

**QUEST™**

**For Serial Nos.  
312,000,000 & Higher**  
Part No. 4501-191 Rev. A

# Operator's Manual

**⚠ WARNING**

**CALIFORNIA  
Proposition 65 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 (CPRC) 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.

To acquire a spark arrester for your unit, see your Engine Service Dealer.

This spark ignition system complies with the Canadian standard ICES-002.

**⚠ WARNING**

Removing standard original equipment parts and accessories may alter the warranty, traction, and safety of the machine. Failure to use original Exmark parts could cause serious injury or death. Making unauthorized changes to the engine or fuel system, may violate EPA and CARB regulations.

Replace all parts including, but not limited to, tires, belts, blades, and fuel system components with original Exmark parts.

The enclosed Engine Owner's Manual is supplied for information regarding the US Environmental Protection Agency (EPA) and the California Emission Control Regulation of emission systems, maintenance, and warranty. Replacements may be ordered through the engine manufacturer.

For models with stated engine horsepower, the gross horsepower of the engine was laboratory rated by the engine manufacturer in accordance with SAE J1940. As configured to meet safety, emission, and operating requirements, the actual engine horsepower on this class of lawn mower will be significantly lower.



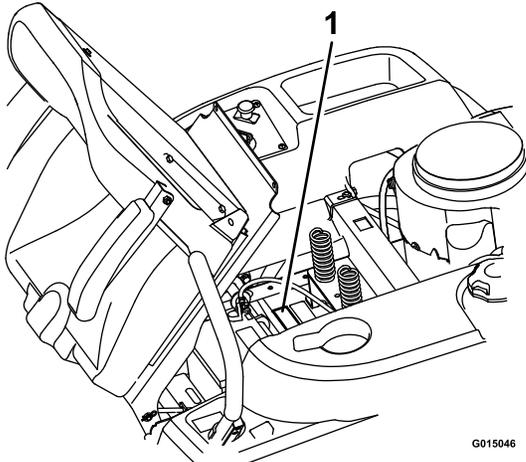
If your Exmark dealer does not have the Exmark part in stock, Exmark will get the parts to the dealer the next business day or the part will be FREE Guaranteed!! (Some restrictions apply. See your participating Exmark Dealer for details.)

# Introduction

Read this information carefully to learn how to operate and maintain your product properly and to avoid injury and product damage. You are responsible for operating the product properly and safely.

Exmark parts manuals are available online at <http://www.exmark.com>. You may contact Exmark directly at [www.Exmark.com](http://www.Exmark.com) for product and accessory information or help finding a dealer.

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



G015046

**Figure 1**  
Under the seat

1. Model and serial number location

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<b>Model No.</b> _____
<b>Serial No.</b> _____

# Contents

Introduction .....	3	Changing the Hydraulic System Filter and Oil.....	40
Safety .....	5	Mower Maintenance .....	42
Safety Alert Symbol.....	5	Servicing the Cutting Blades .....	42
Safe Operating Practices .....	5	Leveling the Mower Deck .....	45
Safety and Instructional Decals .....	9	Mower Belt Maintenance .....	48
Specifications .....	14	Replacing the Discharge Deflector .....	50
Model Numbers .....	14	Cleaning .....	52
Systems .....	14	Washing the Underside of the Mower .....	52
Dimensions.....	15	Clean Engine and Exhaust System Area .....	52
Torque Requirements .....	16	Storage .....	53
Product Overview .....	16	Cleaning and Storage .....	53
Operation .....	17	Troubleshooting .....	54
Controls .....	17	Schematics .....	56
Operating Instructions .....	18		
Recommended Gasoline.....	19		
Checking the Engine Oil Level.....	20		
Starting the Engine.....	20		
Operating the Blades .....	21		
Stopping the Engine .....	21		
The Safety Interlock System.....	22		
Driving Forward or Backward.....	22		
Stopping the Machine.....	24		
Adjusting the Height of Cut .....	24		
Adjusting the Anti-Scalp Rollers.....	24		
Positioning the Seat .....	25		
Changing the Seat Ride Suspension .....	26		
Adjusting the Motion Control Levers .....	26		
Pushing the Machine by Hand.....	26		
Side Discharge.....	27		
Transporting .....	27		
Operating Tips .....	28		
Maintenance .....	30		
Recommended Maintenance Schedule(s) .....	30		
Premaintenance Procedures .....	31		
Raising the Seat .....	31		
Periodic Maintenance .....	31		
Lubrication.....	31		
Engine Maintenance.....	32		
Servicing the Engine Oil.....	32		
Servicing the Spark Plug .....	34		
Cleaning the Blower Housing.....	35		
Fuel System Maintenance .....	35		
Servicing the Emissions Filter.....	35		
Electrical System Maintenance.....	36		
Charging the Battery.....	36		
Drive System Maintenance .....	39		
Checking the Tire Pressure .....	39		
Checking the Hydraulic Oil Level.....	39		

# Safety

## Safety Alert Symbol

This manual identifies potential hazards and has safety messages identified by the safety alert symbol (Figure 2), which signals a hazard that may cause serious injury or death if you do not follow the recommended precautions.



**Figure 2**  
Safety Alert Symbol

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.

**This machine meets or exceeds the safety specifications of the American National Standards Institute B71.1-2003 in effect at the time of production. However, improper use or maintenance by the operator or owner can result in injury. To reduce the potential for injury, comply with these safety instructions and always pay attention to the safety alert symbol, which means CAUTION, WARNING, or DANGER-"personal safety instruction." Failure to comply with the instruction may result in personal injury or death.**

## Safe Operating Practices

The following instructions are from ANSI standard B71.1-2003.

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

### General Operation

- Read, understand, and follow all instructions in the operator's manual and on the machine before starting.
- Do Not place hands or feet near rotating parts or under the machine. Keep clear of the discharge opening at all times.
- Allow only responsible adults who are familiar with the instructions to operate the machine.
- Clear the area of objects such as rocks, toys, wire, etc., which could be picked up and thrown by the blade.
- Be sure the area is clear of other people before mowing. Stop the machine if anyone enters the area.
- Never carry passengers.
- Do Not mow in reverse unless absolutely necessary. Always look down and behind before and while backing up.
- Be aware of the mower discharge direction and Do Not point it at anyone. Avoid discharging material against a wall or obstruction. Material may ricochet back toward the operator. Stop the blades when crossing gravel surfaces.
- Do Not operate the mower without either the entire grass collection system or the discharge deflector in place.
- Be alert, slow down and use caution when making turns. Look behind and to the side before changing directions.
- Never leave a running machine unattended. Always turn off blades, engage parking brake, stop engine, and remove key before dismounting.
- Turn off blades when not mowing. Stop the engine, wait for all parts to come to a complete stop, engage parking brake, and remove key before cleaning the machine, removing the grass or unclogging the deflector.
- Operate the machine only in daylight or good artificial light.
- Do Not operate the machine while under the influence of alcohol or drugs.
- Watch for traffic when operating near or crossing roadways.
- Use extra care when loading or unloading the machine into a trailer or truck
- Always wear eye protection when operating the mower.
- Data indicates that operators, age 60 years and above, are involved in a large percentage of riding mower-related injuries. These operators should evaluate their ability to operate the riding mower

# Safety

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safely enough to protect themselves and others from serious injury.

- Always follow the recommendations for wheel weights or counterweights.

## Slope Operation

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

- Do Not mow slopes greater than 15 degrees.
- Watch for ditches, holes, rocks, dips, and rises that change the operating angle, as rough terrain could overturn the machine.
- Choose a low ground speed so you will not have to stop while operating on a slope.
- Do Not mow slopes when grass is wet. Slippery conditions reduce traction and could cause sliding and loss of control.
- Reduce speed and use extreme caution on slopes.
- Do Not make sudden turns or rapid speed changes.
- Remove or mark obstacles such as rocks, tree limbs, etc. from the mowing area. Tall grass can hide obstacles.
- Avoid sudden starts when mowing uphill because the mower may tip backwards.
- Be aware that operating on wet grass, across steep slopes or downhill may cause the mower to lose traction. Loss of traction to the drive wheels may result in sliding and a loss of braking and steering.
- Always avoid sudden starting or stopping on a slope. If tires lose traction, disengage the blades and proceed slowly off the slope.
- Use extreme care with grass collection systems or other attachments. These can change the stability of the machine and cause loss of control.
- Do Not try to stabilize the machine by putting your foot on the ground.
- Do Not mow near drop-offs, ditches, steep banks or water. Wheels dropping over edges can cause rollovers, which may result in serious injury, death or drowning.
- Use a walk behind mower and/or a hand trimmer on slopes greater than 15 degrees, near drop-offs, ditches, steep banks or water.

## Children

Tragic accidents can occur if the operator is not alert to the presence of children. Children are often attracted to the machine and the mowing activity. Never assume that children will remain where you last saw them.

- Keep children out of the mowing area and under the watchful care of another responsible adult, not the operator.
- Be alert and turn the machine off if children enter the area.
- Before and while backing or changing direction, look behind, down, and side-to-side for small children.
- Never carry children, even with the blades off. They may fall off and be seriously injured or interfere with safe machine operation.
- Children who have been given rides in the past may suddenly appear in the mowing area for another ride and be run over or backed over by the mower.
- Never allow children to operate the machine.
- Use extra care when approaching blind corners, shrubs, trees, the end of a fence or other objects that may obscure vision.

## Towing

- Use for towing only if equipped with an Exmark hitch kit. Do Not attach towed equipment except at the hitch point.
- Follow Exmark's recommendation for weight limits for towed equipment and towing on slopes. This information can be found in the hitch kit instruction sheet and on the decal.
- Never allow children or others in or on towed equipment.
- On slopes, the weight of the towed equipment may cause loss of traction and loss of control.
- Travel slowly and allow extra distance to stop.

## Service

### Safe Handling of Gasoline

To avoid personal injury or property damage, use extra care when handling gasoline and other fuels. They are flammable and the vapors are explosive.

- Extinguish all cigarettes, cigars, pipes and other sources of ignition.
- Use only an approved container.
- Never remove the gas cap or add fuel when the engine is running. Allow the engine to cool before refueling.
- Never refuel the machine indoors.
- Never store the machine or fuel container inside where there is an open flame, such as near a water heater or furnace.
- Never fill containers inside a vehicle or on a truck or trailer with a plastic liner. Always place containers on the ground away from your vehicle before filling.
- Remove gas-powered equipment from the truck or trailer and refuel it on the ground. If this is not possible, then refuel such equipment with a portable container, rather than from a gasoline dispenser nozzle.
- Keep the nozzle in contact with the rim of the fuel tank or container opening at all times until the fueling is complete. Do Not use a nozzle lock-open device.
- If fuel is spilled on clothing, change clothing immediately.
- Never overfill the fuel tank. Replace gas cap and tighten securely.

### General Service:

- Never run a machine inside a closed area.
- Keep nuts and bolts tight, especially the blade attachment bolts. Keep equipment in good condition.
- Never tamper with safety devices. Check their proper operation regularly.
- Keep the machine free of grass, leaves, or other debris build-up. Clean up oil or fuel spillage and fuel soaked debris. Allow the machine to cool before storing.
- Stop and inspect the equipment if you strike an object. Repair, if necessary, before restarting.
- Never make any adjustments or repairs with the engine running.
- Grass collection system components are subject to wear, damage and deterioration, which could expose moving parts or allow objects to be thrown. Frequently check components and replace with manufacturers' recommended parts, when necessary.
- Mower blades are sharp and can cut. Wrap the blades or wear gloves, and use extra caution when servicing them.
- Check for proper brake operation frequently. Adjust and service as required.
- Maintain or replace safety and instruction decals as necessary.
- Use only genuine Exmark replacement parts to ensure that original standards are maintained.

## Exmark Riding Mower Safety

The following list contains safety information specific to Exmark products or other safety information that you must know that is not included in the ANSI standards.

- Only adults and mature teenagers should operate a mower, and even mature teenagers should have adult supervision. Be sure a teenager:
  1. has read and understands the Operator's Manual and recognizes the risks involved;
  2. is sufficiently mature to use caution; and
  3. is of sufficient size and weight to operate the controls comfortably and to manage the mower without taking risks.
- Engine exhaust contains carbon monoxide, which is an odorless, deadly poison that can kill you. Do Not run engine indoors or in an enclosed area.
- Park machine on level ground. Stop the engine, wait for all moving parts to stop, engage parking brake, disconnect spark plug wire(s) and remove key before performing any service, repairs, maintenance or adjustments.
- Keep hands, feet, hair, and loose clothing away from attachment discharge area, underside of mower and any moving parts while engine is running.
- Do Not touch equipment or attachment parts which may be hot from operation. Allow to cool before attempting to maintain, adjust or service.
- Battery acid is poisonous and can cause burns. Avoid contact with skin, eyes, and clothing. Protect your face, eyes, and clothing when working with a battery.

# Safety

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- Battery gases can explode. Keep cigarettes, sparks and flames away from battery.
- Use only Exmark approved attachments. Warranty may be voided if used with unapproved attachments.
- If loading the machine onto a trailer or truck, use a single, full-width ramp only. The ramp angle should not exceed 15 degrees.

**Note:** The left and right sides of the machine are determined while sitting in the seat in the normal operating position

## Safety and Instructional Decals

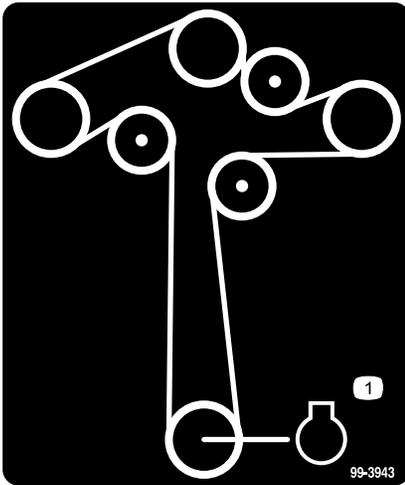


Safety decals and instructions are easily visible to the operator and are located near any area of potential danger. Replace any decal that is damaged or lost.



93-7009

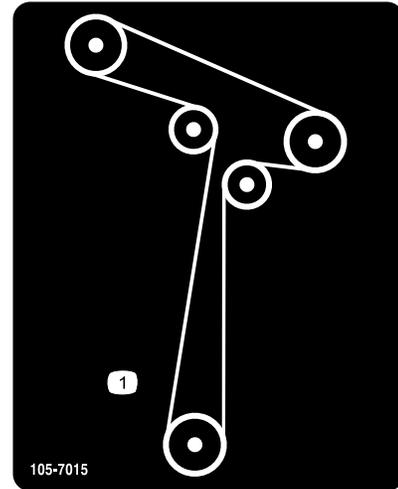
1. Warning—don't operate the mower with the deflector up or removed; keep the deflector in place.
2. Cutting/dismemberment hazard of hand or foot, mower blade—stay away from moving parts.



99-3943

For Models with 50 Inch Decks

1. Engine

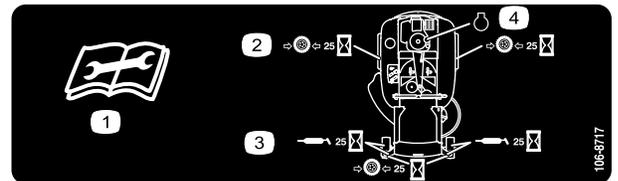


105-7015

105-7015

For Models with 42 Inch Decks

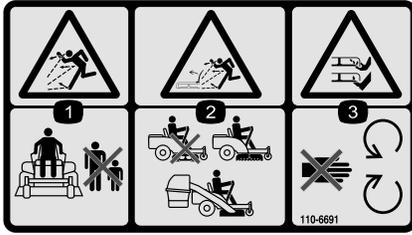
1. Belt routing



106-8717

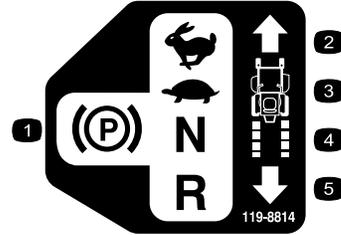
1. Read the instructions before servicing or performing maintenance.
2. Check tire pressure every 25 operating hours.
3. Grease every 25 operating hours.
4. Engine

# Safety



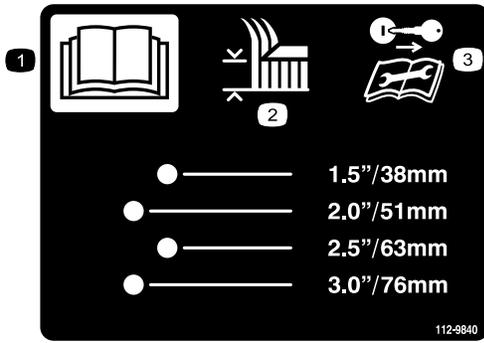
110-6691

1. Thrown object hazard—keep bystanders a safe distance from the machine.
2. Thrown object hazard, mower—do not operate without the deflector, discharge cover, or grass collection system in place.
3. Cutting/dismemberment of hand or foot—stay away from moving parts.



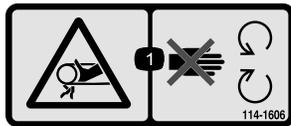
119-8814

1. Parking position
2. Fast
3. Slow
4. Neutral
5. Reverse



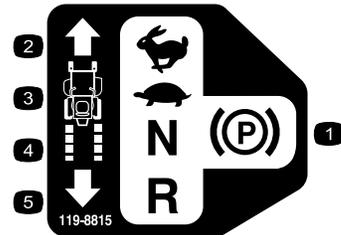
112-9840

1. Read the *Operator's Manual*.
2. Height of cut
3. Remove the ignition key and read the instructions before servicing or performing maintenance.



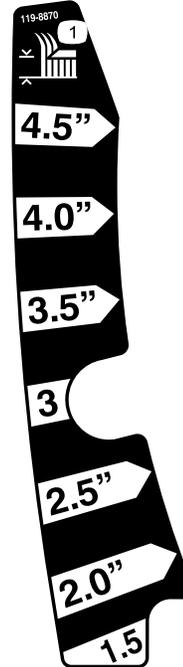
114-1606

1. Entanglement hazard, belt—keep all guards in place.



119-8815

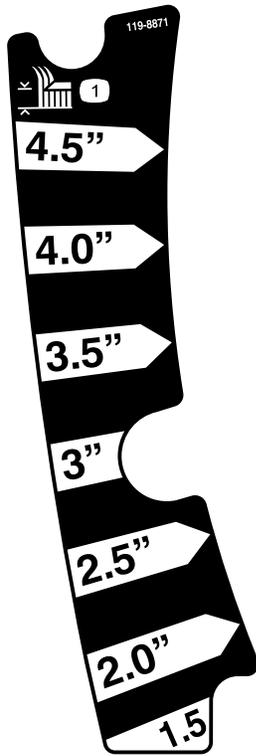
1. Parking position
2. Fast
3. Slow
4. Neutral
5. Reverse



