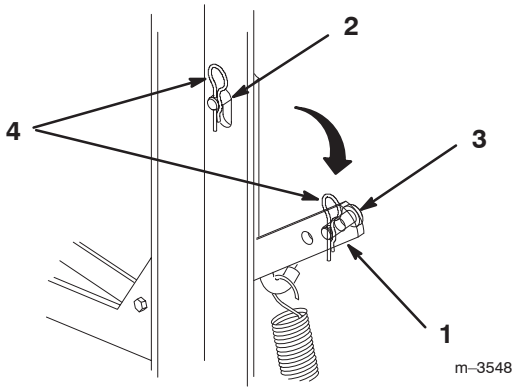


Figure 40

1. Idler arm
2. Frame slot
3. Clevis pin
4. Hairpin cotter

Installing and Removing the Plenum

To avoid damage to the plenum, remove the plenum when not in bagging mode.

Caution

Hands and fingers can be cut when removing bagging components.

- **Keep hands and fingers out of blower housing.**
- **Do not operate in bagging mode without entire bagging system in place.**
- **Stop engine before cleaning bagging system.**

Removing the Plenum

1. Disengage the power take off (PTO), set the parking brake, and turn the ignition key to off. Remove the key.
2. Tilt deck to upright position. Refer to Tilting the Mower on page 19.
3. Reach through from lefthand side in front of traction tire, lift plenum and unwind cable clockwise around plenum cable guide.

4. Flip seat up and unlatch plenum from both sides of blower inlet (Fig. 41).
5. Pull plenum out from blower housing and place it on the ground (Fig. 41).
6. Pull or slide plenum out from between deck and traction tire (Fig. 41).

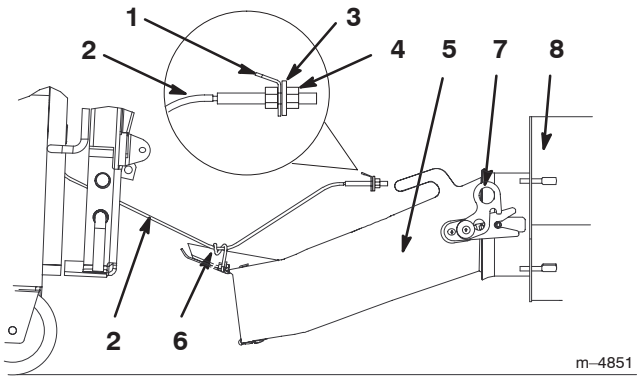


Figure 41

1. Bracket
2. Plenum cable
3. Washer
4. Nut
5. Plenum
6. Plenum cable guide
7. Plenum latches
8. Blower housing

Installing the Plenum

1. Tilt deck to upright position. Refer to Tilting the Mower on page 19.
2. Slide plenum, with blower end in first, between deck and traction tire.
3. Flip seat up, reach down and direct plenum into blower housing. Ensure the plenum latches lock into both sides of blower housing (Fig. 41).
4. Reach through from lefthand side in front of traction tire, lift plenum and wind cable counter clockwise around plenum cable guide (Fig. 41).

Using a Rollover Protection System (ROPS)

A ROPS is available and its use is recommended for areas where there are slopes, drop–offs or water. Contact an Authorized Service Dealer for information on obtaining ROPS for your machine.

Important When operating a machine with ROPS always use the seat belt and secure the seat base.

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 of the safety instructions. Knowing this information could help you, your family, pets, or bystanders avoid injury.

To transport the machine:

- Lock the brake and block the wheels.
- Securely fasten the machine to the trailer or truck with straps, chains, cable, or ropes.
- Secure a trailer to the towing vehicle with safety chains.

Warning

Driving on street or roadway without turn signals, lights, reflective markings, or a slow moving vehicle emblem is dangerous and can lead to accidents causing personal injury.

Do not drive machine on a public street or roadway.

Loading Machines

Use extreme caution when loading units on trailers or trucks. One full width ramp that is wide enough to extend beyond the rear tires is recommended instead of individual ramps for each side of the unit (Fig. 42). If it is not possible to use one full width ramp, use enough individual ramps to simulate a full width continuous ramp.

The ramp should be long enough so that the angles do not exceed 15 degrees (Fig. 42). A steeper angle may cause mower deck components to get caught as the unit moves from ramp to trailer or truck. Steeper angles may also cause the unit to tip backward. If loading on or near a slope, position the trailer or truck so it is on the down side of the slope and the ramp extends up the slope. This will minimize the ramp angle. The trailer or truck should be as level as possible.

Important **Do Not** attempt to turn the unit while on the ramp; you may lose control and drive off the side.

Avoid sudden acceleration when driving up a ramp and sudden deceleration when backing down a ramp.

Warning

Loading a unit onto a trailer or truck increases the possibility of a loss of control and could cause serious injury or death.

- **Use extreme caution when operating a unit on a ramp.**
- **Use only a single, full width ramp; DO NOT use individual ramps for each side of the unit.**
- **If individual ramps must be used, use enough ramps to create an unbroken ramp surface wider than the unit.**
- ***Do not* exceed a 15 degree angle between ramp and ground or between ramp and trailer or truck.**
- **Avoid sudden acceleration while driving unit up a ramp to avoid losing control.**
- **Avoid sudden deceleration while backing unit down a ramp to avoid losing of control.**

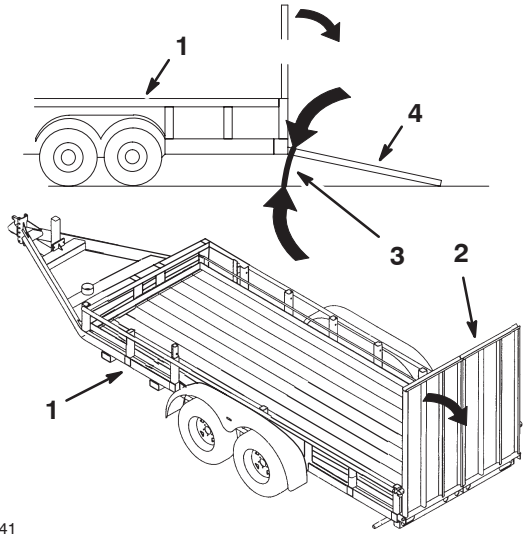


Figure 42

1. Trailer
2. Full width ramp
3. Not greater than 15 degrees
4. Full width ramp—side view

Tips for Mowing Grass

Fast Throttle Setting

For best mowing and maximum air circulation, operate the engine at **fast**.

Cutting a Lawn for the First Time

Cut grass slightly longer than normal to ensure that the cutting height of the mower does not scalp any uneven ground. However, the cutting height used in the past is generally the best one to use. When cutting grass longer than 6 inches (15 cm) tall, you may want to cut the lawn twice to ensure an acceptable quality of cut.

Cut 1/3 of the Grass Blade

It is best to cut only about 1/3 of the grass blade. Cutting more than that is not recommended unless grass is sparse, or it is late fall when grass grows more slowly.

Mowing Direction

Alternate mowing direction to keep the grass standing straight. This also helps disperse clippings which enhances decomposition and fertilization.

Mow at Correct Intervals

Normally, mow every four days. But remember, grass grows at different rates at different times. So to maintain the same cutting height, which is a good practice, mow more often in early spring. As the grass growth rate slows in mid summer, mow less frequently. If you cannot mow for an extended period, first mow at a high cutting height; then mow again two days later at a lower height setting.

Cutting Speed

To improve cut quality, use a slower ground speed.

Long Grass

If the grass is ever allowed to grow slightly longer than normal, or if it contains a high degree of moisture, raise the cutting height higher than usual and cut the grass at this setting. Then cut the grass again using the lower, normal setting.

When Stopping

If the machine's forward motion must be stopped while mowing, a clump of grass clippings may drop onto your lawn. To avoid this, move onto a previously cut area with the blades engaged.

Keep the Underside of the Mower Clean

Clean clippings and dirt from the underside of the mower after each use. If grass and dirt build up inside the mower, cutting quality will eventually become unsatisfactory.

Blade Maintenance

Maintain a sharp blade throughout the cutting season because a sharp blade cuts cleanly without tearing or shredding the grass blades. Tearing and shredding turns grass brown at the edges, which slows growth and increases the chance of disease. Check the cutter blades daily for sharpness, and for any wear or damage. File down any nicks and sharpen the blades as necessary. If a blade is damaged or worn, replace it immediately with a genuine Toro replacement blade.

Maintenance

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

Recommended Maintenance Schedule

Maintenance Service Interval	Maintenance Procedure
After first use	• Check the hydraulic fluid level. • Change the oil. • Change the hydraulic filter.
Each use	• Check the oil level. • Check the safety system. • Clean the hopper. • Clean the mower housing. • Check the cutting blades.
Every 8 hours	• Check the hydraulic fluid level. • Check the filter gage, replace filter when indicated and reset gage.[1] • Grease the chassis.[1] • Grease the drive shaft.[1] • Grease the push arm bearings. • Grease the PTO idler.[1]
Every 25 hours	• Grease the castor wheels. • Clean the cooling systems.[1] • Check tire and castor tire pressures.
Every 40 hours	• Check the belts for wear/cracks. • Grease the motion control lever pivot. • Check the mower gearbox oil.
Every 100 hours	• Change the engine oil. • Check the primary air cleaner.[1] • Check the hydraulic lines. • Change the mower gearbox oil (initial).
Every 200 hours	• Change the oil filter. • Change the hydraulic filter. • Check the spark plug(s). • Replace the fuel filter.
Every 600 hours	• Replace the safety air cleaner.[1]
Before storage	• Perform all maintenance procedures listed above before storage • Drain the gasoline. • Charge the battery and disconnect the cables. • Check the battery electrolyte. • Paint chipped surfaces.

[1]More often in dusty, dirty conditions

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

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.

Danger

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.**

Blades must be replaced if a solid object is hit, if the blade is out of balance or is 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.

Important Always check gearbox output shafts for straightness after impacting solid objects with blades. Severe damage could result if gearbox is operated with bent output shafts

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

1. Inspect the cutting edges (Fig 43). If the edges are not sharp or have nicks, remove and sharpen the blades. Refer to Sharpening the Blades on page 33.
2. Inspect the blades, especially the curved area (Fig. 43). If you notice any damage, wear, or a slot forming in this area (item 3 in Fig. 43), immediately install a new blade.

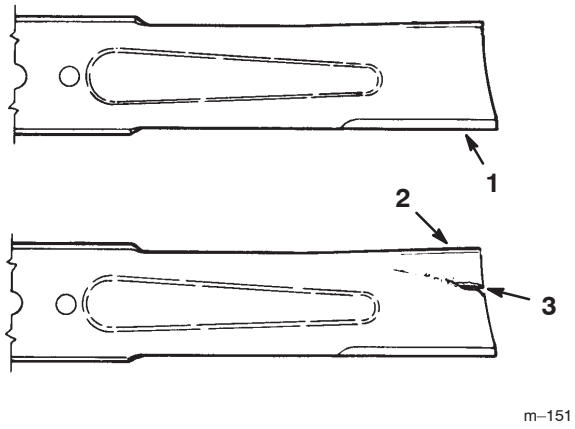


Figure 43

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

Checking for Bent Blades

1. Rotate the blades until the ends face forward and backward (Fig. 44). Measure from a level surface to the cutting edge tip of the blades (Fig. 44). Note this dimension.
2. Rotate the opposite ends of the blades forward. Measure from a level surface to the cutting edge tip of the blades at the same position as in step 1 above. The difference between the dimensions obtained in steps 1 and 2 must not exceed 1/8 inch. If this dimension

exceeds 1/8 inch, the blade is bent and must be replaced. Refer to Removing the Blades, and Installing the Blades on page 32.

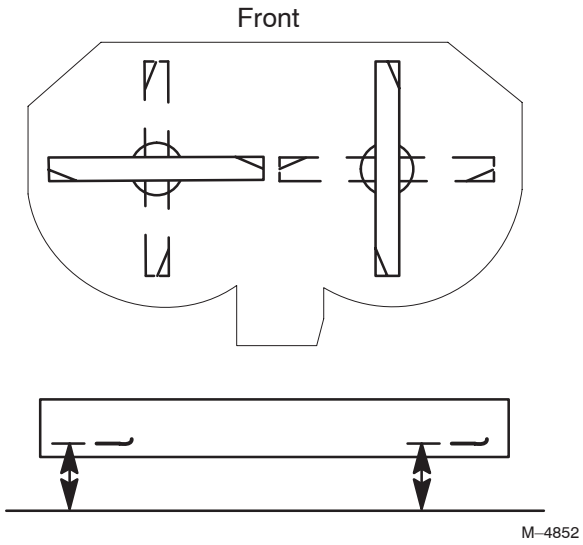


Figure 44

Warning

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

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

Removing the Blades

Hold the blade end using a rag or thickly-padded glove. Remove the retainer bolt with its washer and spacer, and the shear bolts and locknuts from the blade retainer (Fig. 46).

Installing the Blades

Important The blades are different for each side and rotate in opposite directions forcing clippings to the center rear of the mower. Align cutting edges properly when installing. Sails of blades must point towards the top of the deck.

