# JOHN DEERE
## WORLDWIDE COMMERCIAL & CONSUMER EQUIPMENT DIVISION

**Lawn Tractors**
**LX280, LX280AWS, and LX289**

**OMM152799 A6**

# OPERATOR'S MANUAL

JOHN DEERE

⚠ WARNING: The Engine Exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

California Proposition 65 Warning

**North American Version**
**Litho in U.S.A.**

# INTRODUCTION

## Thank You for Purchasing a John Deere Product

We appreciate having you as a customer and wish you many years of safe and satisfied use of your machine.

## Using Your Operator's Manual

This manual is an important part of your machine and should remain with the machine when you sell it.

Reading your operator's manual will help you and others avoid personal injury or damage to the machine. Information given in this manual will provide the operator with the safest and most effective use of the machine. Knowing how to operate this machine safely and correctly will allow you to train others who may operate this machine.

If you have an attachment, use the safety and operating information in the attachment operator's manual along with the machine operator's manual to operate the attachment safely and correctly.

This manual and safety signs on your machine may also be available in other languages (see your authorized dealer to order).

Sections in your operator's manual are placed in a specific order to help you understand all the safety messages and learn the controls so you can operate this machine safely. You can also use this manual to answer any specific operating or servicing questions. A convenient index located at the end of this book will help you to find needed information quickly.

The machine shown in this manual may differ slightly from your machine, but will be similar enough to help you understand our instructions.

RIGHT-HAND and LEFT-HAND sides are determined by facing in the direction the machine will travel when going forward. When you see a broken line (------), the item referred to is hidden from view.

Before delivering this machine, your dealer performed a predelivery inspection to ensure best performance.

## Special Messages

Your manual contains special messages to bring attention to potential safety concerns, machine damage as well as helpful operating and servicing information. Please read all the information carefully to avoid injury and machine damage.

**CAUTION: Avoid injury! This symbol and text highlight potential hazards or death to the operator or bystanders that may occur if the hazards or procedures are ignored.**

**IMPORTANT: Avoid damage! This text is used to tell the operator of actions or conditions that might result in damage to the machine.**

***NOTE: General information is given throughout the manual that may help the operator in the operation or service of the machine.***

## Attachments for Your Machine

There's a John Deere attachment or kit to make your new machine perform more tasks or be more versatile, whether your machine is a lawn tractor or compact utility tractor or a utility vehicle.

You can check out the entire line of attachments for your machine at JohnDeere.com or ask your John Deere dealer. From aerators to electric lift kits to tillers, there's a John Deere attachment or kit to fill every need.

# PRODUCT IDENTIFICATION

## Record Identification Numbers

Lawn Tractors

LX280, LX280AWS, and LX289 - PIN (100001 - )

If you need to contact an Authorized Service Center for information on servicing, always provide the product model and serial number.

You will need to locate the model and serial number for the machine and for the engine of your machine and record the information in the spaces provided below.

DATE OF PURCHASE:

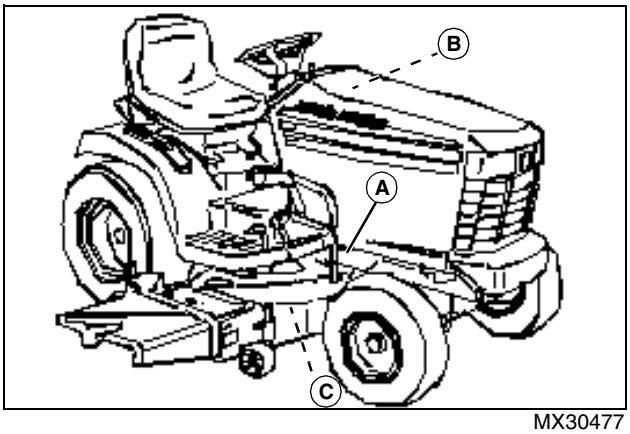
_____

DEALER NAME:

_____

DEALER PHONE:

_____




MX30477

PRODUCT IDENTIFICATION NUMBER (A):

__ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __

ENGINE SERIAL NUMBER (B):

__ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __

MOWER DECK SERIAL NUMBER (C):

__ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __

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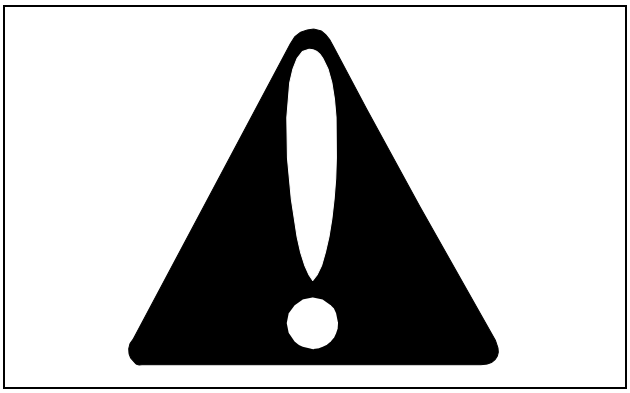
**OMM152799 A6 - English**

# SAFETY LABELS

## Understanding The Machine Safety Labels



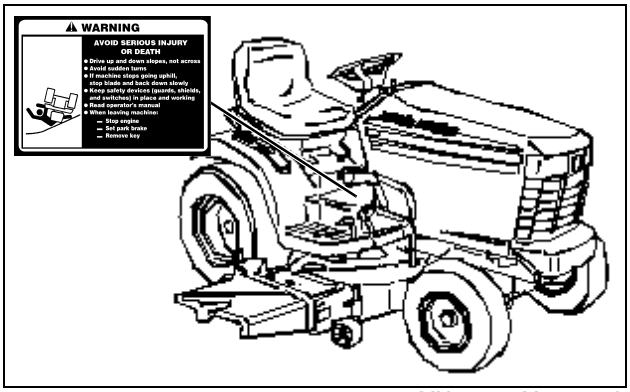
Safety-Alert Symbol

The machine safety labels shown in this section are placed in important areas on your machine to draw attention to potential safety hazards.

On your machine safety labels, the words DANGER, WARNING, and CAUTION are used with this safety-alert symbol. DANGER identifies the most serious hazards.

The operator's manual also explains any potential safety hazards whenever necessary in special safety messages that are identified with the word, CAUTION, and the safety-alert symbol.

## WARNING: AVOID SERIOUS INJURY OR DEATH




MX30477, M118788A

• Drive up and down slopes, not across

• Avoid sudden turns

• If machine stops going uphill, stop blade and back down slowly

• Keep safety devices (guards, shields, and switches) in place and working

• Read operator's manual

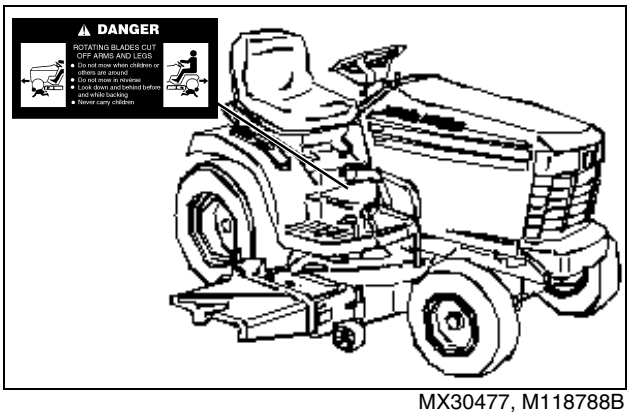
• When leaving machine:

–Stop engine

–Set park brake

–Remove key

## DANGER: ROTATING BLADES CUT OFF ARMS AND LEGS




MX30477, M118788B

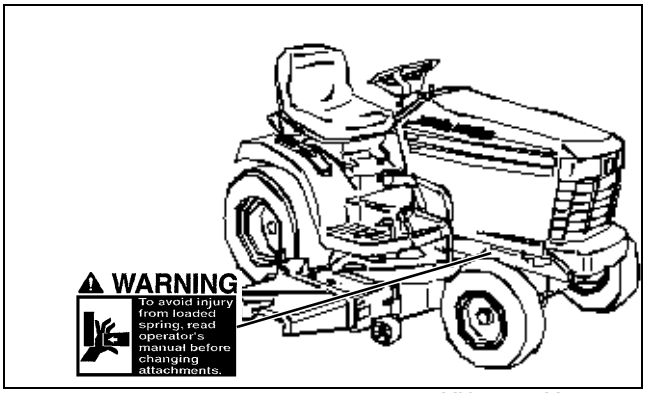
• Do not mow when children or others are around

• Do not mow in reverse

• Look down and behind before and while backing

• Never carry children even with blades off

## WARNING: AVOID SERIOUS INJURY, LOADED SPRING



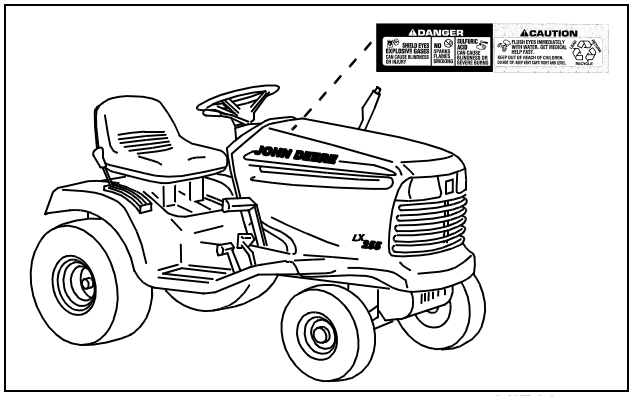

MX30477, M146577

**Picture Note: Label appears at both sides of machine.**

• To avoid injury from loaded spring, read operator's manual before changing attachments.

# SAFETY LABELS

## DANGER: CAUTION-POISON




MIF M137060

**Picture Note: Label appears on battery.**

• Shield eyes, explosive gases can cause blindness or injury.

• No sparks, flames, smoking.

• Sulfuric acid can cause blindness or severe burns.

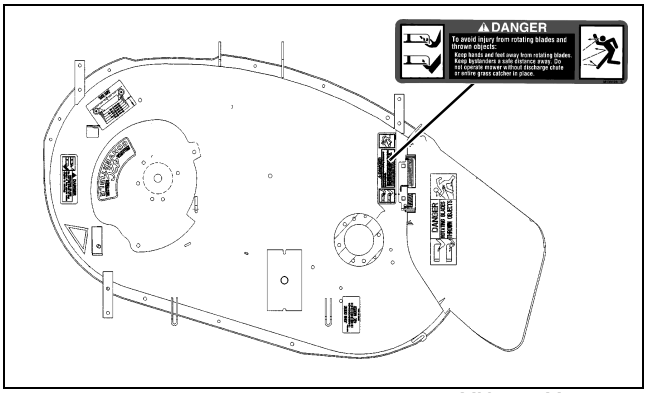
• Flush eyes immediately with water. Get medical help fast.

• Keep out of reach of children.

• Do not tip.

• Keep vent caps tight and level.

## DANGER




MX8380 M139128

**Picture Note: Label appears on 42C mower only.**

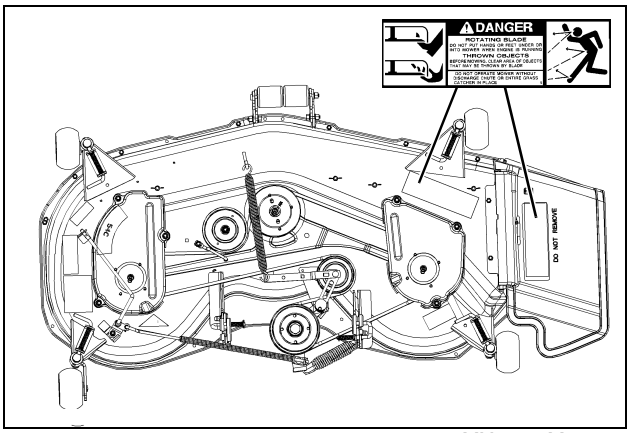
To avoid injury from rotating blades and thrown objects:

• Keep hands and feet away from rotating blades.

• Keep bystanders a safe distance away.

• Do not operate mower without discharge chute or entire grass catcher in place.

## DANGER: ROTATING BLADE-THROWN OBJECTS




MX8376 M89504

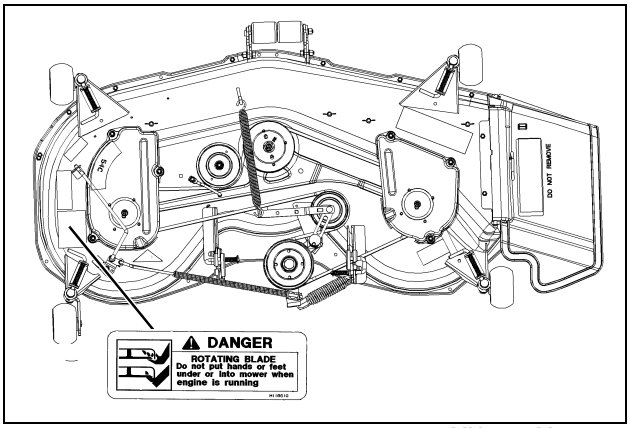
**Picture Note: 42C, 48C, and 54C mowers only. Label appears as shown on 48C and 54C. Label appears on discharge chute only on 42C.**

• Do not put hands or feet under or into mower when engine is running.

• Before mowing, clear area of objects that may be thrown by blade.

• Do not operate mower without discharge chute or entire grass catcher in place.

## DANGER: ROTATING BLADE

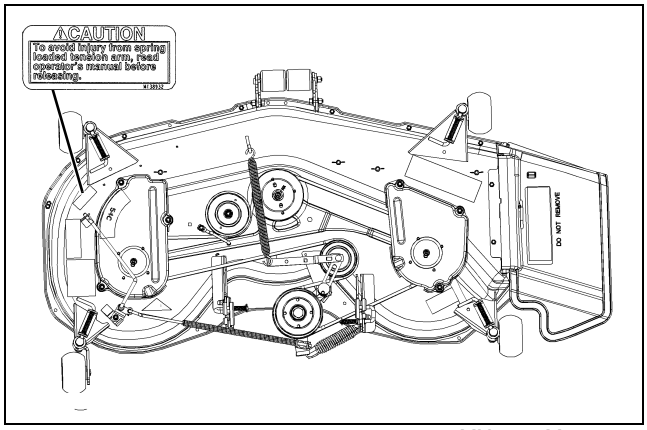



MX8376 M118610

**Picture Note: Label appears on all mowers, located on both sides of Freedom42.**

• Do not put hands or feet under or into mower when engine is running

## CAUTION




MX8376 M138932

**Picture Note: Label appears on 48C and 54C mowers only.**

To avoid injury from spring loaded tension arm, read operator's manual before releasing.

## Emission Control System Certification Label

***NOTE: Tampering with emission controls and components by unauthorized personnel may result in severe fines or penalties. Emission controls and components can only be adjusted by EPA and/or CARB authorized service centers. Contact your John Deere Commercial and Consumer Equipment Retailer concerning emission controls and component questions.***

The presence of an emissions label signifies that the engine has been certified with the United States Environmental Protection Agency (EPA) and/or California Air Resources Board (CARB).

The emissions warranty applies only to those engines marketed by John Deere that have been certified by the EPA and/or CARB; and used in the United States and Canada in off-road mobile equipment.

## Emission Compliance Period

If your engine has the emission compliance category listed on the emission control system certification or air index label, this indicates the number of operating hours for which the engine has been certified to meet EPA and/or CARB emission requirements. The following table provides the engine compliance period in hours associated with the category found on the certification label.

| Agency | Category | Hours |
|---|---|---|
| EPA | C | 250 |
| EPA | B | 500 |
| EPA | A | 1000 |
| CARB | Moderate | 125 |
| CARB | Intermediate | 250 |
| CARB | Extended | 500 |

## Certification

Your mower has been certified by an independent laboratory for compliance with American National Standard B-71.1, “Safety Specifications” for Power Lawn Mowers, Lawn and Garden Tractors, and Lawn Tractors.

## Operating Safely

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

• Read, understand and follow all instructions on the machine and in manuals provided, and view safety video, before starting. Be thoroughly familiar with the controls and the proper use of the machine before starting.

• Do not put hands or feet near rotating parts or under the machine. Keep clear of the discharge opening at all times.