119-8870

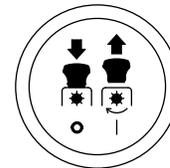
50 Inch Model

1. Height-of-cut



119-8871  
42 Inch Model

1. Height-of-cut



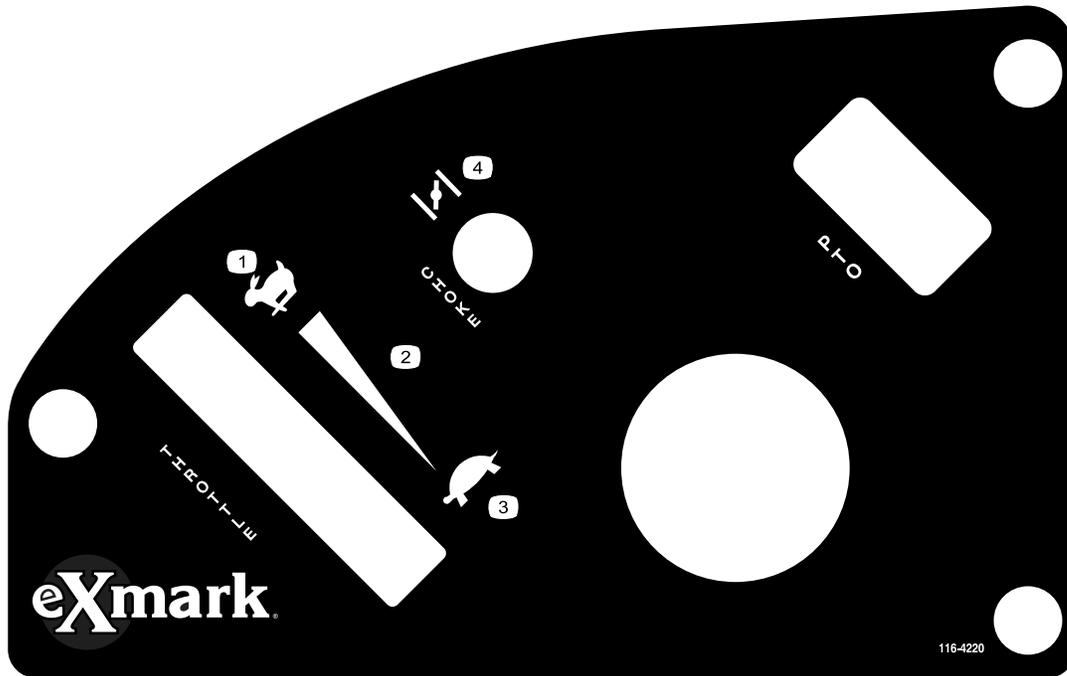
PTO Switch Symbols

1. PTO-disengage
2. PTO-engage



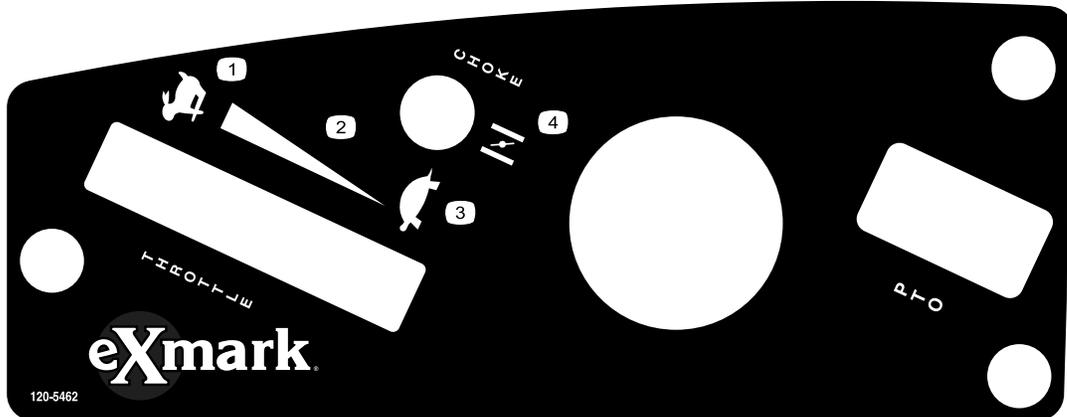
121-2989  
42 Inch Model

1. Bypass lever position for pushing the machine
2. Bypass lever position for operating the machine



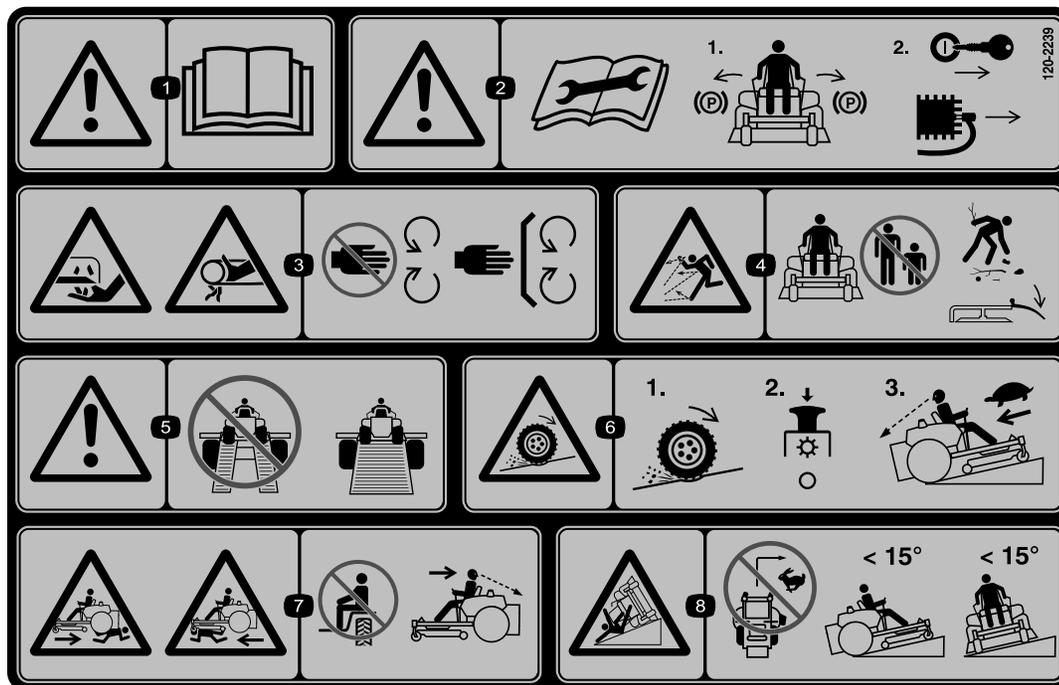
**116-4220**  
50 Inch Model

- |                                |          |
|--------------------------------|----------|
| 1. Fast                        | 3. Slow  |
| 2. Continuous variable setting | 4. Choke |



**120-5462**  
42 Inch Model

- |                                |          |
|--------------------------------|----------|
| 1. Fast                        | 3. Slow  |
| 2. Continuous variable setting | 4. Choke |



## 120-2239

1. Warning—read the *Operator's Manual*.
2. Warning—read the instructions before servicing or performing maintenance; move the motion control levers to the park (brake) position, remove the ignition key and disconnect the spark plug wire.
3. Cutting/dismemberment hazard, mower blade; entanglement hazard, belt—stay away from moving parts, keep all guards and shields in place.
4. Thrown object hazard—keep bystanders a safe distance from the machine, pick up debris before operating, keep deflector in place.
5. Warning—do not use split ramps, use a full ramps when transporting machine.
6. Loss of traction/control hazard, slopes—loss of traction/control on a slope, disengage the blade control switch (PTO), proceed off the slope slowly.
7. Crushing/dismemberment hazard of bystanders, reversing; crushing/dismemberment hazard of bystanders—do not carry passengers, look behind and down when reversing.
8. Tipping hazard—do not mow slopes greater than 15 degrees, avoid sudden and sharp turns while on slopes.



### Battery Symbols

Some or all of these symbols are on your battery.

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.
7. Wear eye protection; explosive gases can cause blindness and other injuries.
8. Battery acid can cause blindness or severe burns.
9. Flush eyes immediately with water and get medical help fast.
10. Contains lead; do not discard.

# Specifications

## Model Numbers

Serial Nos: 312,000,000 and Higher

QTE651KA421; QTE691KA501; QTS691KA502

## Systems

### Engine

- Engine Specifications: See your Engine Owner's Manual
- Engine Oil Type: Exmark 4-Cycle Premium Engine Oil
- RPM:  
Full Speed: 3300 ±100 (max) RPM (No Load)  
Idle: 1650 (min) RPM

### Fuel System

- Capacity: 3.0 gal. (11.4 L)
- Fuel Recommendations:
  - For best results, use only clean, fresh, unleaded gasoline with an octane rating of 87 or higher ((R+M)/2 rating method).
  - Oxygenated fuel with up to 10% ethanol or 15% MTBE by volume is acceptable.
  - **Do Not** use ethanol blends of gasoline (such as E15 or E85) with more than 10% ethanol by volume. Performance problems and/or engine damage may result which may not be covered under warranty.
  - **Do Not** use gasoline containing methanol.
  - **Do Not** store fuel either in the fuel tank or fuel containers over the winter unless a fuel stabilizer is used.
  - **Do Not** add oil to gasoline.
- Fuel Filter:  
Kawasaki P/N 49019-7005

### Electrical System

- Charging System: Flywheel Alternator
- Charging Capacity: 15 amps
- Battery Type: 195 CCA
- Battery Voltage: 12 Volt

- Polarity: Negative Ground
- Fuses: One 30 amp, one 25 amp; blade type

### Safety Interlock System

- PTO must be disengaged, motion control levers out (brake engaged) to start engine. (It is not necessary for the operator to be in the seat to start the engine.)
- Operator must be in seat when PTO is engaged or motion control levers are moved in or engine will stop.

### Operator Controls

- Steering and Motion Control:

**Note:** Motion control levers are adjustable to two heights.

- Separate levers, on each side of the console, control speed and direction of travel of the respective drive wheels.
- Steering is controlled by varying the position of the levers relative to each other.
- Moving motion control levers outward (in slots) locks the drive system in neutral and applies the parking brake.
- PTO Engagement Switch: Engages electric clutch (to drive belt) which engages mower blades.
- Deck Height Adjustment Lever: Sets cutting height to desired position.
- Deck Lift Assist Lever: Foot pedal that assists in raising the deck.

### Seat

- Type:
  - 42 inch unit: Standard seat with high back, foam padded with spring suspension and armrests.
  - 50 inch unit: Two tone upholstered seat with spring suspension and armrests.

- Mounting: Hinged to tilt up for access to battery and other components. Adjustable fore and aft.
- Armrests: Standard—padded flip-up armrests.
- Seat Safety Switch: Incorporated into the Safety Interlock System.

## Hydrostatic Ground Drive System

- Hydrostatic Pumps:
  - 42 inch unit: Two Hydro Gear ZT2100 Integrated drive systems.
  - 50 inch E-Series unit: Two Hydro Gear ZT2200 Integrated drive systems.
  - 50 inch S-Series unit: Two Hydro Gear ZT2800 Integrated drive systems.
- Hydraulic Oil Type: Exmark Premium Hydro Oil.
- Speeds:
  - 0-7.0 mph (11.3 km/hr) forward.
  - 0-5.0 mph (8.0 km/hr) reverse.
- Drive wheel releases, located on left and right sides of engine deck, allow machine to be moved when the engine is not running and brake is off.

## Tires and Wheels

	Drive		
	Pneumatic (Air-Filled)		
Deck Size	42	50 E-Series	50 S-Series
Quantity	2	2	2
Tread	Hoosier Premium	Hoosier Premium	Carlisle Turf Master
Size	18 x 7.50-8	18 x 9.50-8	20 x 8-10
Ply Rating	2	4	4
Pressure	13 psi (90 kPa)	13 psi (90 kPa)	13 psi (90 kPa)

	Front Caster	
	Pneumatic (Air-Filled)	
Deck Size	42	50
Quantity	2	2
Tread	Smooth	Ribbed
Size	410/350 x 4	13 x 5-6
Ply Rating	2	2
Pressure	20 psi (138 kPa)	13 psi (90 kPa)

## Cutting Deck

- Cutting Width:
  - 42 inch Deck: 42 inches (107 cm)
  - 50 inch Deck: 50 inches (127 cm)
- Discharge: Side
- Blade Size:
  - 42 inch Deck: 21.60 inches (54.9 cm)—Qty: 2
  - 50 inch Deck: 17.50 inches (44.5 cm)—Qty: 3
- Blade Spindles: Solid steel spindles with no maintenance bearings.
- Deck Drive: Electric clutch mounted on vertical engine shaft. Blades are driven by one belt (w/self-tensioning idler) direct from the engine.
- Deck: Full floating deck is attached to out-front support frame. Maximum turf protection is provided with anti-scalp rollers.  
Deck design allows for bagging, mulching or side discharge.
- Deck Depth:
  - 42 inch Deck: 4.0 inches (10.2 cm)
  - 50 inch Deck: 4.0 inches (10.2 cm)
- Cutting Height Adjustment: A hand deck lift lever with foot assist is used to adjust the cutting height from 1 1/2 inch (3.8 cm) to 4 1/2 inches (11.4 cm) in 1/2 inch (1.3 cm) increments.
- Mulching Kit: Optional.

## Dimensions

### Overall Width:

	42 inch Deck	50 inch Deck
Without Deck	39.0 inches (99 cm)	46.3 inches (118 cm)
Deflector Up	45.3 inches (115 cm)	54.6 inches (139 cm)
Deflector Down	53.8 inches (137 cm)	63.0 inches (160 cm)

### Overall Length:

42 inch Deck	50 inch Deck
71.8 inches (182 cm)	72.9 inches (185 cm)

# Product Overview

## Overall Height:

All Units
41.5 inches (105 cm)

## Tread Width: (Center to Center of Tires, Widthwise)

	42 inch Deck	50 inch Deck
Drive Wheels	31.5 inches (80 cm)	37.4 inches (95 cm)
Caster Wheels	29.5 inches (75 cm)	36.9 inches (94 cm)

## Wheel Base: (Center of Caster Tire to Center of Drive Tire)

All Units
45.6 inches (116 cm)

## Curb Weight:

42 inch Deck	50 inch E-Series Deck	50 inch S-Series Deck
531 lb (241 kg)	614 lb (279 kg)	672 lb (305 kg)

## Torque Requirements

Bolt Location	Torque
Spindle Pulley Nut	35-65 ft-lb (47-88 N-m)
Blade Mounting Bolt	35-65 ft-lb (47-88 N-m)
Engine Mounting Bolts	330-400 in-lb (37-45 N-m)
Wheel Lug Nuts	70-90 ft-lb (95-122 N-m)
Clutch Mounting Bolt (secured with threadlocker)	50-60 ft-lb (68-81 N-m)

# Product Overview

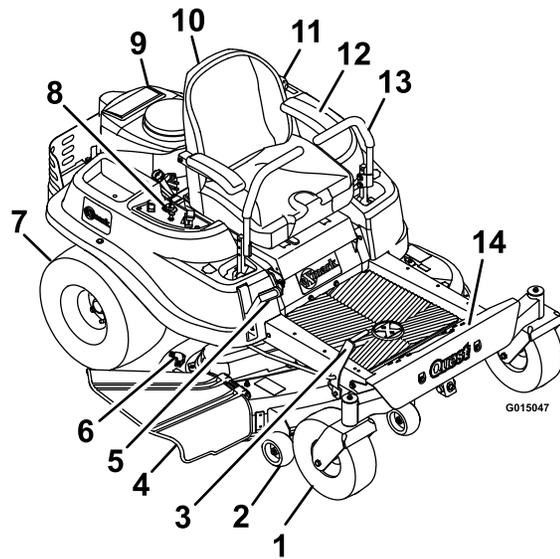


Figure 3

- |                                 |                           |
|---------------------------------|---------------------------|
| 1. Front caster wheel           | 8. Control panel          |
| 2. Anti-scalp roller            | 9. Engine                 |
| 3. Height-of-cut foot lever     | 10. Seat                  |
| 4. Discharge deflector          | 11. Fuel tank             |
| 5. Deck height adjustment lever | 12. Armrest               |
| 6. Washout fitting              | 13. Motion control levers |
| 7. Rear drive wheel             | 14. Footrest              |

# Operation

## Controls

**Note:** Become familiar with all of the controls in Figure 3 and Figure 4 before you start the engine and operate the machine.

### Ignition Switch

Located on control panel.

The ignition switch is used to start and stop the engine. The switch has three positions “OFF”, “RUN” and “START” ( Figure 4). Insert key into switch and rotate clockwise to the “ON” position. Rotate clockwise to the next position to engage the starter (key must be held against spring pressure in this position).

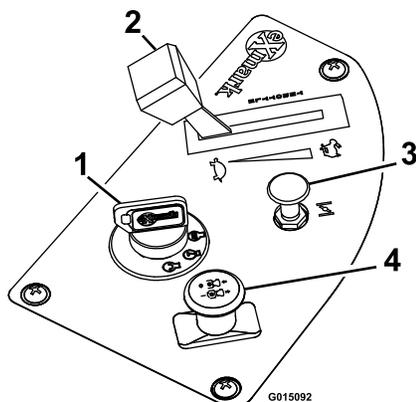


Figure 4

- |                    |  |
|--------------------|--|
| 1. Ignition switch | 3. Choke control                         |
| 2. Throttle lever  | 4. Blade control switch (power take-off) |

**Note:** Brake must be engaged (motion control levers out) and PTO switch “OFF” to start engine. (It is not necessary for the operator to be in the seat to start the engine.)

Turning the key to the Off position will stop the engine; however, always remove the key when leaving the machine to prevent someone from accidentally starting the engine.

### Blade Control Switch (Power Take-Off)

Located on the control panel.

The blade control switch, represented by a power take-off (PTO) symbol, engages and disengages power to the mower blades (see Figure 4).

Pull out on the blade control switch to “On” to engage the blades.

Push the blade control switch to “Off” to disengage the blades.

### Throttle Lever

Located on control panel.

The throttle is used to control engine speed. Moving throttle lever forward will increase engine speed and moving throttle lever to the rear will decrease engine speed. Moving the throttle forward until it stops is full throttle (see Figure 4).

### Choke Control

The choke is used to aid in starting a cold engine. Pulling up on the choke control will put the choke in the “ON” position and pushing down the control will put the choke in the “OFF” position. Do Not run a warm engine with the choke in the “ON” position.

### Motion Control Levers and Parking Brake Position

The motion control levers located on each side of the seat (Figure 3).

The motion control levers are speed sensitive controls of independent wheel motors. Moving a lever forward or backward turns the wheel on the same side forward or in reverse; wheel speed is proportional to the amount the lever is moved. Moving the control levers outward from the center position engages the parking brake on the drive wheels. Always position the motion control levers into the parking brake position when you stop the machine or leave it unattended. The unit must be tied down and brake engaged when transporting.

### Deck Height Adjustment Lever

Located below the RH motion control lever (Figure 3).

# Operation

Pull the lever inward and rearward to raise the cutting deck. Allow the handle to move forward to lower the cutting deck. Move the deck height adjustment lever outward at the desired height-of-cut. Only adjust the height of cut while the machine is not moving.

## Height-of-Cut Foot Lever

The height-of-cut foot lever allows the operator to use their leg to assist in lowering and raising the deck from the seated position (Figure 3). When the lever is moved forward, away from the operator the deck is raised from the ground and when moved back, towards the operator it is lowered toward the ground.

## Fuel Window

Located on the left side of the machine (see Figure 5).

The fuel window can be used to verify the presence of fuel in the tank.

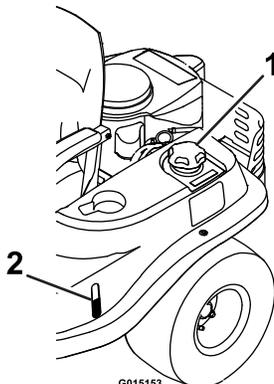


Figure 5

- 1. Fuel cap
- 2. Fuel window

# Operating Instructions

## Think Safety First

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

Please carefully read all of the safety instructions and decals in the safety section. Knowing this information could help you, your family, pets 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 loss of traction is a loss of steering control.

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.
- When mowing slopes, gradually work from lower to higher areas on the incline.
- Avoid sudden turns or rapid speed changes.
- Turn up, into an incline when changing directions on slopes. Turning down the slope reduces traction.
- Attachments change the handling characteristics of the machine. Use extra caution when using attachments with the machine.

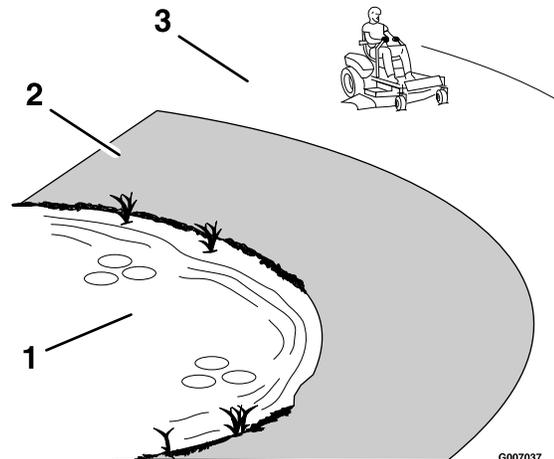


Figure 6

- 1. Water
- 2. Danger Zone—Use walk behind mower and/or hand trimmer on slopes greater than 15 degrees, near drop-offs and water.
- 3. Safe Zone—use the Quest here.

See inside back cover to determine the approximate slope angle to be mowed.

## Recommended Gasoline

Fill fuel tank on level ground. See **Fuel Recommendations** in the Specifications section for additional gasoline information.

**Do Not** add oil to gasoline.

**Do Not** overfill fuel tank. Fill the fuel tank to the bottom of the filler neck. The empty space in the tank allows gasoline to expand. Overfilling may result in fuel leakage or damage to the engine or emission system.

### **⚠ DANGER**

In certain conditions gasoline is extremely flammable and vapors are explosive.

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

- Fill the fuel tank outdoors on level ground, in an open area, when the engine is cold. Wipe up any gasoline that spills.
- Never refill the fuel tank or drain the machine indoors or inside an enclosed trailer.
- **Do Not** fill the fuel tank completely full. Add gasoline to the fuel tank until the body of the tank is full but fuel does not fill the neck of the tank. 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 spark.
- Store gasoline in an approved container and keep it out of the reach of children. Never buy more than a 30-day supply of gasoline.
- **Do Not** operate without entire exhaust system in place and in proper working condition.

### **⚠ DANGER**

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

- 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 has caused cancer in laboratory animals. Failure to use caution may cause serious injury or illness.

- Avoid prolonged breathing of vapors.
- Keep face away from nozzle and gas tank/container opening.
- Keep away from eyes and skin.
- Never siphon by mouth.

## Using Stabilizer/Conditioner

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

- Keeps gasoline fresh during storage of 30 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 Add the

# Operation

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

Make sure the engine is shut off and the motion controls are in the park position. Tank maximum capacity is 2.9 gallons.