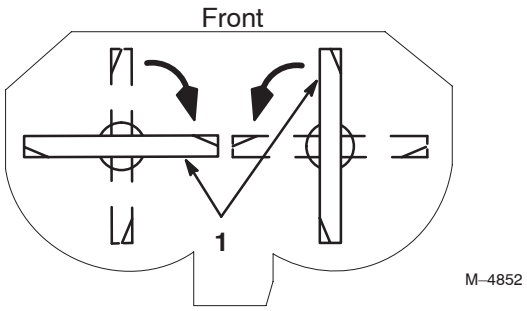


Figure 45

1. Cutting edge

Note: Use anti-seize lubricant on spindle and keyway before installing blade retainer.

1. Install the key in the retainer and install blade retainer to spindle (Fig. 46).
2. Install the blade, spacer, washer, and retainer bolt to spindle (Fig. 46).
3. Torque the retainer bolt to 85–110 ft-lb.

Important Blade should spin after blade bolt is torqued. If not, check to make sure the spacer is installed correctly.

4. Position the blade onto the blade retainer and secure with shear bolts and locknuts (Fig. 46).

Important The curved part of the blade, the sail, must be pointing upward toward the top of the mower to ensure proper cutting.

5. Torque blade shear bolts to **90 inch-lb**.

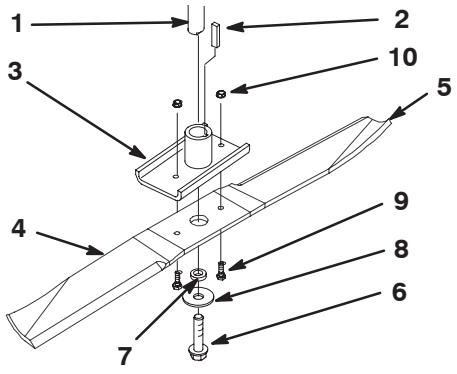


Figure 46

1. Spindle
2. Key
3. Blade retainer
4. Blade
5. Sail Area of Blade
6. Retainer bolt
7. Spacer
8. Washer
9. Shear Bolt
10. Locknut

Sharpening the Blades

1. Use a file to sharpen the cutting edge at both ends of the blade (Fig. 47). Maintain the original angle. The blade retains its balance if the same amount of material is removed from both cutting edges.

Figure 47

1. Sharpen at original angle

2. Check the balance of the blade by putting it on a blade balancer (Fig. 48). 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 (Fig. 48). Repeat this procedure until the blade is balanced.

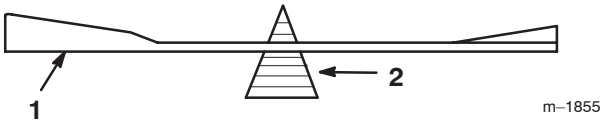


Figure 48

1. Blade 2. Balancer

Correcting Cutting Unit Mismatch

If one deck blade cuts lower than the other, correct as follows:

1. Stop the engine, remove the key and disconnect the spark plug wire(s) from the spark plug(s).
2. Adjust the tire pressure in all tires to specifications and check that the blades and spindle shafts are not bent. Refer to Checking for Bent Blades on page 31.
3. Set the height-of-cut to the 6 cm (2-1/2 inch) position. Refer to Adjusting the Height-Of-Cut in the Operation section. Make sure there is no excessive wear on push arm pivot points.
4. Refer to Matching Height–of–Cut, Checking Front to Rear Pitch and Checking Side to Side Leveling on pages 33, 33 and 34.

Matching the Height–of–Cut

The height of cut needs to be checked and correct before the front to rear pitch and side to side leveling is performed.

1. Check the tire pressure on both deck and traction unit.
2. Set the height-of-cut to the 2-1/2 inch position following the height-of-cut decal.
3. With the machine on level surface, position one blade front-to-rear (Fig. 49). Measure at **A** from level surface to the cutting edge of the blade tips (Fig. 50).
4. The measurement should be 2-1/2 inch. Rotate blades and repeat for opposite blade.

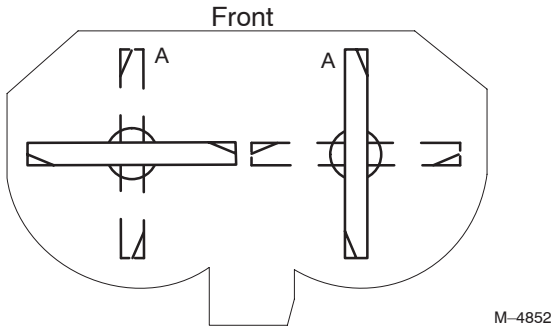


Figure 49

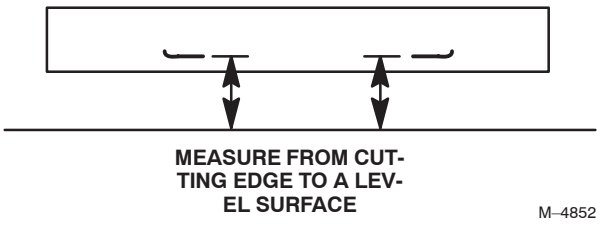


Figure 50

5. If it does not measure correctly remove or add washers to the height–of–cut posts. Match the hole in the post with the decal and the measured height–of–cut (Fig. 34).

Note: Make sure you add or remove washers from all four height–of–cut posts.

Checking the Front-to-Rear Pitch

The height of cut needs to be checked and correct before the front to rear pitch leveling is performed.

1. Check the tire pressure on both deck and traction unit.
2. Position one blade front-to-rear (Fig. 51). Measure at **C** and **D** locations (Fig. 51) from a level surface to the cutting edge of the blade tips (Fig. 52).
3. **The mower blade should be 1/4–3/8 inch lower in front C than in the rear D.** Rotate blades and repeat for opposite blade. If it is not correct proceed to Change the Front–to–Rear Pitch.

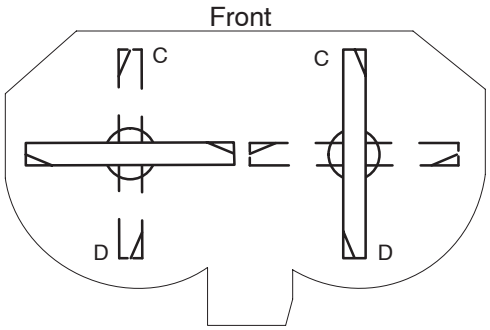


Figure 51

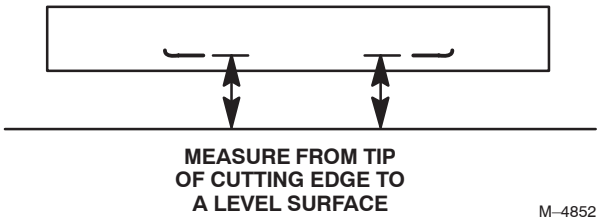


Figure 52

Changing the Front-to-Rear Pitch

Changing the front–to–rear pitch is done by removing or adding washers to height of cut posts.

1. Check the tire pressure on both deck and traction unit.
2. To change the front-to-rear pitch, remove the hairpin cotter and move an equal number of washers on front or rear height–of–cut posts.
3. Add washers to the height–of–cut posts to raise the mower.
4. Remove washers from the height–of–cut posts to lower the mower.
5. Check the Front–to–Rear Pitch.

Checking the Side-to-Side Level

The height of cut needs to be checked and correct before the side to side leveling is performed.

1. Check the tire pressure on both deck and traction unit.
2. Position the blades side-to-side (Fig.53). Measure at **A** and **B** locations (Fig. 53) from a level surface to the cutting edge of blade tips (Fig.54).

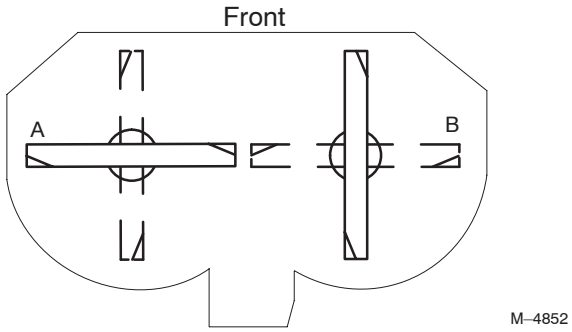


Figure 53

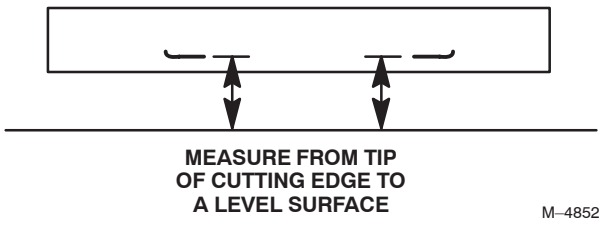


Figure 54

3. The difference between measurements **A** and **B** should be no more than 1/4 inch.

Change the Side-to-Side Level

Changing the side–to–side leveling is done by removing or adding washers to height of cut posts. Do this to the corresponding side that needs adjustment.

1. Check the tire pressure on both deck and traction unit.
2. To change the side-to-side leveling, remove the hairpin cotter and remove or add washers on one side only.
3. Add washers to the height–of–cut posts to raise the corresponding side of the mower.
4. Remove washers from the height–of–cut posts to lower the corresponding side of the mower.
5. Recheck the front-to-rear pitch and side to side leveling of the cutting unit.

Checking the Spindle

The spindle can be checked using the following procedure. Repeat the procedure for each blade and spindle.

1. Check the tire pressure on both deck and traction unit.

2. Position the blade in the **A** orientation as shown in Figure 55.

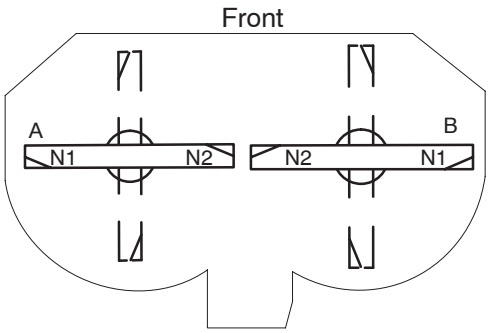


Figure 55

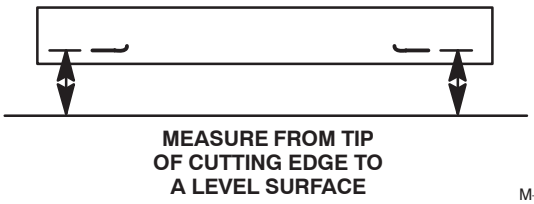


Figure 56

3. Measure the distance from the end of the blade (N1) to the ground (Fig. 56).
4. Rotate the blade 180 degrees so the opposite blade end (N2) is in position **A** (Fig. 55).
5. Measure the distance from the end of the blade to the ground (Fig. 56).
6. If the measurements vary by more than 1/8 inch, replace the blade and repeat steps 2–5. Refer to Removing the Blades and Installing the Blades on page 32.
7. If the measurements continue to vary by more than 1/8 inch contact your Authorized Service Dealer.

Servicing the Air Cleaner

Primary Filter: Clean or replace every 200 operating hours or when Filter Minder reaches “Change Filter” level.

Safety Filter: Replace after every 600 operating hours.

Note: Service the air cleaner more frequently if operating conditions are extremely dusty or sandy.

Removing the Filter

1. Disengage the power take off (PTO), set the parking brake, and turn the ignition key to off. Remove the key.
2. Remove the wing nut from the bolt in the air filter guard. Rotate guard to gain access to filter (Fig. 57).

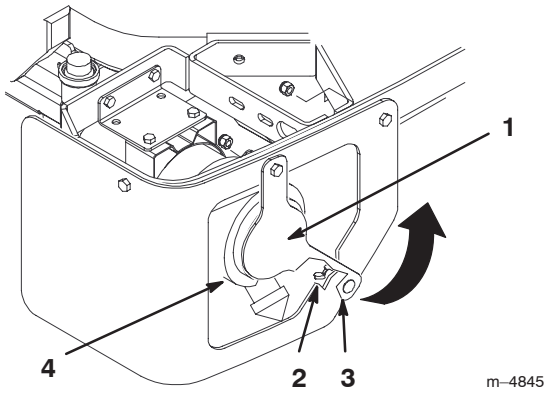


Figure 57

1. Filter guard
2. Wing nut
3. Bolt
4. Filter

3. Release the latches on the air cleaner and pull the air cleaner cover off of the air cleaner body (Fig. 58).
4. Clean the inside of the air cleaner cover with compressed air.
5. Gently slide the primary filter out of the air cleaner body (Fig. 58). Avoid knocking the filter into the side of the body. Do not remove the safety filter, unless you intend to replace it as well.
6. Inspect the primary filter for damage by looking into the filter while shining a bright light on the outside of the filter. Holes in the filter will appear as bright spots. If the filter is damaged, discard it, otherwise clean it.

Important Never attempt to clean the safety filter. If the safety filter is dirty, then the primary filter is damaged and you should replace both filters.