• Only allow responsible adults, who are familiar with the instructions, to operate this machine. Local regulations may restrict the age of the operator.

• Clear the area of objects such as rocks, wire and toys which could be thrown by the blades.

• Be sure the area is clear of bystanders before operating. Stop 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.

• Never direct discharged material toward 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 machine without the entire grasscatcher, discharge guard, or other safety devices in place and working. Never operate with the discharge deflector raised, removed, or altered, unless using a grasscatcher.

• Slow down before turning.

• Never leave a running machine unattended. Always turn off blades, lock park brake, stop engine and remove key before dismounting.

• Disengage blades when not mowing. Shut off engine and wait for all parts to come to a complete stop before cleaning the machine, removing the grasscatcher, or unclogging the discharge chute.

• Operate 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. Stop blades before crossing roads or sidewalks.

• Use extra care when loading or unloading the machine into a trailer or truck.

• Always wear safety goggles or safety glasses with side shields when operating machine.

• Data indicates operators 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 safely enough to protect themselves and others from serious injury.

• Follow the manufacturer's recommendation for wheel weights or counterweights.

• Inspect machine before you operate. Be sure hardware is tight. Repair or replace damaged, badly worn, or missing parts. Be sure guards and shields are in good condition and fastened in place. Make any necessary adjustments before you operate.

• Before using, always visually inspect to see that the blades, blade bolts and the mower assembly are not worn and damaged. Replace worn and damaged blades and bolts in sets to preserve balance.

• Make sure spark plug, muffler, fuel cap and air cleaner are in place before starting the engine.

• Be sure all drives are in neutral and parking brake is locked before starting engine. Only start engine from the operator's position.

• Do not change the engine governor settings or overspeed the engine. Operating the engine at excessive speed can increase the hazard of personal injury.

• If you hit an object or if abnormal vibration occurs, stop the machine and inspect it. Make repairs before you operate.

• Use only accessories and attachments approved by the manufacturer of the machine. Keep safety labels visible when installing accessories and attachments.

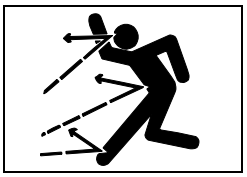
• Do not wear radio or music headphones. Safe service and operation requires your full attention.

• When machine is left unattended, stored, or parked, lower the mower deck unless a positive mechanical lock is used.

## Using a Spark Arrestor

The engine in this machine is not equipped with a spark arrestor muffler. It is a violation of California Public Resource Code Section 4442 to use or operate this engine on or near any forest-covered, brush-covered or grass-covered land unless the exhaust system is equipped with a spark arrestor meeting any applicable local or state laws. Other states or federal areas may have similar laws.

A spark arrestor for your machine may be available from your authorized dealer. An installed spark arrestor must be maintained in good working order by the operator.



## Checking Mowing Area

• Clear mowing area of objects that might be thrown. Keep people and pets out of mowing area.

• Low-hanging branches and similar obstacles can injure the operator or interfere with mowing operation. Before mowing, identify potential obstacles such as low-hanging branches, and trim or remove those obstacles.

• Study mowing area. Set up a safe mowing pattern. Do not mow where traction or stability is doubtful.

• Test drive area with mower lowered but not running. Slow down when you travel over rough ground.

## Parking Safely

1. Stop machine on a level surface, not on a slope.

2. Disengage mower blades or any other attachments.

3. Lower attachments to the ground.

4. Lock the park brake.

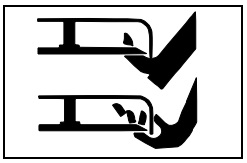
5. Stop the engine.

6. Remove the key.

7. Wait for engine and all moving parts to stop before you leave the operator's seat.

8. Close fuel shut-off valve, if your machine is equipped.

9. Disconnect the negative battery cable or remove the spark plug wire (for gasoline engines) before servicing the machine.



## Rotating Blades are Dangerous

**HELP PREVENT SERIOUS OR FATAL ACCIDENTS:**

• Rotating blades can cut off arms and legs, and throw objects. Failure to observe safety instructions could result in serious injury or death.

• Keep hands, feet and clothing away from mower deck when engine is running.

• Be alert at all times, drive forward and in reverse carefully. People, especially children can move quickly into the mowing area before you know it.

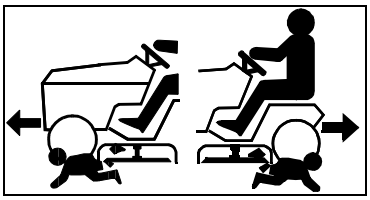
• Before backing up, stop mower blades or attachments and look down and behind the machine carefully, especially for children.

• Do not mow in reverse.

• Shut off blades when you are not mowing.

• Park machine safely before leaving the operator's station for any reason including emptying the grasscatchers or unplugging the chute.

• The mower blades should stop in approximately five seconds when the mower is disengaged. If you believe that your blades may not be stopping in that period of time, take your machine to your authorized dealer where they can safely check and service your machine.



## Protect Children

• Death or serious injury can occur when young children associate having fun with a lawn mowing machine simply because someone has given them a ride on a machine.

• Children are attracted to lawn mowing machines and mowing activities. They don't understand the dangers of rotating blades or the fact that the operator is unaware of their presence.

• 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 machine.

• Tragic accidents with children can occur if the operator is not alert to the presence of children, especially when a child approaches a machine from behind. Before and while backing up, stop mower blades and look down and behind the machine carefully, especially for children.

• Never carry children on a machine or attachment, even with the blades off. Do not tow children in a cart or trailer. They can fall off and be seriously injured or interfere with safe machine operation.

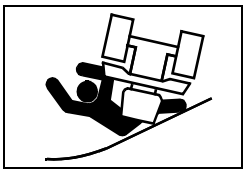
• Never use the machine as a recreational vehicle or to entertain children.

• Never allow children or an untrained person operate the machine. Instruct all operators not to give children a ride on the machine or in an attachment.

• Keep children indoors, out of the mowing area, and in the watchful eye of a responsible adult, other than the operator, when a mower is being operated.

• Stay alert to the presence of children. Never assume that children will remain where you last saw them. Turn the machine off if a child enters the work area.

• Use extreme care when approaching blind corners, shrubs, trees, or other objects that may block your view of a child.



## Avoid Tipping

• 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.

• Mow up and down slopes, not across.

• Watch for holes, ruts, bumps, rocks, or other hidden objects. Uneven terrain could overturn the machine. Tall grass can hide obstacles.

• Choose a low ground speed so you will not have to stop or shift while on a slope.

• Do not mow or operate machine on wet grass. Tires may lose traction. Tires may lose traction on slopes even though the brakes are functioning properly.

• Always keep the machine in gear when going down slopes. Do not shift to neutral and coast downhill.

• Avoid starting, stopping or turning on a slope. If the tires lose traction, disengage the blades and proceed slowly, straight down the slope.

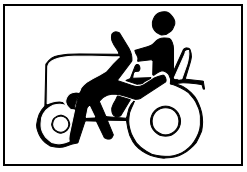
• Keep all movement on slopes slow and gradual. Do not make sudden changes in speed or direction, which could cause the machine to roll over.

• Use extra care while operating machine with grasscatchers or other attachments, they can affect stability of the machine. Do not use on steep slopes.

• Do not try to stabilize the machine by putting your foot on the ground.

• Do not mow near drop-offs, ditches, embankments, or bodies of water. The machine could suddenly roll over if a wheel goes over the edge or the edge caves in. Leave a safety area between the machine and any hazard.

• Follow the manufacturer's recommendations for wheel weights or counterweights for added stability when operating on slopes or using front or rear mounted attachments. Remove weights when not required.



## Keep Riders Off

• Only allow the operator on the machine. Keep riders off.

• Riders on the machine or attachment may be struck by foreign objects or thrown off the machine causing serious injury.

• Riders obstruct the operator's view resulting in the machine being operated in an unsafe manner.

## Towing Loads Safely

• Stopping distance increases with speed and weight of towed load. Travel slowly and allow extra time and distance to stop.

• Total towed weight must not exceed combined weight of pulling machine, ballast and operator. Use counterweights or wheel weights as described in the attachment or pulling machine operator's manual.

• Excessive towed load can cause loss of traction and loss of control on slopes. Reduce towed weight when operating on slopes.

• Never allow children or others in or on towed equipment.

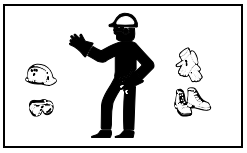
• Use only approved hitches. Tow only with a machine that has a hitch designed for towing. Do not attach towed equipment except at the approved hitch point.

• Follow the manufacturer's recommendations for weight limits for towed equipment and towing on slopes.

• If you cannot back up a slope with a towed load, the slope is too steep to operate on with the towed load. Reduce the towed load or do not operate.

• Do not turn sharply. Use additional caution when turning or operating under adverse surface conditions. Use care when reversing.

• Do not shift to neutral and coast downhill.



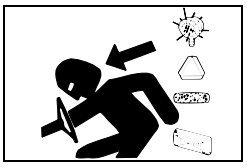
## Wear Appropriate Clothing

• Always wear eye protection when operating the machine.

• Wear close fitting clothing and safety equipment appropriate for the job.

• While mowing, always wear substantial footwear and long trousers. Do not operate the equipment when barefoot or wearing open sandals.

• Wear a suitable protective device such as earplugs. Loud noise can cause impairment or loss of hearing.



## Driving Safely on Public Roads

Avoid personal injury or death resulting from a collision with another vehicle on public roads:

• Use safety lights and devices. Slow moving machines when driven on public roads are hard to see, especially at night.

• Whenever driving on public roads, use flashing warning

lights and turn signals according to local regulations. Extra flashing warning lights may need to be installed.

## Practice Safe Maintenance

• Only qualified, trained adults should service this machine. Understand service procedure before doing work.

• Never operate machine in a closed area where dangerous carbon monoxide fumes can collect.

• Keep all nuts and bolts tight, especially blade attachment bolts, to be sure the equipment is in safe working condition.

• Never tamper with safety devices. Check their proper operation regularly.

• Keep machine free of grass, leaves or other debris build-up. Clean up oil or fuel spillage and remove any fuel-soaked debris. Allow the machine to cool before storing.

• If you strike a foreign object, stop and inspect the machine. Repair, if necessary, before restarting.

• Never make any adjustments or repairs with the engine running. Wait for all movement to stop on machine before adjusting, cleaning or repairing.

• Check grasscatcher components and the discharge guard frequently and replace with manufacturer's recommended parts, when necessary. Grasscatcher components are subject to wear, damage, and deterioration which could expose moving parts or allow objects to be thrown.

• Mower blades are sharp. Wrap the blade or wear gloves, and use extra care when servicing them. Only replace blades. Never straighten or weld them.

• Check brake operation frequently. Adjust and service as required.

• Maintain or replace safety and instruction labels, as necessary.

• On multi-bladed machines, take care as rotating one blade can cause other blades to rotate.

• Keep hands, feet, clothing, jewelry, and long hair away from any moving parts, to prevent them from getting caught.

• Lower any attachments to the ground before cleaning or servicing machine. Disengage all power and stop the engine. Lock park brake and remove the key. Let machine cool.

• Securely support any machine elements that must be raised for service work. Use jack stands or lock service latches to support components when needed.

• Disconnect battery or remove spark plug wire (for gasoline engines) before making any repairs. Disconnect negative terminal first and positive last. Install positive terminal first and negative last.

• Before servicing machine or attachment, carefully release pressure from any components with stored energy, such as hydraulic components or springs.

• Release hydraulic pressure by lowering attachment or cutting units to the ground or to a mechanical stop and move hydraulic control levers back and forth.

• Keep all parts in good condition and properly installed. Fix damage immediately. Replace worn or broken parts.

• Charge batteries in an open, well-ventilated area, away from sparks. Unplug battery charger before connecting or disconnecting from the battery. Wear protective clothing and use insulated tools.

• Do not strike the flywheel with a hammer or hard object because the flywheel may later shatter during operation.

## Avoid High Pressure Fluids

• Hydraulic hoses and lines can fail due to physical damage, kinks, age, and exposure. Check hoses and lines regularly. Replace damaged hoses and lines.

• Hydraulic fluid connections can loosen due to physical damage and vibration. Check connections regularly. Tighten loose connections.

• Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure.

• Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

• If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A. Information may be obtained in the United States and Canada only by calling 1-800-822-8262.

## Prevent Fires

• Remove grass and debris from engine compartment and muffler area, before and after operating machine, especially after mowing or mulching in dry conditions.

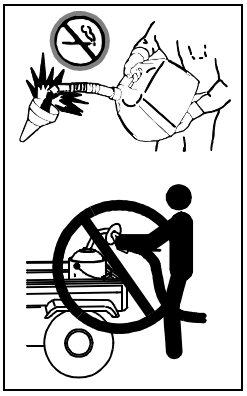
• Empty the grasscatcher completely before storing.

• Always shut off fuel when storing or transporting machine,

if the machine has a fuel shutoff.

• Do not store machine near an open flame or source of ignition, such as a water heater or furnace.

• Check fuel lines, tank, cap, and fittings frequently for cracks or leaks. Replace if necessary.



## Handling Fuel Safely

**To avoid personal injury or property damage, use extreme care in handling fuel. Fuel is extremely flammable and fuel vapors are explosive:**

• Extinguish all cigarettes, cigars, pipes, and other sources of ignition.

• Use only an approved fuel container. Use only non-metal, portable fuel containers approved by the Underwriter's Laboratory (U.L.) or the American Society for Testing & Materials (ASTM). If using a funnel, make sure it is plastic and has no screen or filter.

• Never remove the fuel tank cap or add fuel with the engine running. Allow engine to cool before refueling.

• Never add fuel to or drain fuel from the machine indoors. Move machine outdoors and provide adequate ventilation.

• Clean up spilled fuel immediately. If fuel is spilled on clothing, change clothing immediately. If fuel is spilled near machine, do not attempt to start the engine but move the machine away from the area of spillage. Avoid creating any source of ignition until fuel vapors have dissipated.

• Never store the machine or fuel container where there is an open flame, spark, or pilot light such as on a water heater or other appliance.

• Prevent fire and explosion caused by static electric discharge. Static electric discharge can ignite fuel vapors in an ungrounded fuel container.

• Never fill containers inside a vehicle or on a truck or trailer bed with a plastic liner. Always place containers on the ground away from your vehicle before fueling.

• Remove fuel-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 fuel 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.

• Never overfill fuel tank. Replace fuel tank cap and tighten securely.

• Replace all fuel container caps securely after use.

• For gasoline engines, do not use gas with methanol. Methanol is harmful to your health and to the environment.

## Tire Safety

Explosive separation of a tire and rim parts can cause serious injury or death:

• Do not attempt to mount a tire without the proper equipment and experience to perform the job.

• Always maintain the correct tire pressure. Do not inflate the tires above the recommended pressure. Never weld or heat a wheel and tire assembly. The heat can cause an increase in air pressure resulting in a tire explosion. Welding can structurally weaken or deform the wheel.

• When inflating tires, use a clip-on chuck and extension hose long enough to allow you to stand to one side and NOT in front of or over the tire assembly.

• Check tires for low pressure, cuts, bubbles, damaged rims or missing lug bolts and nuts.

## Checking Wheel Hardware

• A serious accident could occur causing serious injury if wheel hardware is not tight.

• Check wheel hardware tightness often during the first 100 hours of operation.

• Wheel hardware must be tightened to specified torque using the proper procedure anytime it is loosened.

## Handling Waste Product and Chemicals

Waste products, such as, used oil, fuel, coolant, brake fluid, and batteries, can harm the environment and people:

• Do not use beverage containers for waste fluids - someone may drink from them.

• See your local Recycling Center or authorized dealer to learn how to recycle or get rid of waste products.

• A Material Safety Data Sheet (MSDS) provides specific details on chemical products: physical and health hazards, safety procedures, and emergency response techniques. The seller of the chemical products used with your machine is responsible for providing the MSDS for that product.

## Engine Break-In

Poor engine performance can result from improper break-in or incomplete break-in time. Break-in is the period of initial run time that seats the piston rings to the cylinder wall.

New engines need to be run hard, under varying loads for at least 5 hours and may not be completely broken-in until after 50 hours. Follow these guidelines:

• Run engine at full throttle during operation. Use partial throttle only for 30-60 seconds to warm a cold engine.