**Important:** Do Not overfill fuel tank. Fill the fuel tank to the bottom of the filler neck. The empty space in the tank allows the fuel to expand. Overfilling may result in fuel leakage or damage to the engine or emission system.

1. Shut the engine off and move the motion controls outward to engage parking brake.
2. Clean around the fuel tank cap and remove the cap.
3. Add unleaded regular gasoline until the fuel reaches the base of the filler neck and does not fill the neck of the tank (Figure 7). This space at the base of the filler neck allows gasoline to expand. Do Not fill the fuel tank completely full. Overfilling may result in fuel leakage or damage to the engine or emissions system.

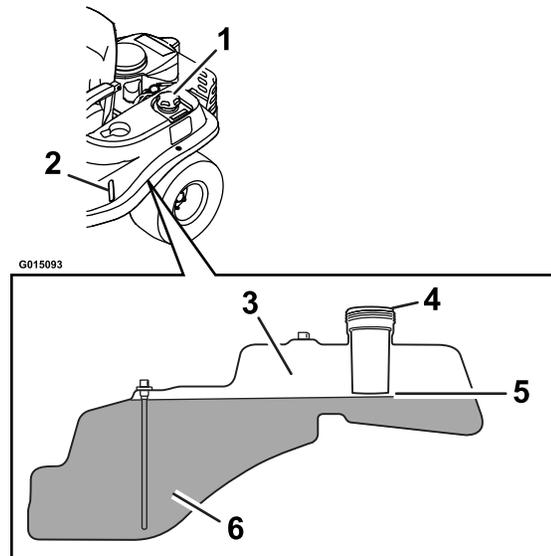


Figure 7

- |                                   |  |
|-----------------------------------|--|
| 1. Fuel cap                       | 4. Fill opening                                      |
| 2. Fuel window                    | 5. Base of filler neck, <b>DO NOT FILL PAST HERE</b> |
| 3. Empty space for fuel expansion | 6. Fuel  |

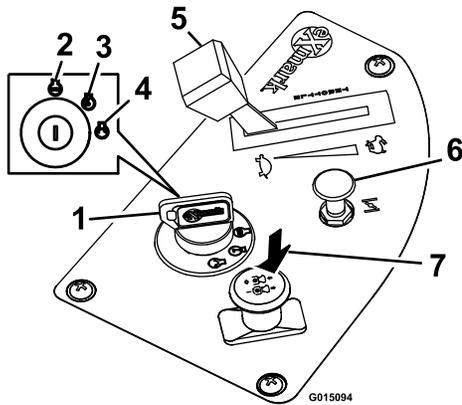
4. Install the fuel tank cap securely and tighten until it “clicks”. Wipe up any gasoline that may have spilled.

## Checking the Engine Oil Level

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

## Starting the Engine

1. Sit down on the seat and move the motion controls outward to engage the parking brake.
2. Disengage the blades by moving the blade control switch to Off (Figure 8).



**Figure 8**

- |                 |                                      |
|-----------------|--------------------------------------|
| 1. Ignition key | 5. Throttle lever                    |
| 2. Off          | 6. Choke control                     |
| 3. Run          | 7. Blade control switch—Off position |
| 4. Start        |                                      |

3. Pull up on the choke control to engage the choke before starting a cold engine (Figure 8).

**Note:** A warm or hot engine may not require choking.

4. Turn the ignition key to Start to energize the starter. When the engine starts, release the key (Figure 8).

**Important:** Do Not engage the starter for more than 5 seconds at a time. If the engine fails to start, allow a 60 second cool-down period between attempts. Failure to follow these instructions can burn out the starter motor.

5. Once the engine starts, gradually push down the choke control as the engine warms. If the engine stalls or hesitates, slightly pull the control up for a few seconds.

## Operating the Blades

The blade control switch, represented by a power take-off (PTO) symbol, engages and disengages power to the mower blades. This switch controls power to any attachments that draw power from the engine, including the mower deck and cutting blades.

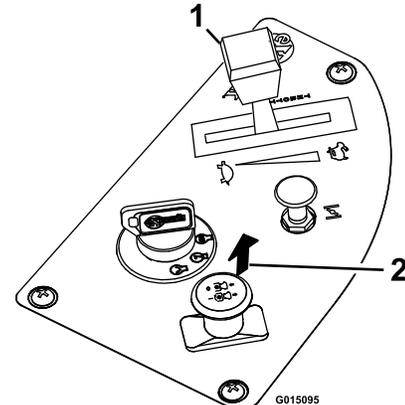
### Engaging the Blades

1. Release pressure on the motion control levers and place the machine in neutral.

2. Move the throttle midway to the Fast position.

**Note:** Always engage the blades with the throttle in the midway position.

3. Pull out on the blade control switch, to the On position, to engage the blades (Figure 9).



**Figure 9**

- |                             |                                     |
|-----------------------------|-------------------------------------|
| 1. Throttle—Midway position | 2. Blade control switch—On position |
|-----------------------------|-------------------------------------|

4. Move throttle to full forward position before mowing.

## Disengaging the Blades

Set throttle to midway position. Push the blade control switch to Off to disengage the blades (Figure 8).

## Stopping the Engine

1. Bring the unit to a full stop.
2. Disengage the blades.
3. Move the motion control levers out to engage the parking brake.
4. Place the throttle midway between the “SLOW” and “FAST” positions.
5. Allow the engine to run for a minimum of 15 seconds, then turn the ignition switch to the “OFF” position to stop the engine.
6. Remove the key to prevent children or other unauthorized persons from starting engine.

## The Safety Interlock System

### ⚠ CAUTION

If the 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 blades are disengaged.
- The motion control levers are in the neutral position.
- The parking brake is engaged.

The safety interlock system is designed to initiate engine shutdown when:

- The parking brake is disengaged and the operator gets off machine.
- The PTO is engaged and the operator gets off machine.
- The parking brake is disengaged and levers are in and the operator gets off machine.

## Testing the Safety Interlock System

Test the safety interlock system before you use the machine each time

1. Check starting circuit. Starter **should** crank with the PTO **disengaged** and motion control levers moved out in the **parking brake** position. The operator does not need to be in the seat to start the engine.

Try to start with **operator in seat**, PTO disengaged and motion control levers in the **parking brake** position - starter **must not crank**.

Try to start with **operator in seat**, PTO **disengaged**, and the **left motion control lever in**, starter **must not crank**, repeat again with the **right lever in**, then with **both levers in** - starter **must not crank**.

2. Check kill circuits. Run engine at one-third throttle, **engage PTO** and **raise off** of seat (but

do not get off of machine) engine **must initiate shutdown**.

Run engine at one-third throttle, with brake disengaged, move levers in and raise off seat (but do not get off of machine) engine **must initiate shutdown**.

**Note:** If machine does not pass any of these tests, Do Not operate. Contact your authorized **EXMARK SERVICE DEALER**.

**Important:** It is essential that operator safety mechanisms be connected and in proper operating condition prior to use for mowing.

## Driving Forward or Backward

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

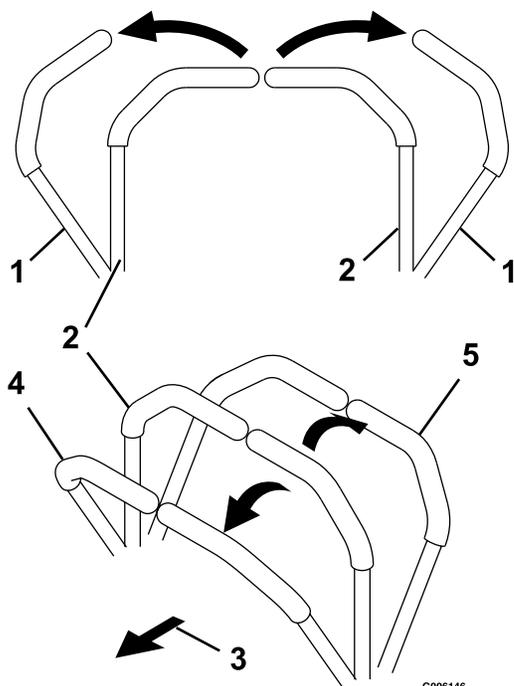
### ⚠ CAUTION

**Machine can spin very rapidly by positioning one lever too much ahead of the other. Operator may lose control of the machine, which may cause damage to the machine or injury.**

- Use caution when making turns.
- Slow the machine down before making sharp turns.

## Forward

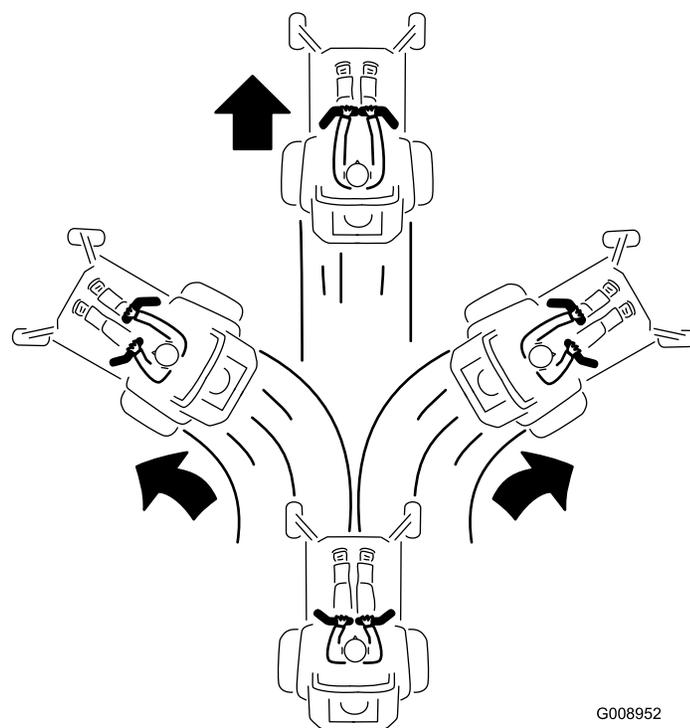
1. Move the levers to the center, unlocked position.
2. To go forward, slowly push the motion control levers forward (Figure 10).



**Figure 10**

- |                                     |             |
|-------------------------------------|-------------|
| 1. Parking brake position (engaged) | 4. Forward  |
| 2. Center unlock position (neutral) | 5. Backward |
| 3. Front of unit                    |             |

To go straight, apply equal pressure to both motion control levers (Figure 10 and Figure 11).



**Figure 11**

To turn, pull back on the motion control lever toward the direction you want to turn (Figure 10 and Figure 11).

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

To stop, pull the motion control levers to neutral.

## Backward

1. Move the levers to the center, unlocked position.
2. To go backward, slowly pull the motion control levers rearward (Figure 10 and Figure 12).

# Operation

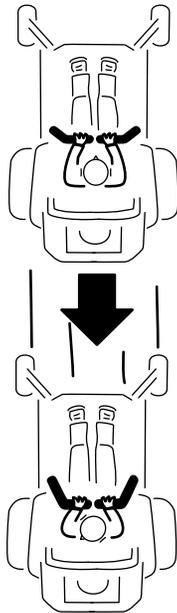


Figure 12

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To go straight, apply equal pressure to both motion control levers (Figure 10 and Figure 12).

To turn, release the pressure on the motion control lever toward the direction you want to turn (Figure 10 and Figure 12).

To stop, push the motion control levers to neutral.

## Stopping the Machine

To stop the machine, move the motion control levers to neutral, disengage the blade control switch, move the motion control levers outward to engage the parking brake, move the throttle lever to between Fast and half throttle, and turn the ignition key to off. Remember to remove the key from the ignition switch.

### **CAUTION**

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

Always remove the ignition key and move the motion control levers outward to apply the parking brake when leaving the machine unattended, even if just for a few minutes.

## Adjusting the Height of Cut

1. Raise the deck to the transport position (4.5 inch (114 mm) cut height) by moving the deck height

adjustment lever inward and pulling up. The height can also be adjusted by moving the deck height adjustment lever inward and pushing the height-of-cut foot lever forward (Figure 13). The transport lever will automatically engage and will drop into place.

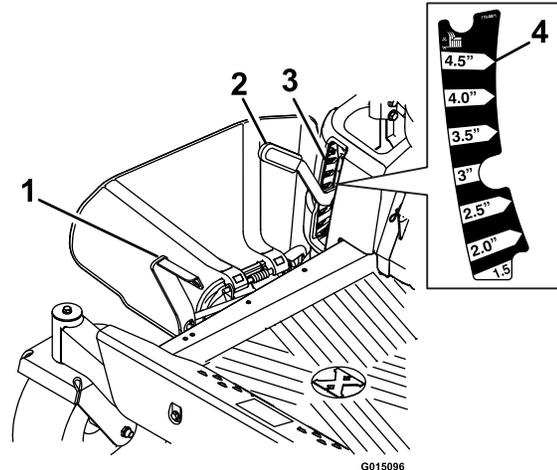


Figure 13

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- |                                 |   |
|---------------------------------|---|
| 1. Height-of-cut foot lever     | 3. Height-of-cut positions                |
| 2. Deck height adjustment lever | 4. Transport position – 4.5 inch (115 mm) |

2. Push the foot lever forward, pull the deck height adjustment lever handle inward and let the deck lower down to the desired cut height by slowly decreasing foot pressure allowing the foot lever to travel rearward. Move the deck height adjustment lever outward at the desired height-of-cut.

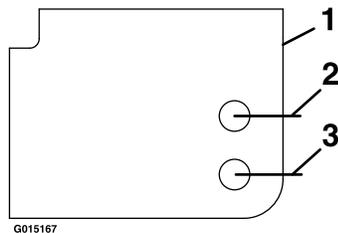
## Adjusting the Anti-Scalp Rollers

It is recommended to change the anti-scalp roller position when the height of cut has changed.

1. Stop the machine and move the drive levers to the neutral position.
2. Disengage the PTO.
3. Move the motion control levers outward to engage the park brake.
4. Stop the engine, remove the key and wait for all moving parts to stop.
5. After adjusting the height of cut, adjust the anti-scalp rollers by removing the nyloc nut.
6. Adjust the anti-scalp rollers for the normal operating conditions. Place rollers in one of

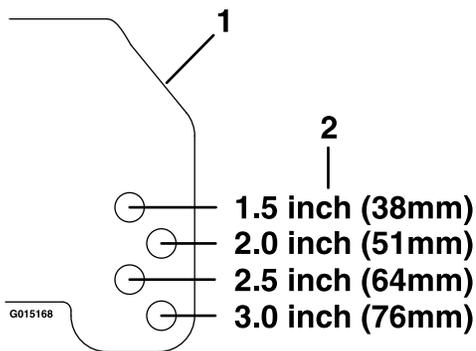
the positions shown in Figure 15. Rollers will maintain 3/4 inches (19 mm) clearance to the ground to minimize gouging and roller wear or damage.

**Note: For Maximum Deck Flotation,** place the rollers one hole position lower. Rollers should maintain 1/4 inch (6.35 mm) clearance to the ground. Do Not adjust rollers to support the deck.



**Figure 14**  
42 Inch Deck

1. Anti-scalp roller mounting bracket
2. Below 2 1/2 inches (64mm) cutting height
3. 2 1/2 inches (64mm) and above cutting height



**Figure 15**

50 Inch Deck

For cutting heights above 3 1/2 inches (90 mm) use the bottom hole. The rollers will still be effective against scalping.

1. Anti-scalp roller mounting bracket
2. Cutting height

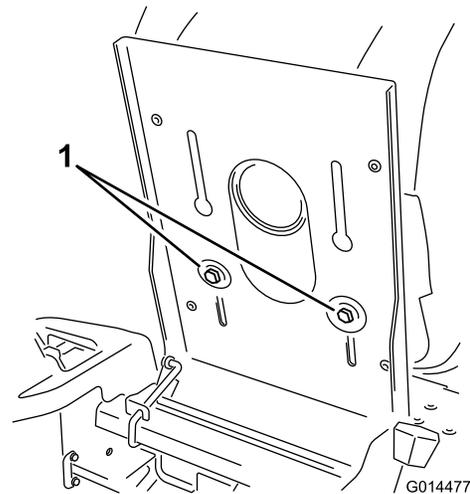
7. Torque hardware to 27-33 ft-lb (37-45 N-m) or loss of roller may result.

## 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.

- 42 Inch Unit:

1. Tip the seat forward.
2. Loosen the adjustment bolts.



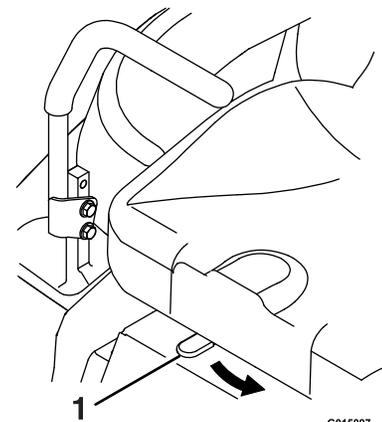
**Figure 16**

1. Adjustment bolt

3. Move the seat to the desired position and tighten bolts.
4. Tip the seat back to the closed position.

- 50 Inch Units:

1. Push the adjustment lever towards the center of the machine to release the seat adjuster track (Figure 17).



**Figure 17**

1. Adjustment lever

2. Move the seat to the desired position and release the lever to lock in that position.

# Operation

## Changing the Seat Ride Suspension

The number of seat springs can be changed to maximize rider comfort. More springs should be used with heavier operators and on rough terrain. Fewer springs should be used with lighter operators and when mowing smooth, well established lawns. Always keep the number of springs on the left and right side the same when adding and removing springs.

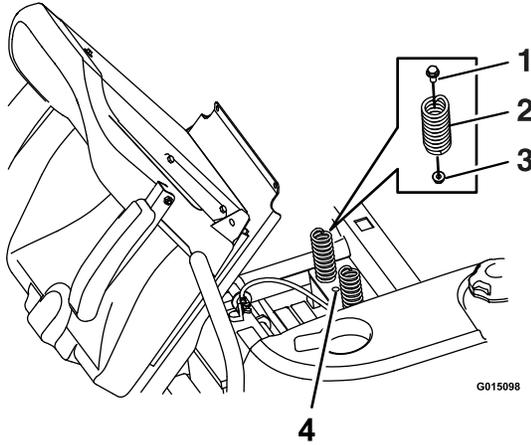


Figure 18

- |           |                              |
|-----------|------------------------------|
| 1. Bolt   | 3. Nut                       |
| 2. Spring | 4. Additional mounting holes |

Up to five springs can be secured to the seat box with a nut and bolt, see Figure 18.

Refer to your Parts Manual for spring and hardware part numbers.

## Adjusting the Motion Control Levers

### Adjusting the Height

The motion control levers can be adjusted higher or lower for maximum operator comfort.

1. Remove the hardware holding the control lever to the control arm shaft (Figure 19).

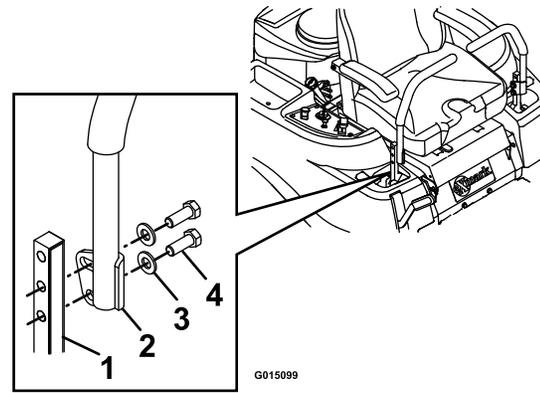


Figure 19

- |                      |           |
|----------------------|-----------|
| 1. Control arm shaft | 3. Washer |
| 2. Control lever     | 4. Bolt   |
2. Move the control lever to the next set of holes. Secure the lever with the hardware.
  3. Repeat the adjustment for the opposite control lever.

### Adjusting the Tilt

The motion control levers can be tilted fore or aft for maximum operator comfort.

1. Loosen the upper bolt holding the control lever to the control arm shaft.
2. Loosen the lower bolt just enough to pivot the control lever fore or aft (Figure 19). Tighten both bolts to secure the control in the new position.
3. Repeat the adjustment for the opposite control lever.

## Pushing the Machine by Hand

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

This machine has an electric brake mechanism and to push the machine the ignition key needs to be in the Run position. The battery needs to be charged and functioning for the electric brake to be disengage.

### To Push the Machine

1. Park the machine on a level surface and disengage the blade control switch.

2. Move the motion control levers outward to park position, stop the engine, and wait for all moving parts to stop before leaving the operating position.
3. Locate the bypass levers on the frame on both sides of the engine.
4. Move the bypass levers forward through the key hole and down to lock them in place as shown in Figure 20. Ensure this is done for each lever.
5. Move the motion control levers inward to the neutral position and turn the ignition key to the run position. Do Not start the machine.

The machine is now able to be pushed by hand.