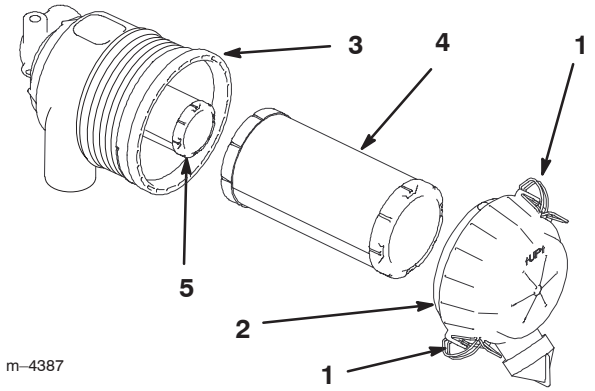


Figure 58

1. Latches
2. Air cleaner cover
3. Air filter body
4. Primary filter
5. Safety filter

Cleaning the Primary Filter

Blow compressed air from the inside to the outside of the primary filter.

Important Do not exceed 685.5 kPa (100 psi) and keep the hose at least 5cm (2 inch) from the filter.

Installing the Filters

1. If installing new filters, check each filter for shipping damage. Do not use a damaged filter.
2. If the safety filter is being replaced, carefully slide it into the filter body (Fig. 58).
3. Carefully slide the primary filter over the safety filter (Fig. 58). Ensure that it is fully seated by pushing on the outer rim of the filter while installing it.

Important Do not press on the soft inside area of the filter.

4. Install the air cleaner cover with the side indicated as UP facing up and secure the latches (Fig. 58).

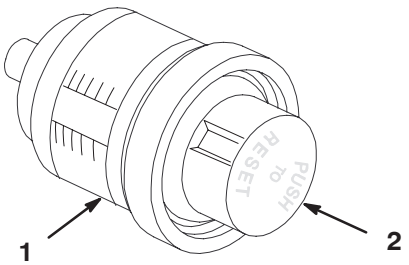
Using the Filter Minder

This machine contains an air cleaner **Filter Minder** gauge.

Filter Minder: Check this daily.

The plunger inside the gauge canister will change to red when the air cleaner element becomes dirty and restricted. When it changes red, air cleaner maintenance is required.

1. Start visually inspecting the primary filter. To access this filter, refer to Removing the Filter on page 35. clean or replace the filter as needed.
2. Reset the gauge by depressing the button in the bottom of the canister until the plunger returns to the lowest point (Fig. 59).



M–4824

Figure 59

1. Filter minder
2. Button (push to reset)

3. Test run the engine and recheck the gauge. If the plunger remains in the lowest range, normal operation can resume. If the plunger returns to the "Change Filter" level, the primary element is restricted and must be replaced, even though it may not appear to be dirty.
4. The gauge may be reset at any time, however it will return to the prior position if corrective filter servicing has not been performed.

Servicing the Engine Oil

Change oil:

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

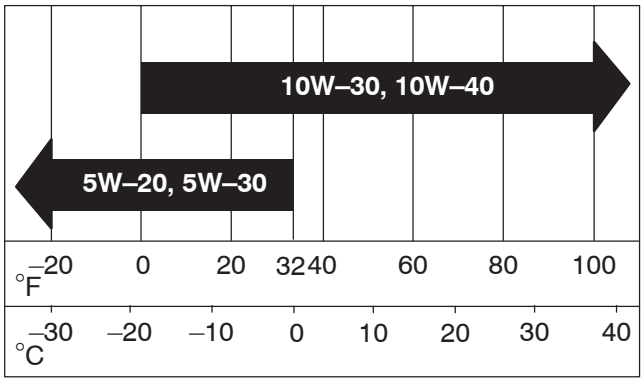
Note: Change oil more frequently when operating conditions are extremely dusty or sandy.

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

Crankcase Capacity: w/filter, 2.0 l (67.5 oz.)

Viscosity: See table below

USE THESE SAE VISCOSITY OILS



Checking the Engine Oil Level

1. Park the machine on a level surface, disengage the power take off (PTO) and turn the ignition key to off. Remove the key.
2. Clean around the oil dipstick (Fig. 60) so dirt cannot fall into the filler hole and damage the engine.

3. Pull the oil dipstick and wipe the metal end clean (Fig. 60).

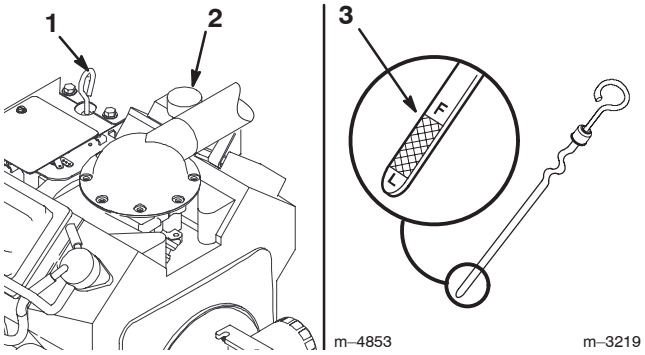


Figure 60

1. Oil dipstick
2. Filler Cap
3. Metal end

4. Slide the oil dipstick fully into the filler tube (Fig. 60). Pull the dipstick out and look at the metal end. If oil level is low, slowly pour only enough oil into the filler tube to raise the level to the full mark.

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

Changing the Engine Oil

1. Start the engine and let it run five minutes. This warms the oil so it drains better.
2. Park the machine so that the drain side is slightly lower than the opposite side to assure the oil drains completely. Then disengage the power take off (PTO), set the parking brake, and turn the ignition key to off. Remove the key.
3. Place a pan below the oil drain. Remove the oil drain cap (Fig. 61).

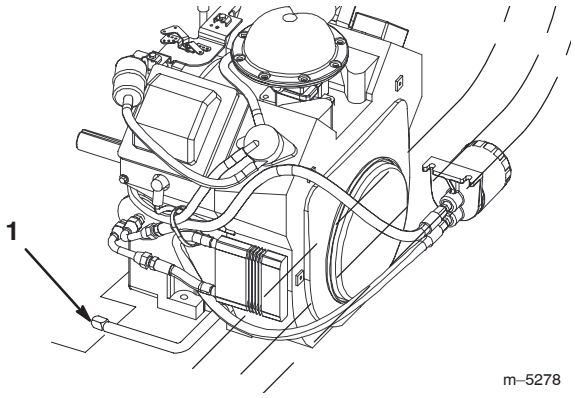


Figure 61

1. Oil drain cap

4. When oil has drained completely, install the drain cap.

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

5. Slowly pour approximately 80% of the specified oil, on page 36, into the fill opening (Fig. 60). Now check the oil level; refer to Checking Oil Level, page 36. Slowly add additional oil to bring to full mark on dipstick.

Changing the Engine Oil Filter

Replace the oil filter after first 8 hours of use.

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

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

1. Drain the oil from the engine; refer to Changing/Draining Oil, page 37.
2. Remove the old filter and wipe the filter adapter (Fig. 62) gasket surface.
3. Pour new oil of the proper type in through the center hole. Stop pouring when the oil reaches the bottom of the threads. Allow a minute or two for the oil to be absorbed by filter material.
4. Apply a thin coat of new oil to the rubber gasket on the replacement filter (Fig. 62).

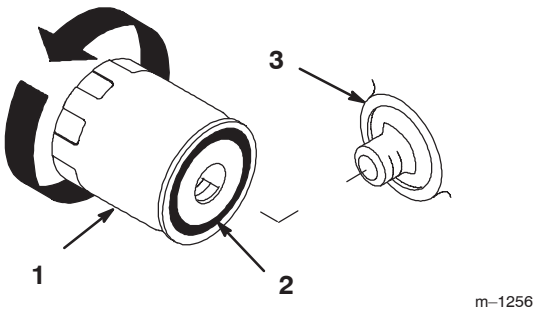


Figure 62

1. Oil filter
2. Gasket
3. Adapter

5. Install the replacement oil filter to the filter adapter. Turn the oil filter clockwise until the rubber gasket contacts the filter adapter, then tighten the filter an additional 1/2 turn (Fig. 62).
6. Fill the crankcase with the proper type of new oil; refer to Changing/Draining Oil, page 37.

Servicing the Spark Plugs

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

Type: Champion Premium Gold 2071 (or equivalent)
Air Gap: 0.030 inch (0.76 mm)

Removing the Spark Plugs

1. Disengage the power take off (PTO), set the parking brake, and turn the ignition key to off. Remove the key.
2. Pull the wire(s) off the spark plug(s) (Fig. 63). Now clean around the spark plug(s) to prevent dirt from falling into the engine and potentially causing damage.
3. Remove the spark plug(s) and metal washer.

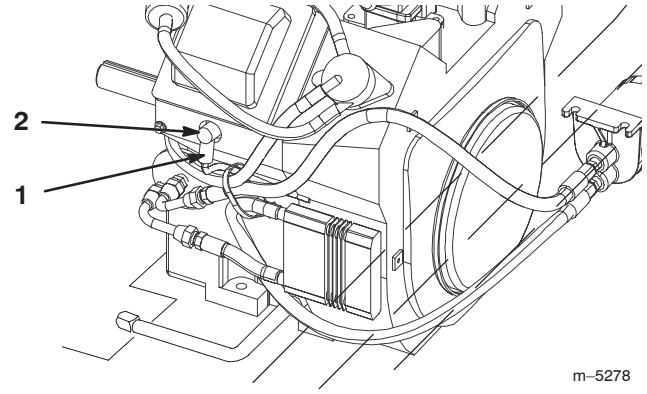


Figure 63

1. Spark plug wire
2. Spark plug

Checking the Spark Plugs

1. Look at the center of the spark plug(s) (Fig. 64). If you see light brown or gray on the insulator, the engine is operating properly. A black coating on the insulator usually means the air cleaner is dirty.

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

2. Check the gap between the center and side electrodes (Fig. 64). Bend the side electrode (Fig. 64) if the gap is not correct.

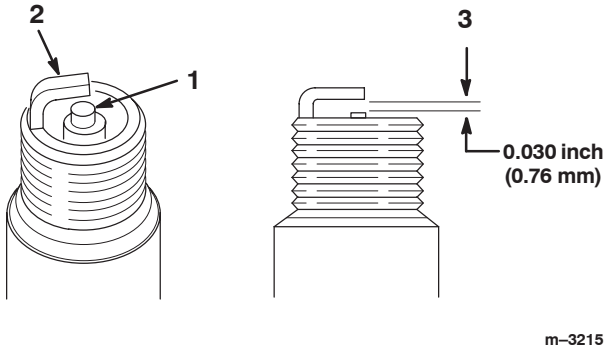


Figure 64

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

Installing the Spark Plug(s)

1. Install the spark plug(s). Make sure the air gap is set correctly.
2. Tighten the spark plug(s) to 27 N.m (20 ft-lb).
3. Push the wire(s) onto the spark plug(s) (Fig. 63).

Servicing the Fuel Filter

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

Replacing the Fuel Filter

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

1. Disengage the power take off (PTO), set the parking brake, and turn the ignition key to off. Remove the key.
2. Close fuel shut–off valve at fuel tank (Fig. 66).

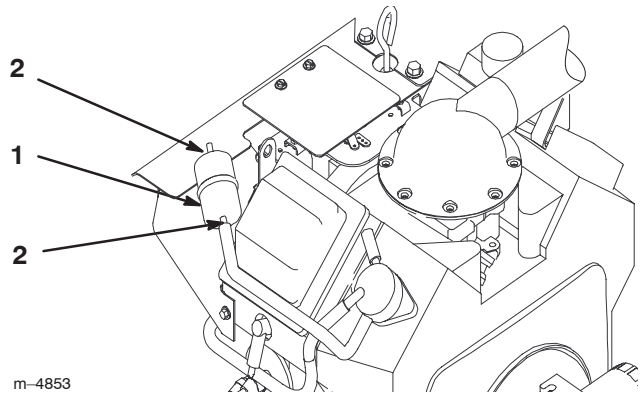


Figure 65

1. Filter
2. Hose clamp

3. Squeeze the ends of the hose clamps together and slide them away from the filter (Fig. 65).
4. Remove the filter from the fuel lines.
5. Install a new filter and move the hose clamps close to the filter.
6. Open fuel shut-off valve at fuel tank (Fig. 66).

Servicing the Fuel Tank

Draining 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.**

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 fuel shut–off valve at fuel tank (Fig. 66).

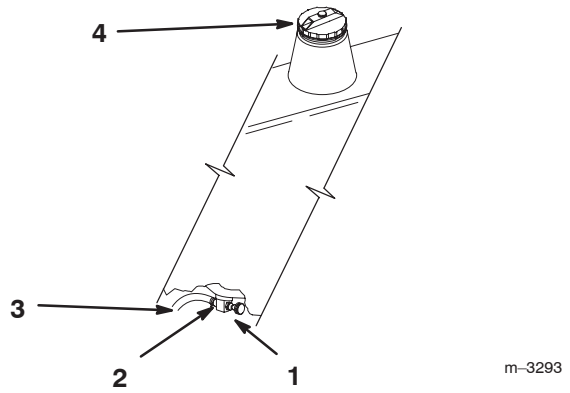


Figure 66

1. Fuel shut-off valve
2. Hose clamp
3. Fuel line
4. Fuel cap

3. Loosen the hose clamp and slide it up the fuel line away from the fuel shut-off valve (Fig. 66).
4. Pull the fuel line off fuel shut-off valve (Fig. 66). Open fuel shut-off valve and allow gasoline to drain into a gas can or drain pan.