• Run engine under load by mowing, blowing snow, etc.

• Check oil and coolant (if equipped) levels often. Top off as necessary.

• Follow the break-in service intervals.

Engine may show these symptoms during break-in:

• Excess exhaust smoke at startup and during operation.

• High oil consumption.

• Low power/compression.

• Slight surging at full throttle when not under load.

• Fuel in the oil.

## Daily Operating Checklist

❑ Test safety systems.

❑ Check tire pressure.

❑ Check fuel level.

❑ Check engine oil level.

❑ Check transmission oil level.

❑ Check coolant level on liquid cooled engine.

❑ Remove grass and debris from engine compartment and muffler area, before and after operating machine.

❑ Clean air intake screen.

❑ Check area below machine for leaks.

## Avoid Damage to Plastic and Painted Surfaces

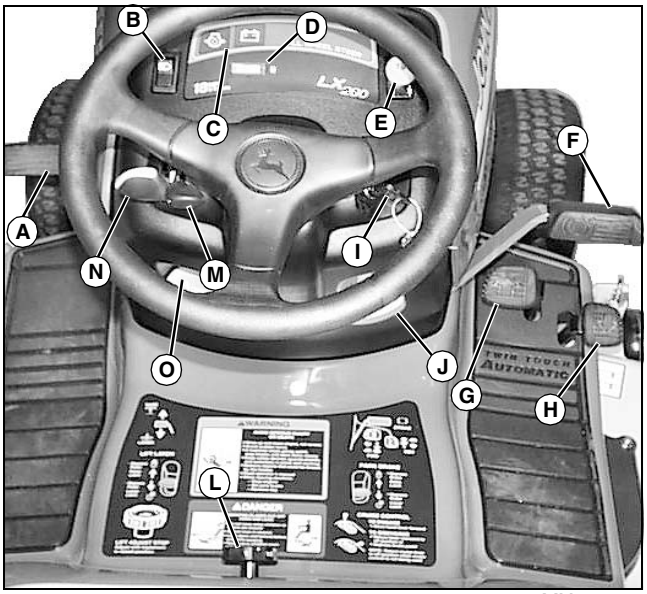
• Do not wipe plastic parts unless rinsed first.

• Insect repellent spray may damage plastic and painted surfaces. Do not spray insect repellent near machine.

• Be careful not to spill fuel on machine. Fuel may damage surface. Wipe up spilled fuel immediately.

• Prolonged exposure to sunlight will damage the hood surface.

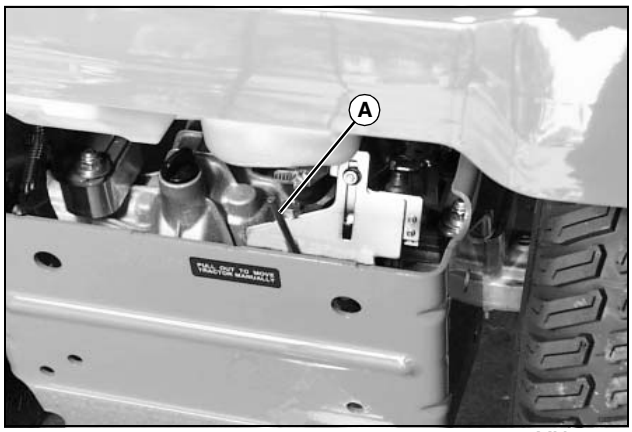
## Operator Station Controls




MX30333

**A - Attachment Lift Pedal**
**B - Light Switch**
**C - Indicator Lights**
**D - Hour Meter**
**E - PTO/RIO Switch**
**F - Brake Pedal**
**G - Forward Travel Pedal**
**H - Reverse Travel Pedal**
**I - Key Switch**
**J - Park Brake Lever**
**K - Cruise Control Lever**
**L - Mower Height Control Knob**
**M - Choke Lever**
**N - Throttle Lever**
**O - Attachment Lock Handle**

## Miscellaneous Controls




MX30479

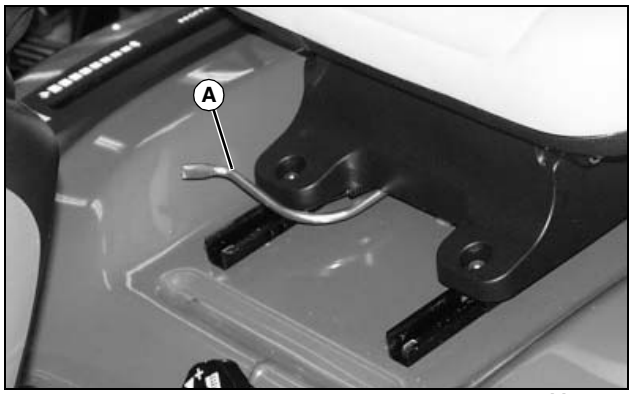
**A - Free-Wheeling Lever**


MX8400

**A - Fuel Tank Cap**

## Adjusting Seat

### Adjusting Seat Position



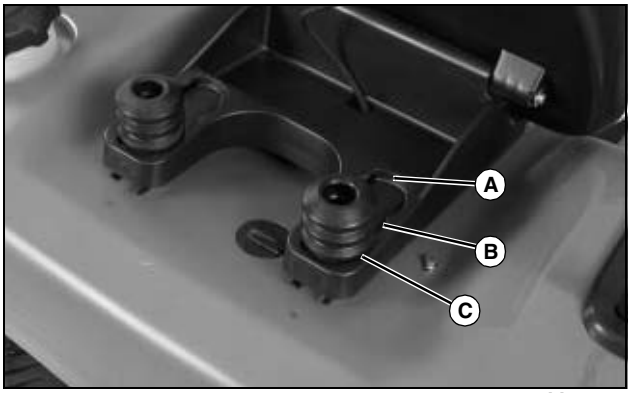

M95967

1. Push lever (A) to the left.
2. Slide seat forward or rearward to desired position.
3. Release lever.

### Adjusting Ride Comfort

**IMPORTANT: Avoid damage! To prevent damage to seat switch and seat base, do not operate without suspension coils in place.**

1. Lift seat.
2. Rotate suspension coils into desired position:




M96407

- Move coils to front position (A) for softest ride.
- Move coils to middle position (B) for average ride.
- Move coils to rear position (C) for firm ride.

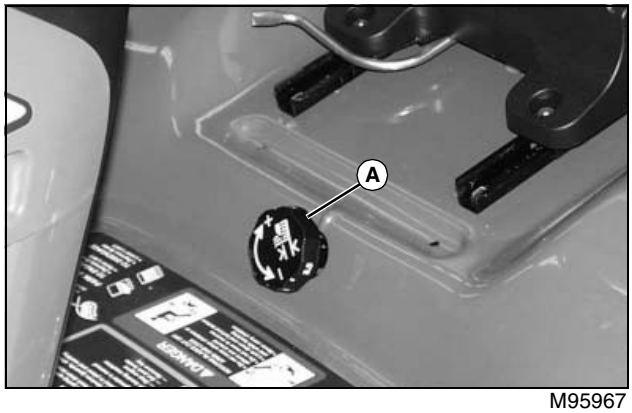
***NOTE: Additional suspension coils can be installed for extra support. See your John Deere dealer.***

## Adjusting Cutting Height

***NOTE: Cutting height can be adjusted from approximately 25-102 mm (1-4 in.). Cut height is approximately 102 mm (4 in.) when lift lever is in transport position.***

***Mower must be raised completely before turning height control knob.***

1. Park machine safely. (See Parking Safely in the SAFETY section.)
2. Raise mower deck completely by pressing lift pedal.




M95967

3. Turn mower height control knob (A) to desired cutting height. Mower will be at set cutting height when lowered.

4. Adjust mower wheels.

## Adjusting Mower Wheels

**CAUTION: Avoid injury! Rotating blades are dangerous. Before adjusting or servicing mower:**

**• Disconnect spark plug wire(s) to prevent engine from starting accidently.**

**• Always wear gloves when handling mower blades or working near blades.**

**IMPORTANT: Avoid damage! The mower deck can be damaged if mower wheels are adjusted wrong:**

**• Mower wheels must not ride on the ground unless power flow is installed. Use of power flow requires special mower wheel adjustment.**

**• Check wheel adjustment each time cutting height is changed.**

1. Park machine safely on a level surface. (See Parking Safely in the SAFETY section).

2. Inflate tires to correct pressure.

3. Press lift pedal and lock in place.

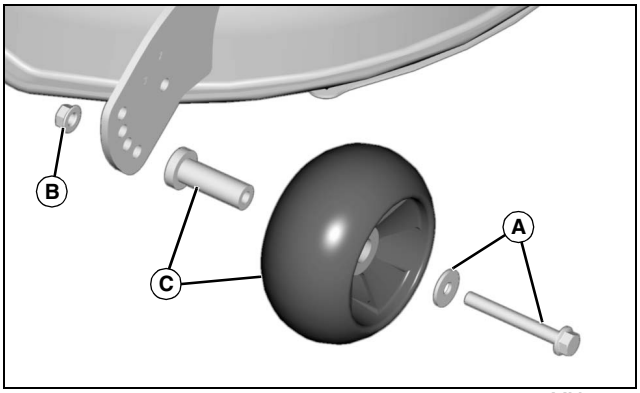
4. Adjust cutting height.

5. Lower mower to cutting position.

6. Measure distance between mower wheels and ground surface:

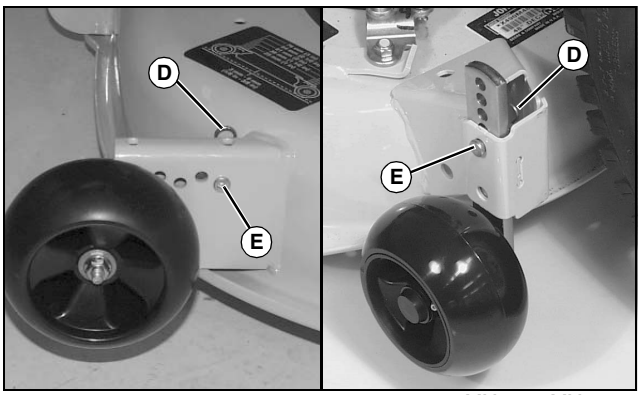
- 42 Inch Mulching Mower - All wheels should be 3-13 mm (1/8-1/2 in.) from ground.
- 42 Inch Mower - All wheels should be 3-9 mm (1/8-3/8 in.) from ground.
- 48 Inch and 54 Inch Mower - All wheels should be 6-13 mm (1/4-1/2 in.) from ground.

7. Adjust mower wheels to correct height:




MX7590

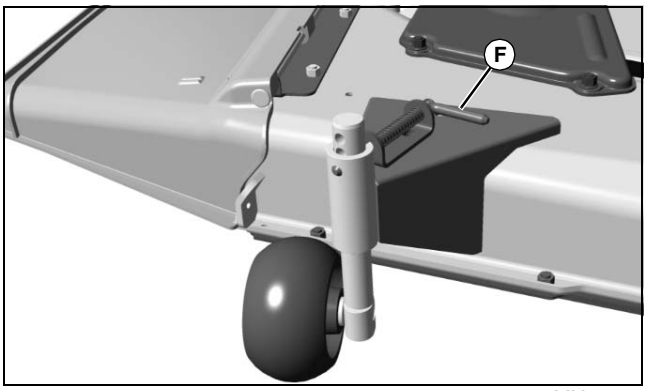
- 42 Inch Mulching Mower - Remove bolt and washer (A) and nut (B). Move wheel and bushing (C) to proper hole position. Secure with bolt, washer, and nut. Tighten nut to 34 N•m (25 lb-ft).




MX8382 MX8381

**Picture Note: 42 Inch shown left, 48 Inch right.**

- 42 Inch and 48 Inch Mower - Remove spring locking pin (D) and drilled pin (E). Move wheel to proper hole position. Install pins.




MX8332

- 54 Inch Mower - Pull pin (F) outward and move wheel to proper hole position. Release pin to lock wheel in

position.

## Adjusting Mower Level (Side-to-Side)

**CAUTION: Avoid injury! Rotating blades are dangerous. Before adjusting or servicing mower:**

**• Disconnect spark plug wire(s) or battery negative (-) cable to prevent engine from starting accidentally.**

**• Always wear gloves when handling mower blades or working near blades.**

***NOTE: Mower wheels should not contact the ground when leveling the deck.***

1. Park machine safely on a level surface. (See Parking Safely in the SAFETY section).

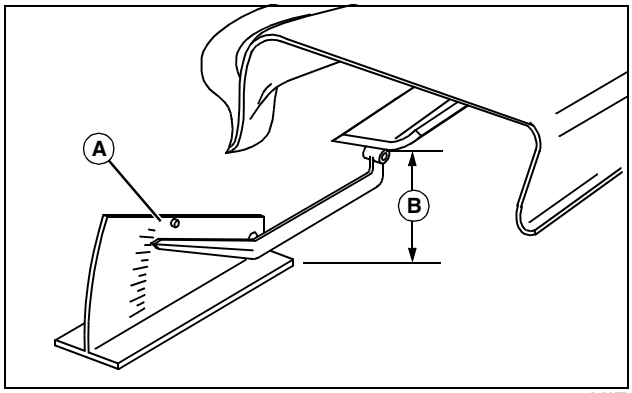
2. Inflate tires to the correct pressure.

3. Adjust cutting height to 50 mm (2 in.).

4. Lower mower to cutting position.

***NOTE: The difference between blade measurements must not be more than 3 mm (1/8 in.).***

5. Turn left blade parallel to axle and complete measurement. Hold drive belt and turn right blade parallel to machine axle and complete measurements.



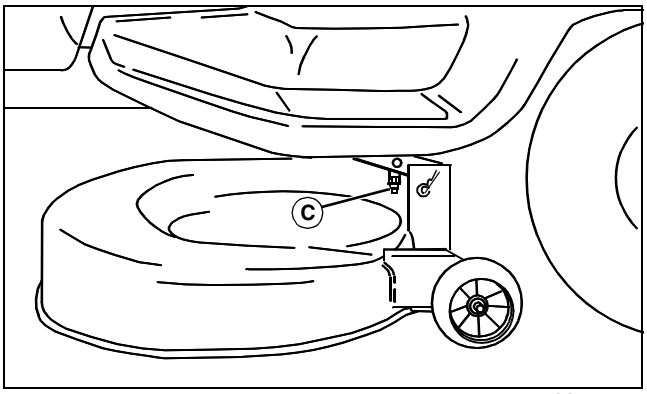

MIF

**Picture Note: A convenient leveling gauge (A) is available from your John Deere dealer.**

6. Measure from each outside blade tip (B) to the level surface.

***NOTE: Cutting height can closely match knob setting by adjusting lift links on both sides of deck.***

***Deck will not lock in transport position if adjusted too high.***




M96012

**Picture Note: Left side shown.**

7. Adjust lift links, turn nut (C):

- Clockwise to raise left side of mower.
- Counterclockwise to lower left side of mower.

## Adjusting Mower Level (Front-to-Rear)

**CAUTION: Avoid injury! Rotating blades are dangerous. Before adjusting or servicing mower:**

**• Disconnect spark plug wire(s) or battery negative (-) cable to prevent engine from starting accidently.**

**• Always wear gloves when handling mower blades or working near blades.**

***NOTE: Mower wheels should not contact the ground during leveling.***

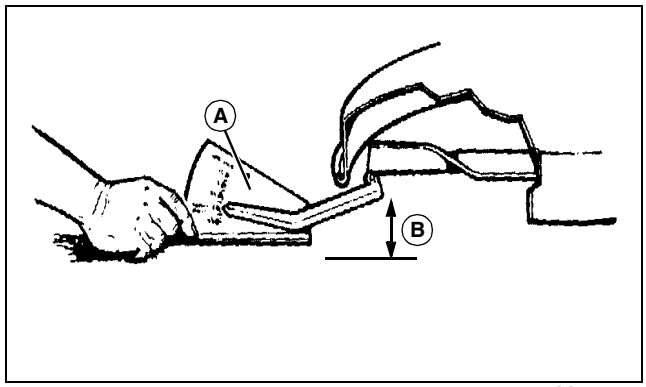
1. Park machine safely on a level surface. (See Parking Safely in the SAFETY section.)