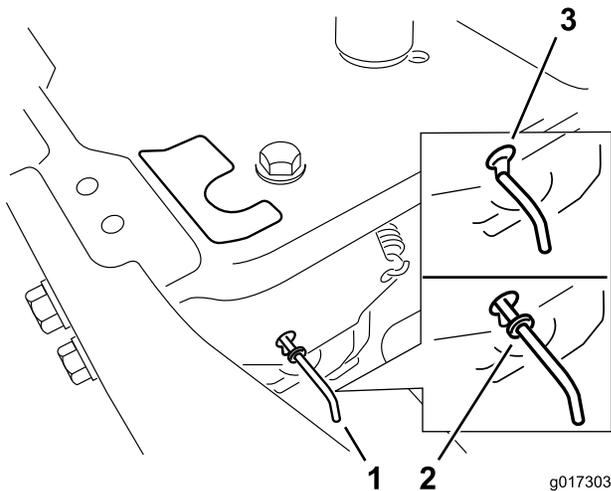


Figure 20

g017303

- |   |   |
|---|---|
| 1. Bypass lever location                    | 3. Lever position for pushing the machine |
| 2. Lever position for operating the machine |   |

6. When finished, ensure the key has been returned to the Stop position to avoid draining the battery charge.

If the machine fails to move the electric brake may still be engaged. If necessary the electric brake can be released manually. Refer to the **Releasing the Electric Brake** procedure in Drive Maintenance.

## To Operate the Machine

Move the bypass levers rearward through the key hole and down to lock them in place as shown in Figure 20. Ensure this is done for each lever.

## Side Discharge

The mower has a hinged discharge deflector that disperses clippings to the side and down toward the turf.

### **⚠ DANGER**

Without the discharge deflector, mulch kit, or entire grass collection system mounted in place, you and others are exposed to blade contact and thrown debris. Contact with rotating mower blade(s) and thrown debris will cause injury or death.

- Never remove the discharge deflector from the mower because the discharge deflector routes material down toward the turf. If the discharge deflector is ever damaged, replace it immediately.
- Never put your hands or feet under the mower.
- Never try to clear discharge area or mower blades unless you move the blade control switch to Off and rotate the ignition key to Off. Also remove the key and pull the wire off the spark plug(s).

## Transporting

### Transporting a Unit

Use a heavy-duty trailer or truck to transport the machine. Lock brake and block wheels. Securely fasten the machine to the trailer or truck with straps, chains, cable, or ropes. Be sure that the trailer or truck has all necessary lighting and marking as required by law. Secure a trailer with a safety chain.

### **⚠ CAUTION**

This unit does not have proper turn signals, lights, reflective markings, or a slow moving vehicle emblem. Driving on a street or roadway without such equipment is dangerous and can lead to accidents causing personal injury. Driving on a street or roadway without such equipment may also be a violation of State laws and the operator may be subject to traffic tickets and/or fines.

Do Not drive a unit on a public street or roadway.

# Operation

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## **▲ WARNING**

Loading a unit on a trailer or truck increases the possibility of backward tip-over. Backward tip-over 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° angle between ramp and ground or between ramp and trailer or truck.
- Avoid sudden acceleration while driving unit up a ramp to avoid tipping backward.
- Avoid sudden deceleration while backing unit down a ramp to avoid tipping backward.

## **Loading a Unit**

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. The lower rear section of the tractor frame extends back between the rear wheels and serves as a stop for tipping backward. Having a full width ramp provides a surface for the frame members to contact if the unit starts to tip backward. If it is not possible to use one full width ramp, use enough individual ramps to simulate a full width continuous ramp.

Ramp should be long enough so that the angles between the ramp and the ground and the ramp and the trailer or truck Do Not exceed 15°. 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. Both maneuvers can cause the unit to tip backward.

## **Operating Tips**

### **Fast Throttle Setting**

For best mowing and maximum air circulation, operate the engine at the Fast position. Air is required to thoroughly cut grass clippings, so Do Not set the height-of-cut so low as to totally surround the mower by uncut grass. Always try to have one side of the mower free from uncut grass, which allows air to be drawn into the mower.

### **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 six inches 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.

### **Avoid Cutting Too Low**

If the cutting width of the mower is wider than the mower you previously used, raise the cutting height to ensure that uneven turf is not cut too short.

## **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 Exmark replacement blade. Only Exmark blades are to be used with this unit. No other blades are approved.

## Maintenance

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

### ⚠ WARNING

While maintenance or adjustments are being made, someone could start the engine. Accidental starting of the engine could seriously injure you or other bystanders.

Remove the key from the ignition switch, engage parking brake, and pull the wire(s) off the spark plug(s) before you do any maintenance. Also push the wire(s) aside so it does not accidentally contact the spark plug(s).

### ⚠ WARNING

The engine can become very hot. Touching a hot engine can cause severe burns.

Allow the engine to cool completely before service or making repairs around the engine area.

### ⚠ WARNING

Removing standard original equipment parts and accessories may alter the warranty, traction, and safety of the machine. Failure to use original Exmark parts could cause serious injury or death. Making unauthorized changes to the engine or fuel system, may violate EPA and CARB regulations.

Replace all parts including, but not limited to, tires, belts, blades, and fuel system components with original Exmark parts.

## Recommended Maintenance Schedule(s)

Maintenance Service Interval	Maintenance Procedure
After the first 5 hours	<ul style="list-style-type: none"> <li>Change the engine oil.</li> </ul>
After the first 50 hours	<ul style="list-style-type: none"> <li>Change the hydraulic system filter and oil.</li> </ul>
Before each use or daily	<ul style="list-style-type: none"> <li>Check the safety interlock system.</li> <li>Check the oil level before starting or after every 8 hours.</li> <li>Check the mower blades.</li> <li>Clean the mower housing.</li> <li>Clean the engine and exhaust system area.</li> </ul>
Every 25 hours	<ul style="list-style-type: none"> <li>Grease all lubrication points.</li> <li>Check the air cleaner for dirt, looseness, or damage. (May need more often under extremely dusty or dirty conditions.)</li> <li>Check the tire pressure.</li> <li>Check the hydraulic oil level in the expansion tank.</li> <li>Check the belts.</li> </ul>
Every 100 hours	<ul style="list-style-type: none"> <li>Service the paper element. (more often in dusty, dirty conditions)</li> <li>Change the engine oil and filter.</li> <li>Clean the blower housing. More often under dirty conditions.</li> <li>Replace the fuel filter.</li> </ul>
Every 200 hours	<ul style="list-style-type: none"> <li>Replace the paper element. (more often in dusty, dirty conditions)</li> <li>Service the spark plug.</li> </ul>
Every 400 hours	<ul style="list-style-type: none"> <li>Change the hydraulic system filter and oil.</li> </ul>
Every 500 hours	<ul style="list-style-type: none"> <li>Replace the spark plug.</li> </ul>

Maintenance Service Interval	Maintenance Procedure
Before storage	<ul style="list-style-type: none"> <li>• Charge the battery and disconnect the battery cables.</li> <li>• Perform all maintenance procedures listed above before storage.</li> <li>• Paint any chipped surfaces.</li> </ul>
Monthly	<ul style="list-style-type: none"> <li>• Check the battery charge.</li> </ul>
Yearly	<ul style="list-style-type: none"> <li>• Inspect the emissions filter.</li> </ul>

**Important:** Refer to your Engine Operator's Manual for additional maintenance procedures.

## Premaintenance Procedures

### Raising the Seat

Make sure the motion control levers are locked in the park position. Lift the seat forward.

The following components can be accessed by raising the seat:

- Serial plate
- Service decal
- Seat adjustment bolts
- Fuel filter
- Battery and battery cables

## Periodic Maintenance

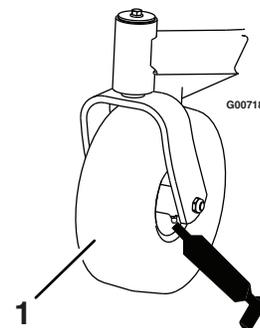
### Lubrication

#### Greasing the Bearings

**Service Interval: Every 25 hours/Monthly (whichever comes first)**

Grease Type: NGLI grade #2 multi-purpose gun grease.

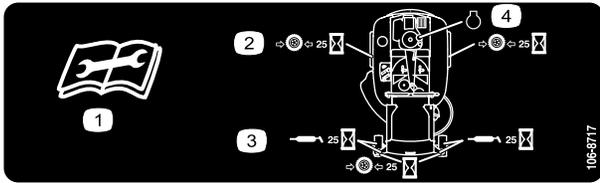
Grease the front caster wheels (Figure 21).



**Figure 21**

1. Front caster tire

1. Park the machine on a level surface and disengage the blade control switch.
2. Move the motion control levers outward to engage parking brake, stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Clean the grease fittings shown in Figure 22 with a rag. Make sure to scrape any paint off of the front of the fitting(s).



**Figure 22**

Located on the seat pan

1. Read the instructions before servicing or performing maintenance.
2. Check tire pressure every 25 operating hours.
3. Grease every 25 operating hours.
4. Engine

4. Wipe up any excess grease.

## Engine Maintenance

### Servicing the Air Cleaner

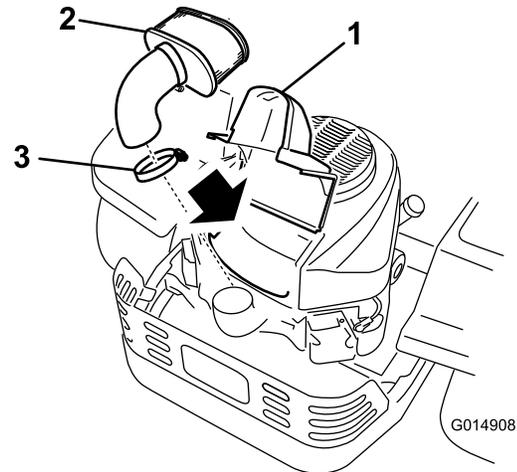
**Service Interval: Every 25 hours/Monthly (whichever comes first) (May need more often under extremely dusty or dirty conditions.)**

Check the air cleaner daily or before starting the engine. Check for a buildup of dirt and debris around the air cleaner system. Keep this area clean. Also check for loose or damaged components. Replace all bent or damaged air cleaner components.

**Note:** Operating the engine with loose or damaged air cleaner components could allow unfiltered air into the engine causing premature wear and failure.

**Note:** Service the air cleaner more often under extremely dusty, dirty conditions.

1. Park the machine on a level surface, disengage the blade control switch, move the motion control levers to the brake position, stop the engine, and remove the key.
2. Clean around the air cleaner cover to prevent dirt from getting into the engine and causing damage. Lift the cover and remove the hose clamp securing the air cleaner assembly to the engine (Figure 23).
3. Loosen the hose clamp and remove the paper element (Figure 23).



**Figure 23**

1. Cover
2. Paper element
3. Hose clamp

### Cleaning the Element

**Service Interval: Every 100 hours—Service the paper element. (more often in dusty, dirty conditions)**

**Every 200 hours/Yearly (whichever comes first)—Replace the paper element. (more often in dusty, dirty conditions)**

1. Lightly tap the element on a flat surface to remove dust and dirt.
2. Inspect the element for tears, an oily film, and damage to the seal.

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

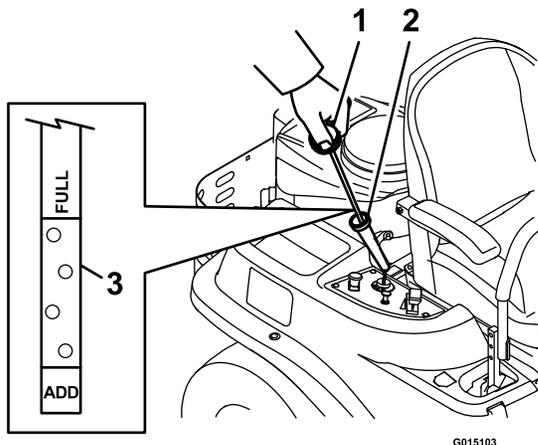
## Servicing the Engine Oil

### Checking the Oil Level

**Service Interval: Before each use or daily**

1. Park the machine on a level surface, disengage the blade control switch, stop the engine, engage parking brake, and remove the key.

2. Make sure the engine is stopped, level, and is cool so the oil has had time to drain into the sump.
3. To keep dirt, grass clippings, etc., out of the engine, clean the area around the oil fill cap/dipstick before removing it.
4. Remove the oil fill cap/dipstick; wipe oil off. Reinsert the dipstick push into place, but **Do Not** screw it in (Figure 24).



**Figure 24**

1. Oil dipstick
2. Filler tube
3. Oil level

5. Remove the dipstick and check the oil level.  
The oil level should be up to, but not over, the "FULL" mark on the dipstick.
6. If the level is low, wipe off the area around the oil fill cap, remove cap and add oil to the "FULL" mark on the dipstick. Exmark 4-Cycle Premium Engine Oil is recommended; refer to the Engine Owner's manual for an acceptable alternative. Always check the level with the dipstick before adding more oil. **Do Not** overfill.

**Note:** To prevent extensive engine wear or damage, always maintain the proper oil level in the crankcase. Never operate the engine with the oil level below the "ADD" mark or over the "FULL" mark on the dipstick.

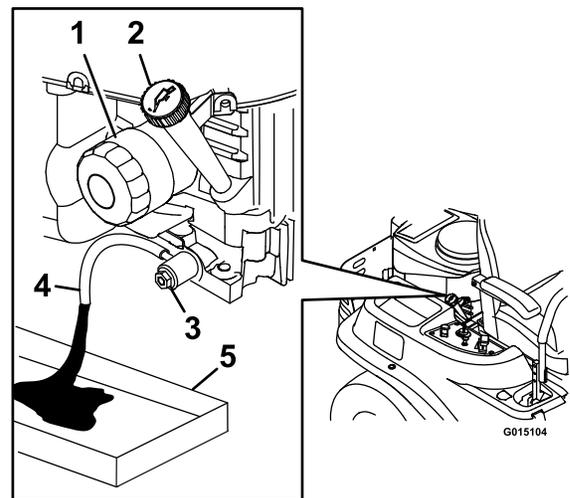
## Changing the Oil and Filter

**Service Interval: After the first 5 hours**

**Every 100 hours/Yearly  
(whichever comes first)  
thereafter.**

Change the oil and filter while the engine is still warm. The oil will flow more freely and carry away more impurities. Make sure the engine is level when filling, checking, or changing the oil.

1. Start the engine and let it run until warm. This warms the oil so it drains better.
2. Disengage the blade control switch and move the motion controls outward to the parking brake position.
3. Stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
4. Clean the area around the oil drain valve and on the machine frame.
5. Install the oil drain hose, located in the literature pack, onto the oil drain valve (Figure 25). Remove the oil fill cap/dipstick.



**Figure 25**

1. Oil filter
2. Oil fill cap/dipstick
3. Oil drain valve
4. Oil drain hose
5. Pan

6. Place a pan under the open end of the hose.
7. Open the drain valve by turning hex end counterclockwise. Be sure to allow ample time for complete drainage.
8. Remove the old filter and wipe off the mounting pad.
9. When the oil has drained completely, close the oil drain valve by rotating it clockwise and remove

# Maintenance

and retain the hose. Wipe up any excess oil on the frame (Figure 25).

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

10. Apply a thin film of clean Exmark 4-Cycle Premium Engine Oil to the rubber gasket on the new filter.
11. Install the replacement oil filter to the mounting pad. Turn the oil filter clockwise until the rubber gasket contacts the pad, then tighten the filter an additional 1/2 to 3/4 turn.
12. Slowly pour approximately 80% of the specified oil into the filler tube—use oil recommended in the **Checking the Oil Level** section.
13. Install the oil fill cap/dipstick and push into place, but Do Not screw it in.
14. Check the oil level (Figure 24); refer to **Checking the Oil Level** section.
15. Slowly add additional oil to bring it to the full mark. Do Not overfill.
16. Install the oil fill cap/dipstick.
17. Start the engine and check for leaks.

## Servicing the Spark Plug

**Service Interval: Every 200 hours/Every 2 years (whichever comes first)**

**Every 500 hours—Replace the spark plug.**

As stated in the maintenance intervals, remove the spark plug, check condition, and reset the gap or replace with a new plug as necessary.

The spark plug is RFI compliant. Equivalent alternate brand plugs can also be used.

Type: NGK BPR4ES (or equivalent)

Air Gap: 0.030 inch (0.76 mm)

## Removing the Spark Plug

1. Disengage the blade control switch, move the motion controls outward to the park position, stop the engine, and remove the key.
2. Pull the wire off of the spark plug (Figure 26). Clean around the spark plug to prevent dirt from falling into the engine and potentially causing damage.

**Note:** Due to the deep recess around the spark plug, blowing out the cavity with compressed air is usually the most effective method for cleaning. The spark plug is most accessible when the blower housing is removed for cleaning.

3. Remove the spark plug and metal washer.

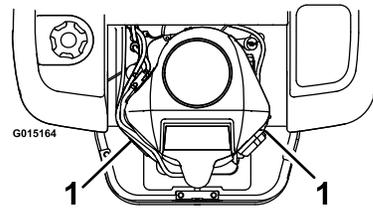


Figure 26

1. Spark plug and wire location

## Checking the Spark Plug

1. Look at the center of the spark plug (Figure 27). 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. Always replace the spark plug when it has a black coating, worn electrodes, an oily film, or cracks.**

2. Check the gap between the center and side electrodes (Figure 27). Bend the side electrode if the gap is not correct.

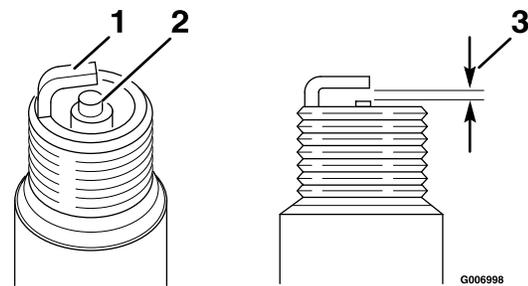


Figure 27

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

## Installing the Spark Plug

1. Install the spark plug. Make sure that the air gap is set correctly.
2. Tighten the spark plug to 16 ft-lb (22 N-m).
3. Push the wire onto the spark plug (Figure 26).

## Cleaning the Blower Housing

**Service Interval: Every 100 hours/Yearly (whichever comes first) More often under dirty conditions.**

To ensure proper cooling, make sure the grass screen, cooling fins, and other external surfaces of the engine are kept clean at all times.

1. Remove the blower housing and any other cooling shrouds.
2. Clean the cooling fins and external surfaces as necessary.
3. Make sure the cooling shrouds are reinstalled

**Important:** Operating the engine with a blocked grass screen, dirty or plugged cooling fins, and/or cooling shrouds removed, will cause engine damage due to overheating.

## Fuel System Maintenance

### Replacing the Fuel Filter

**Service Interval: Every 100 hours/Yearly (whichever comes first)**

#### **⚠ DANGER**

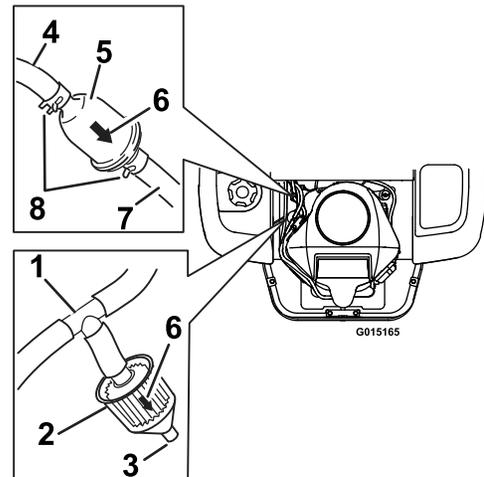
In certain conditions, gasoline is extremely flammable and highly explosive. A fire or explosion from gasoline can burn you and others and can damage property.

- Perform any fuel related maintenance 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.

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

1. Park the machine on a level surface and disengage the blade control switch.
2. Move the motion control levers outward to engage parking brake, stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.

3. The fuel filter is in the fuel line between the tank and engine.



**Figure 28**

- |                           |                         |
|---------------------------|-------------------------|
| 1. Tee fitting, vent line | 5. In-line fuel filter  |
| 2. Emissions filter       | 6. Flow direction arrow |
| 3. Open port              | 7. Fuel line to engine  |
| 4. Fuel line from tank    | 8. Hose clamp           |

4. Squeeze the ends of the hose clamps together and slide them away from the filter (Figure 28).
5. Remove the filter from the fuel lines.
6. Install a new filter with the flow direction arrow coming from the fuel tank and pointing to the engine. Move the hose clamps close to the filter (Figure 28) to secure it in place.

## Servicing the Emissions Filter

**Service Interval: Yearly**

The machine is equipped with a emissions filter (Figure 28) connected to a tee fitting on the vent line coming from the gas tank. The filter has an open port by design. The filter should be inspected regularly. Replace the filter if the filter is dirty or clogged.