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

5. Install the fuel line onto the fuel shut-off valve. Slide the hose clamp close to the fuel shut-off valve to secure the fuel line (Fig. 66).

Important Ensure that the fuel line is routed correctly to avoid damage to the fuel line.

Cleaning the Cooling Systems

Cleaning the Engine Screen and the Oil Cooler

Before each use, check and clean engine screen and engine oil cooler. Remove any build–up of grass, dirt or other debris from the oil cooler screen and engine air intake (Fig. 67).

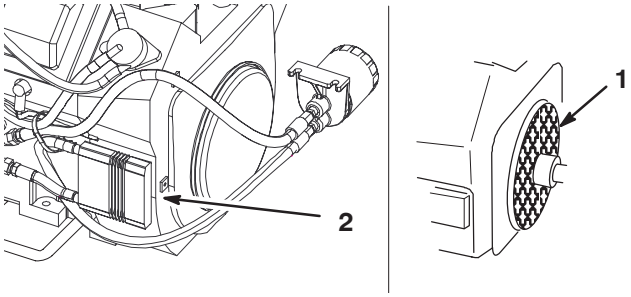


Figure 67

1. Engine screen
2. Oil cooler

Cleaning the Engine Fins

Every 100 hours engine cylinder and cylinder head cooling fins. Also clean around carburetor, governor levers and linkage. This will make sure adequate cooling to hydraulic pumps, motors and engine and will reduce the possibility of overheating and mechanical damage.

1. Remove the panels from the engine shroud.
2. Clean the engine cooling fins.
3. Install the panels onto the engine shroud.

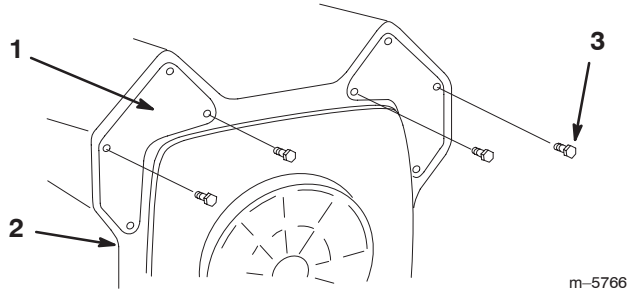


Figure 68

1. Panel
2. Engine shroud
3. Screws

Greasing and Lubricating

The unit must be lubricated regularly. Refer to the Recommended Maintenance Schedule on page 30.

Grease Type: No. 2 general purpose lithium base or molybdenum base grease.

How to Grease

1. Disengage the power take off (PTO) and turn the ignition key to off. Remove the key.
2. Clean the grease fittings with a rag. Make sure to scrape any paint off the front of the fitting(s).
3. Connect a grease gun to the fitting. Pump grease into the fittings until grease begins to ooze out of the bearings.
4. Wipe up any excess grease.

Where to Add Grease

Use the following decal for a reference to where and when to lubricate the machine. The decal is located under the seat.

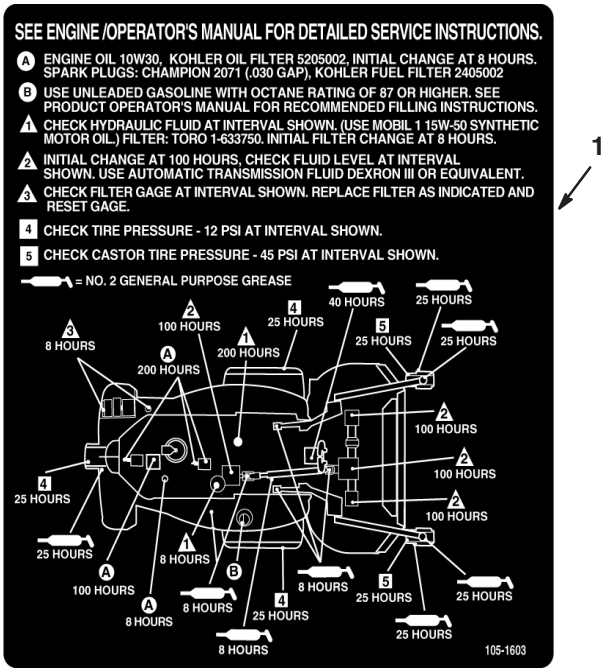


Figure 69

1. Where to grease decal

1. Lubricate the castor wheel bearings and motion control lever pivot until grease begins to ooze out of the bearings (Fig. 70).

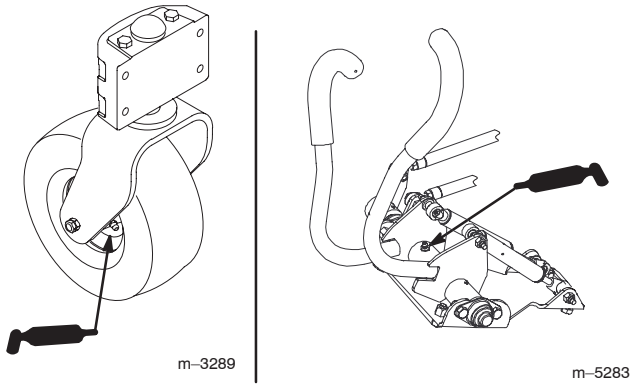


Figure 70

2. Grease the fittings on drive shaft and universal joints (Fig. 71).

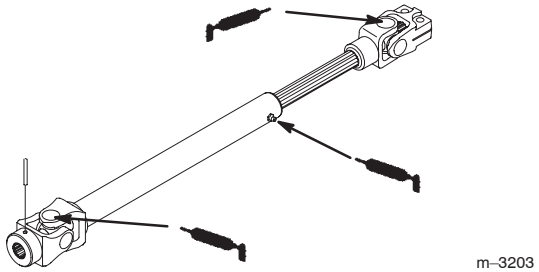


Figure 71

1. PTO Driveshaft
2. Universal Joint

3. Grease the fitting on the PTO idler pulley

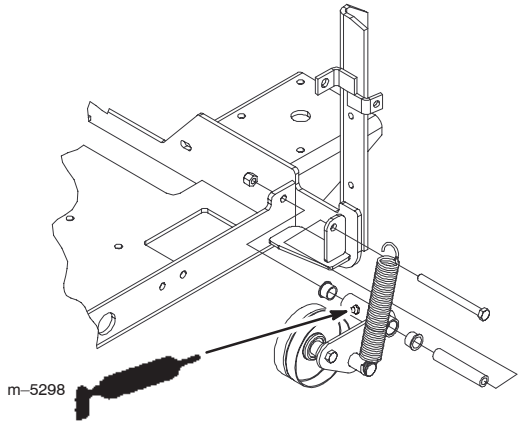


Figure 72

1. PTO Idler and pulley

4. Grease the fittings on push arms (Fig. 73).

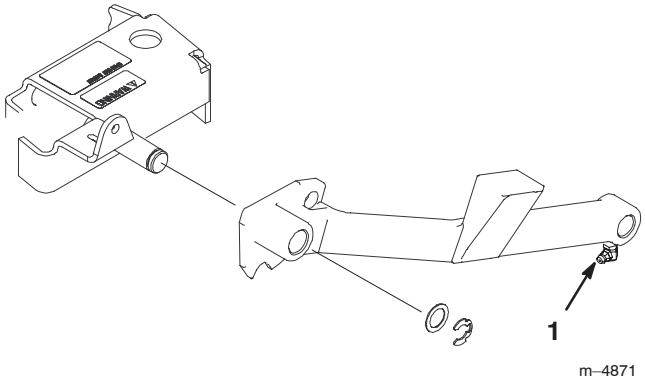


Figure 73

1. Push arm grease fitting

5. Grease the fittings on the carrier frame castor hubs and castor wheels (Fig. 74).

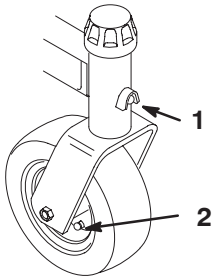


Figure 74

1. Carrier Frame Castor Hub Grease Fitting
2. Castor Wheel Grease Fitting

Servicing the Gearbox Fluid

Change fluid:

- After initial 100 operating hours.

Note: Fluid will not have to be changed again after initial 100 hour fluid change.

Fluid Type: Automatic Transmission Fluid (Dexron® III or equivalent)

Important Do not mix fluids. Use only Automatic Transmission Fluid.

Gearbox Capacity: 5–1/2 oz each box

Check fluid: After every 100 operating hours.

Changing the Gearbox Fluid

The gearbox fluid must be changed after first 100 operating hours. Change all three gearboxes.

Important Do not mix fluids. Use only specified fluid on page 41.

1. Warm the fluid in gearbox. Run the mower deck for a few minutes.
2. Tilt mower into the vertical position, refer to; Tilting the Mower, page 19.
3. With deck raised, remove plug on the bottom side of the gearbox. Let fluid fully drain into a pan. (Fig. 75).
4. Reinstall the bottom plug into the gearbox. Use pipe thread sealant if needed (Fig. 75).
5. Remove the top plug to fill gearbox (Fig. 75).
6. Fill gearbox with 5–1/2 oz of fluid.
7. Reinstall the top plug into the gearbox (Fig. 75).
8. Repeat for remaining gearboxes.

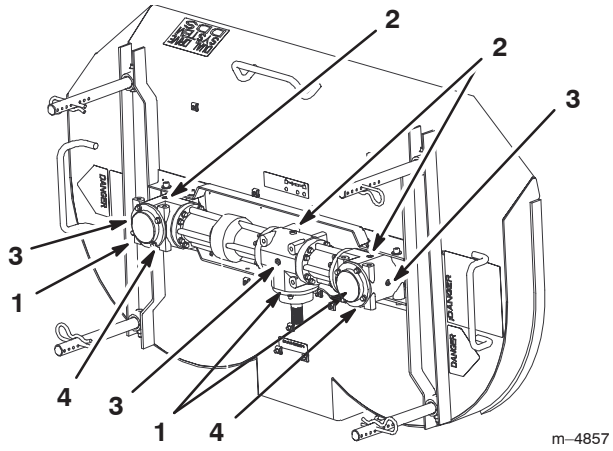


Figure 75

1. Gearbox
2. Top plug
3. Side plug
4. Bottom plug

Checking the Gearbox Fluid

The gearbox fluid must be checked after every 100 operating hours. Check all three gearboxes.

1. Warm the fluid in gearbox. Run the mower deck for a few minutes.
2. Tilt mower into the vertical position, refer to; Tilting the Mower, page 19.
3. Remove plug on the side of the gearbox. The fluid level must be up to side hole in gearbox (Fig. 75).
4. If needed, fill fluid into top hole until it runs out the side hole in gearbox. It is full when it runs out the side hole (Fig. 75).

Important Do not mix fluids. Do not overfill gearboxes.

5. Reinstall the top and side plugs into gearbox using pipe sealant (Fig. 75).
6. Fill gearbox with fluid.
7. Repeat for remaining gearboxes.

Replacing the Castor Wheel Fork Bushings

The castor wheel forks are mounted in bushings pressed into the top and bottom of the carrier frame castor tubes. To check the bushings, move the castor forks back and forth and side-to-side. If a castor fork is loose, the bushings are worn and must be replaced.

1. Tilt mower into the vertical position, refer to; Tilting the Mower, page 19.
2. Remove the cap, thrust washer and 1/2 inch spacer from the top of the castor wheel fork (Fig. 76).

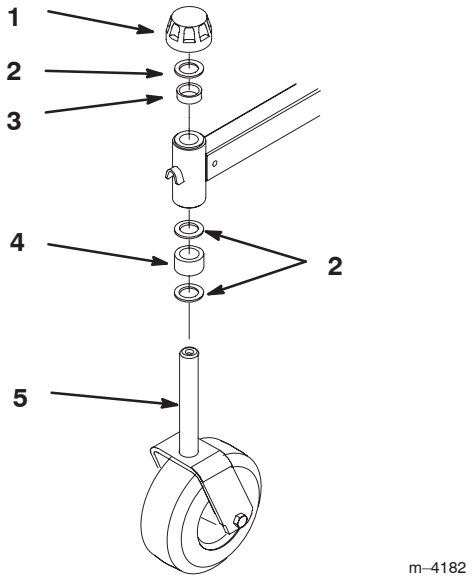


Figure 76

1. Cap
2. Washer
3. Spacer, 1/2 inch (New)
4. Spacer, 1 inch
5. Caster Wheel Fork

3. Pull the castor wheel fork out of the mounting tube, leaving the 1 inch spacer and thrust washers on the fork. Remember the location of thrust washers on each fork to ensure correct installation, and to maintain a level deck.

4. Insert a pin punch into the castor hub and carefully drive out the bushings (Fig. 77). Clean the inside of the mounting tube.

5. Grease the inside and outside of the new bushings. Use a hammer and flat plate to carefully drive the bushings into the castor hub (Fig. 77).