2. Inflate tires to the correct pressure.

3. Adjust cutting height to 50 mm (2 in.).

4. Lower mower deck completely.

5. Turn right blade so blade tip points straight forward.




M40137

**Picture Note: A convenient leveling gauge (A) is available from your John Deere dealer.**

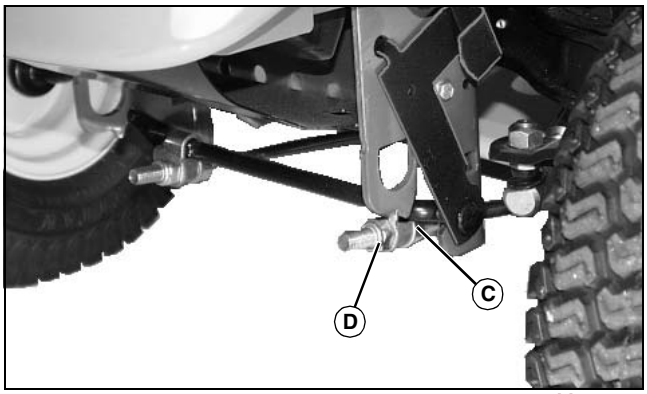
6. Measure distance (B) from blade tip to level surface:

   • 42 Inch Mulching Mower - The difference between the front and rear blade tip measurements must not be more than 3 mm (1/8 in.)

   • 42 Inch Mower - The front blade tip must be 3-9 mm (1/8-3/8 in.) lower than rear blade tip.

   • 48 Inch and 54 Inch Mower - The front blade tip must be 3-6 mm (1/8-1/4 in.) lower than rear blade tip.

7. Adjust front-to-rear mower level if necessary:




M95976

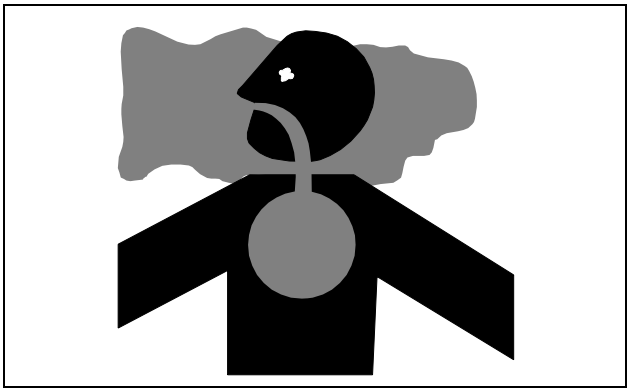
   a. Loosen rear nut (C) on each side of front lift rod.

   b. Turn front nut (D) on each side clockwise to raise front of mower or counterclockwise to lower it.

   c. Tighten rear nuts after adjustment is complete.

8. Check adjustment by measuring blade tips again.

## Testing Safety Systems



**CAUTION: Avoid injury! Engine exhaust fumes contain carbon monoxide and can cause serious illness or death.**

**Move the machine to an outside area before running the engine.**

**Do not run an engine in an enclosed area without adequate ventilation.**

**• Connect a pipe extension to the engine exhaust pipe to direct the exhaust fumes out of the area.**

**• Allow fresh outside air into the work area to clear the exhaust fumes out.**

The safety systems installed on your machine should be checked before each machine use. Be sure you have read the machine operator manual and are completely familiar with the operation of the machine before performing these safety system checks.

Use the following checkout procedures to check for normal operation of machine.

If there is a malfunction during one of these procedures, do not operate machine. **See your authorized dealer for service.**

Perform these tests in a clear open area. Keep bystanders away.

## Testing Park Brake Switch

1. Park machine safely. (See Parking Safely in the SAFETY section.)

2. Sit on seat.

3. Unlock the park brake.

4. Try to start engine.

**Result:** Engine must not crank. If engine cranks, there is a

problem with your safety interlock circuit.

## Testing Park Brake

1. Park machine safely. (See Parking Safely in the SAFETY section.)

2. Engage free-wheeling lever.

3. Lock the park brake.

4. Try to push machine manually.

**Result:** Park brake must prevent machine from moving. If machine moves, parking brake needs to be adjusted.

## Testing PTO Switch

1. Park machine safely. (See Parking Safely in the SAFETY section.)

2. Sit on seat.

3. Lock the park brake.

4. Engage the PTO switch.

5. Try to start engine.

**Result:** Engine must not crank. If engine cranks, there is a problem with your safety interlock circuit.

## Testing Seat Switch

**Test 1**

1. Start the engine.

2. Move throttle lever to maximum speed position.

3. Unlock the park brake.

4. Engage the PTO switch.

5. Raise up off seat. Do not get off machine.

**Result:** Engine should begin to stop. PTO should shut off immediately and mower blades should stop.

**Test 2**

1. Disengage the PTO switch.

2. Start the engine.

3. Unlock the park brake.

4. Raise up off seat. Do not get off machine.

**Result:** Engine should stop. If engine does not stop, there is a problem with your safety interlock circuit.

**Test 3**

1. Start the engine.

2. Lock the park brake.

3. Raise up off seat. Do not get off machine.

**Result:** Engine should continue to run.

## Testing Reverse Implement Option (RIO)

**CAUTION: Avoid injury! Rotating blades are dangerous. Children or bystanders may be injured by runover and rotating blades.**

**Before backing up, carefully check the area around the machine.**

1. Park machine safely. (See Parking Safely in the SAFETY section.)

2. Start the engine.

3. Engage PTO to start attachment.

4. Look behind the vehicle to be sure there are no bystanders.

5. Begin reverse travel by depressing reverse foot pedal.

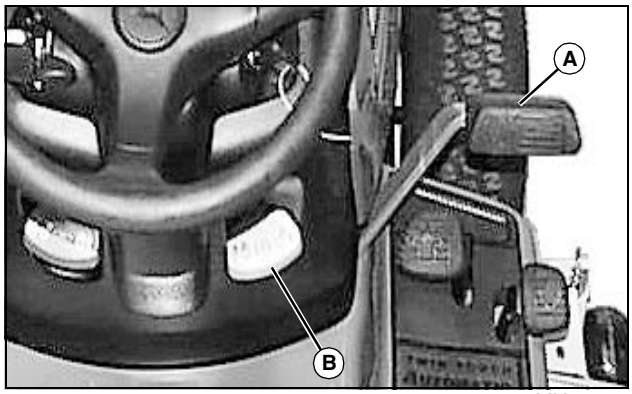
**Result:** Attachment should stop operation. If attachment continues to operate as machine begins travel in reverse, do not continue to operate machine.

## Using Park Brake

**CAUTION: Avoid injury! Children or bystanders may attempt to move or operate an unattended machine.**

**Always lock the park brake and remove the key before leaving the machine unattended.**

### Locking Park Brake



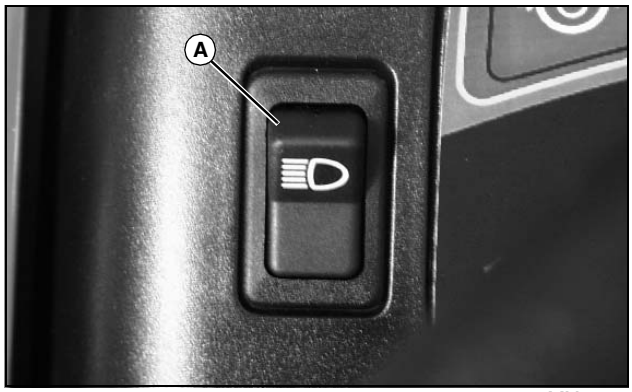

MX30336

1. Push and hold down brake pedal (A).
2. Pull up park brake lever (B) to lock park brake.
3. Release brake pedal. Pedal should stay down and park brake lever should stay up in locked position.

### Unlocking Park Brake

1. Push and hold down brake pedal (A).
2. Push down park brake lever (B) to unlock park brake.
3. Release brake pedal. Pedal should come up to operating position.

## Using Headlights




MX8386

- Press at top of light switch (A) to turn headlights on.
- Press at bottom of light switch (A) to turn headlights off.

## Using Indicator Lights and Hour Meter


MX30334

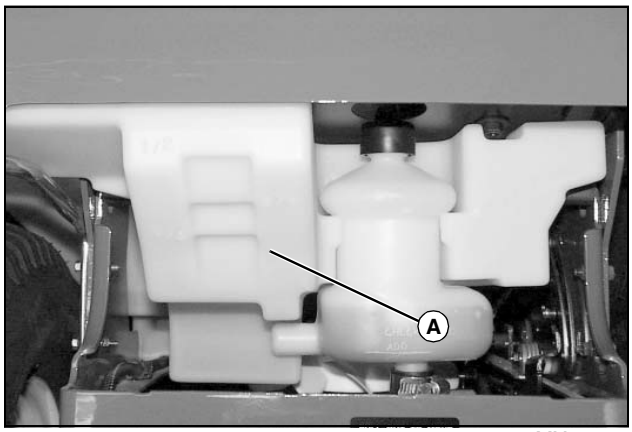
A - **Oil Pressure Indicator** - will come on when you turn the key to the run position. Indicator should go out when engine is started. If indicator comes on during operation, engine oil pressure is too low. Stop engine and perform appropriate service.

B - **Battery Discharge Indicator** - will come on when you turn the key to the run position. Indicator should remain on during the starting cycle and then go off. The indicator may remain on at low idle or if battery charge is low and the PTO and headlights are turned on. If indicator comes on during normal operation, stop engine and perform appropriate service.

C - **Coolant Temperature Indicator (Model LX289 Only, not shown)** - will not come on when you turn the key to the run position. If indicator comes on during operation, coolant temperature is above normal operating temperature. Stop engine and perform appropriate service. Coolant light will come on momentarily when key is turned to the start position.

D - **Hour Meter** - shows the number of hours the engine has run. The hour meter will run with the engine off when the key is in the run position with the operator's seat occupied or the park brake locked with PTO off. Use the hour meter to determine when your machine has reached the recommended service intervals.

## Checking Fuel Level




MX30480

Check fuel level in fuel tank (A).

## Starting the Engine

**CAUTION: Avoid injury! Engine exhaust fumes contain carbon monoxide and can cause serious illness or death.**

**Move the machine to an outside area before running the engine.**

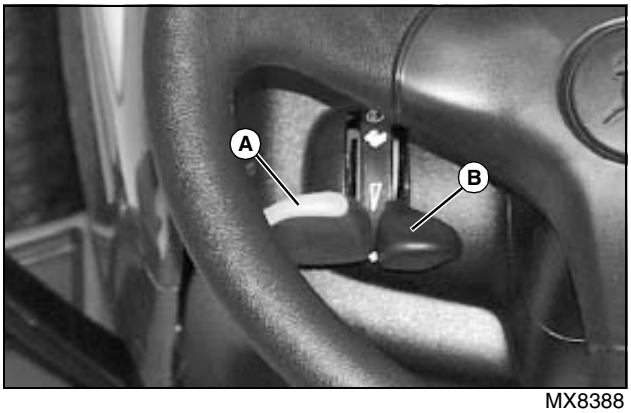
**Do not run an engine in an enclosed area without adequate ventilation.**

**• Connect a pipe extension to the engine exhaust pipe to direct the exhaust fumes out of the area.**

**• Allow fresh outside air into the work area to clear the exhaust fumes out.**

***NOTE: Engine will not start unless park brake is applied and PTO is disengaged.***

1. Sit on seat.
2. Make sure PTO switch is disengaged.
3. Push down brake pedal.




MX8388

4. Adjust throttle setting:
   - If engine is cold, move throttle lever (A) between the half throttle and fast throttle positions.
   - If engine is warm, move throttle lever (A) to slow throttle position.
5. Adjust choke setting:
   - If engine is cold, push and hold choke lever (B) all the way up to the choke position.
   - If engine is warm, push and hold choke lever (B) half way up or do not use at all depending on engine temperature.


MX8389

6. Turn key to run position (C).
7. Make sure the oil pressure and battery discharge indicators illuminate.

**IMPORTANT: Avoid damage! Starter may be damaged if operated longer than 20 seconds at a time. Wait two minutes between starting intervals if engine does not start immediately.**

8. Turn key to start position (D) for no more than 5 seconds.
9. Release key to run position (C) and release choke lever when engine starts. If engine does not start:
   a. Wait 10 seconds.
   b. Hold choke lever in the choke position.

c. Turn key to start position again for no longer than 5 seconds. Release key and choke lever when engine starts.

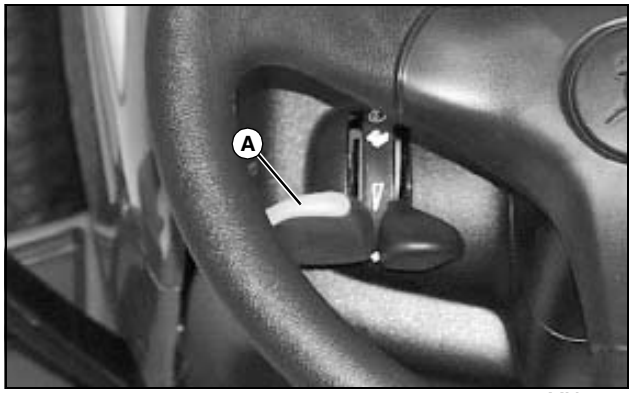
d. Repeat procedure if necessary.

**IMPORTANT: Avoid damage! Unnecessary engine idling can cause engine overheating, carbon build-up, and poor performance.**

10. Run engine at half throttle for 30-60 seconds to allow warm-up before operating.

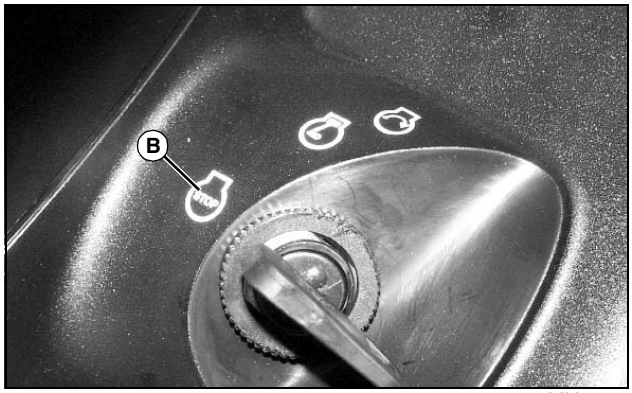
## Stopping the Engine

1. Stop the machine.




MX8388

2. Move throttle lever (A) to the slow position. Allow engine to idle for several seconds.




MX8389

3. Turn key to stop position (B).

4. Lock the park brake.

5. Remove the key.

## Using Travel Controls

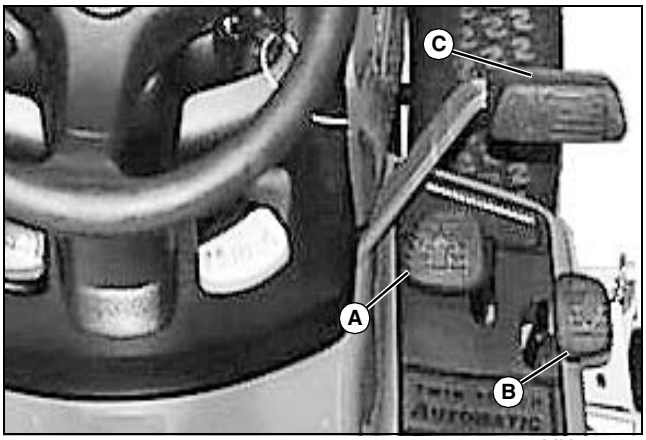
**CAUTION: Avoid injury! Children or bystanders may be injured by runover and rotating blades. Before traveling forward or rearward:**

- **Carefully check the area around the machine.**
- **Disengage the mower before backing up.**