## Electrical System Maintenance

### ⚠ WARNING

#### CALIFORNIA Proposition 65 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.

### ⚠ DANGER

Battery electrolyte contains sulfuric acid, which is poisonous and can cause severe burns. Swallowing electrolyte can be fatal or if it touches skin can cause severe burns.

- Wear safety glasses to shield eyes, and rubber gloves to protect skin and clothing when handling electrolyte.
- Do Not swallow electrolyte.
- In the event of an accident, flush with water and call a doctor immediately.

## Charging the Battery

### Removing 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.

#### ⚠ DANGER

Charging or jump starting the battery may produce explosive gases. Battery gases can explode causing serious injury.

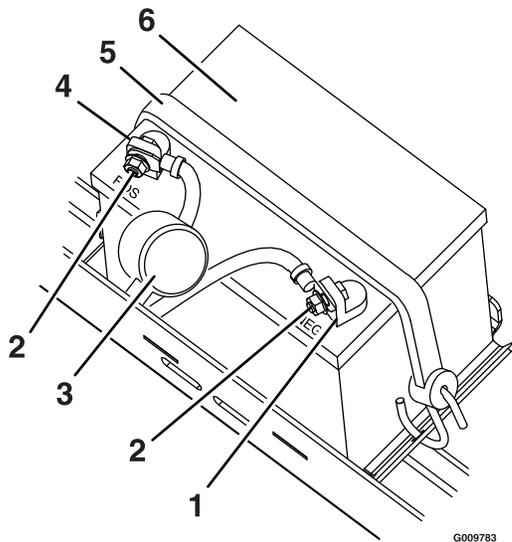
- Keep sparks, flames, or cigarettes away from battery.
- Ventilate when charging or using battery in an enclosed space.
- Make sure venting path of battery is always open once battery is filled with acid.
- Always shield eyes and face from battery.

### ⚠ CAUTION

If the ignition is in the “ON” position there is potential for sparks and engagement of components. Sparks could cause an explosion or moving parts could accidentally engage causing personal injury.

Be sure ignition switch is in the “OFF” position before charging the battery.

1. Park the machine on a level surface and disengage the blade control switch.
2. Move the motion control levers outward to engage parking brake stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Raise the seat.
4. Disconnect the negative (black) ground cable from the battery post (Figure 29). Retain all fasteners.



**Figure 29**

- |                          |                          |
|--------------------------|--------------------------|
| 1. Negative battery post | 4. Positive battery post |
| 2. Bolt, washer, and nut | 5. Battery strap         |
| 3. Terminal boot         | 6. 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 connect the positive (red) battery cable before connecting the negative (black) cable.

5. Slide the rubber cover up the positive (red) cable. Disconnect the positive (red) cable from the battery post. Retain all fasteners.
6. Remove the battery strap (Figure 29) and lift the battery from the battery tray.

## Checking the Battery Charge

1. Remove the battery from the chassis; refer to **Removing the Battery**.
2. Allowing batteries to stand for an extended period without recharging them will result in reduced performance and service life. To preserve optimum battery performance and life, recharge batteries in storage when the open circuit voltage drops to 12.4 volts.

**Note:** To prevent damage due to freezing, battery should be fully charged before putting away for winter storage.

3. Check the voltage of the battery with a digital voltmeter. Locate the voltage reading of the battery in the table below and charge the battery for the recommended time interval to bring the charge up to a full charge of 12.6 volts or greater.

**Important:** Make sure the negative battery cable is disconnected and the battery charger used for charging the battery has an output of 16 volts and 7 amps or less to avoid damaging the battery (see chart below for recommended charger settings).

Voltage Reading	Percent Charge	Maximum Charger Settings	Charging Interval
12.6 or greater	100%	16 volts/7 amps	No Charging Required
12.4 – 12.6	75–100%	16 volts/7 amps	30 Minutes
12.2 – 12.4	50–75%	16 volts/7 amps	1 Hour
12.0–12.2	25–50%	14.4 volts/4 amps	2 Hours
11.7–12.0	0–25%	14.4 volts/4 amps	3 Hours
11.7 or less	0%	14.4 volts/2 amps	6 Hours or More

## Recommended Jump Starting Procedure

1. Check the weak battery for terminal corrosion (white, green, or blue “snow”), it must be cleaned off prior to jump starting. Clean and tighten connections as necessary.

## ⚠ CAUTION

Corrosion or loose connections can cause unwanted electrical voltage spikes at anytime during the jump starting procedure.

**Do Not attempt to jump start with loose or corroded battery terminals or damage to the engine may occur.**

# Maintenance

## **⚠ DANGER**

Jump starting a weak battery that is cracked, frozen, has low electrolyte level, or an open/shorted battery cell, can cause an explosion resulting in serious personal injury.

Do Not jump start a weak battery if these conditions exist.

2. Make sure the booster is a good and fully charged lead acid battery at 12.6 volts or greater. Use properly sized jumper cables (4 to 6 AWG) with short lengths to reduce voltage drop between systems. Make sure the cables are color coded or labeled for the correct polarity.

## **⚠ CAUTION**

Connecting the jumper cables incorrectly (wrong polarity) can immediately damage the electrical system.

Be certain of battery terminal polarity and jumper cable polarity when hooking up batteries.

**Note:** The following instructions are adapted from the SAE J1494 Rev. Dec. 2001 – Battery Booster Cables – Surface Vehicle Recommended Practice (SAE – Society of Automotive Engineers).

## **⚠ WARNING**

Batteries contain acid and produce explosive gases.

- Shield the eyes and face from the batteries at all times.
- Do Not lean over the batteries.

**Note:** Be sure the vent caps are tight and level. Place a damp cloth, if available, over any vent caps on both batteries. Be sure the vehicles do not touch and that both electrical systems are off and at the same rated system voltage. These instructions are for negative ground systems only.

3. Connect the positive (+) cable to the positive (+) terminal of the discharged battery that is wired to the starter or solenoid as shown in Figure 30.

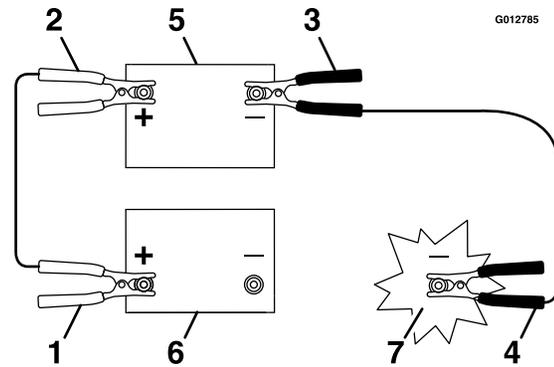


Figure 30

1. Positive (+) cable on discharged battery
  2. Positive (+) cable on booster battery
  3. Negative (-) cable on the booster battery
  4. Negative (-) cable on the engine block
  5. Booster battery
  6. Discharged battery
  7. Engine block
4. Connect the other end of the positive cable to the positive terminal of the booster battery.
  5. Connect the black negative (-) cable to the other terminal (negative) of the booster battery.
  6. MAKE THE FINAL CONNECTION ON THE ENGINE BLOCK OF THE STALLED VEHICLE (NOT TO THE NEGATIVE POST) AWAY FROM THE BATTERY. STAND BACK.
  7. Start the vehicle and remove the cables in the reverse order of connection (the engine block (black) connection is the first to disconnect).

## Installing the Battery

1. Position the battery in the tray with the terminal posts toward the operating position (Figure 29).
2. Install the positive (red) battery cable to the positive (+) battery terminal using the fasteners removed previously.
3. Install the negative battery cable to the negative (-) battery terminal using the fasteners removed previously.
4. Slide the red terminal boot onto the positive (red) battery post.
5. Secure the battery with the strap (Figure 29).

## Servicing the Fuses

### Service Interval: As required

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

Fuse:

- Main F1-30 amp, blade-type
  - Charge Circuit F2-25 amp, blade-type
1. Remove the four screws securing the control panel to the machine. Retain all fasteners
  2. Lift the control pane up to access the main wiring harness and fuse block (Figure 31).
  3. To replace a fuse, pull out on the fuse to remove it (Figure 31).

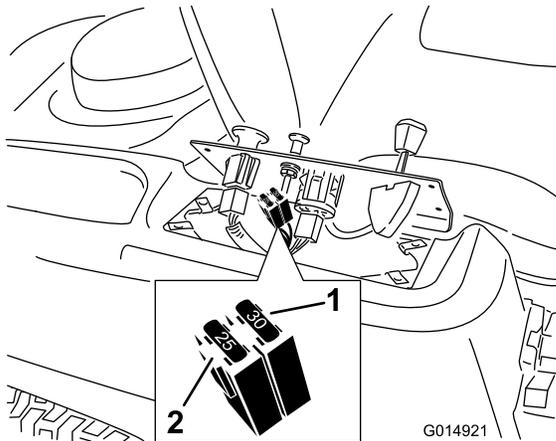


Figure 31

1. Main-30 amp
2. Charge circuit-25 amp

4. Return the control panel to its original position. Use the four screws removed previously to secure the panel to the machine.

## Drive System Maintenance

### Checking the Tire Pressure

#### Service Interval: Every 25 hours/Monthly (whichever comes first)

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 (Figure 32).

Check the tires when they are cold to get the most accurate pressure reading.

Rear Tires: 13 psi (90 kPa)

Front Tires (caster wheels):

- Ribbed: 13 psi (90 kPa)
- Smooth: 20 psi (138 kPa)

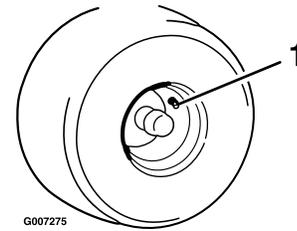


Figure 32

1. Valve stem

## Releasing the Electric Brake

### Service Interval: As required

The electric brake can be release by manually rotating the link arms forward. Once the electric brake is energized the brake will reset.

To release the brake:

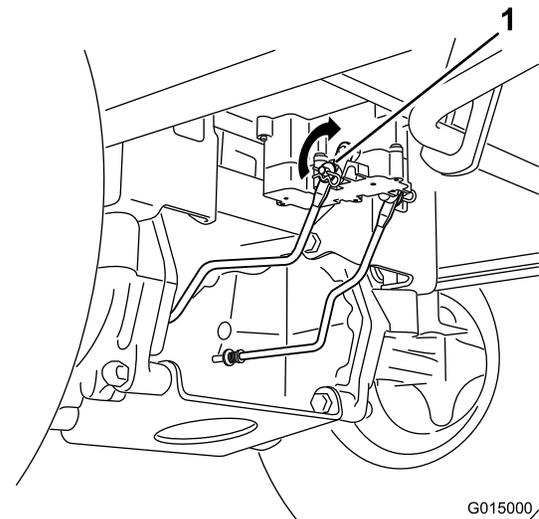


Figure 33

1. Brake link arm on the electric brake control module

1. Locate the shaft on the electric brake where the brake link arms are connected.
2. Rotate the shaft forward to release the brake.

## Checking the Hydraulic Oil Level

### Service Interval: Every 25 hours

# Maintenance

Check expansion reservoir and if necessary add 20W-50 engine oil to the FULL COLD line.

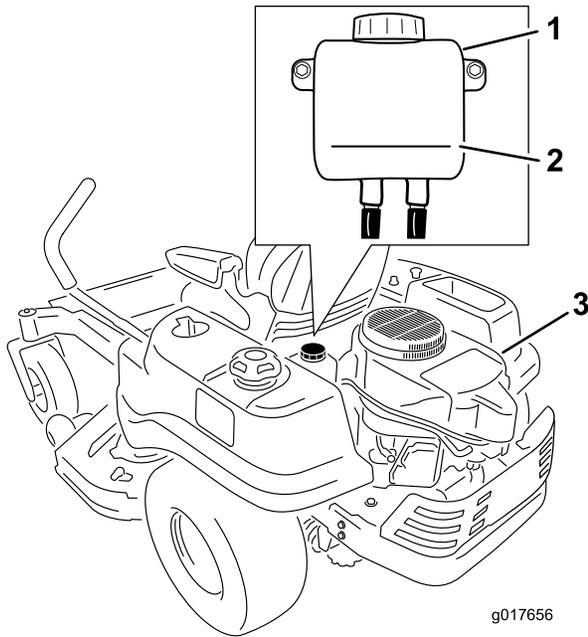


Figure 34

- 1. Expansion reservoir
- 2. Full Cold line
- 3. Engine

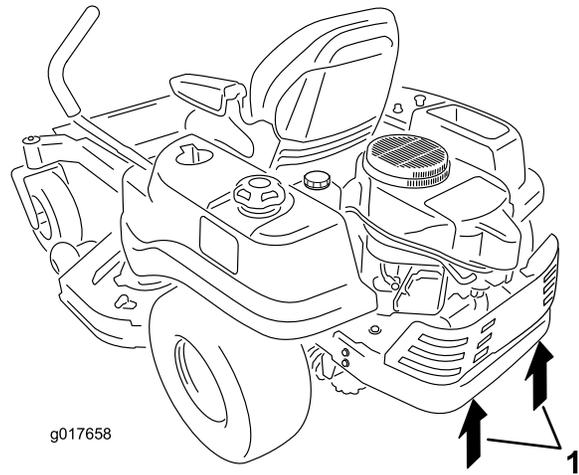


Figure 35

- 1. Jacking points

- 3. Remove the nuts holding the transaxle support in place (Figure 36).

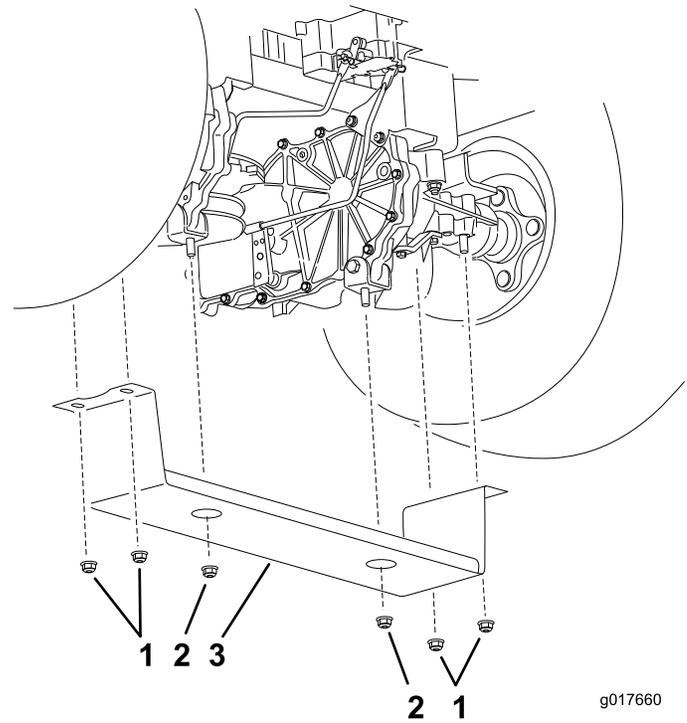


Figure 36

- 1. Nut (5/16 inch) (27 to 33 ft-lb)
- 2. Nut (3/8 inch) (15 to 19 ft-lb)
- 3. Transaxle support

## Changing the Hydraulic System Filter and Oil

**Service Interval: After the first 50 hours  
Every 400 hours thereafter.**

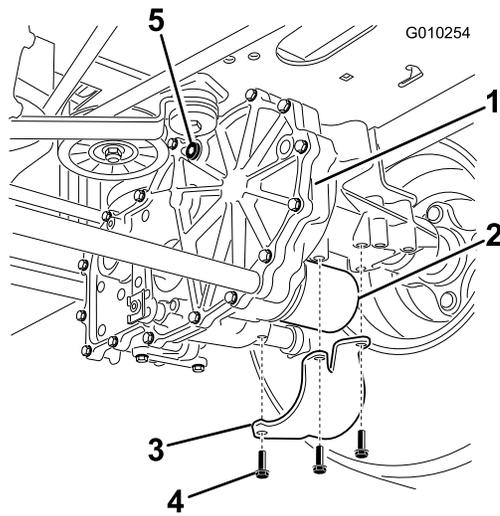
The filter and oil are changed at the same time. **Do Not** reuse oil. Once the new filter is installed and oil is added any air in the system must be purged.

The bleeding process is repeated until the oil remains at the FULL COLD line in the reservoir after purging. **Failure to properly perform this procedure can result in irreparable damage to the transaxle drive system.**

### Removing Hydraulic System Filters

- 1. Stop engine, wait for all moving parts to stop, and allow engine to cool. Remove the key and engage the parking brake.
- 2. Raise the rear of machine up and support with jack stands (or equivalent support) just high enough to allow drive wheels to turn freely.

- 4. Locate the filter and filter guards on each transaxle drive system (Figure 37). Remove three screws securing the filter guard and guard.



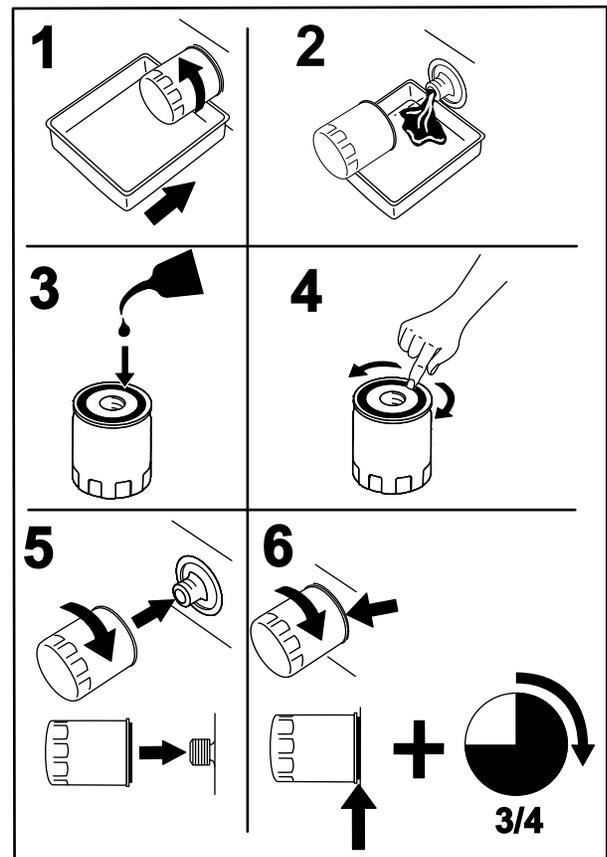
**Figure 37**  
Right side shown

- |                    |              |
|--------------------|--------------|
| 1. Transaxle drive | 4. Screws    |
| 2. Oil filter      | 5. Vent plug |
| 3. Filter guard    |              |

5. Carefully clean area around filters. It is important that no dirt or contamination enter hydraulic system.
6. Place a container below the filter to catch the oil that drains when the filter and vent plugs are removed.
7. Locate and remove the vent plug on each transmission
8. Unscrew the filter to remove and allow oil to drain from drive system.

Repeat this procedure for both filters.

## Installing the Hydraulic System Filters



**Figure 38**

1. Apply a thin coat of oil on the surface of the rubber seal of each filter.
2. Turn the filter clockwise until rubber seal contacts the filter adapter then tighten the filter an additional  $\frac{3}{4}$  to 1 full turn. Repeat for the other filter
3. Install the filter guards over each filter as previously removed. Use the three screws to secure the filter guards.
4. Verify the vent plugs are removed before adding the oil.
5. Slowly pour the specified oil through expansion reservoir until oil comes out of **one** of the vent plug holes. Stop and install that vent plug. Torque the plug to 180 in-lb (20.3 N-m).
6. Continue to add oil through the expansion reservoir until oil comes out of the remaining vent plug hole on the second transmission. Stop

and install that vent plug. Torque the plug to 180 in-lb (20.3 N-m).

7. Continue to add oil through the expansion reservoir until it reaches the FULL COLD line on the expansion reservoir.
8. Install the transaxle guard. Refer to Figure 36 for the correct torque values for the nuts and bolts.
9. Proceed to the Bleeding the Hydraulic System section.

**Important:** Failure to perform the *Bleeding the Hydraulic System* procedure after changing hydraulic filters and oil can result in irreparable damage to the transaxle drive system.

## Bleeding the Hydraulic System

1. Enter the operator's position. Start engine and move throttle control ahead to 1/2 throttle position. Disengage parking brake.
  - A. Move the bypass levers into the pushing the machine position; refer to the Pushing the Machine by Hand section in Operation. With the bypass valves open and the engine running, slowly move the motion control levers in both forward and reverse (5 or 6 times).
  - B. Move the bypass levers into the operating the machine position. With the bypass valve closed and the engine running, slowly move the directional control in both forward and reverse directions (5 to 6 times).
  - C. Stop the engine and check the oil level in the expansion reservoir. Add the specified oil as until it reaches the FULL COLD line on the expansion reservoir.
2. Repeat step 1 until all the air is completely purged from the system.

When the transaxle operates at normal noise levels and moves smoothly forward and reverse at normal speeds, then the transaxle is considered purged.

3. Check the oil level in the expansion reservoir one last time. Add the specified oil as until it reaches the FULL COLD line on the expansion reservoir if necessary.