6. Inspect the castor wheel fork for wear and replace if necessary (Fig. 76).

7. Slide the castor wheel fork through the bushings in the castor hub. Replace the 1/2 inch spacer and thrust washer onto the fork and secure with the cap (Fig 76).

Important The inside diameter of the bushings may collapse slightly when installed. If the castor wheel fork does not slide into the new bushings, ream both bushings to an inside diameter of 1–1/8 inch.

8. Grease the fitting on the carrier frame castor hub using No. 2 general purpose lithium base or molybdenum base grease.

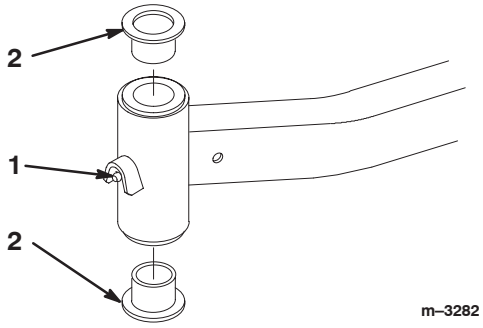


Figure 77

1. Carrier Frame Castor Hub
2. Bushing

Replacing Idler Arm Bushings

There are idler arms for the blower belt, PTO belt and traction belt. All three idler arms have pressed in bushings. To check the bushings, move the idler arms side-to-side and examine for wear. If the idler arms are loose, the bushings are worn and must be replaced.

1. Disengage the power take off (PTO) and turn the ignition key to off. Remove the key.

2. Remove tension on idler arms and remove belt from the idler. See one of the following figures 78, 79 or 80 that shows the idler you are checking.

3. Inspect the idler pivot pin assembly for wear and replace if necessary. To check the bushings, move the idler arms side-to-side and examine for wear.

4. If the idler arms are loose, the bushings are worn and must be replaced. Remove the hardware securing the idler pivot arm to the mower.

5. Insert a pin punch into the idler arm and carefully drive out the bushings (Figures 78, 79 or 80). Clean the inside of the idler arm.

6. Use a hammer and flat plate to carefully drive new bushings into the idler arm (Figures 78, 79 or 80).

7. Install the idler arm back onto the machine.

Note: Grease the PTO idler arm using No. 2 general purpose lithium base or molybdenum base grease.

8. Install the belt back onto idler pulley.

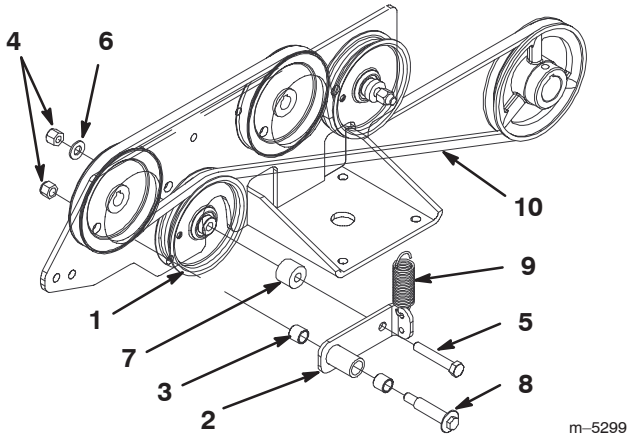


Figure 78

1. Pump Idler Pulley
2. Idler arm
3. Bushing
4. Nut
5. Bolt
6. Washer
7. Spacer
8. Shoulder bolt
9. Spring
10. Traction Belt

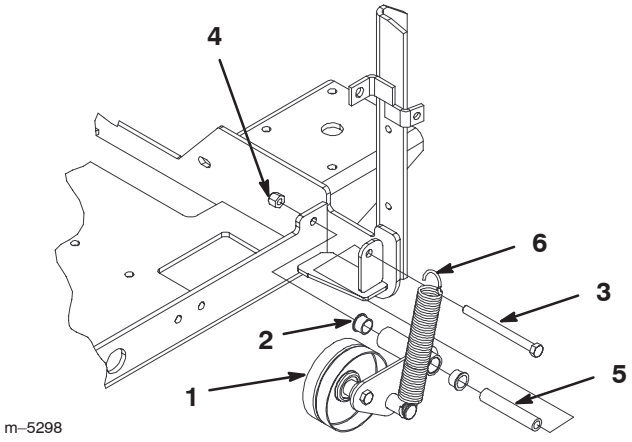


Figure 79

1. PTO Idler and pulley
2. Bushing
3. Bolt
4. Nut
5. Spacer
6. Spring

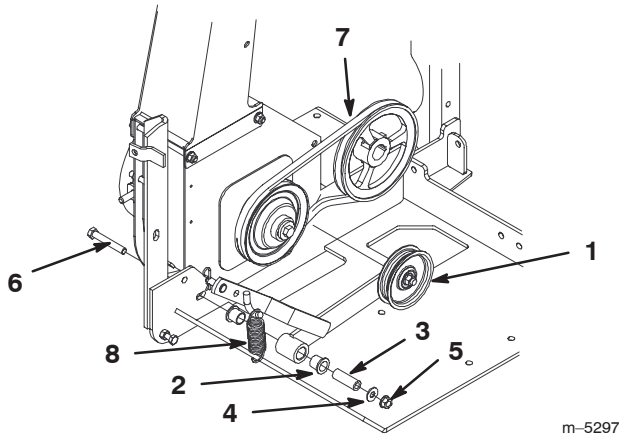


Figure 80

1. Blower Idler Pulley
2. Bushing
3. Spacer
4. Washer
5. Nut
6. Bolt
7. Blower Belt
8. Spring

Replacing Push Arm Bushings

The push arms have pressed in bushings on the end mounted to the traction unit. To check the bushings, move the push arms side-to-side and examine for wear. If a push arm is loose, the bushings are worn and must be replaced.

1. Remove the mower: refer to Removing the Mower in the Installation section.

2. Inspect the pivot pin assembly for wear and replace if necessary.

3. Remove the retaining ring and flat washer securing the push arm to the mower (Fig. 81).

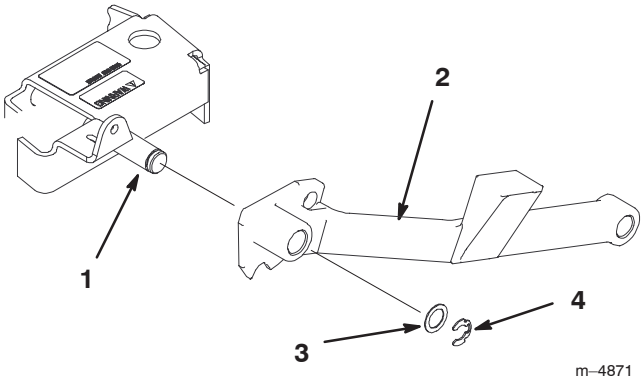


Figure 81

1. Pin
2. Push arm
3. Flat washer 1-1/2 inch
4. Retaining ring

4. Insert a pin punch into the push arm and carefully drive out the bushings (Fig. 82). Clean the inside of the push arm.

5. Use a hammer and flat plate to carefully drive new bushings into the end of push arm (Fig. 82).

6. Place push arm onto carrier frame pin and secure with 1-1/2 inch flat washer and retaining ring (Fig 81).

7. Grease the fitting on the push arm using No. 2 general purpose lithium base or molybdenum base grease.

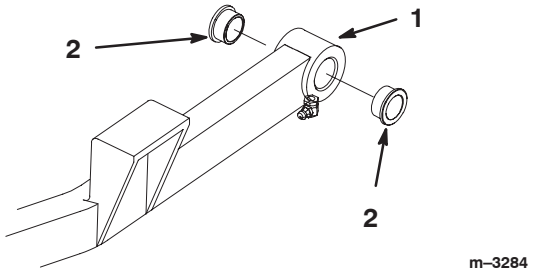


Figure 82

1. Push arm
2. Bushing

Servicing the Castor Wheels and Tail Wheel Bearings

The castor wheels and tail wheel rotate on a roller bearing supported by a spanner bushing. If the bearing is kept well lubricated, wear will be minimal. Failure to keep the bearing well lubricated will cause rapid wear. A wobbly castor wheel usually indicates a worn bearing.

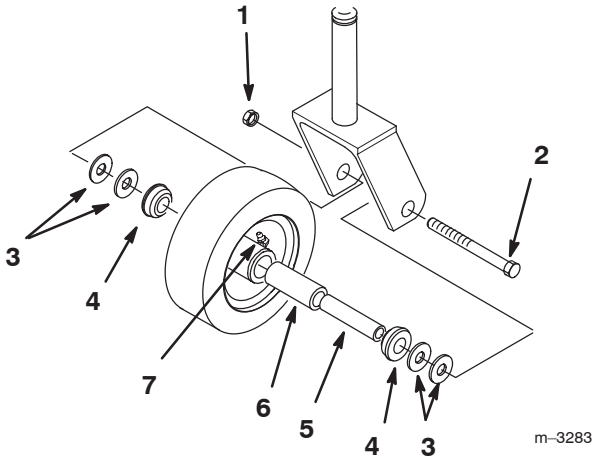


Figure 83

1. Locknut
2. Wheel Bolt
3. Washer
4. Bushing
5. Spanner Bushing
6. Roller Bearing
7. Grease fitting

1. Remove the locknut and wheel bolt holding the castor wheel to the castor fork (Fig. 83).

2. Remove the washer and bushing, then pull the spanner bushing and roller bearing out of the wheel hub (Fig. 83).

3. Remove the other bushing from the wheel hub and clean any grease and dirt from the wheel hub (Fig. 83).

4. Inspect the roller bearing, bushings, spanner bushing and inside of the wheel hub for wear. Replace any defective or worn parts (Fig. 83).

5. To assemble, place one (1) bushing into the wheel hub. Grease the roller bearing and spanner bushing and slide them into the wheel hub. Place the second bushing into the wheel hub (Fig. 83).

6. Install the castor wheel into the castor fork and secure with the wheel bolt and locknut. Tighten the locknut until the spanner bushing bottoms against the inside of the castor forks (Fig. 83).

7. Grease the fitting on the castor wheel.

Checking the Tire Pressure

Maintain the air pressure in the front and rear tires as specified. Uneven tire pressure can cause uneven cut. Check the pressure at the valve stem after every 50 operating hours or monthly, whichever occurs first (Fig. 84 and 85). Check the tires when they are cold to get the most accurate pressure reading.

Pressure: 83 kPa (12 psi) drive wheels
83 kPa (12 psi) tail wheel
345 kPa (45 psi) castor wheels

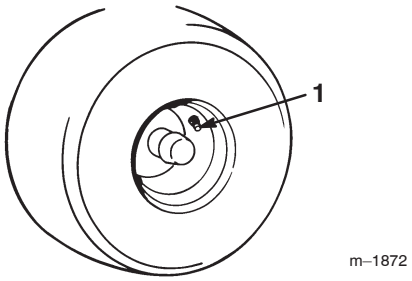


Figure 84

1. Drive Wheel and Tail Wheel Valve Stem

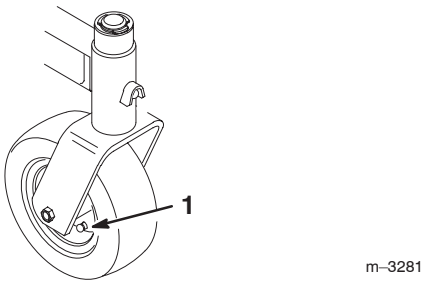


Figure 85

1. Castor Wheel Valve Stem

Servicing the Hydraulic System

Checking the Hydraulic Fluid

Check the hydraulic fluid level before engine is first started and after every 8 operating hours.

Fluid Type: Mobil 1® 15w–50 synthetic oil or equivalent synthetic oil.

Important Use only oils specified. Other fluids could cause system damage.

Total System Capacity: 2.8 l (96 oz.)

1. Position machine on a level surface and set the parking brake.
2. Clean area around filler neck of hydraulic tank (Fig. 86).

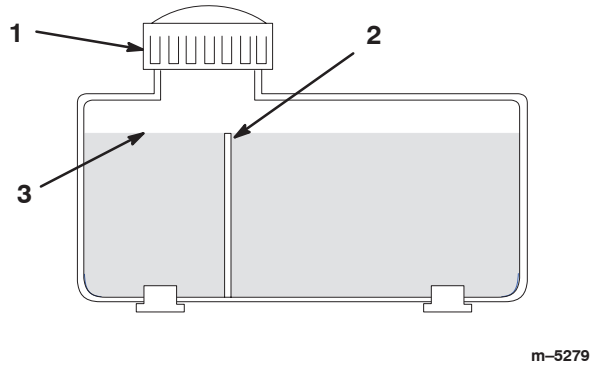


Figure 86

1. Cap
2. Baffle
3. Fluid level—full

3. Remove cap from filler neck. Look inside to check if there is fluid in the reservoir (Fig. 86).
4. If there is no fluid, add fluid to reservoir approximately a 1/4 inch below the top of baffle.
5. Run the machine 15 minutes to allow any air to purge out of the system and warm fluid.
6. Recheck level while fluid is warm. Add fluid to raise level to top of the baffle, if required.