### Forward Travel

1. Start the engine.

2. Unlock the park brake.




MX30336

3. Push down slowly on forward pedal (A) until desired travel speed is obtained.

4. Release forward pedal and machine will automatically return to neutral and stop.

### Reverse Travel

***NOTE: Any operating attachment will stop as the reverse foot pedal is depressed with attachment engaged.***

1. Stop the machine.

2. Push PTO knob down to the off position to disengage attachment.

3. Look behind the machine to be sure there are no bystanders nearby.

4. Push down slowly on reverse pedal (B).

### Stopping

1. Release either travel pedal, machine will automatically return to neutral and stop.

2. Push down brake pedal (C).

## Using the Reverse Implement Option (RIO)

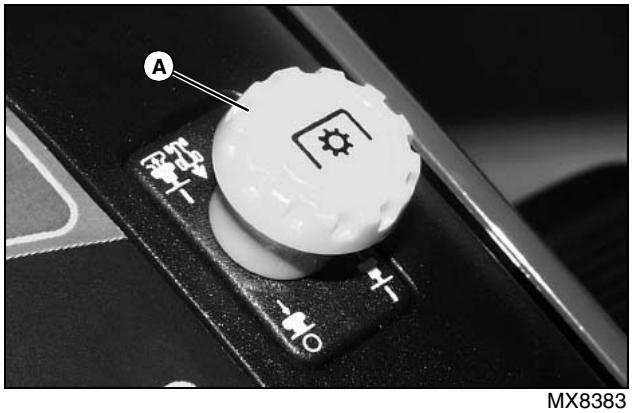
**CAUTION: Avoid injury! Children or bystanders may be injured by runover and rotating blades. Before traveling forward or rearward:**

- **Carefully check the area around the machine.**
- **Disengage the mower before backing up.**

***NOTE: Operating the mower while backing up is strongly discouraged. The Reverse Implement Option should be used only when operating another attachment or when the operator deems it necessary to reposition the machine with the mower engaged.***

1. Stop the machine. Allow attachment to run.

2. Look behind the machine to be sure there are no bystanders.




MX8383

3. Lift PTO switch (A) past the PTO engagement position while depressing reverse foot pedal slightly.

***NOTE: If the attachment stops while positioning the machine, return PTO switch to off position. Repeat this procedure from the beginning.***

4. As the machine begins to move backward, release the PTO switch and position the machine.

5. Resume forward travel. The attachment should continue operating.

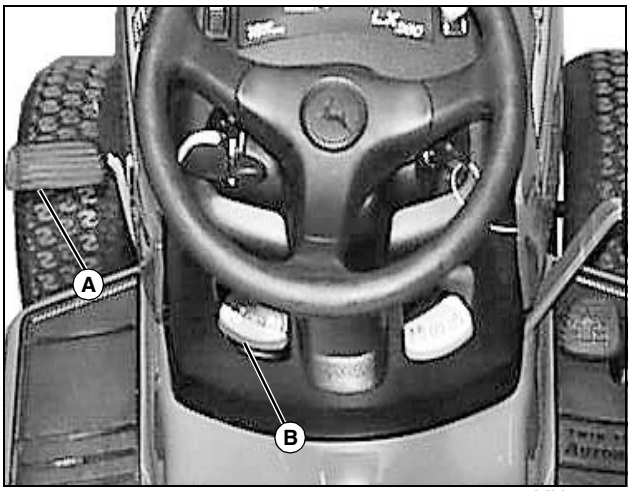
6. Repeat procedure to position the machine again.

## Using Mower Attachment/ Mower Lift Pedal

***NOTE: Make sure the tension on the lift assist spring is properly adjusted to support the weight of the mower deck or attachment installed.***

**MOWING POSITION**

Mower floats along ground contour while maintaining desired cutting height. The mower will always float up and back down onto the depth stop.




MX30336

1. Press lift pedal (A), make sure pedal latch handle (B) is in lower position, select cut height on knob, release pedal to lower deck.

**TRANSPORT POSITION**

Holds mower above ground level while traveling to and from worksite.

1. Push forward on lift pedal.

2. Raise pedal latch handle to latch deck in transport (raised) position.

3. Remove foot from lift pedal and mower stays up.

## Using Cruise Control

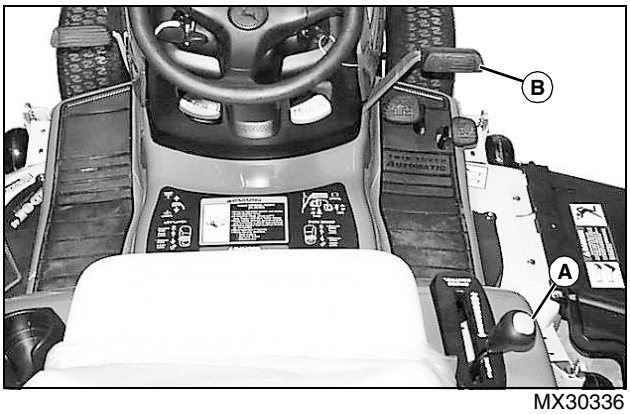
**CAUTION: Avoid injury! Do not use cruise control when going down hills. Machine speed will increase. Operate machine in a large, open area to learn how the cruise control works.**

**IMPORTANT: Avoid damage! The reverse pedal linkage will be restricted if the cruise control lever is not completely rearward in the OFF position.**

**Manually pull cruise control lever completely rearward to OFF when not in use.**

Use cruise control when you want to maintain travel speed without having to hold the forward travel pedal down. Cruise control operates only for forward travel.

**Engaging Cruise Control**




MX30336

1. Put cruise control lever (A) in OFF position.
2. Move cruise control lever forward to the slow speed position to begin forward machine travel.
3. Continue to move lever forward to increase speed.
4. Release lever when desired cruise speed is reached.

**Disengaging Cruise Control**

• Move cruise control lever (A) completely rearward to OFF position, or

• Push down park brake pedal (B), then move cruise control lever (A) completely rearward to OFF position.

## Using Mower (PTO)

***NOTE: Power Take-Off (PTO) operation will stop if reverse pedal is depressed. Understand the Reverse Implement Option (RIO) system before operating the PTO.***

1. Start the engine. If necessary, allow engine to warm up before operating PTO.

***NOTE: Always operate at maximum throttle speed when PTO is engaged.***


MX30334

2. Move throttle lever (A) to fast position.
3. Move PTO switch (B) to desired position:
   - Engage PTO - Lift up on switch lever to “I” position.
   - Disengage PTO - Push down on switch lever to “O” position.
   - Maintain PTO engagement in reverse - Lift and hold switch lever in the highest position.

## Pushing Machine (Using Free-Wheeling Lever)

**CAUTION: Avoid injury! With the free-wheeling valve open, the machine will have unrestricted motion.**

**• The machine may free-wheel out of control if the free-wheeling valve is opened with the machine on an incline.**

**• Park the machine on a level surface before opening the free-wheeling valve.**

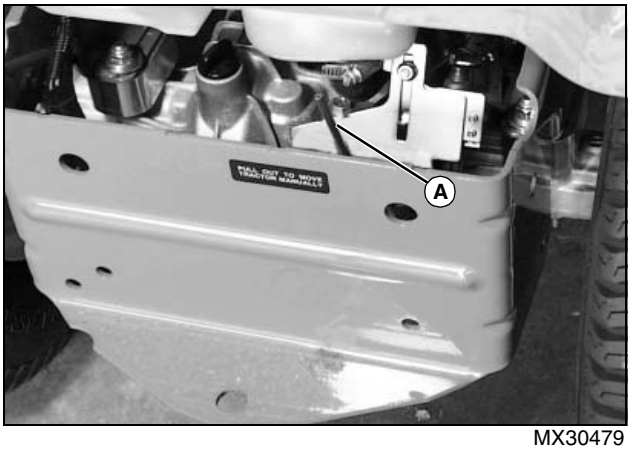
**IMPORTANT: Avoid damage! Transmission damage may occur if the machine is moved incorrectly:**

**• Move unit by hand only.**

**• Do not use another vehicle to move unit.**

**• Do not tow unit.**

1. Unlock the park brake.




MX30479

2. Pull out on free-wheeling lever (A).
3. Push machine to desired location.

***NOTE: The free-wheeling lever will return to operating position when brake pedal is pressed.***

## Unplugging Mower, Bagger, or Material Collection System

**CAUTION: Avoid injury! Do not attempt to unplug attachment with machine running.**

**• Rotating blades are dangerous. Shut off the engine and remove the key before getting off the seat to inspect the machine and attachment.**

**• Thrown objects can cause serious injury. Make sure all machine parts are stopped before raising hopper top or removing chutes.**

### Checking For Plugging While Driving

Check the flow indicator on MCS chute (if equipped) periodically for any indication of loss of air flow.

If grass builds up in front of mower discharge chute, check for plugged chute or problems with blower assembly (if equipped).

If there is a trail of clippings behind mower or clippings blow to the side, check for plugged chute, full collector bags, or problems with blower assembly.

### Removing Debris From Inspection Points:

**CAUTION: Avoid injury! Do not use hands or feet to clear plugged mower deck or blower assembly. Stored energy can cause blades to rotate.**

1. Park machine safely. Wait for all moving parts to stop before getting off to inspect machine.

2. Open hopper cover. Check chute outlet.

3. Remove chute from mower deck or blower assembly. Check chute inlet.

4. Check under mower deck for debris.

## Transporting Machine on Trailer

***NOTE: Trailer capacity must exceed combined machine weight and attachment weight. (See Specifications section in operator's manual).***

Be sure trailer has all the necessary lights and signs required by law.

**CAUTION: Avoid injury! Use extra care when loading or unloading the machine onto a trailer or truck.**

**• Park trailer on a level surface.**

**• Use of a trailer with sides is recommended.**

**• Keep wheels away from drop-offs and edges.**

**• Back slowly and in a straight line.**

**• Close fuel shut-off valve, if your machine is equipped.**

**IMPORTANT: Avoid damage! Transporting a machine on a trailer or on a truck bed at high speeds can result in hood or engine cover raising and possibly coming off machine if not secured.**

**• Position machine on trailer so hood or engine cover opens from rear of trailer to prevent wind from blowing hood or cover open.**

**• Secure hood or engine cover with existing machine locks or latches.**

**• Secure hood or engine cover with tie down straps if no locks or latches exist.**

1. Park trailer on level surface.

2. Raise mower deck, if installed, before driving machine onto trailer.

3. Drive machine onto heavy-duty trailer. Position machine on trailer so hood or engine cover will not raise in wind while being transported.

4. Lower mower deck completely.

5. Lock park brake.

6. Turn off machine and remove key.

7. Fasten machine at the axle or frame to trailer with heavy-duty straps, chains, or cables. Both front and rear straps must be directed down and outward from machine.

8. Secure hood to prevent from lifting while driving.

## Using Weights

**CAUTION: Avoid injury! The machine may become unstable when operating on slopes and/or with some attachments.**

**Use weights to improve stability when operating on slopes or using attachments.**

***NOTE: Install weights using the instructions provided***

***with your weights. Remove weights when not required.***

**Using Front Weights**

Install front wheel weights (Max of four suitcase weights) for better stability and steering control when you use equipment such as the rear-mounted grass bagger.

**Using Rear Weights**

Install rear weight bracket kit with suitcase weights (Max of two suitcase weights) when using front-mounted attachments such as a snowthrower or blade.

## Using Tire Chains

**IMPORTANT: Avoid damage! Do not use chains with mower deck or tiller.**

Tire chains are recommended for use with most front attachments. Remove tire chains before installing mower deck.

See your attachment Operator's Manual for tire chain recommendation. See your authorized dealer for the chains.

## Mowing Tips

The following recommendations will produce the best lawn cut quality and appearance:

• Keep mower blades sharp. Dull blades will tear grass; tips of grass will then turn brown.

• Cutting grass too short may kill grass and let weeds grow easily. The suggested finished cut height range is 44 - 70 mm (1.75 - 2.75 in.).

• Adjust cutting height to remove only 1/3 of the grass at a time.

• Do not mow wet grass.

• Mow grass often. Short grass clippings will decay quickly.

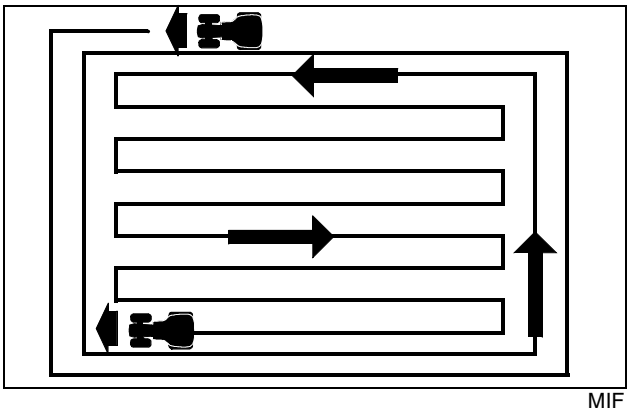
• Mow with engine at full throttle.

• Adjust travel speed to match mowing conditions:

- Travel at slow speed when you mow thick, tall grass, make sharp turns or trim around objects.
- Travel at moderate speed when you mow thin grass.

• Use a different mowing pattern each time you mow. Overlap mowing paths 50 - 100 mm (2 - 4 in.).

• Drive over ridges and through shallow ditches straight-on, not at an angle.



MIF

• Mow around the outside twice, then mow inside in straight passes. Best cut is achieved when mowing in a straight line.

• When mowing or mulching near pavement, overlap the pavement by 50 mm (2 in.) to allow clippings to dispense over grass.

• A thick layer of mulched leaves can prevent sunlight from getting to grass and smother it. Taller grass heights allow mulched leaves to dispense easier in lawn. Mulch leaves several times if needed.

• Use a thatcher in late spring or summer to pull up dead grass and aerate ground.

• For Mulching Mower: Shorter cut heights will provide better cut quality, but may leave noticeable clippings. Higher cut heights will reduce clippings, but cut quality may decline.

## Service Literature

If you would like a copy of the Parts Catalog or Technical Manual for this machine call:

- **U.S. & Canada**: 1-800-522-7448.
- **All Other Regions**: Your John Deere dealer.

## Parts

We recommend John Deere quality parts and lubricants, available at your John Deere dealer.

Part numbers may change, use part numbers listed below when you order. If a number changes, your dealer will have the latest number.

When you order parts, your John Deere dealer needs the serial number or product identification number (PIN) for your machine or attachment. These are the numbers that you recorded in the Product Identification section of this manual.

### Order Service Parts Online

Visit **http://JDParts.deere.com** for your Internet connection to parts ordering and information.

## Machine

| Item | Part Number |
|---|---|
| Air Cleaner Foam Element: | |
| LX280, LX280AWS | M137555 |
| LX289 | M76076 |
| Air Cleaner Paper Element: | |
| LX280, LX280AWS | M137556 |
| LX289 | M76077 |
| Battery | TY21755 |
| Fuel Filter | AM116304 |
| Spark Plug: | |
| LX280, LX280AWS | TY6081 |
| LX289 | M138938 |
| Fuse, 15 amp | 99M7065 |
| Light Bulbs: | |
| Headlamps | AD2062R |
| Instrument Panel | M145444 |
| Seat Suspension Coils | M146683 |
| Engine Oil Filter: | |
| LX280, LX280AWS | AM107423 |
| LX289 | AM107423 |
| Traction Drive Belt: | |
| LX280, LX289 | M147044 |
| LX280AWS | M147044 |

## Mower Deck

| Item | Part Number |
|---|---|
| Primary Belt (engine to mower): | |
| 42 Inch Mulching Mower | M140502 |
| 42 Inch Mower | M143019 |
| 48 Inch Mower | M143019 |
| 54 Inch Mower | M143019 |
| Secondary Belt (mower spindles): | |
| 42 Inch Mulching Mower (timing belt) | M141558 |
| 42 Inch Mower | M43820 |
| 48 Inch Mower | M110313 |
| 54 Inch Mower | M143923 |
| 42 Inch Mulching Mower Blade Kit (includes blades and hardware) | AM130172 |
| 42 Inch Mower Blades: | |
| Standard | M139976 |
| Mulching | M139975 |
| Bagging | M139977 |
| 48 Inch Blades: | |
| Standard | M145476 |
| Mulching | M127673 |

| Item | Part Number |
|---|---|
| 54 Inch Blades: | |
| Standard | M143520 |
| Mulching | M145516 |

(Part numbers are subject to change without notice. Part Numbers may be different outside the U.S.A.)

# SERVICE INTERVALS

## Servicing Your Machine

**IMPORTANT: Avoid damage! Operating in extreme conditions may require more frequent service intervals:**

**• Engine components may become dirty or plugged when operating in extreme heat, dust or other severe conditions.**

**• Engine oil may lose efficiency if vehicle is operated constantly at slow or low engine speeds or with frequent short trips.**

Please use the following timetables to perform routine maintenance on your machine.