## Mower Maintenance

### Servicing the Cutting Blades

#### Service Interval: Before each use or daily

Maintain sharp blades throughout the cutting season because sharp blades cut 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 Exmark replacement blade. For convenient sharpening and replacement, you may want to keep extra blades on hand.

#### **▲ WARNING**

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

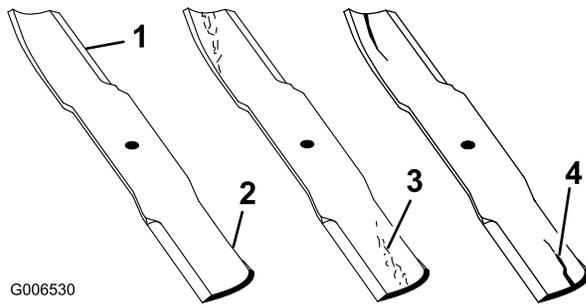
- Inspect the blade periodically for wear or damage.
- Replace a worn or damaged blade.

### Before Inspecting or Servicing the Blades

Park the machine on a level surface, disengage the blade control switch, and move the motion control levers outward to engage parking brake. Stop the engine, remove the key, and disconnect the spark plug wire(s) from the spark plug(s).

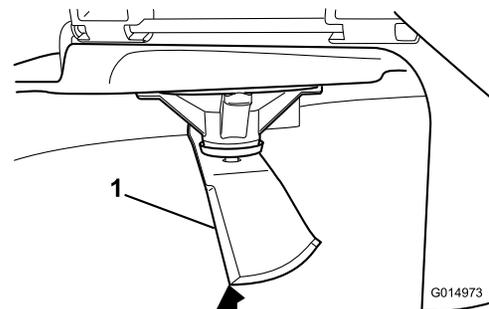
### Inspecting the Blades

1. Inspect the cutting edges (Figure 39). If the edges are not sharp or have nicks, remove and sharpen the blades; refer to **Sharpening the Blades**.
2. Inspect the blades, especially the curved area. If you notice any damage, wear, or a slot forming in this area (item 3 in Figure 39), immediately install a new blade.



**Figure 39**

- |                 |                      |
|-----------------|----------------------|
| 1. Cutting edge | 3. Wear/slot forming |
| 2. Curved area  | 4. Damage            |



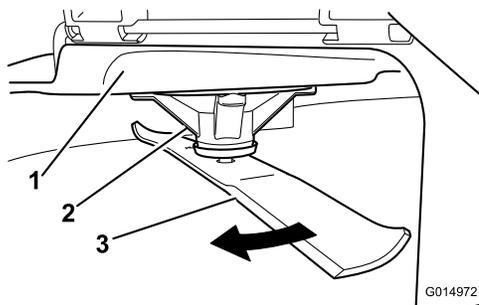
**Figure 41**

1. Blade, in position for measuring
2. Level surface
3. Measured distance between blade and surface (A)

## Checking for Bent Blades

**Note:** The machine must be on a level surface for the following procedure.

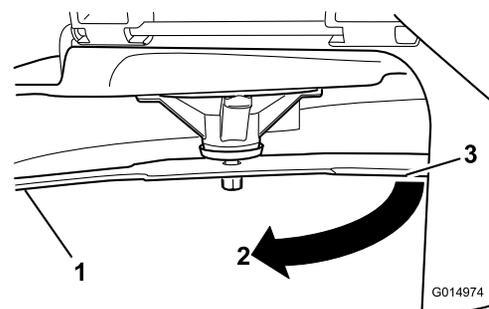
1. Raise the mower deck to the highest height-of-cut position; also considered the 'transport' position.
2. While wearing thickly padded gloves or other adequate hand protection slowly rotate blade to be measure into a position that allows effective measurement of the distance between the cutting edge and the level surface the machine is on.



**Figure 40**

- |                    |          |
|--------------------|----------|
| 1. Deck            | 3. Blade |
| 2. Spindle housing |          |

4. Rotate the same blade 180 degrees so that the opposing cutting edge is now in the same position.

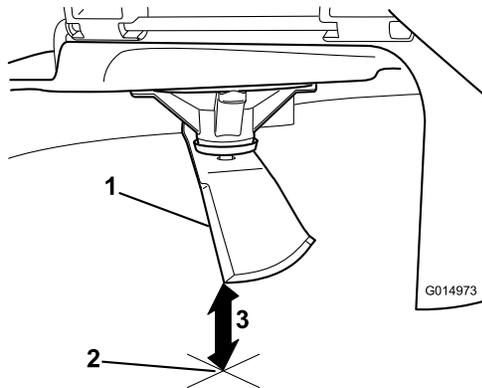


**Figure 42**

1. Blade, side previously measured
2. Measurement position used previously
3. Opposing side of blade being moved into measurement position

3. Measure from the tip of the blade to the flat surface here.

5. Measure from the tip of the blade to the flat surface here. The variance should be no more than 1/8 inch (3mm).



**Figure 43**

1. Opposing blade edge, in position for measuring
2. Level surface
3. Second measured distance between blade and surface (B)

## **⚠ WARNING**

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

- **Inspect the blade periodically for wear or damage.**
  - **Replace a worn or damaged blade.**
- A. If the difference between A and B is greater than 1/8 inch (3mm) replace the blade with a new blade. Refer to Removing the Blades and Installing the Blades.
- Note:** If a bent blade is replaced with a new one and the dimension obtained continues to exceed 1/8 inch (3mm), the blade spindle could be bent. Contact an Authorized Exmark Dealer for service.
- B. If the variance is within constraints, move to the next blade.

Repeat this procedure on each blade.

## **Checking for Loose Blades or Damaged Spring Disc Washers**

1. Place a wrench on the blade bolt and torque to 35-65 ft-lb (47-88 N-m).
2. With the wrench still on the blade bolt, hold the blade spindle stationary and using a rag or

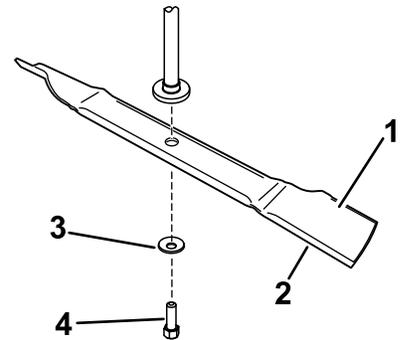
thickly padded glove, try to rotate the blade. If the blade rotates relative to the spindle guard without further tightening the blade bolt, the spring disc washer has been flattened or damaged and the bolt and washer assembly must be replaced (Figure 44). Refer to **Removing the Blades and Installing the Blades**.

3. Once the blade has been removed, inspect the spring disc washer. If the washer appears to be damaged (the washer surface has been marred) or flattened, the bolt and washer assembly must be replaced.

## **Removing the Blades**

The blades must be replaced if a solid object is hit, if the blade is out of balance, or the blade is bent. To ensure optimum performance and continued safety conformance of the machine, use genuine Exmark replacement blades. Replacement blades made by other manufacturers may result in an unsafe machine.

Hold the blade end using a rag or thickly-padded glove. Remove the blade bolt, curved washer, and blade from the spindle shaft (Figure 44).

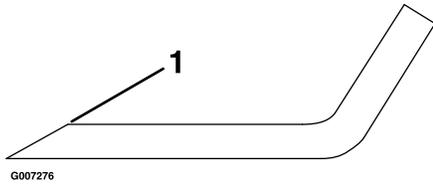


**Figure 44**

- |                       |                  |
|-----------------------|------------------|
| 1. Sail area of blade | 3. Curved washer |
| 2. Blade              | 4. Blade bolt    |

## **Sharpening the Blades**

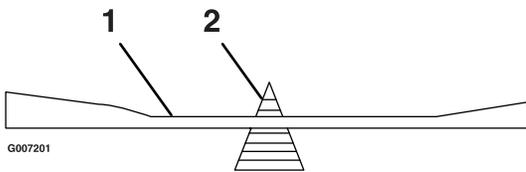
1. Use a file to sharpen the cutting edge at both ends of the blade (Figure 45). Maintain the original angle. The blade retains its balance if the same amount of material is removed from both cutting edges.



**Figure 45**

1. Sharpen at original angle

2. Check the balance of the blade by putting it on a blade balancer (Figure 46). If the blade stays in a horizontal position, the blade is balanced and can be used. If the blade is not balanced, file some metal off the end of the sail area only (Figure 46). Repeat this procedure until the blade is balanced.



**Figure 46**

1. Blade
2. Balancer

## Installing the Blades

1. Install the blade onto the spindle shaft (Figure 44).

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

2. Hold the blade end using a rag or thickly-padded glove (or place a wrench on the top sheave nut). Apply lubricant to the threads of the blade bolt as needed to prevent seizing. Copper based anti-seize is preferable. Grease is an acceptable substitute. Install the washer and blade bolt and washer assembly.
3. Torque the blade bolt to 35-65 ft-lb (47-88 N-m).

### **⚠ WARNING**

Incorrect installation of the blade or components used to retain the blade cause the blade to come loose and could seriously injure or kill you or bystanders.

Always install the original Exmark blades, washers and blade bolts as shown.

## Leveling the Mower Deck

Check to ensure the mower deck is level any time you install the mower or when you see an uneven cut on your lawn.

The mower deck must be checked for bent blades prior to leveling; any bent blades must be removed and replaced. Refer to the **Checking for Bent Blades** procedure before continuing.

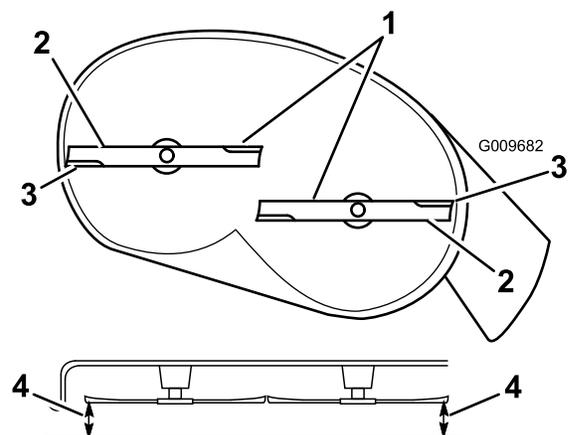
The mower deck must be leveled side-to-side first then the front to rear slope can be adjusted.

Requirements:

- The machine must be on a level surface.
- All four tire must be properly inflated. Refer to **Checking the Tire Pressure** in the Drive System Maintenance section.

## Side-to-Side Leveling

1. Park the machine on a level surface and disengage the blade control switch.
2. Move the motion control levers outward to the park position, stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Set the height-of-cut lever to middle position.
4. Carefully rotate the blades so that they are all side to side (Figure 47 and Figure 48).

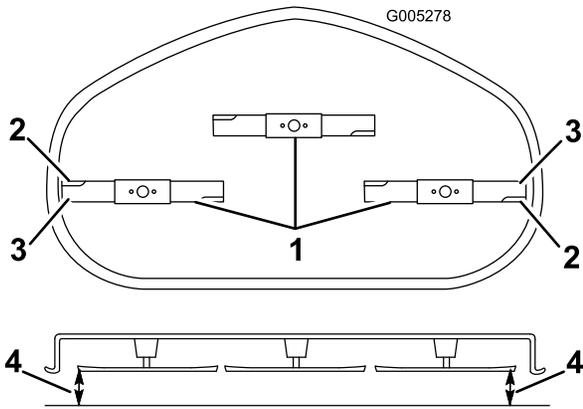


**Figure 47**

42 Inch Decks

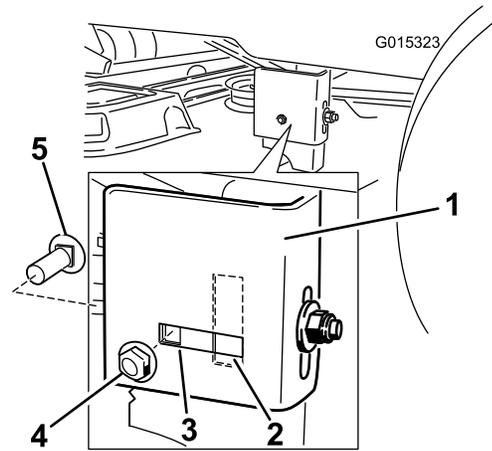
1. Blades side to side
2. Sail area of blade
3. Outside cutting edges
4. Measure from the tip of the blade to the flat surface here

# Maintenance



**Figure 48**  
50 Inch Decks

- |                        |   |
|------------------------|---|
| 1. Blades side to side | 3. Outside cutting edges                                      |
| 2. Sail area of blade  | 4. Measure from the tip of the blade to the flat surface here |



**Figure 49**

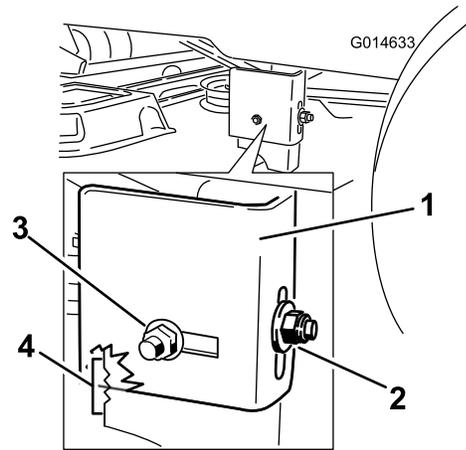
- |                                |                       |
|--------------------------------|-----------------------|
| 1. Hanger bracket              | 4. Side locking nut   |
| 2. Slotted adjustment position | 5. Side carriage bolt |
| 3. Fixed position              |                       |

- Measure between the outside cutting edges and the flat surface (Figure 47 and Figure 48). If both measurements are not within 3/16 inch (5 mm), an adjustment is required; continue with this procedure.
- Support the weight of mower deck by placing wood blocks under the edges of the deck.

**Note:** Avoid placing the supports under any anti-scalp rollers if present on the deck.

- Move to the left side of the machine. Remove the side carriage bolt and locking nut from the fixed position and install it into the rear, slotted position and leave it slightly loose (Figure 49).

- Loosen the side locking nut on the hanger bracket just enough to allow the hanger to be adjusted (Figure 50). Use the notches on the welded bracket to measure the amount of adjustment. Each notch surface is equivalent to 1/16 of an inch. Adjust the height of the mower deck to the desired height.



**Figure 50**

- |                     |                       |
|---------------------|-----------------------|
| 1. Hanger bracket   | 3. Side locking nut   |
| 2. Rear locking nut | 4. Adjustment notches |

- Stop the deck at the adjusted position and tighten the side locking nut on the hanger bracket to hold

the new position (Figure 50). Tighten the rear locking nut on the hanger bracket.

- Continue leveling the deck by checking the front-to-rear blade slope; refer to Adjusting the Front-to-Rear Blade Slope.

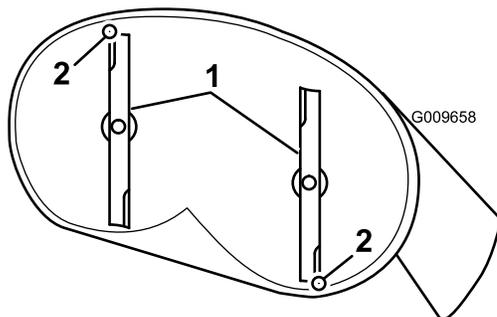
## Adjusting the Front-to-Rear Blade Slope

Check the front-to-rear blade level any time you install the mower. If the front of the mower is more than 5/16 inch (7.9 mm) lower than the rear of the mower, adjust the blade level using the following instructions:

- Park the machine on a level surface and disengage the blade control switch.
- Move the motion control levers outward to the park position, stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
- Set the height-of-cut lever to middle position.

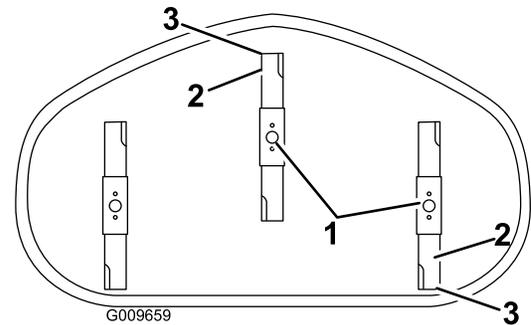
**Note:** Check and adjust the side-to-side blade level if you have not checked the setting; refer to **Side-to-Side Leveling**.

- Carefully rotate the blades so they are facing front to rear (Figure 51 and Figure 52).



**Figure 51**  
42 Inch Decks

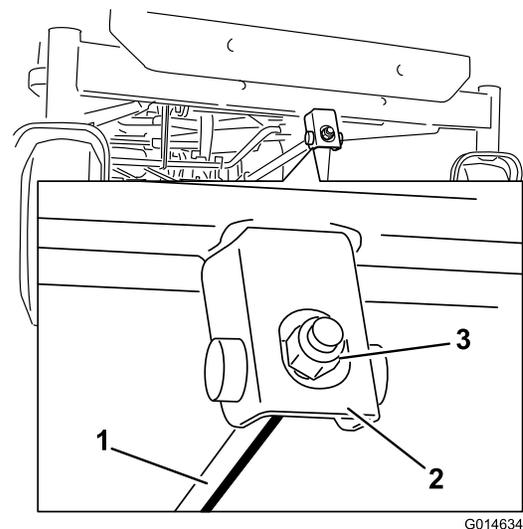
- Blades front to rear
- Measure from the tip of the blade to the flat surface here



**Figure 52**  
50 Inch Decks

- Blades front to rear
- Outside cutting edges
- Measure from the tip of the blade to the flat surface here

- Measure from the tip of the front blade to the flat surface and the tip of the rear blade to the flat surface (Figure 51 and Figure 52). If the front blade tip is not 1/16-5/16 inch (1.6-7.9 mm) lower than the rear blade tip, adjust the front locknut.
- To adjust the front-to-rear blade slope, rotate the adjustment nut in the front of the mower (Figure 53).



**Figure 53**

- Adjusting rod
- Adjusting block
- Lock nut

- To raise the front of the mower, tighten the adjustment nut. To lower the front of the mower, loosen the adjustment nut.
- After adjustment, check the front-to-rear slope again. Continue adjusting the nut until the front

# Maintenance

blade tip is 1/16-5/16 inch (1.6-7.9 mm) lower than the rear blade tip (Figure 51 and Figure 52).

9. When the front-to-rear blade slope is correct check the side-to-side level of the mower again; refer to **Leveling the Mower from Side-to-Side**.

## Removing the Mower

### Service Interval: As required

1. Park the machine on a level surface and disengage the blade control switch.
2. Move the motion control levers outward to the park position, stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Lower the height-of-cut lever to the lowest position.
4. Remove the hairpin cotter from the front support rod and remove the rod from the deck bracket (Figure 54). Carefully lower the front of the mower deck to the ground.

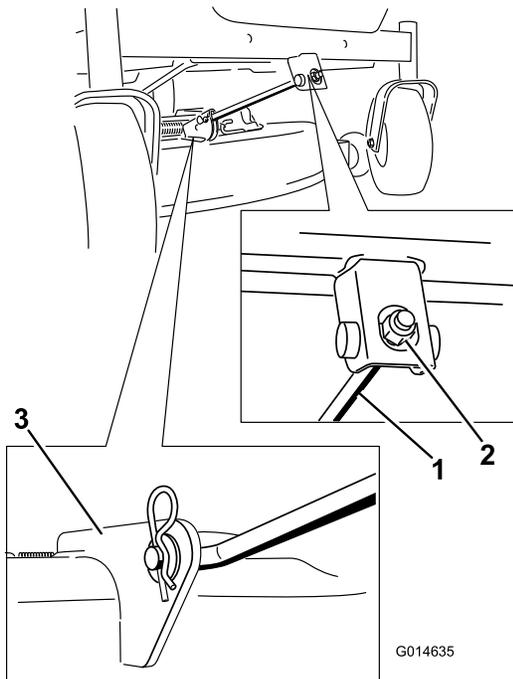


Figure 54

1. Front support rod
2. Locking nut
3. Deck bracket

5. Lift the mower deck and hanger brackets clear of the rear lift rod and lower the mower carefully to the ground (Figure 55).

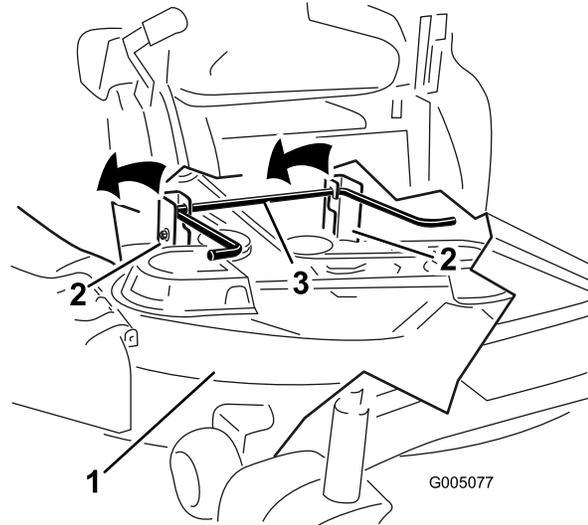


Figure 55

1. Mower deck
2. Hanger bracket
3. Rear lift rod

6. Slide the mower deck rearward to remove the mower belt from the engine pulley.
7. Slide the mower deck out from underneath the machine.