Note: Fluid level should be to the top of the baffle when fluid is warm (Fig. 86).

7. 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 Filter

Change the hydraulic filter:

- After the first 8 operating hours
- After every 200 operating hours

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

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

2. Remove hydro cap and temporarily cover opening with a plastic bag and rubber band to prevent all hydro fluid from draining out.
3. Place drain pan under filter, remove the old filter and wipe the filter adapter gasket surface clean (Fig. 87).

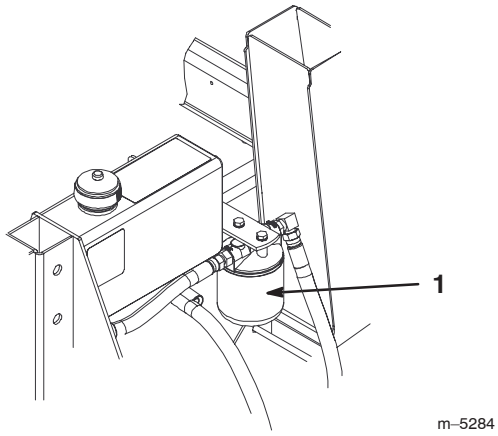


Figure 87

1. Hydraulic filter

4. Apply a thin coat hydro fluid to the rubber gasket on the replacement filter (Fig. 88).

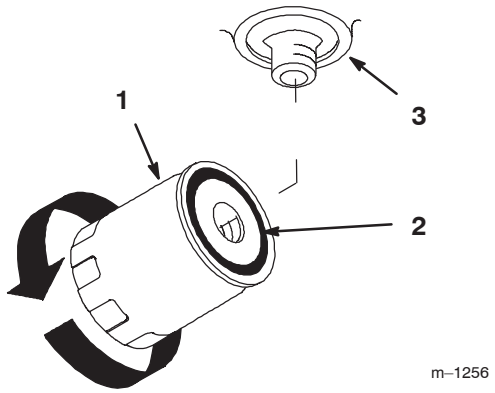


Figure 88

1. Hydraulic filter
2. Gasket
3. Adapter

5. Install replacement hydraulic filter onto the filter adapter. Do not tighten.

6. Remove plastic bag from tank opening and allow filter to fill with hydro fluid.

7. When fluid overflows filter turn the oil filter clockwise until the rubber gasket contacts the filter adapter, then tighten the filter an additional 1/2 turn (Fig. 88).

8. Clean up any spilled fluid.

9. If there is no fluid, add fluid to reservoir approximately a 1/4 inch below the top of baffle.

10. 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 Bleeding Hydraulic System, page 47.

11. Recheck level while fluid is warm. Add fluid to raise level to top of the baffle, if required. **Do not over fill.**

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.

1. Raise front of the machine so wheels are off the ground and support with jack stands.

2. Start the engine and run at idle speed. Engage traction on one side and spin the wheel by hand.

3. When the wheel begins to spin on its own, keep it engaged until wheel drives smoothly. (minimum 2 minutes).

4. Check hydraulic fluid level as it drops and add as required to maintain proper level.

5. Repeat procedure on opposite wheel.

Check the Hydraulic Lines

After every 100 operating hours, check hydraulic lines and hoses for leaks, loose fittings, kinked lines, loose mounting supports, wear, weather and chemical deterioration. Make necessary repairs before operating.

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.**

Adjusting the Motion Controls

If motion control levers do not align, adjustment is required. Adjust each rod separately.

1. Loosen jam nuts on pump control rod (Fig. 89).

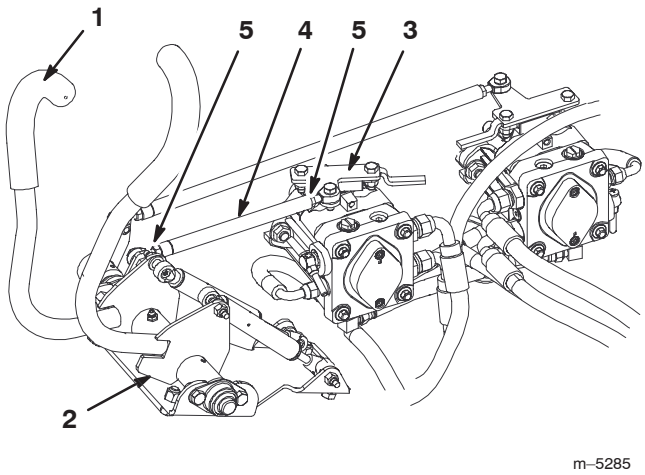


Figure 89

1. Motion control lever
2. Forward stop
3. Pump control plate
4. Control rod
5. Jam nut

2. Push and firmly hold motion control lever against forward stop (Fig. 89).

3. Rotate pump control rod until pump control plate is in the full forward position (Fig. 89). Motion control lever will lift off forward stop.

Important Hold motion control lever firmly against forward stop to determine when pump control reaches stop.

4. Rotate control rod 1 turn in reverse direction and tighten jam nuts (Fig. 89).

Important Motion control lever must contact forward stop before pump contacts internal stop or pump damage may occur.

5. If motion control levers do not line up in neutral, identify control rod of handle closer to the seat. Rotate to lengthen this control rod a little. Tighten jam nuts.

Replacing the Power Take Off (PTO) Belt

Check power take off (PTO) belt for wear after every 50 hours of operation.

1. Using a rag or thickly padded glove, hold spring loaded idler against belts and pull spring down to remove from idler stud (Fig. 90).
2. Lower idler to relax tension on PTO belt and remove belt from gear box pulley (Fig. 90).
3. Remove clutch stop mounting bolts and unplug clutch wire harness (Fig. 90). Remove belt over clutch.

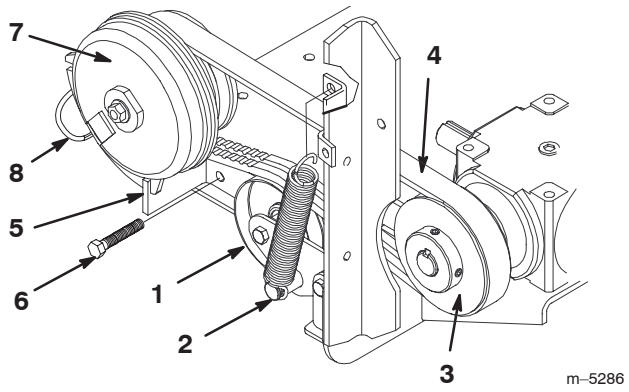


Figure 90

1. Idler
2. Spring
3. Gear box pulley
4. PTO belt
5. Clutch stop
6. Bolt
7. Clutch
8. Clutch electrical connector

4. Install new PTO belt over clutch and route around gearbox pulley and above spring loaded idler (Fig. 91).
5. Hold spring loaded idler against belts and pull spring down to install on idler stud (Fig. 90).
6. Install clutch stop (Fig. 90). Tighten mounting bolts securely.
7. Plug clutch wire into wire harness.

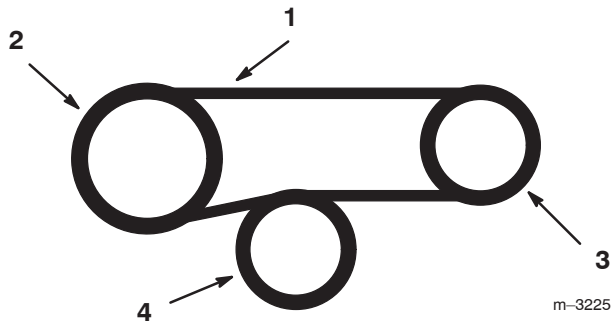


Figure 91

1. PTO belt
2. Clutch pulley
3. Gearbox pulley
4. Spring loaded idler

Replacing the Traction Belt

Check traction drive belt for wear after every 50 hours of operation.

1. Remove PTO belt; refer to Replacing Power Take Off (PTO) Belt on page 48.
2. Push spring loaded idler down and remove traction belt from the engine, fixed idler and hydro pump pulleys (Fig. 92). Remove belt over clutch.
3. Install new belt over clutch and around engine, fixed idler and hydro pump pulleys (Fig. 92).
4. Push spring loaded idler down and align below traction belt. Release pressure on spring loaded idler (Fig. 92).
5. Install PTO belt; refer to Replacing Power Take Off (PTO) Belt.

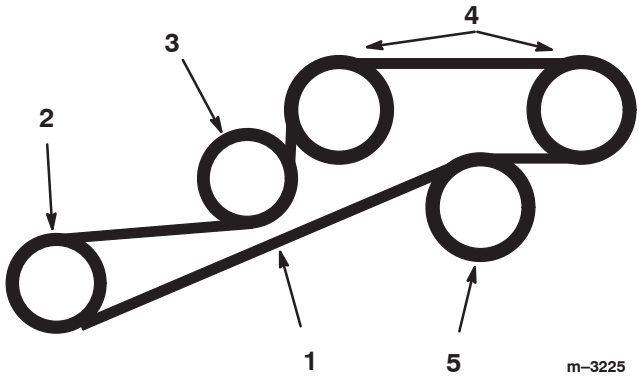


Figure 92

1. Traction belt
2. Engine pulley
3. Fixed idler pulley
4. Hydro pump pulley
5. Spring loaded idler

Replacing the Blower Belt

Squealing when the belt is rotating, blower slipping causing frequent clogging of chute and blower, frayed belt edges, burn marks and cracks are all signs of a worn blower belt. Replace the blower belt if any of these conditions are evident.

1. Stop the engine, remove the key and disconnect the spark plug wire(s) from the spark plug(s).
2. Push up on the spring loaded idler arm behind left hand traction tire to relax pressure on blower belt (Fig. 93). Lock into frame slot.
3. Remove worn blower belt.
4. Install new blower belt around PTO gearbox and blower pulleys. Then release spring loaded idler arm and place belt above idler pulley (Fig. 93).

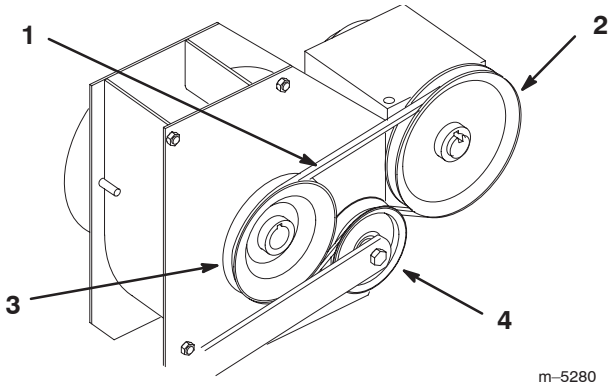


Figure 93

1. Blower belt
2. PTO Gearbox pulley
3. Blower pulley
4. Idler pulley

5. Check that belt aligns with PTO box, blower and idler pulleys (Fig. 93).

Turning Engine Lift Hook

Turn the engine lift hook if the engine is to be lifted. The engine lift hook is positioned to allow clearance for the air cleaner hose.

1. Locate on engine the lift hook in figure 94.
2. Remove the lift hook from engine. Rotate lift hook 180 degrees and reinstall.
3. Use the engine lift hook.
4. Rotate lift hook 180 degrees and reinstall to its original position.

Important Return lift hook to original position after engine has been reinstalled.

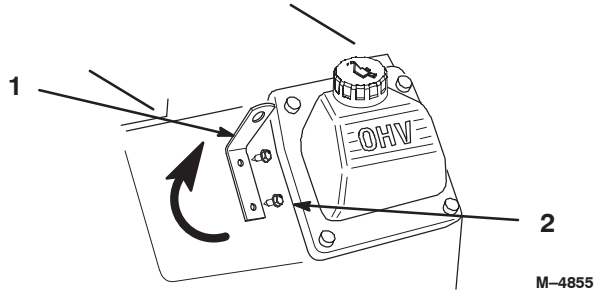


Figure 94

1. Engine Lift Hook
2. Screws

Servicing the Fuse

Service Interval/Specification

The electrical system is protected by fuses. It requires no maintenance, however, if a fuse blows check component/circuit for malfunction or short.

Fuse: Main F1–30 amp, blade-type
Alternator F2–25 amp, blade-type
Safety Interlock and Clutch F3–15 amp, blade-type

1. Remove dash panel screws to gain access to fuse holder (Fig. 95).
2. To replace fuses pull out on the fuse to remove it (Fig. 95).

Important Do not install fuses of greater capacity as call out above. It could cause electrical system damage.

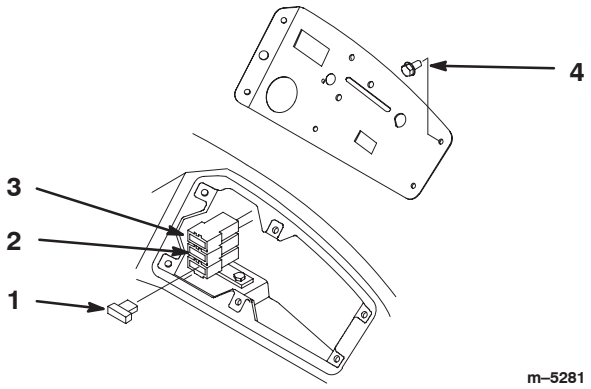


Figure 95

1. Main-30 amp, F1
2. Alternator-25 amp, F2
3. Safety interlock and clutch-15 Amp, F3
4. Screw

Servicing the Battery

Warning

Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. ***Wash hands after handling*****.**

Checking Electrolyte Level

1. Locate the battery under the bagger.
2. Look at the side of the battery. The electrolyte must be up to the **upper** line (Fig. 96). Do not allow the electrolyte to get below the **lower** line (Fig. 96).
3. If the electrolyte is low, add the required amount of distilled water; refer to Adding Water to the Battery, page 51.