## Initial Break-In

**After First 5 Hours of Operation**

• Check/tighten wheel bolts (model LX280AWS).

• Lubricate front wheel spindles.

**After First 25 Hours of Operation**

• Check/tighten wheel bolts (model LX280AWS).

• Check/tighten loose hardware.

• Change engine oil and filter.

• Check transmission oil level.

• Check coolant level (model LX289).

**After First 50 Hours of Operation**

• Check/tighten wheel bolts (model LX280AWS).

• Change engine oil and filter.

**After First 100 Hours of Operation**

• Check/tighten wheel bolts (model LX280AWS).

• Change engine oil and filter.

## Every 25 Hours

• Check mower blades.

## Every 50 Hours

• Check tire pressure.

• Check transmission oil level.

• Lubricate front wheel spindles.

• Lubricate front axle pivot (model LX280AWS).

• Lubricate mower gage wheels.

• Lubricate mower blade spindles.

• Check/service air cleaner elements.

• Check/tighten wheel bolts (model LX280AWS).

## Every 100 Hours or Annually (whichever comes first)

• Check/tighten loose hardware.

• Check battery electrolyte level.

• Clean battery.

• Change engine oil and filter.

• Inspect spark plugs and check gap.

• Check mower belts.

• Check and adjust mower timing belt (42 Inch Mulching Mower).

• Sharpen mower blades.

## Every 200 Hours or Two Years (whichever comes first)

• Replace fuel filter.

• Change radiator coolant (model LX289).

• Check radiator hoses and clamps (model LX289).

## Every 500 Hours or Two Years (whichever comes first)

• Change engine coolant (model LX289).

## Every 500 Hours

***NOTE: See your John Deere dealer for these services.***

• Check engine idle speeds.

• Check carburetor adjustment.

• Check and adjust valve clearance.

• Check fuel lines.

## Grease

**IMPORTANT: Avoid damage! Use recommended John Deere greases to avoid component failure and premature wear.**

**The recommended John Deere greases are effective within an average air temperature range of -29 to 135 degrees C (-20 to 275 degrees F).**

**If operating outside that temperature range, contact your Servicing dealer for a special-use grease.**

**The following greases are preferred:**

- John Deere Multi-Purpose SD Polyurea Grease
- John Deere Multi-Purpose HD Lithium Complex Grease
- John Deere Moly High Temperature EP Grease

If not using any of the preferred greases, be sure to use a general all-purpose grease with an NLGI grade No.2 rating.

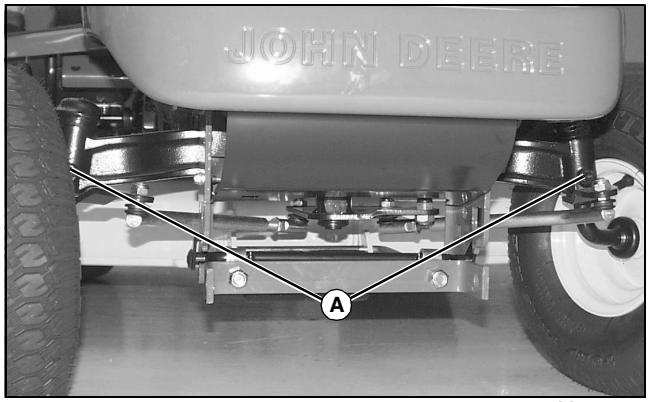
Wet or high speed conditions may require use of a special-use grease. Contact your Servicing dealer for information.

## Lubricating Front Wheel Spindles

**CAUTION: Avoid injury! The machine may fall or slip from an unsafe lifting device or supports, injuring anyone beneath it.**

- **Remove key before raising machine.**
- **Use a safe lifting device rated for the load to be lifted.**
- **Lower machine onto stable supports or jack stands and block wheels before servicing.**

1. Raise front of machine with a safe lifting device so front wheels are slightly off the ground.



M97150

2. Lubricate front spindles (A) with recommended grease.

3. Turn steering wheel back and forth to distribute grease in spindles.

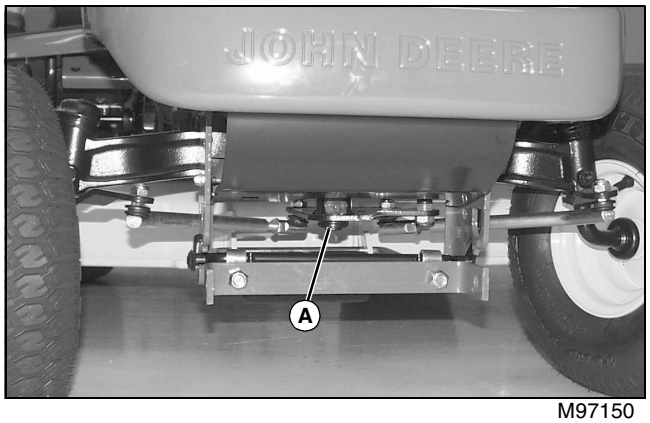
4. Lower machine to the ground.

5. Remove lifting device.

## Lubricating Front Axle and Rear Steering Pivots (LX280AWS Only)

**CAUTION: Avoid injury! Do not work under a raised machine unless it is safely supported. A machine that slips and falls off a jack could cause serious injury or death.**

1. Raise front of machine with a safe lifting device so front wheels are slightly off the ground.



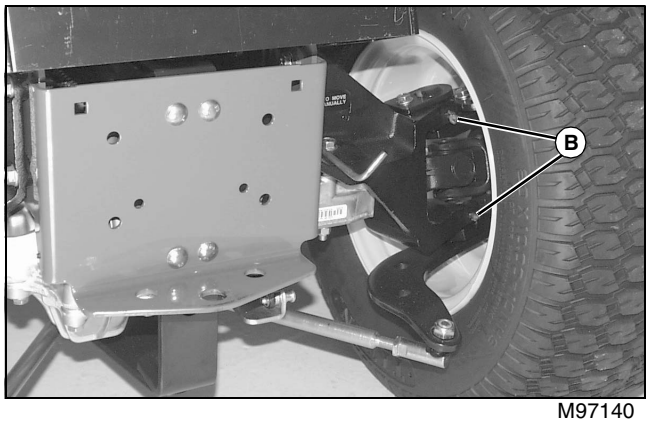
M97150

2. Lubricate front axle pivot (A) with recommended grease.

3. Turn steering wheel back and forth to distribute grease in spindles.

4. Lower machine to the ground.

5. Raise rear of machine with a safe lifting device so rear wheels are slightly off the ground.

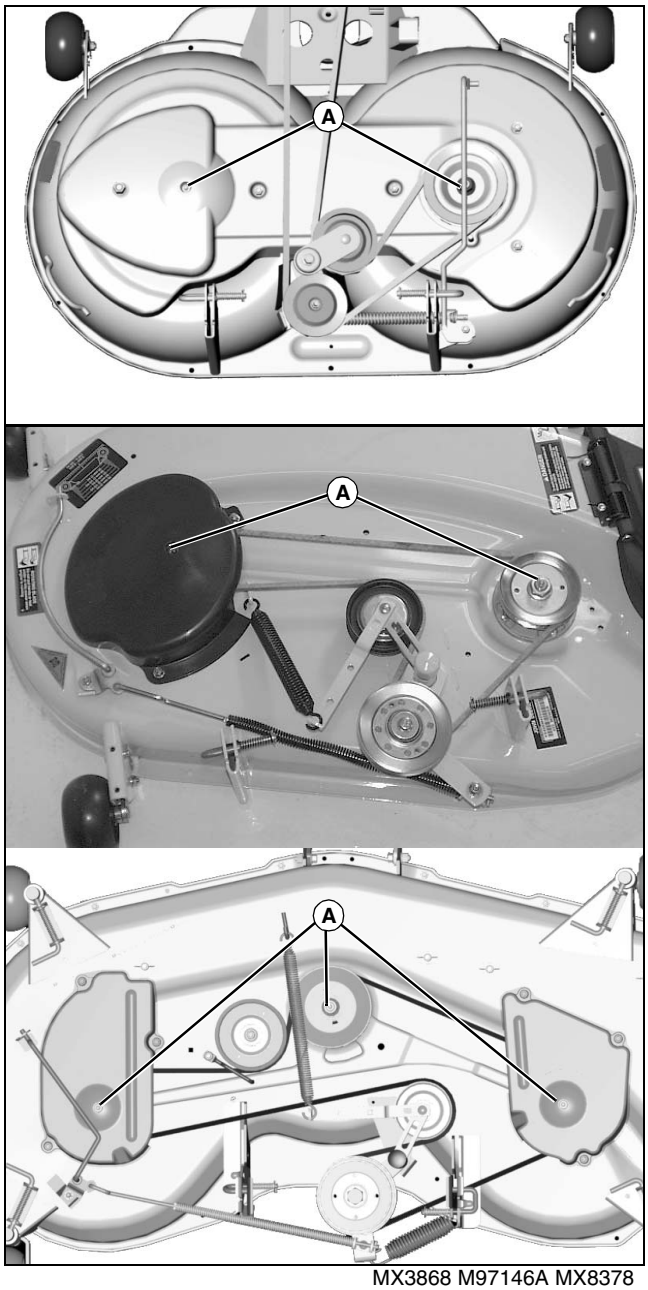


M97140

6. Lubricate two steering pivots (B) at each wheel with recommended grease.

7. Turn steering wheel back and forth to distribute grease.
8. Lower machine to the ground.
9. Remove lifting device.

## Lubricating Blade Spindles

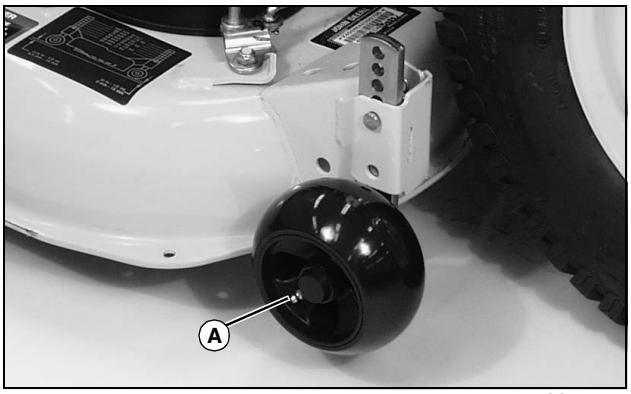



MX3868 M97146A MX8378

**Picture Note: Top-42 Inch Mulching Mower, Center-42 Inch Mower, Bottom-48 Inch and 54 Inch Mowers.**

Lubricate spindles (A) with recommended grease.

## Lubricating Mower Wheels (48 Inch and 54 Inch Mowers Only)




M96021

Lubricate mower wheel grease fittings (A).

- 48 Inch Mower - Rear wheels only.
- 54 Inch Mower - Rear wheels only.

## Engine Warranty Maintenance Statement

Maintenance, repair, or replacement of the emission control devices and systems on this engine, which are being done at the customers expense, may be performed by any non-road engine repair establishment or individual. Warranty repairs must be performed by an authorized John Deere dealer.

## Avoid Fumes

**CAUTION: Avoid injury! Engine exhaust fumes contain carbon monoxide and can cause serious illness or death.**

**Move the machine to an outside area before running the engine.**

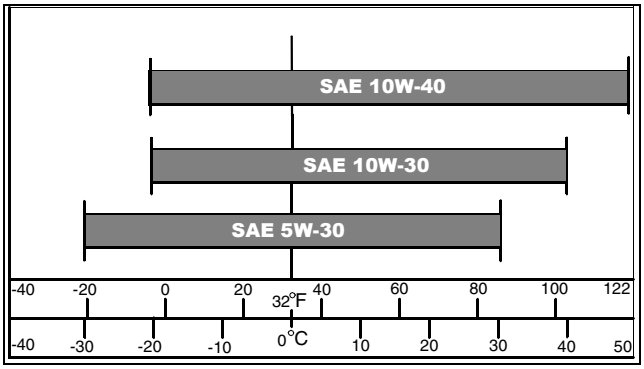
**Do not run an engine in an enclosed area without adequate ventilation.**

**• Connect a pipe extension to the engine exhaust pipe to direct the exhaust fumes out of the area.**

**• Allow fresh outside air into the work area to clear the exhaust fumes out.**

## Engine Oil

Use oil viscosity based on the expected air temperature range during the period between oil changes.




**The following John Deere oils are preferred:**

• TURF-GARD™

• PLUS- 4™

**Other oils may be used if above John Deere oils are not available, provided they meet the following specification:**

• API Service Classification SG or higher

## Checking Engine Oil Level

**IMPORTANT: Avoid damage! Failure to check the oil level regularly could lead to serious engine problems if oil level is low:**

**• Check oil level before operating.**

**• Check oil level when the engine is cold and not running.**

**• Keep level between the FULL and the ADD marks.**

**• Shut off engine before adding oil.**

***NOTE: Check oil twice a day if you run engine over 4 hours in a day.***

***Make sure engine is cold when checking engine oil level.***

1. Park machine safely. (See Parking Safely in the SAFETY section.)

2. Lift hood.


M97130

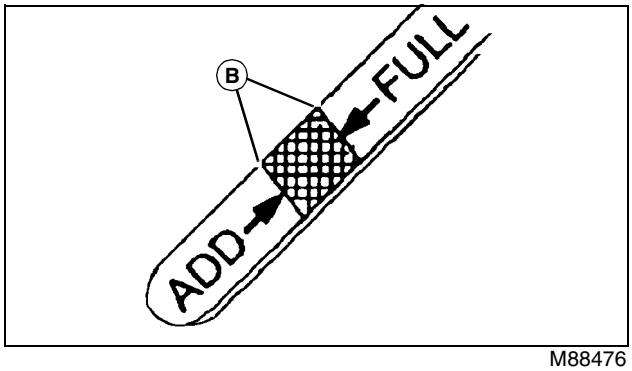
**Picture Note: LX280 shown.**

3. Clean area around dipstick (A) to prevent debris from falling into crankcase.

4. Remove dipstick. Wipe with clean cloth.

5. Install dipstick in tube but do not tighten. Allow dipstick threads to rest on top of tube and rotate cap counterclockwise until it “clicks” or drops into place.

6. Remove dipstick.




M88476

7. Check oil level on dipstick. Oil must be between ADD and FULL marks (B).

8. If oil level is low, add oil to bring oil level no higher than FULL mark on dipstick.

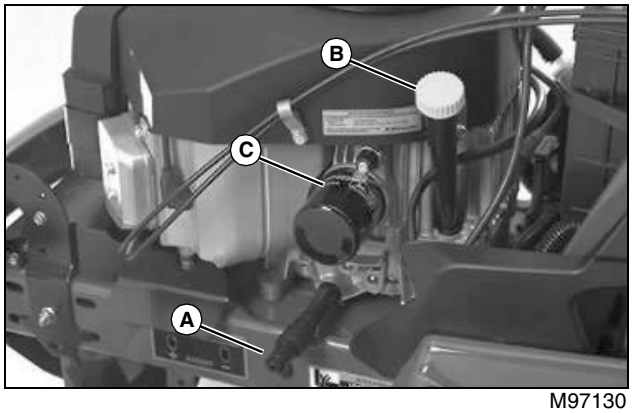
9. Install and tighten dipstick. Lower hood.

## Changing Engine Oil and Filter

1. Run engine to warm oil.

2. Park machine safely on level surface. (See Parking Safely in the SAFETY section.)

3. Lift hood.




M97130

**Picture Note: LX280 shown.**

4. Put drain pan under plug (A). If available, install drain hose.

5. Open drain valve and drain oil into oil drain pan. Allow oil to drain completely.

6. Remove dipstick (B).

7. Change oil filter:

   a. Wipe dirt from around oil filter (C).

   b. Place a drain pan or funnel under filter tray.

   c. Remove old filter and wipe off filter tray.

   d. Apply a light coat of fresh oil to filter seal.

   e. Install replacement oil filter by turning oil filter to the right (clockwise) until rubber seal contacts filter base. Tighten filter an additional one-half turn.