**Note:** Retain all parts for future installation.

## Mower Belt Maintenance

### Inspecting the Belts

**Service Interval: Every 25 hours/Monthly (whichever comes first)**

Check the belts for cracks, frayed edges, burn marks, or any other damage. Replace damaged belts.

### Replacing the Mower Belt

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

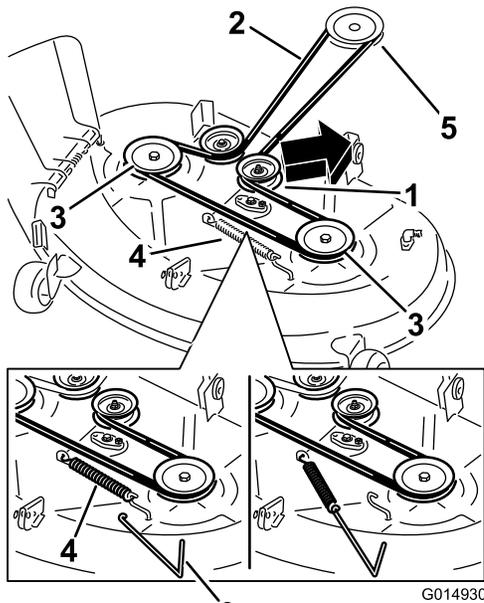
1. Park the machine on a level surface and disengage the blade control switch.
2. Move the motion control levers outward to the park position, stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.

3. Set the height-of-cut at the lowest cutting position [1-1/2 inch (38 mm)].
4. Using a spring removal tool, (P/N. 92-5771), remove the idler spring from the deck hook to remove tension on the idler pulley and roll the belt off of the pulleys (Figure 56 and Figure 57).

## ⚠ WARNING

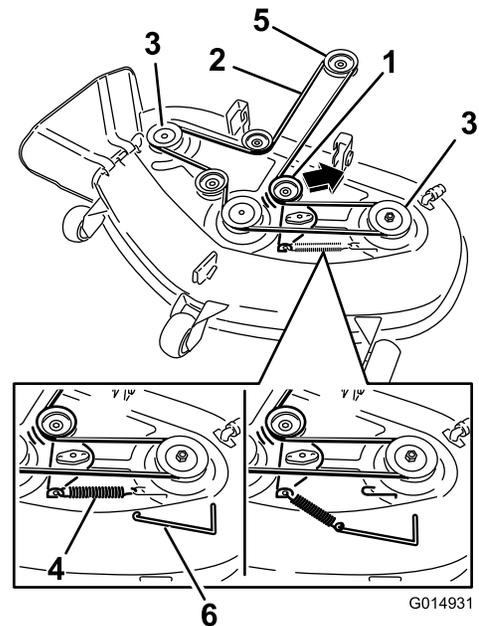
The spring is under tension when installed and can cause personal injury.

Be careful when removing the belt.



**Figure 56**  
42 Inch Deck

- |                   |                        |
|-------------------|------------------------|
| 1. Idler pulley   | 4. Spring              |
| 2. Mower belt     | 5. Engine pulley       |
| 3. Outside pulley | 6. Spring removal tool |



**Figure 57**  
50 Inch Deck

- |                   |                        |
|-------------------|------------------------|
| 1. Idler pulley   | 4. Spring              |
| 2. Mower belt     | 5. Engine pulley       |
| 3. Outside pulley | 6. Spring removal tool |

5. Route the new belt around the engine pulley and mower pulleys (Figure 57).
6. Using a spring removal tool, (P/N 92-5771), install the idler spring over the deck hook and placing tension on the idler pulley and mower belt (Figure 56 and Figure 57).

## Installing the Mower

### Service Interval: As required

1. Park the machine on a level surface and disengage the blade control switch.
2. Move the motion control levers outward to the park position, stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Slide the mower under the machine.
4. Lower the height-of-cut lever to the lowest position.
5. Lift the rear of the mower deck and guide the hanger brackets over the rear lift rod (Figure 55).

# Maintenance

6. Attach the front support rod to the mower deck with the clevis pin and hairpin cotter (Figure 54).
7. Install the mower belt onto the engine pulley; refer to **Replacing the Mower Belt**.

## Replacing the Discharge Deflector

### **▲ DANGER**

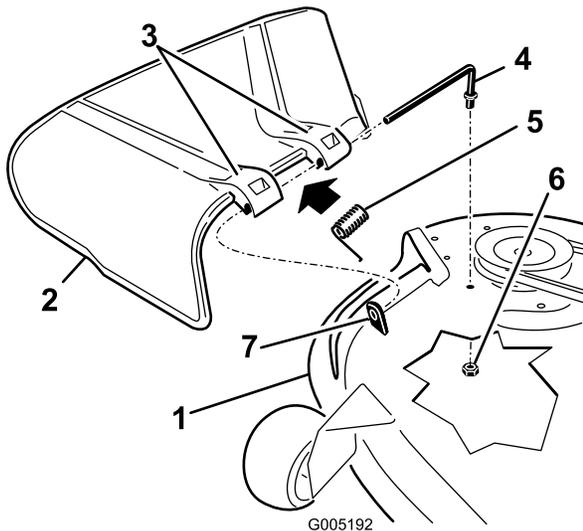
An uncovered discharge opening could allow the lawn mower to throw objects in the operator's or bystander's direction and result in serious injury. Also, contact with the blade could occur.

Never operate the lawn mower unless you install a mulch plate, discharge deflector, or grass collection system.

Inspect the discharge deflector for damage before each use. Replace any damaged parts before use.

#### • 42 inch and 50 inch E-Series Deck

1. Locate items shown in Figure 58.



**Figure 58**

- |                                |                    |
|--------------------------------|--------------------|
| 1. Mower deck                  | 5. Spring          |
| 2. Discharge deflector         | 6. Nut (3/8 inch)  |
| 3. Discharge deflector bracket | 7. Short stand-off |
| 4. Rod                         |                    |

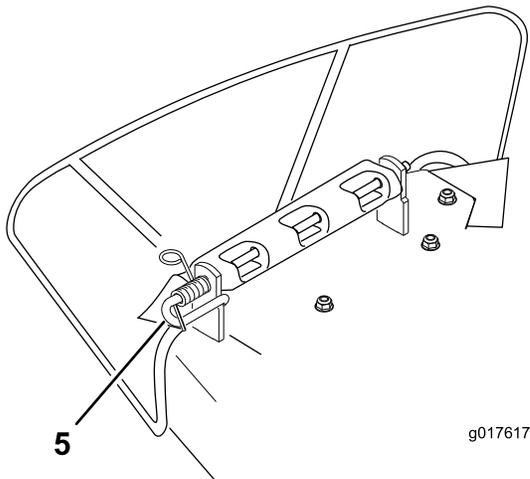
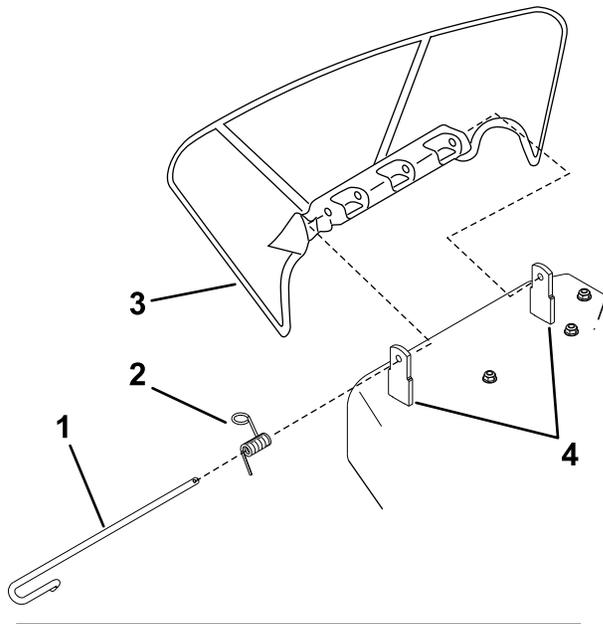
4. Replace the discharge deflector.
5. Slide rod, straight end, through the rear discharge deflector bracket.
6. Place the spring on the rod, with end wires down, and between the discharge deflector brackets. Slide rod through second discharge deflector bracket.
7. Insert rod at front of discharge deflector into short stand-off on deck. Secure rear end of rod into the mower with a nut (3/8 inch).

**Important:** The discharge deflector must be spring loaded in the down position. Lift the deflector up to test that it snaps to the full down position.

#### • 50 inch S-Series Deck

1. Disengage the spring from the notch in the deflector bracket and slide the rod out of the welded deck brackets, spring, and discharge deflector (Figure 59). Remove the damaged or worn discharge deflector.

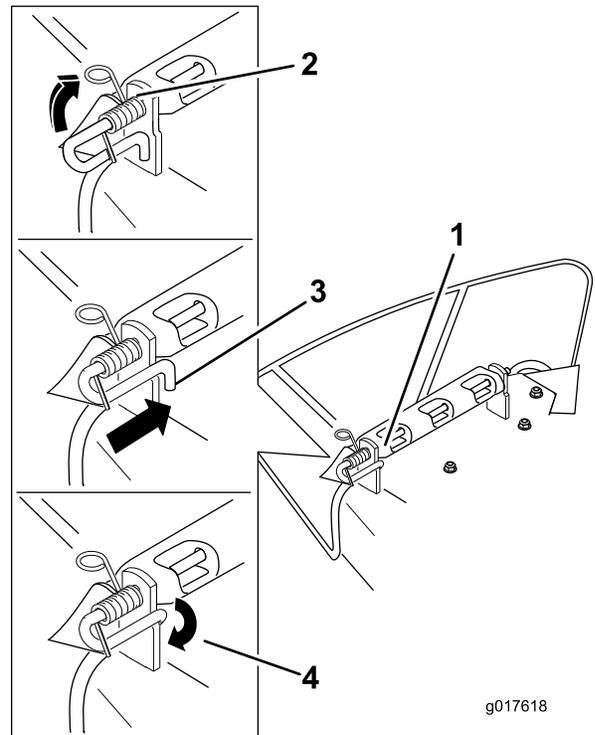
2. Remove the nut (3/8 inch) from the rod under the mower.
3. Slide the rod out of the short stand-off, spring, and discharge deflector. Remove the damaged or worn discharge deflector.



**Figure 59**

- |                       |                                  |
|-----------------------|----------------------------------|
| 1. Rod                | 4. Deck brackets                 |
| 2. Spring             | 5. Spring installed over the rod |
| 3. Deflector assembly |                                  |

- Position the new discharge deflector assembly with the bracket ends between the welded brackets on the deck as shown in Figure 59.
- Install the spring onto the straight end of the rod. Position the spring on the rod as shown in so the shorter spring end is coming from under the rod before the bend and going over the rod as it returns from the bend.
- Lift the loop end of the spring and place it into the notch on the deflector assembly bracket (Figure 60).



**Figure 60**

- |   |   |
|---|---|
| 1. Rod and spring assembly installed  | 3. Rod, short end, moved behind mower bracket |
| 2. Loop end of the spring installed into the notch in the deflector bracket | 4. Short end, retained by mower bracket.      |

- Secure the rod and spring assembly by twisting it so the short end of the rod can be placed behind the front bracket welded to the deck (Figure 60).

**Important:** The grass deflector must be spring loaded in the down position. Lift the deflector up to test that it snaps to the full down position.

## Cleaning

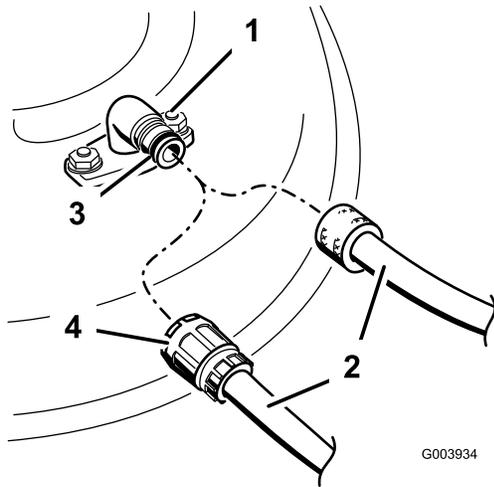
### Washing the Underside of the Mower

**Service Interval: Before each use or daily—Clean the mower housing.**

Wash the underside of the mower after each use to prevent grass buildup for improved mulch action and clipping dispersal.

1. Park the machine on a level surface and disengage the blade control switch.
2. Move the motion control levers outward to the park position, stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Attach the hose coupling to the end of the mower washout fitting, and turn the water on high (Figure 61).

**Note:** Spread petroleum jelly on the washout fitting O-ring to make the coupling slide on easier and protect the O-ring.



**Figure 61**

- |                    |             |
|--------------------|-------------|
| 1. Washout fitting | 3. O-ring   |
| 2. Hose            | 4. Coupling |

4. Lower the mower to the lowest height-of-cut.
5. Sit on the seat and start the engine. Engage the blade control switch and let the mower run for one to three minutes.

6. Disengage the blade control switch, stop the engine, and remove the ignition key. Wait for all moving parts to stop.
7. Turn the water off and remove the coupling from the washout fitting.

**Note:** If the mower is not clean after one washing, soak it and let it stand for 30 minutes. Then repeat the process.

8. Run the mower again for one to three minutes to remove excess water.

#### **⚠ WARNING**

A broken or missing washout fitting could expose you and others to thrown objects or blade contact. Contact with blade or thrown debris can cause injury or death.

- Replace broken or missing washout fitting immediately, before using mower again.
- Never put your hands or feet under the mower or through openings in the mower.

### Clean Engine and Exhaust System Area

**Service Interval: Before each use or daily (May be required more often in dry or dirty conditions.)**

#### **⚠ CAUTION**

Excessive debris around engine cooling air intake and exhaust system area can cause engine, exhaust area, and hydraulic system to overheat which can create a fire hazard.

**Clean all debris from engine and exhaust system area.**

1. Stop engine, wait for all moving parts to stop, and remove key. Engage parking brake.
2. Clean all debris from rotating engine air intake screen, around engine shrouding, and exhaust system area.
3. Wipe up any excessive grease or oil around the engine and exhaust system area.

# Storage

## Cleaning and Storage

1. Disengage the blade control switch, move the motion controls outward to the park position, stop the engine, and 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 cylinder head fins and blower housing.

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

3. Service the air cleaner; refer to Servicing the Air Cleaner in the Engine Maintenance section.
4. Grease and oil the machine; refer to the Lubrication section.
5. Change the crankcase oil and filter; refer to Servicing the Engine Oil in the Engine Maintenance section.
6. Check the tire pressure; refer to Checking the Tire Pressure in the Drive System Maintenance section.
7. Charge the battery; refer to Servicing the Battery in the Electrical System Maintenance section.
8. Check the condition of the blades; refer to Servicing the Cutting Blades in the Mower Maintenance section.
9. Prepare the machine for storage when non-use occurs over 30 days. Prepare the machine for storage as follows.
10. Add a petroleum based stabilizer/conditioner to the fuel in the tank. Follow the mixing instructions from the stabilizer manufacturer. Do not use an alcohol based stabilizer (ethanol or methanol).

**Note:** A fuel stabilizer/conditioner is most effective when mixed with fresh gasoline and used at all times.

Run the engine to distribute the conditioned fuel through the fuel system (5 minutes).

Stop the engine, allow it to cool, and drain the fuel tank; refer to Draining the Fuel Tank in the Fuel System Maintenance section.

Restart the engine and run it until it stops.

Choke the engine. Start and run the engine until it will not start.

Dispose of fuel properly. Recycle pursuant to local codes.

**Important:** Do not store stabilizer/conditioned gasoline over 30 days.

11. Remove the spark plug(s) and check its condition; refer to Servicing the Spark Plug in the Engine Maintenance section. With the spark plug(s) removed from the engine, pour two tablespoons of engine oil into the spark plug hole. 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. Clean any dirt and chaff from the top of the mower.
13. Scrape any heavy buildup of grass and dirt from the underside of the mower, then wash the mower with a garden hose.
14. Check the condition of the drive and mower belts.
15. Check and tighten all bolts, nuts, and screws. Repair or replace any part that is worn or damaged.
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

**Important:** It is essential that all operator safety mechanisms be connected and in proper operating condition prior to mower use.

When a problem occurs, Do Not overlook the simple causes. For example: starting problems could be caused by an empty fuel tank.

The following table lists some of the common causes of trouble. Do Not attempt to service or replace major items or any items that call for special timing of adjustments procedures (such as valves, governor, etc.). Have this work done by your **Engine Service Dealer**.

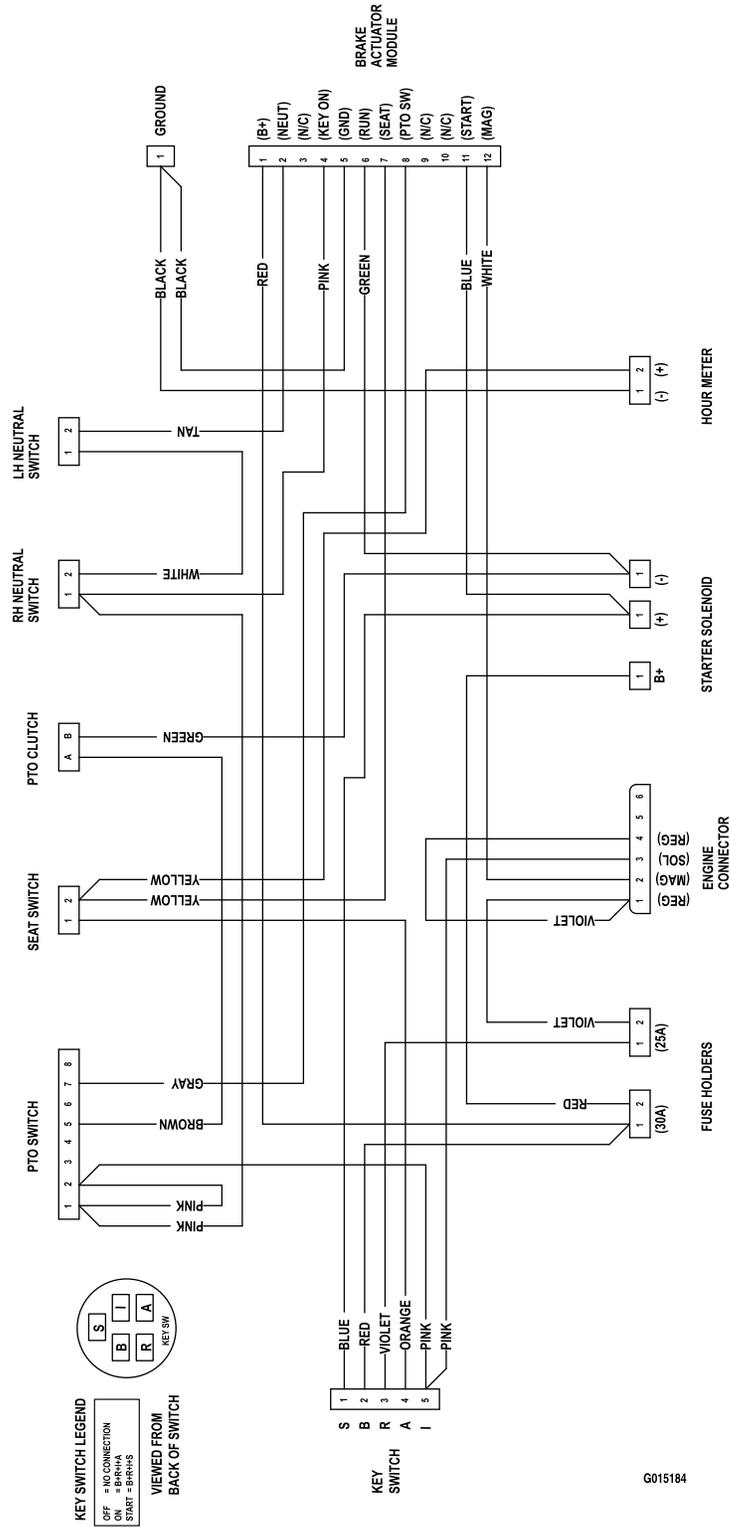
**Note:** When disconnecting electrical connectors DO Not pull on the wires to separate the connectors.