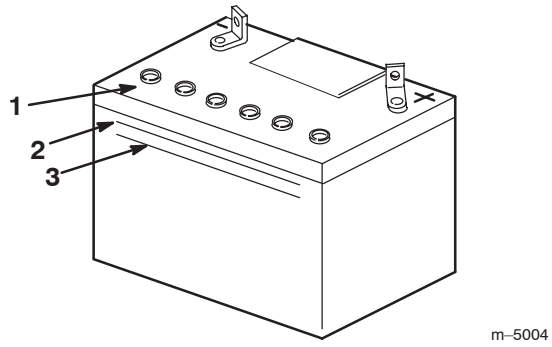


Figure 96

1. Filler caps
2. **Upper** line
3. **Lower** line

Danger

Battery electrolyte contains sulfuric acid which is a deadly poison and causes severe burns.

- **Do not drink electrolyte and avoid contact with skin, eyes or clothing. Wear safety glasses to shield your eyes and robber gloves to protect your hands.**
- **Fill the battery where clean water is always available for flushing the skin.**
- **Follow all instructions and comply with all safety messages on the electrolyte container.**

Installing the Battery

Warning

Battery terminals or metal tools could short against metal machine components causing sparks. Sparks can cause the battery gasses to explode, resulting in personal injury.

- **When removing or installing the battery, do not allow the battery terminals to touch any metal parts of the machine.**
- **Do not allow metal tools to short between the battery terminals and metal parts of the machine.**

1. Position battery in tray with terminal posts toward the engine (Fig. 97).

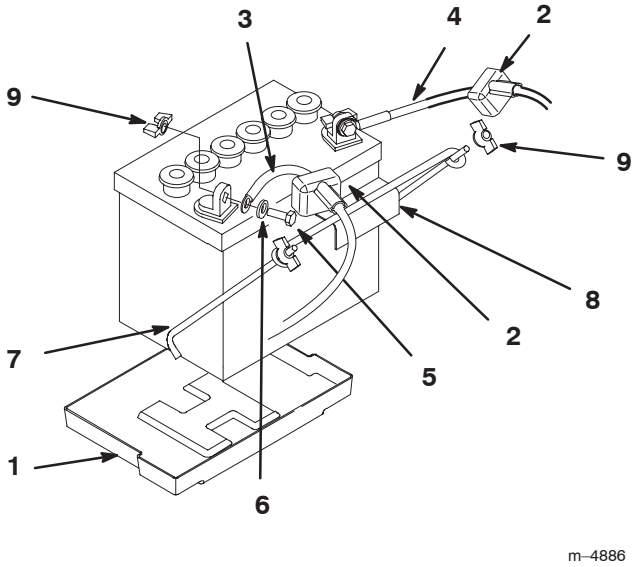


Figure 97

1. Battery tray
2. Terminal boot
3. Positive battery cable
4. Negative battery cable
5. Bolt, 1/4 x 3/4 inch
6. Washer, 1/4 inch
7. Battery support rod
8. Battery clamp
9. Wing nut, 1/4 inch

2. First, install the positive (red) battery cable to positive (+) battery terminal.
3. Then install negative battery cable and ground wire to the negative (–) battery terminal.
4. Secure cables with 2 bolts (1/4 x 3/4 inch), 2 washers (1/4 inch), and 2 locknuts (1/4 inch) (Fig. 97).
5. Slide the red terminal boot onto the positive (red) battery post.

6. Position support rods in mounting holes (Fig. 97). Secure battery with 2 support rods, a battery clamp and 2 wing nuts (1/4 inch). Tighten wing nuts so battery is held securely in position and will not slide. **Do not overtighten.**

Important Route cables so they do not contact metal edges, frame members, or tail wheel.

Removing the Battery

Warning

Incorrect battery cable routing could damage the machine and cables causing sparks. Sparks can cause the battery gasses to explode, resulting in personal injury.

- **Always *Disconnect* the negative (black) battery cable before disconnecting the positive (red) cable.**
- **Always *Reconnect* the positive (red) battery cable before reconnecting the negative (black) cable .**

1. Disengage the power take off (PTO), set the parking brake, and turn the ignition key to off. Remove the key.
2. Locate the battery under the bagger.
3. First disconnect the negative battery cable and ground wire from the negative (–) battery terminal (Fig. 97).
4. Slide the red terminal boot off the positive (red) battery terminal. Then remove positive (red) battery cable (Fig. 97).
5. Remove both wing nuts (1/4 inch) securing the battery clamp and support rods (Fig. 97).
6. Remove the battery.

Adding Water to the Battery

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

1. Remove the battery from the machine.
2. Clean the top of the battery with a paper towel.

Note: Never fill the battery with distilled water while the battery installed in the machine. Electrolyte could be spilled on other parts and cause corrosion.

3. Remove the vent caps from the battery (Fig. 96).
4. Slowly pour distilled water into each battery cell until the level is up to the **upper** line (Fig. 96) on the battery case.

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

5. Wait five to ten minutes after filling the battery cells. Add distilled water, if necessary, until the electrolyte level is up to the **upper** line (Fig. 96) on the battery case.
6. Reinstall battery vent caps.

Charging the Battery

Warning

Charging the battery produces gasses that can explode.

Never smoke near the battery and keep sparks and flames away from battery.

Important Always keep the battery fully charged (1.265 specific gravity). This is especially important to prevent battery damage when the temperature is below 32°F (0°C).

1. Remove the battery from the chassis; refer to Removing the Battery, page 51.
2. Check the electrolyte level; refer to Checking Electrolyte Level, page 50.
3. Make sure the filler caps are installed in battery. Charge battery for 10 to 15 minutes at 25 to 30 amps or 30 minutes at 4–6 amps.

4. When the battery is fully charged, unplug the charger from the electrical outlet, then disconnect the charger leads from the battery posts (Fig. 98).

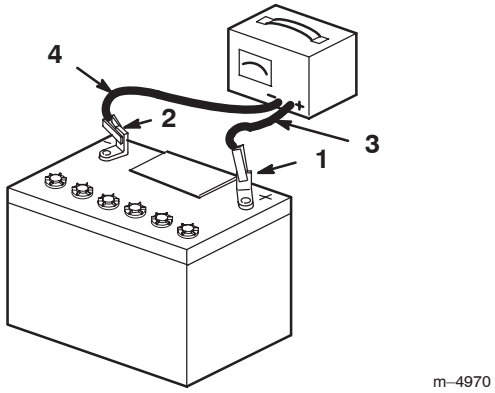


Figure 98

1. Positive Battery Post
2. Negative Battery Post
3. Red (+) Charger Lead
4. Black (–) Charger Lead

5. Install the battery in the machine and connect the battery cables; refer to Installing the Battery on page 50.

Note: Do not run the machine with the battery disconnected, electrical damage may occur.

Cleaning the Hopper Screens

For best clipping collection, maximum air flow through the hopper is required. To provide maximum air flow, the hopper screens must be kept clean.

1. To clean the hopper screens dump the hopper to remove grass clippings.
2. With the door open, remove the knobs at the upper front of the hopper and slide the screens out the rear of the hopper (Fig. 99).

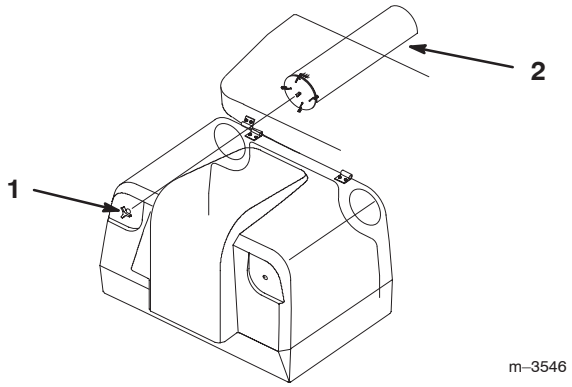


Figure 99

1. Knob
2. Screen

3. Clean the screen by brushing off with your hand, blowing with compressed air or spraying with a stream of water.
4. Replace the screens and secure with knobs (Fig. 99). Close and latch the hopper door.

Cleaning the Hopper Full Sensor

The hopper full sensor, inside the top right side of the hopper, detects a beam of light from the transmitter to the receiver. If the light beam is blocked the sensor buzzer sounds. If the lenses are covered with clippings or debris it may give false hopper full signals and needs to be cleaned.

Note: There are two different positions the hopper full sensors can be mounted. The lower position will signal the hopper full alarm earlier and prevent plugging of the chute and blower.

1. To clean the hopper full sensor dump the hopper to remove grass clippings.
2. With the door open, wipe off the lenses of both the transmitter and receiver with a soft cloth or paper towel (Fig. 100).
3. To test the hopper full sensor for proper operation turn the ignition key and PTO switch to on, but do not start the engine. Place a piece of heavy cardboard in front of the transmitter to block the light beam (Fig. 100). The alarm buzzer should sound.

Note: Do not use your hand to test for proper sensor operation as the light beam may pass through or around your hand and not properly activate the sensor.

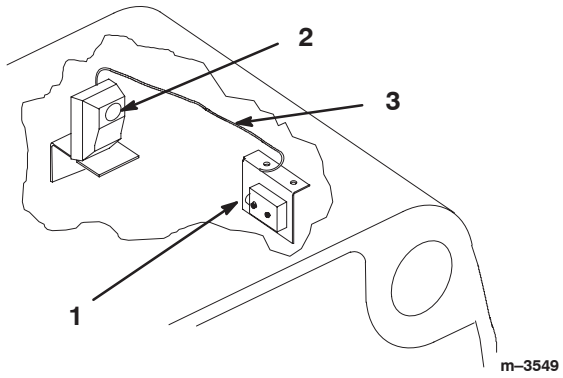
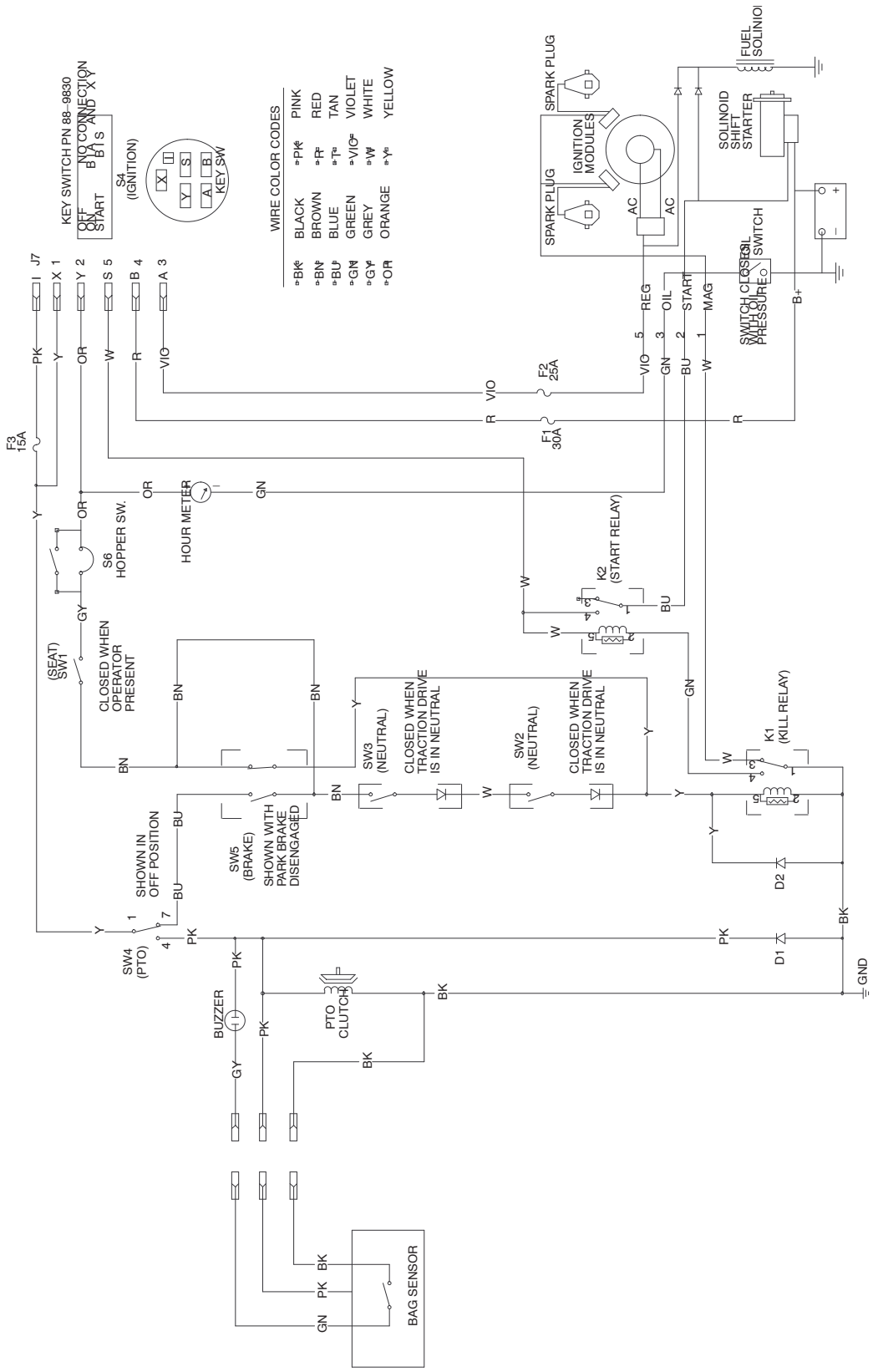