8. Close drain valve.

9. Add oil:

   - LX280, LX280AWS and LX289: 1.8 L (1.9 qt)

10. Install and tighten dipstick.

11. Start and run engine at idle to check for leaks. Stop engine. Fix any leaks before operating.

12. Check oil level, add oil if necessary.

## Cleaning Air Intake Screen and Engine Fins

**CAUTION: Avoid injury! Compressed air can cause debris to fly a long distance.**

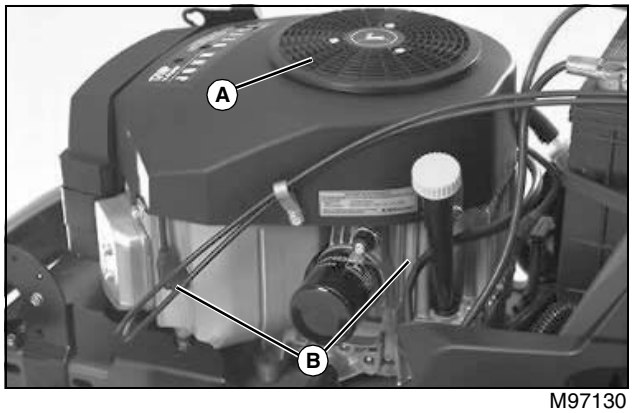
**• Clear work area of bystanders.**

**• Wear eye protection when using compressed air for cleaning purposes.**

**• Reduce compressed air pressure to 210 kPa (30 psi).**

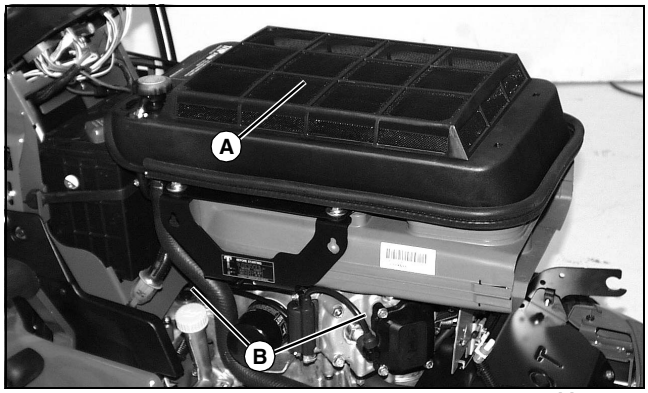
**IMPORTANT: Avoid damage! An obstructed air intake screen can cause engine damage due to overheating. Keep air intake screen and other external surfaces of the engine, including cooling fins, clean at all times to allow adequate air intake.**

1. Park machine safely. (See Parking Safely in the SAFETY section.)




M97130

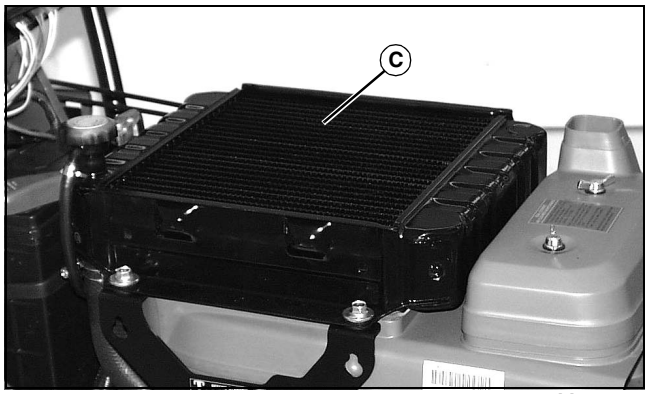
**Picture Note: LX280 shown.**




M97133

**Picture Note: LX289 shown.**

2. Clean air intake screen (A), cooling fins, and external surfaces (B), with rag, brush, vacuum or compressed air.




M97134

3. LX289 Only - When operating in extremely dirty conditions, remove air intake screen and clean radiator screen (C).

4. Lower hood.

## Servicing Air Cleaner (LX280 and LX280AWS)

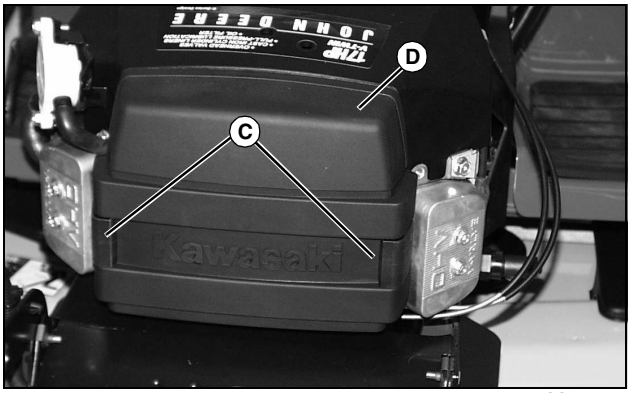
1. Park machine safely. (See Parking Safely in the SAFETY section.)

**CAUTION: Avoid injury! Touching hot surfaces can burn skin. The engine and components will be hot if the engine has been running. Allow the engine to cool before servicing.**

2. Allow engine to cool.

3. Raise or remove hood as needed to access air cleaner.

4. Remove air cleaner cover:

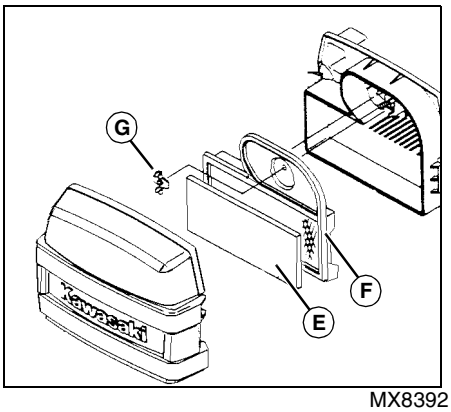



M97137

- LX280, LX280AWS - Release latches (C) and remove cover (D).

**IMPORTANT: Avoid damage! Dirt and debris can enter the engine through a damaged filter element:**

- **Do not wash paper element.**
- **Do not attempt to clean paper element by tapping against another object.**
- **Do not use pressurized air to clean element.**
- **Replace element only if it is very dirty, damaged or the seal is cracked.**




MX8392 M97141

**Picture Note: LX280, LX280AWS shown.**

5. Inspect air cleaner:

- If precleaner (E) is dirty, remove it from paper

element (F). If paper element is very dirty or damaged, remove wing nuts (G) and element. Replace with new element.

6. If precleaner is damaged, replace it. If precleaner is dirty, clean it as follows:

   a. Wash it in a solution of warm water and liquid detergent. Do not wash paper element.

   b. Rinse precleaner.

   c. Squeeze excess water from precleaner.

   d. Allow precleaner to air dry.

7. Install precleaner on paper element.

8. Install air cleaner cover and secure with original hardware.

9. Install or lower hood.

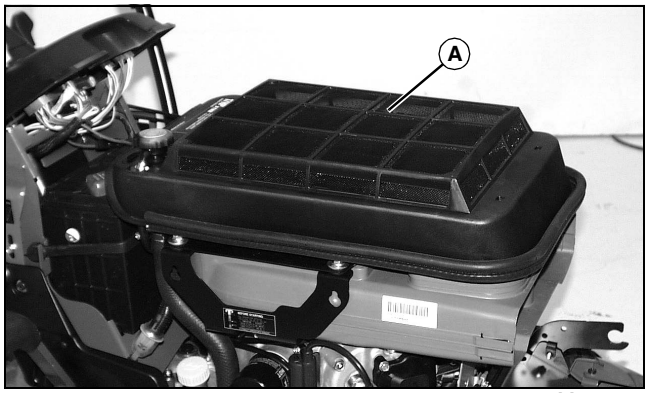
## Servicing Air Cleaner (LX289)

1. Park machine safely. (See Parking Safely in the SAFETY section.)

**CAUTION: Avoid injury! Touching hot surfaces can burn skin. The engine, components, and fluids will be hot if the engine has been running. Allow the engine to cool before servicing or working near the engine and components.**

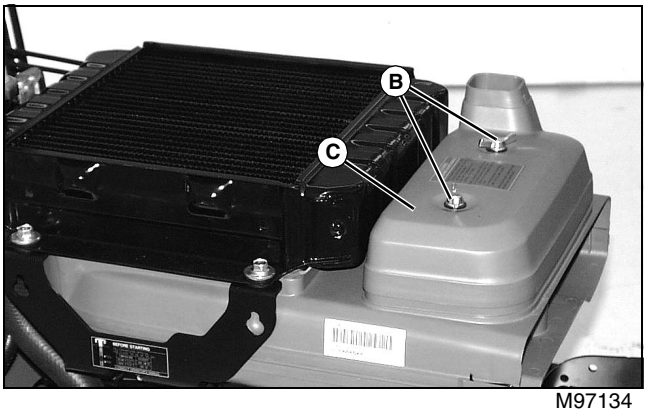
2. Allow engine to cool.

3. Raise or remove hood.




M97133

4. Remove air intake screen (A):

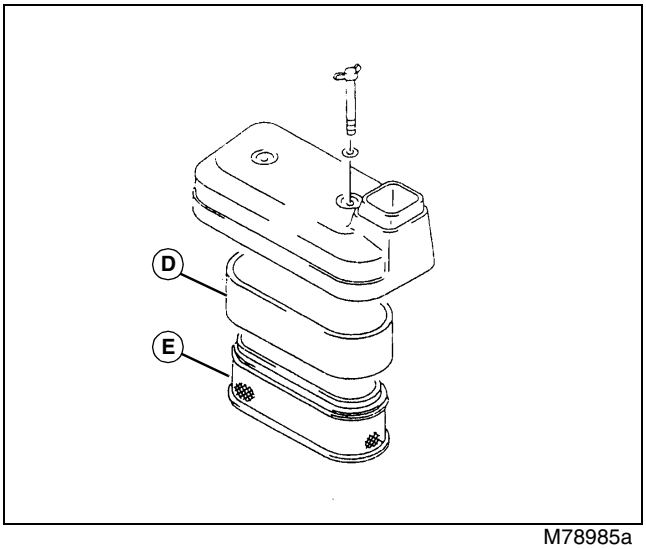



M97134

5. Remove thumb screws and washers (B) and cover (C).

**IMPORTANT: Avoid damage! Dirt and debris can enter the engine through a damaged filter element:**

- **Do not wash paper element.**
- **Do not attempt to clean paper element by tapping against another object.**
- **Do not use pressurized air to clean element.**
- **Replace element only if it is very dirty, damaged or the seal is cracked.**




M78985a

6. Inspect air cleaner:

   • If precleaner (D) is dirty, remove it from paper element (E). If paper element is very dirty or damaged, remove wing nuts and element. Replace with new element.

7. If precleaner is damaged, replace it. If precleaner is dirty, clean it as follows:

   a. Wash it in a solution of warm water and liquid detergent. Do not wash paper element.

   b. Rinse precleaner.

c. Squeeze excess water from precleaner.

d. Allow precleaner to air dry.

8. Install precleaner on paper element.

9. Install air cleaner cover and secure with original hardware.

10. Install or lower hood.

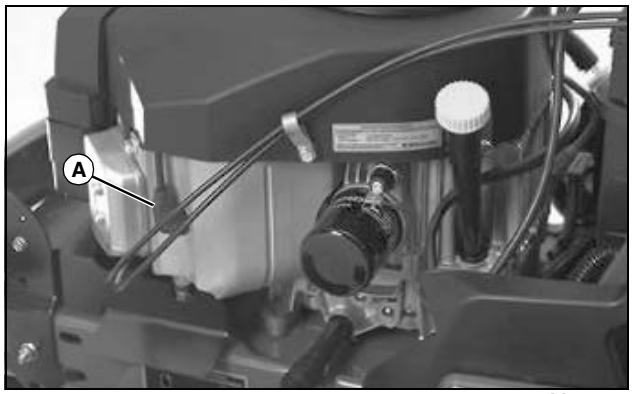
## Checking Spark Plugs

**CAUTION: Avoid injury! Touching hot surfaces can burn skin. The engine and components will be hot if the engine has been running. Allow the engine to cool before servicing.**

1. Park machine safely. (See Parking Safely in the SAFETY section.)

2. Allow engine to cool.

3. Raise or remove hood.




M97130

**Picture Note: LX280 shown.**

4. Disconnect spark plug wire(s) (A).

5. Remove spark plug(s).

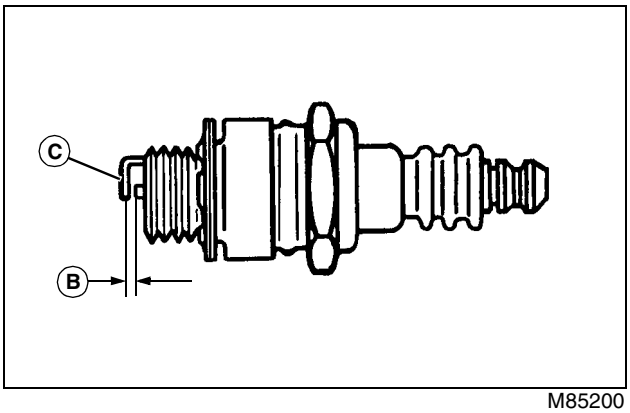
6. Clean each spark plug carefully with a wire brush.

7. Inspect spark plugs for:

- Cracked porcelain.
- Pitted or damaged electrodes.
- Other wear or damage.

***NOTE: In Canada, replace spark plug with resistor plug only.***

8. Replace spark plugs as necessary.




M85200

9. Check plug gap (B) with a wire feeler gauge. To change gap, bend outer electrode (C).

- LX280, LX280AWS - Gap must be 1.00 mm (0.040 in.).
- LX289 - Gap must be 0.70 mm (0.028 in.).

10. Install and tighten spark plugs:

- LX280, LX280AWS - 15 N•m (133 lb-in.).
- LX289 - 17 N•m (150 lb-in.).

11. Connect spark plug wires.

12. Install or lower hood.

## Adjusting Carburetor

***NOTE: Carburetor is calibrated by the engine manufacturer and is not adjustable.***

***If engine is operated at altitudes above 1829 m (6,000 ft), some carburetors may require a special high altitude main jet. See your authorized dealer.***

If engine is hard to start or runs rough, check the TROUBLESHOOTING section of this manual.

Possible engine surging will occur at high throttle with transmission in “N” neutral and mower engagement lever disengaged. This is a normal condition due to the emission control system.

After performing the checks in the troubleshooting section and your engine is still not performing correctly, contact your authorized dealer.

## Replacing Fuel Filter

**CAUTION: Avoid injury! Fuel vapors are explosive and flammable:**

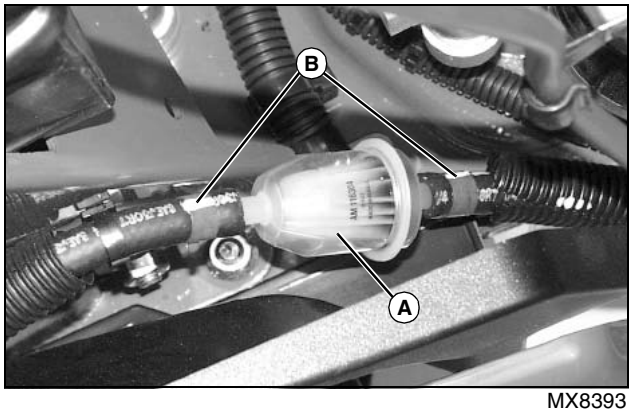
- **Do not smoke while handling fuel.**
- **Keep fuel away from flames or sparks.**
- **Shut off engine before servicing.**
- **Cool engine before servicing.**
- **Work in a well-ventilated area.**
- **Clean up spilled fuel immediately.**

***NOTE: Change filter when fuel is low to prevent excessive fuel spillage.***

1. Park machine safely. (See Parking Safely in the SAFETY section.)

2. Allow engine to cool.

3. Raise the hood.




MX8393

4. Place a drain pan under fuel filter (A).

5. Note direction of arrow on fuel filter so new filter can be installed in the same direction.

6. Use a pliers to slide hose clamps (B) away from fuel filter.

7. Disconnect hoses from filter.

**IMPORTANT: Avoid damage! Incorrect installation of fuel filter may cause engine damage. Install the filter with the arrow pointing in the direction of fuel flow for proper operation.**

8. Make sure arrow on new filter is pointing in the direction of fuel flow. Connect hoses to filter.

9. Slide hose clamps in position to secure filter.

10. Check for leaks.

11. Lower the hood.

## Recommended Engine Coolant

The following John Deere coolant is preferred:

• COOL-GARD™ PRE-DILUTED SUMMER COOLANT (TY16036).