Problem	Possible Cause	Corrective Action
The engine overheats.	<ol style="list-style-type: none"> <li>1. The engine load is excessive.</li> <li>2. The oil level in the crankcase is low.</li> <li>3. The cooling fins and air passages under the engine blower housing are plugged.</li> <li>4. The air cleaner is dirty.</li> <li>5. Dirt, water, or stale fuel is in fuel system.</li> </ol>	<ol style="list-style-type: none"> <li>1. Reduce ground speed.</li> <li>2. Add oil to the crankcase.</li> <li>3. Remove the obstruction from the cooling fins and air passages.</li> <li>4. Clean or replace the air cleaner element.</li> <li>5. Contact an Authorized Service Dealer.</li> </ol>
The starter does not crank	<ol style="list-style-type: none"> <li>1. The blade control switch is engaged.</li> <li>2. The motion control levers are not in the park position.</li> <li>3. The operator is not seated.</li> <li>4. Battery does not have a full charge.</li> <li>5. The electrical connections are corroded or loose.</li> <li>6. A fuse is blown.</li> <li>7. A relay or switch is damaged.</li> </ol>	<ol style="list-style-type: none"> <li>1. Move the blade control switch to Disengaged.</li> <li>2. Move the motion control levers outward to the park position.</li> <li>3. Sit on the seat.</li> <li>4. Charge the battery. See <b>Check Battery Charge</b> and <b>Recommended Jump Starting Procedure</b> sections in Maintenance.</li> <li>5. Check the electrical connections for good contact.</li> <li>6. Replace the fuse.</li> <li>7. Contact an Authorized Service Dealer.</li> </ol>
Engine will not start, starts hard, or fails to keep running	<ol style="list-style-type: none"> <li>1. Fuel tank is empty.</li> <li>2. The choke is not on.</li> <li>3. The air cleaner is dirty.</li> <li>4. The spark plug wire(s) is loose or disconnected.</li> <li>5. The spark plug(s) is pitted, fouled, or the gap is incorrect.</li> <li>6. There is dirt in fuel filter.</li> <li>7. Dirt, water, or stale fuel is in the fuel system.</li> <li>8. There is incorrect fuel in the fuel tank.</li> <li>9. The oil level in the crankcase is low.</li> </ol>	<ol style="list-style-type: none"> <li>1. Fill the fuel tank.</li> <li>2. Move the choke lever to On.</li> <li>3. Clean or replace the air cleaner element.</li> <li>4. Install the wire(s) on the spark plug.</li> <li>5. Install a new, correctly gapped spark plug(s).</li> <li>6. Replace the fuel filter.</li> <li>7. Contact an Authorized Service Dealer.</li> <li>8. Drain the tank and replace the fuel with the proper type.</li> <li>9. Add oil to the crankcase.</li> </ol>

Problem	Possible Cause	Corrective Action
Engine loses power	<ol style="list-style-type: none"> <li>1. Engine load is excessive.</li> <li>2. Air cleaner is dirty.</li> <li>3. Oil level in the crankcase is low.</li> <li>4. Cooling fins and air passages for the engine are plugged.</li> <li>5. The spark plug(s) is pitted, fouled, or the gap is incorrect.</li> <li>6. Dirt in fuel filter.</li> <li>7. Dirt, water, or stale fuel is in the fuel system.</li> <li>8. There is incorrect fuel in the fuel tank.</li> </ol>	<ol style="list-style-type: none"> <li>1. Reduce the ground speed.</li> <li>2. Clean or replace the air cleaner element.</li> <li>3. Add oil to the crankcase.</li> <li>4. Remove the obstructions from the cooling fins and air passages.</li> <li>5. Install a new, correctly gapped spark plug(s).</li> <li>6. Replace the fuel filter.</li> <li>7. Contact an Authorized Service Dealer.</li> <li>8. Drain the tank and replace the fuel with the proper type.</li> </ol>
The machine does not drive.	<ol style="list-style-type: none"> <li>1. The drive belts are worn, loose, or broken.</li> <li>2. The drive belts are off of the pulleys.</li> <li>3. The drive is in bypass mode.</li> </ol>	<ol style="list-style-type: none"> <li>1. Contact an Authorized Service Dealer.</li> <li>2. Contact an Authorized Service Dealer.</li> <li>3. Take machine out of bypass mode. Refer to <b>Pushing the Machine by Hand</b> section.</li> </ol>
Abnormal vibration	<ol style="list-style-type: none"> <li>1. Engine mounting bolts are loose.</li> <li>2. Loose engine pulley, idler pulley, or blade pulley.</li> <li>3. Engine pulley is damaged.</li> <li>4. Cutting blade(s) is/are bent or unbalanced.</li> <li>5. Blade is loose.</li> <li>6. Blade spindle is bent.</li> </ol>	<ol style="list-style-type: none"> <li>1. Tighten the engine mounting bolts.</li> <li>2. Tighten the appropriate pulley.</li> <li>3. Contact an Authorized Service Dealer.</li> <li>4. Install new cutting blade(s).</li> <li>5. Tighten the blade mounting bolt and inspect the blade spring disc washer for damage (See <b>Servicing the Cutting Blades</b> section).</li> <li>6. Contact an Authorized Service Dealer.</li> </ol>
Uneven cutting height.	<ol style="list-style-type: none"> <li>1. Blade(s) not sharp.</li> <li>2. Cutting blade(s) is/are bent.</li> <li>3. A blade is loose.</li> <li>4. Mower deck is not level.</li> <li>5. An anti-scalp wheel is not set correctly</li> <li>6. Underside of mower is dirty.</li> <li>7. Tire pressure in drive tires not correct.</li> <li>8. Blade spindle bent.</li> </ol>	<ol style="list-style-type: none"> <li>1. Sharpen the blade(s).</li> <li>2. Install new cutting blade(s).</li> <li>3. Tighten the blade mounting bolt and inspect the blade spring disc washer for damage (See <b>Servicing the Cutting Blades</b> section).</li> <li>4. Level mower deck from side-to-side and front-to-rear.</li> <li>5. Adjust the anti-scalp wheel height.</li> <li>6. Clean the underside of the mower.</li> <li>7. Adjust tire pressure.</li> <li>8. Contact an Authorized Service Dealer.</li> </ol>
Blades do not rotate.	<ol style="list-style-type: none"> <li>1. Drive belt is worn, loose or broken.</li> <li>2. Drive belt is off pulley.</li> <li>3. The mower belt is worn, loose, or broken.</li> </ol>	<ol style="list-style-type: none"> <li>1. Install new drive belt.</li> <li>2. Install drive belt and check adjusting shafts and belt guides for correct position.</li> <li>3. Install a new mower belt.</li> </ol>

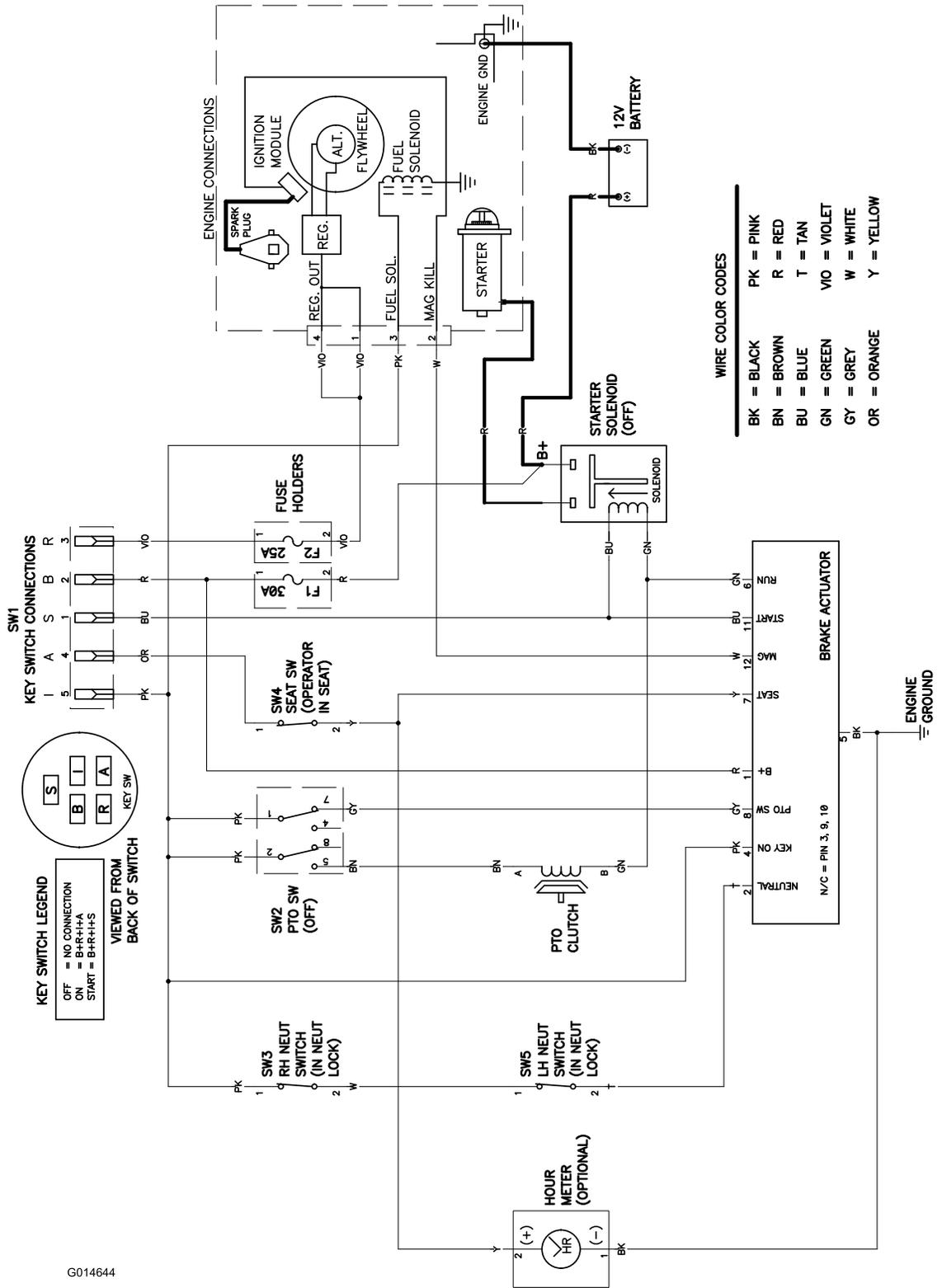
# Schematics

## Electrical Diagram



G015184

# Electrical Logic Schematic



G014644

# Exmark Quest Turf Equipment 3-Year Limited Consumer Warranty (30-Day Limited Commercial Warranty)

## Consumer Warranty Conditions and Products Covered

Exmark Mfg. Co. Inc. and its affiliate, Exmark Warranty Company, pursuant to an agreement between them, jointly warrant on the terms and conditions herein, that we will repair, replace or adjust any part on these products and found by us (in the exercise of our reasonable discretion) to be defective in factory materials or workmanship for a period of three years for residential usage of Exmark Quest turf equipment.

Residential usage means use of the product on the same lot as your home. Use at more than one location is considered commercial use, and the commercial use warranty detailed below would apply.

This warranty applies to Exmark Quest turf equipment sold in the U.S. or Canada. This warranty may only be assigned or transferred to a second (or third) owner by an authorized Exmark dealer. The warranty period commences upon the date of the original retail purchase.

### Warranty Exceptions

- Bags, Belts and Tires
- Battery
- Engine

### Warranty Period

90 days  
1 Year Prorated \*

\* Please refer to the manufacturer's warranty statement that is included in the literature packet.

This warranty only includes the cost of parts and labor. For the first warrantable service repair, Exmark will cover up to \$45 for associated pick-up and delivery charges to and from any authorized Exmark Service Dealer. Additional transportation charges may apply, contact your Dealer for details.

## Limited Warranty for Commercial Use

Exmark Quest turf equipment used for commercial, institutional, or rental use are warranted against defects in materials or workmanship for a period of 30 days from the date of original purchase.

### Warranty Exception

- Engines

### Warranty Period

\*

\* Please refer to the manufacturer's warranty statement that is included in the literature packet.

## Items and Conditions Not Covered

This warranty does not cover the following:

- Pickup and delivery charges to and from any authorized Exmark Service Dealer beyond first warrantable service.
- Any damage or deterioration due to normal use, wear and tear, or exposure.
- Cost of regular maintenance service or parts, such as filters, fuel, lubricants, tune-up parts, and 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.
- Any repairs necessary due to use of parts, accessories or supplies, including gasoline, oil or lubricants, incompatible with the turf equipment or other than as recommended in the operator's manual or other operational instructions provided by Exmark.

There are no other express warranties except for engine and special emission system coverage.

All warranty work must be performed by an authorized Exmark Service Dealer using Exmark approved replacement parts.

## Instructions for Obtaining Warranty Service

The product must be registered with original proof of purchase by an Exmark Service Dealer before obtaining any warranty service.

Contact any Exmark Service Dealer to arrange service at their dealership. To locate a dealer convenient to you, access our website at [www.exmark.com](http://www.exmark.com). U.S. or Canada customers may also call 402-223-6375.

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

Exmark Customer Service Department  
The Exmark Warranty Company  
2101 Ashland Avenue  
Beatrice, NE 68310  
402-223-6375 or  
[service@exmark.com](mailto:service@exmark.com)

## Owner's Responsibilities

If your product requires warranty service it must be returned to an authorized Exmark service dealer within the warranty period. This warranty extends only to turf equipment operated under normal conditions. You must read the operator's manual. You must also properly service and maintain your Exmark product as described in the operator's manual. Such routine maintenance, whether performed by a dealer or by you, is at your expense.

## General Conditions

The sole liability of Exmark and Exmark Warranty Company with respect to this warranty shall be repair or replacement of defective components as set forth herein. **Neither Exmark nor Exmark Warranty Company shall be liable for any incidental or consequential loss or damage.**

Such damages include but are not limited to:

- Expenses related to gasoline, oil or lubricants.
- Travel time, overtime, after hours time or other extraordinary repair charges or charges relating to repairs or replacements outside of normal business hours at the place of business of the authorized Exmark Service Dealer.
- Rental of like or similar replacement equipment during the period of any warranty, repair or replacement work.
- Any telephone or telegram charges or travel charges.
- Loss or damage to person or property other than that covered by the terms of this warranty.
- Any claims for lost revenue, lost profit or additional cost as a result of a claim of breach of warranty.
- Attorney's fees.

No Claim of breach of warranty shall be cause for cancellation or rescission of the contract of sale of any Exmark mower.

**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.**

**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.**

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

G4500-750\_A

**Notes:**

**Notes:**



## MAXIMIZE THE PERFORMANCE OF YOUR EXMARK.

### **4-CYCLE PREMIUM ENGINE OIL**

Part No. 116-3373

Both SAE 30 and SAE 10W-30 in one bottle.

Contains increased levels of zinc and phosphorus for better lubricity.

No Viscosity Index Improvers that tend to shear down in high heat.

Synthetic formulation.

Gas & Diesel compatible.

Anti-corrosion additives.

API 'SL' and JASO rated with wet clutch compatibility for other machines.

### **PREMIUM HYDRO OIL**

Part No. 109-9828

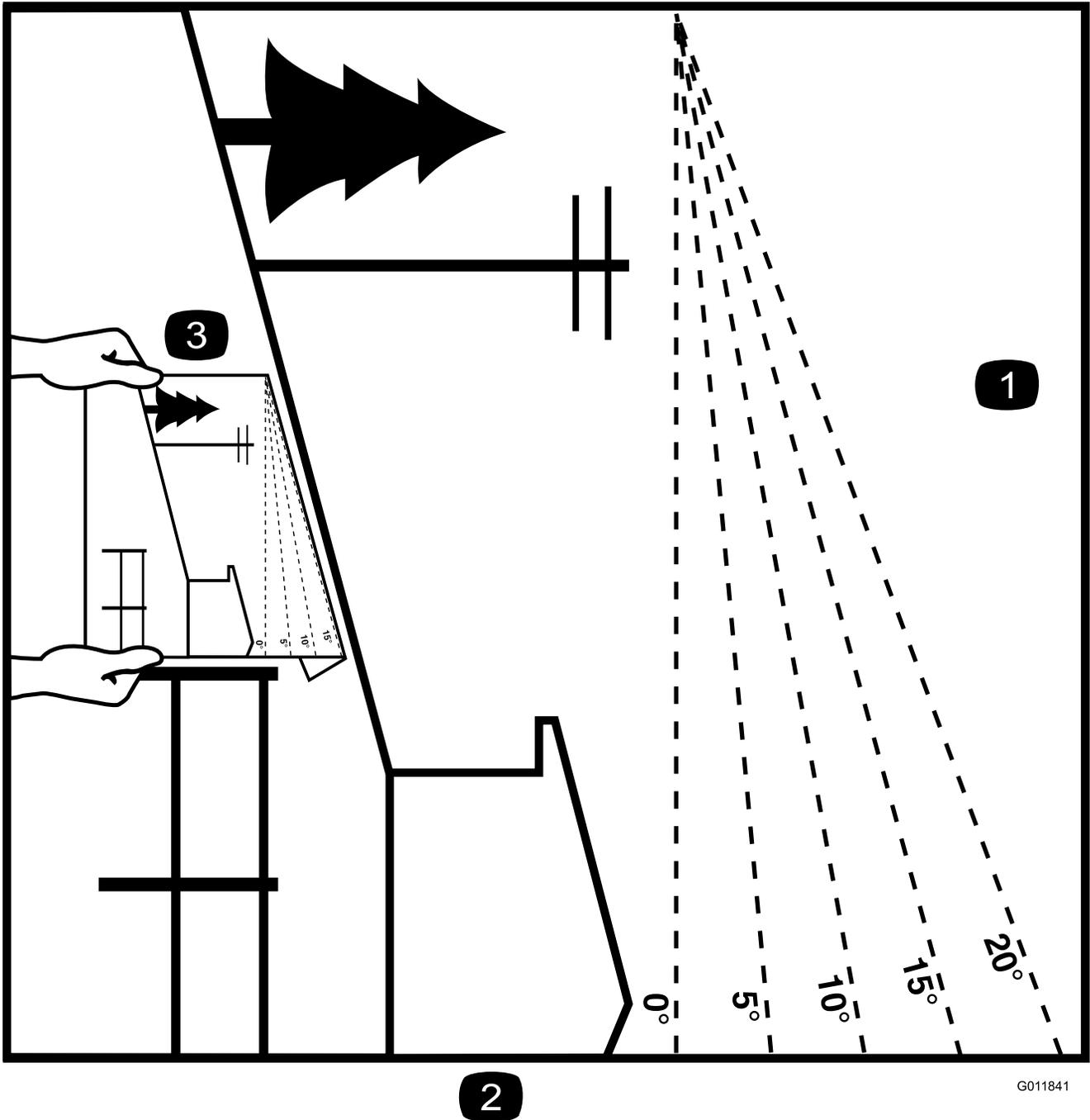
Commercial quality for tough, high-heat conditions.

Designed specifically for zero-turn mower hydraulic systems.

Superior shear resistance under heavy loads.



Available from your local Exmark dealer. Find your closest dealer at [exmark.com](http://exmark.com)



G011841

2

Figure 62

This page may be copied for personal use.

1. The maximum slope you can safely operate the machine on is **15 degrees**. Use the slope indicator to determine the degree of slope of hills before operating. **Do Not operate this machine on a slope greater than 15 degrees.** Fold along the appropriate line to match the recommended slope.
2. Align this edge with a vertical surface, a tree, building, fence pole, etc.
3. Example of how to compare slope with folded edge.

## EXMARK ACCESSORIES AND OPTIONS\*

### MID-MOUNT RIDING ACCESSORIES AND OPTIONS

CUSTOM RIDE SEAT SUSPENSION SYSTEM	OPERATOR CONTROLLED DISCHARGE
FULL SUSPENSION SEAT	SUN SHADE
DECK LIFT ASSIST KIT	TRASH CONTAINER
HITCH KIT	TURF STRIPER
LIGHT KIT	ULTRA VAC COLLECTION SYSTEM
12V POWER PORT	ULTRA VAC QUICK DISPOSAL SYSTEM
MICRO-MULCH SYSTEM	

### OUT-FRONT RIDING ACCESSORIES AND OPTIONS

CUSTOM RIDE SEAT SUSPENSION SYSTEM	SNOW BLADE
DUAL-TAIL WHEEL	SNOWBLOWER
FLOOR PAN EXTENDER	SUN SHADE
HITCH KIT	TRASH CONTAINER
LIGHT KIT	ULTRA VAC COLLECTION SYSTEM
MICRO-MULCH SYSTEM	ULTRA VAC QUICK DISPOSAL SYSTEM
ROLL OVER PROTECTION SYSTEM (ROPS)	WEATHER CAB

### WALK-BEHIND ACCESSORIES AND OPTIONS

GRASS CATCHER	TURF STRIPER
MICRO-MULCH SYSTEM	STANDON

\*Some accessories and options not available for some models.

Place Model No. and Serial No.  
Label Here (Included in the Literature  
Pack) or Fill in Below

Model No. \_\_\_\_\_

Serial No. \_\_\_\_\_

Date Purchased \_\_\_\_\_

Engine Model No. and Spec. No. \_\_\_\_\_

Engine Serial No. (E/No) \_\_\_\_\_

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