Figure 100

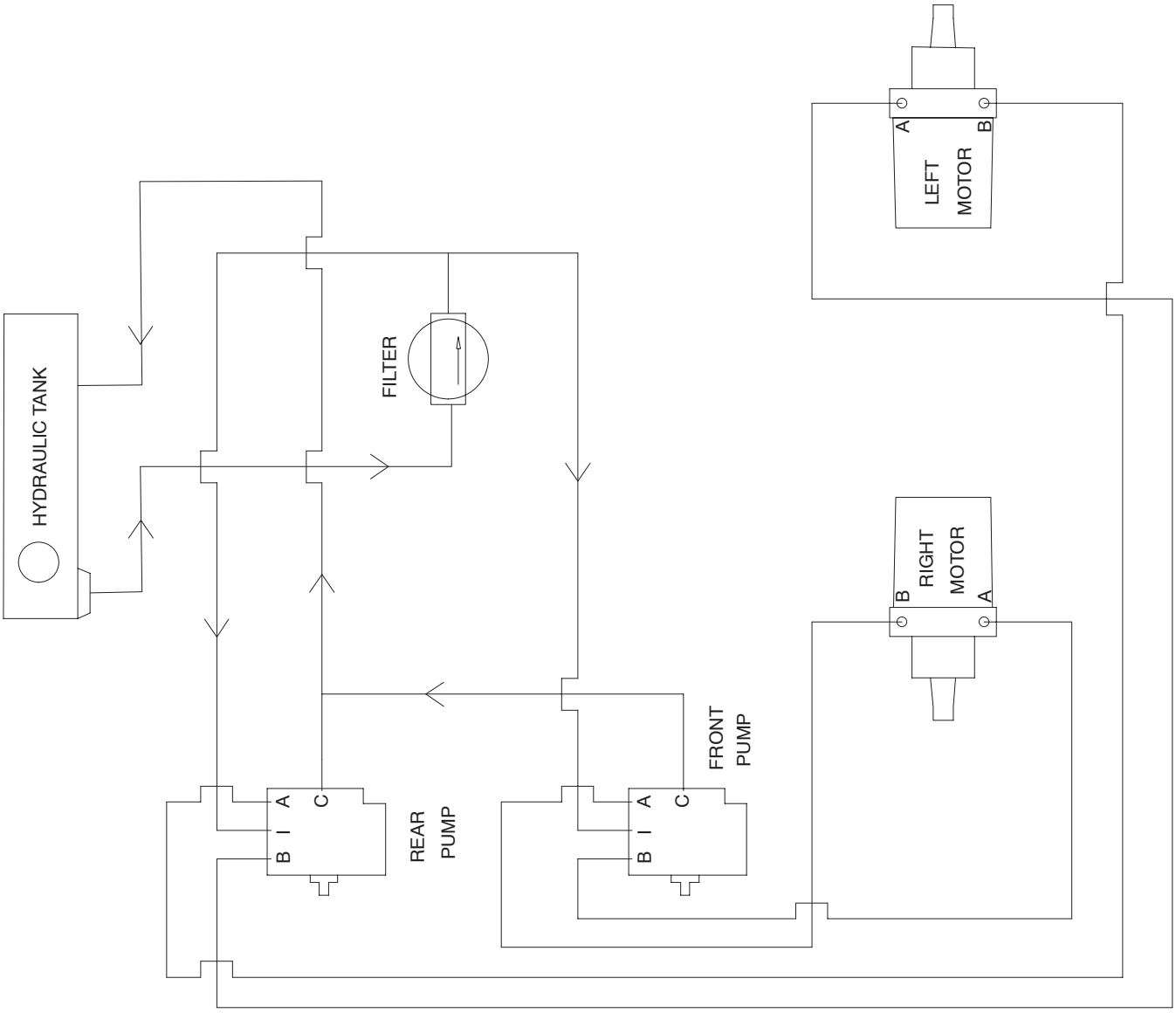
1. Transmitter
2. Receiver
3. Wire

Note: Make sure the wire between receiver and transmitter is tight. It can collect debris and give a false hopper full signal.

Wiring Diagram



Hydraulic Diagram



Cleaning and 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.
3. Clean any dirt and chaff from the mower, chute, blower and hopper.
4. Scrape any heavy buildup of grass and dirt from the mower, chute, blower and hopper, then wash with a garden hose.

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

5. Check the condition of the blades. Refer to Servicing the Cutting Blades on page 31.
6. Service the air cleaner; refer to Servicing the Air Cleaner, page 35.
7. Grease the machine; refer to Greasing and Lubricating page 40.
8. Change the crankcase oil; refer to Servicing the Engine Oil, page 36.
9. Change the hydraulic fluid; refer to Servicing the Hydraulic System, page 45.
10. For long-term storage (more than 90 days) add stabilizer/conditioner additive to fuel in the tank.
    A. Run engine to distribute conditioned fuel through the fuel system (5 minutes).
    B. Stop engine, allow to cool and drain the fuel tank; refer to Servicing the Fuel Tank, page 39.
    C. Restart engine and run until it stops. Repeat, on choke until engine will not restart.
    D. Dispose of fuel properly. Recycle as per local codes.

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

11. Remove the spark plug(s) and check its condition; refer to Servicing the Spark Plug, page 38. With the spark plug(s) removed from the engine, pour two tablespoons of engine oil into the spark plug hole. Now use the starter to crank the engine and distribute the oil inside the cylinder. Install the spark plug(s). Do not install the wire on the spark plug(s).
12. Check the condition of all belts.
13. Check the tire pressure; refer to Checking the Tire Pressure, page 45.
14. Disconnect the negative battery cable. Clean the battery and battery terminals. Check the electrolyte level and charge it fully; refer to Servicing the Battery on page 50. Leave the negative battery cable disconnected from the battery during storage.

Important The battery must be fully charged to prevent it from freezing and being damaged at temperatures below 32°F (0°C). A fully charged battery can be stored one winter season without recharging.

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

Troubleshooting

PROBLEM	POSSIBLE CAUSES	CORRECTIVE ACTION
Starter does not crank	1. Power take off (PTO) is ENGAGED. 2. Parking brake is not on. 3. Motion control levers are not in neutral. 4. Battery is dead. 5. Electrical connections are corroded or loose. 6. Fuse is blown. 7. Relay or switch is defective.	1. Move power take off (PTO) to DISENGAGED. 2. Set parking brake. 3. Move motion control levers into neutral. 4. Charge the battery. 5. Check electrical connections for good contact. 6. Replace fuse. 7. Contact Authorized Service Dealer.
Engine will not start, starts hard, or fails to keep running.	1. Fuel tank is empty. 2. Choke is not ON. 3. Air cleaner is dirty. 4. Spark plug wires is loose or disconnected. 5. Spark plugs are pitted, fouled, or gap is incorrect. 6. Dirt in fuel filter. 7. Dirt, water, or stale fuel is in fuel system. 8. Fuel shut off valve is “off”.	1. Fill fuel tank with gasoline. 2. Move choke lever to ON. 3. Clean or replace air cleaner element. 4. Install wires on spark plug. 5. Install new, correctly gapped spark plugs. 6. Replace fuel filter. 7. Contact Authorized Service Dealer. 8. Turn shut off valve to “on”.
Engine loses power.	1. Engine load is excessive. 2. Air cleaner is dirty. 3. Oil level in crankcase is low. 4. Cooling fins and air passages under engine blower housing are plugged. 5. Spark plugs are pitted, fouled, or gap is incorrect. 6. Dirt in fuel filter. 7. Dirt, water, or stale fuel is in fuel system.	1. Reduce ground speed. 2. Clean air cleaner element. 3. Add oil to crankcase. 4. Remove obstruction from cooling fins and air passages. 5. Install new, correctly gapped spark plugs. 6. Replace fuel filter. 7. Contact Authorized Service Dealer.
Engine overheats.	1. Engine load is excessive. 2. Oil level in crankcase is low. 3. Cooling fins and air passages under engine blower housing are plugged.	1. Reduce ground speed. 2. Add oil to crankcase. 3. Remove obstruction from cooling fins and air passages.

PROBLEM	POSSIBLE CAUSES	CORRECTIVE ACTION
Abnormal vibration.	1. Engine mounting bolts are loose.	1. Tighten engine mounting bolts.
	2. Loose engine pulley, idler pulley, or blade pulley.	2. Tighten the appropriate pulley.
	3. Engine pulley is damaged.	3. Contact Authorized Service Dealer.
	4. Loose deck gearbox bolts.	4. Check and tighten bolts.
	5. Blades are bent.	5. Replace blades.
	6. Gearbox output shaft (spindle) is bent.	6. Contact Authorized Service Dealer.
Machine does not drive.	1. Parking brake is on.	1. Move parking brake to off.
	2. Traction belt is worn, loose or broken.	2. Contact Authorized Service Dealer.
	3. Traction belt is off pulley.	3. Contact Authorized Service Dealer.
	4. Hydro fluid level low.	4. Add hydro fluid to reservoir.

LCE

The Toro Total Coverage Guarantee

A One-Year Limited Warranty

Conditions and Products Covered

The Toro Company and its affiliate, Toro Warranty Company, pursuant to an agreement between them, jointly promise to repair any Toro Product used for commercial, institutional, or rental purposes if defective in materials or workmanship. The following time periods apply from the date of purchase:

Products	Warranty Period
• All Products	1 year
• All Spindles	2 years parts and labor; third year, parts only
• Engines/Hydraulic Systems* on the following: Outfront and Mid-Mount Z's ProLine Mid-Size Mowers Groundsmaster® Riding Mowers Backpack Blowers	2 years
• Deck Shells (36″–72″) on the following: ProLine Mid-Size Mowers Mid-Mount Z's	2 years
• Electric Clutch on 200 Series Mid-Mount Z's	2 years

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

This warranty applies to:

- Outfront and Mid-Mount Z's
- ProLine Mid-Size Mowers
- Groundsmaster Riding Mowers
- Turf Maintenance Equipment
- Debris Management Equipment

* Some engines used on Toro LCE Products are warranted by the engine manufacturer.

Instructions for Obtaining Warranty Service

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

1. Contact any Toro Authorized or Master Service Dealer to arrange service at their dealership. To locate a dealer convenient to you, access our website at www.Toro.com. U.S. Customers may also call 800-348-2424.
2. Bring the product and your proof of purchase (sales receipt) to the Service Dealer.

If for any reason you are dissatisfied with the Service Dealer's analysis or with the assistance provided, contact us at:

LCB Customer Service Department
Toro Warranty Company
8111 Lyndale Avenue South
Bloomington, MN 55420-1196
888-577-7466 (U.S. customers)
877-484-9255 (Canada customers)

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 on some products. This express warranty does not cover the following:

- Cost of regular maintenance service or parts, such as filters, fuel, lubricants, tune-up parts, blade sharpening, brake and clutch adjustments.
- Any product or part which has been altered or misused or required replacement or repair due to normal wear, accidents, or lack of proper maintenance.
- Repairs necessary due to improper fuel, contaminants in the fuel system, or failure to properly prepare the fuel system prior to any period of non-use over three months.
- Pickup and delivery charges.

All repairs covered by this warranty must be performed by an Authorized Toro Service Dealer using Toro approved replacement parts.

General Conditions

Repair by an Authorized Toro Service Dealer is your sole remedy under this warranty.

Neither The Toro Company nor Toro Warranty Company is liable for indirect, incidental or consequential damages in connection with the use of the Toro Products covered by this warranty, including any cost or expense of providing substitute equipment or service during reasonable periods of malfunction or non-use pending completion of repairs under this warranty.

Some states do not allow exclusions of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the above exclusions and limitations may not apply to you.

All implied warranties of merchantability (that the product is fit for ordinary use) and fitness for use (that the product is fit for a particular purpose) are limited to the duration of the express warranty.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Countries Other than the United States or Canada

Customers who have purchased Toro products exported from the United States or Canada should contact their Toro Distributor (Dealer) to obtain guarantee policies for your country, province, or state. If for any reason you are dissatisfied with your Distributor's service or have difficulty obtaining guarantee information, contact the Toro importer. If all other remedies fail, you may contact us at Toro Warranty Company.

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