• COOL-GARD™ CONCENTRATED SUMMER COOLANT (TY16034)

If neither of the above coolants is available, use an ethylene glycol base coolant that meets the following specification:

• ASTM D4985 (JDM H24A2)

Check container label before using to be sure it has the appropriate specifications for your machine. Use coolant with conditioner or add conditioner to coolant before using.

If using concentrate, mix approximately 50 percent antifreeze with 50 percent distilled or deionized water before adding to cooling system. This mixture will provide freeze protection to -37 degrees C (-34 degrees F).

Certain geographical areas may require lower temperature protection. See the label on your antifreeze container or consult your John Deere dealer to obtain the latest information and recommendations.

## Checking Coolant Level

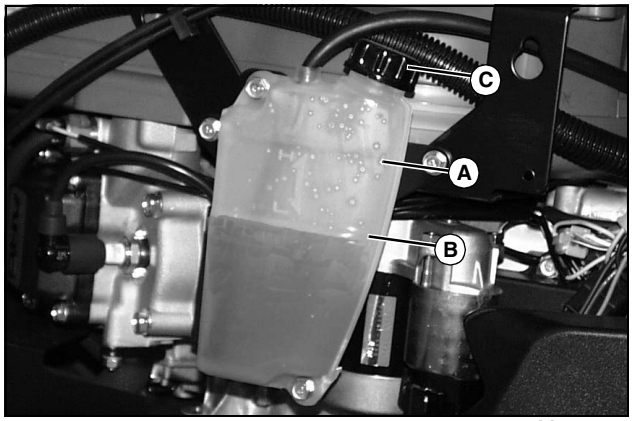
**IMPORTANT: Avoid damage! Using incorrect coolant mixture can damage the radiator:**

- **Do not operate engine with plain water.**
- **Use ethylene-glycol based antifreeze approved for use in aluminum radiators or aluminum engines.**
- **Do not exceed a 50% mixture of coolant and water.**
- **Do not pour coolant or water into the radiator when the engine is hot.**

1. Park machine safely on a level surface. (See Parking Safely in the SAFETY section.)

2. Raise hood.

3. Check coolant level:



M97132a

- If engine is hot, coolant should be up to “H” mark (A) on recovery tank.
- If engine is cold, coolant should be at “L” mark (B) on recovery tank.

4. Remove cap (C) from recovery tank if coolant is low. Add ethylene glycol antifreeze (without stop-leak additive) and water in a 50:50 ratio to bring coolant up to proper level.

5. Install and tighten recovery tank cap.

6. Clean debris from air intake screens and radiator.

7. Check condition of hoses. Check for leaks or loose connections.

## Servicing Cooling System

**CAUTION: Avoid injury! The radiator will be hot and can burn skin. Built-up pressure may cause explosive release of coolant when the radiator cap is removed:**

**• Shut off the engine and allow to cool.**

**• Do not remove the cap unless the radiator and the engine are cool enough to touch with bare hands.**

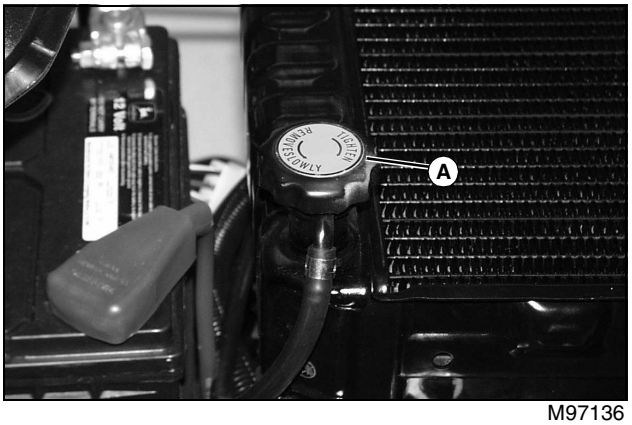
**• Slowly loosen the cap to the first stop to release all pressure. Then remove the cap.**

### Draining Cooling System

1. Park machine safely on a level surface. (See Parking Safely in the SAFETY section.)

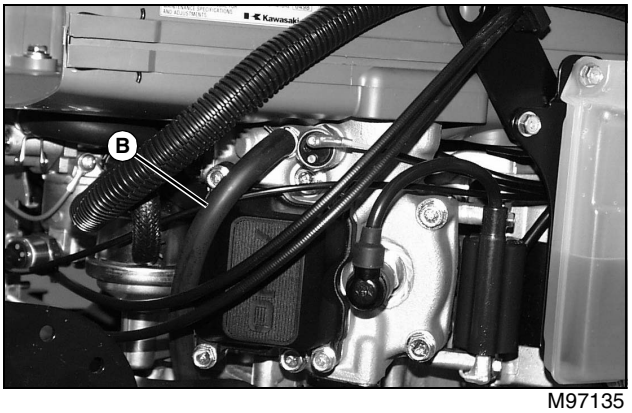
2. Allow engine to cool.

3. Raise hood.



M97136

4. Loosen and remove radiator cap (A) slowly to release all pressure, then tighten cap.



M97135

5. Locate hose (B) between water pump and cylinder head on left side of engine. Loosen upper hose clamp with pliers.

6. Position a bucket below the hose.

7. Remove hose from fitting on cylinder head. Drain all coolant into bucket.

***NOTE: If pressure has been released from radiator and cap is tight, only a small amount of coolant should escape from cylinder head.***

8. Install hose and clamp to cylinder head fitting after coolant has drained completely.

9. Flush the cooling system.

### Flushing Cooling System

1. Remove radiator cap.

2. Fill cooling system with clean water and John Deere Cooling System Cleaner, or John Deere Cooling System Quick Flush or an equivalent. Follow directions on the can.

3. Install and tighten radiator cap.

4. Start and run engine until it reaches operating temperature.

5. Stop the engine.

6. Drain cooling system immediately before rust and dirt settle.

7. Install hose and clamp.

**Filling Cooling System**

**IMPORTANT: Avoid damage! Using incorrect coolant mixture can damage the radiator:**

**• Do not operate engine with plain water.**

**• Use ethylene-glycol based antifreeze approved for use in aluminum radiators or aluminum engines.**

**• Do not exceed a 50% mixture of coolant and water.**

**• Do not pour coolant or water into the radiator when the engine is hot.**

1. Allow radiator to cool.

2. Remove radiator cap.

3. Fill cooling system. Coolant capacity is 2.6 L (2.8 qt).

4. Install and tighten radiator cap.

5. Run engine until it reaches operating temperature.

6. Stop the engine.

7. Check coolant level while engine is hot and after cooling to ensure proper level in recovery tank. If necessary, fill recovery tank to proper level.

8. Tighten hose clamps if necessary.

9. Lower the hood.

## Transmission Oil

**IMPORTANT: Avoid damage! Dirt and debris in the hydraulic oil can cause damage to the transmission:**

- **Do not drain or change the transmission oil.**
- **See your John Deere dealer for service.**
- **Do not mix transmission oils.**

SAE 5W30 engine oil with API classification of SE or higher is recommended in the transmission.

## Checking Transmission Oil Level

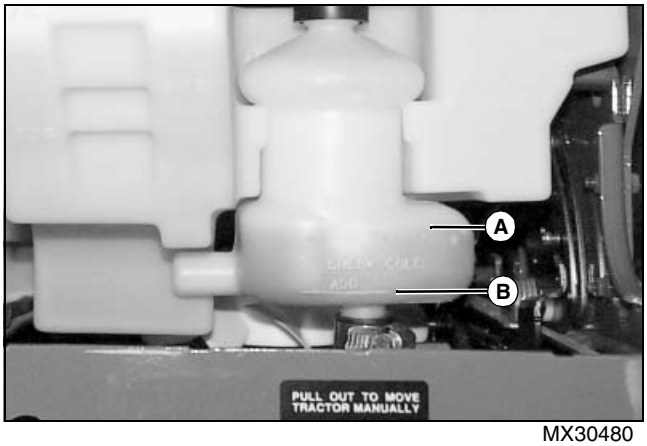
**IMPORTANT: Avoid damage! Dirt and debris in the hydraulic oil can cause damage to the transmission:**

- **Do not drain or change the transmission oil.**
- **See your John Deere dealer for service.**
- **Do not mix transmission oils.**

1. Park machine safely on a level surface. (See Parking Safely in the SAFETY section.)

**IMPORTANT: Avoid damage! Hot hydraulic oil will expand and show incorrect oil level. Check level in reservoir when engine is off and oil is cold.**

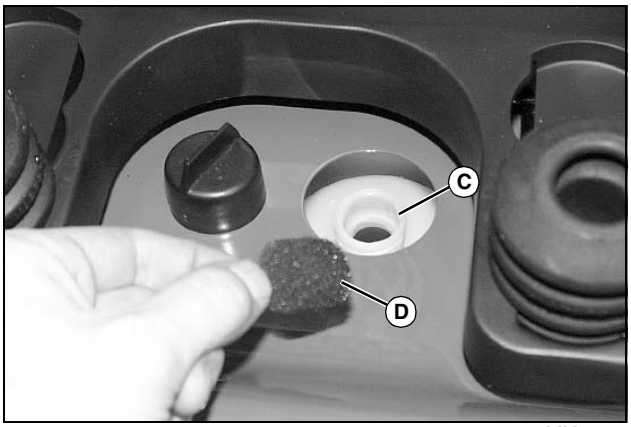
2. Allow machine to cool.




MX30480

3. Locate transmission oil reservoir at rear of machine. Reservoir is marked FULL (A) and ADD (B).

**IMPORTANT: Avoid damage! Contamination can damage the hydraulic system. Clean thoroughly around reservoir fill cap before opening.**




MX8395

4. If oil level is low, slide operator's seat ahead and tip it forward to access reservoir (C). Clean area around reservoir cap.

5. Remove cap and filter (D).

6. Add SAE 5W30 oil until oil level is at FULL mark on reservoir.

7. Install filter and cap.

8. Lower and adjust operator's seat.

9. Start engine.

10. Operate machine forward and in reverse several times.

11. Park machine safely on a level surface. (See Parking Safely in the SAFETY section.)

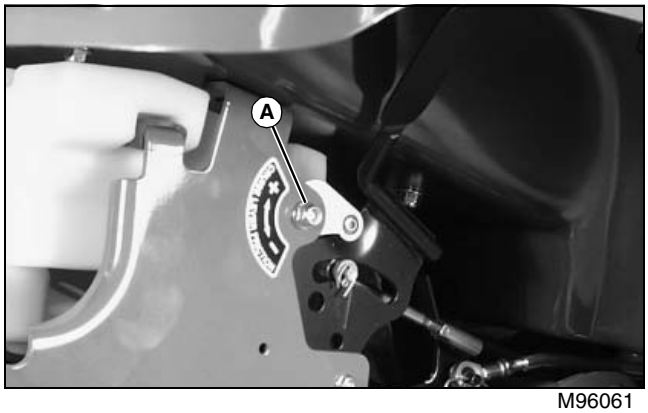
12. Wait at least 3 minutes for hydraulic oil to cool.

13. Check oil level again. Add oil if necessary.

## Adjusting Cruise Control Lever

***NOTE: The cruise control lever is held in position by an adjustable friction mechanism pre-set at the factory. The amount of friction can be adjusted for the operator's preference or to accommodate normal wear.***

1. Park machine safely. (See Parking Safely in the SAFETY section.)




M96061

**Picture Note: Right wheel shown removed for clarity. Removal of wheel is not required.**

2. Locate adjusting bolt (A) at right wheel well.

3. Turn adjusting bolt so cruise control lever moves easily forward and rearward while remaining stationary in any desired position:

- Clockwise (+) - increases friction on lever.
- Counterclockwise (–) - decreases friction on lever.

## Removing Mower

**CAUTION: Avoid injury! Rotating blades are dangerous. Before adjusting or servicing mower:**

**• Disconnect spark plug wire(s) or battery negative (-) cable to prevent engine from starting accidently.**

**• Always wear gloves when handling mower blades or working near blades.**

1. Park machine safely. (See Parking Safely in the SAFETY section.)

2. Press lift pedal in the transport position.

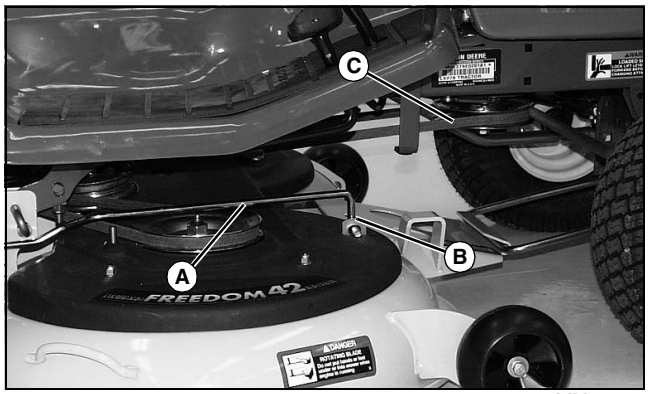
3. Turn mower height control knob to “0” position.

**CAUTION: Avoid injury! Lift pedal is spring-assisted and may have unexpected movement.**

**Lock the lift pedal in rearward position before removing or installing the mower.**

4. Release pedal, pull back and pull up on lock handle.

**CAUTION: Avoid injury! Drive belt tension rod is spring-assisted and under tension. Keep a secure grasp on rod at all times while releasing or applying drive belt tension.**




MX0237

5. Remove drive belt tension:

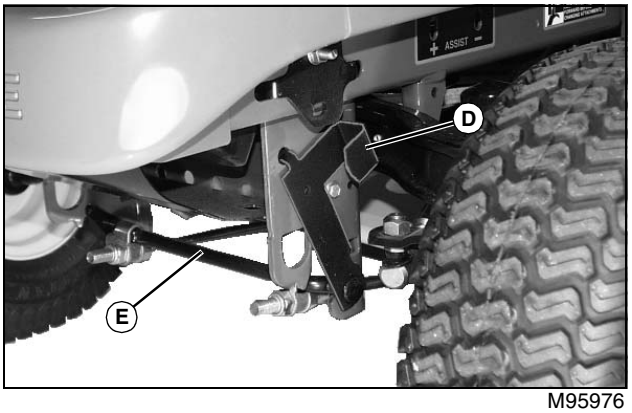
   a. Grasp and hold tension rod (A) securely.

   b. Disengage rod from retaining bracket (B).

   c. Move rod as far as possible toward rear wheel to remove all belt tension.

6. Hold tension rod in the released position. Remove mower drive belt (C) from engine drive sheave.

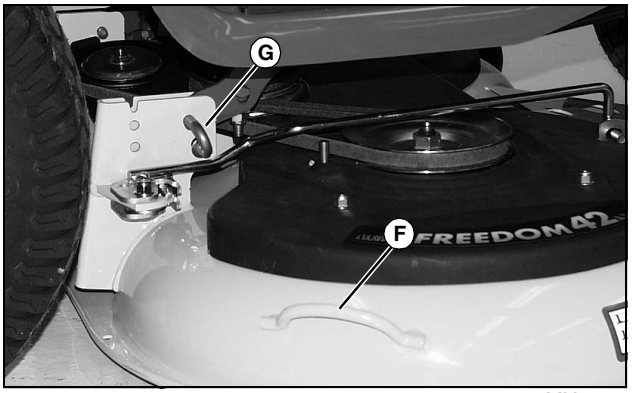
7. Move tension rod to the latched position.




M95976

8. Pull out and push down on lever (D) to release front lift rod assembly.

9. Remove front lift rod assembly (E) from machine and mower deck.




MX3862

10. Lift up on rear of mower using handle (F). Pull outward on J-pin (G) to disconnect draft arms. Repeat at other side.

11. Install draft arms on spring holders.

12. Slide mower deck out from under machine.

## Installing Mower

**CAUTION: Avoid injury! Rotating blades are dangerous. Before adjusting or servicing mower:**

**• Disconnect spark plug wire(s) or battery negative (-) cable to prevent engine from starting accidently.**

**• Always wear gloves when handling mower blades or working near blades.**

**IMPORTANT: Avoid damage! If equipped, remove tire chains before installing mower to machine to prevent mower damage.**

1. Park machine safely. (See Parking Safely in the SAFETY section.)

2. Press lift pedal in the transport position.

3. Turn mower height control knob to “0” position.

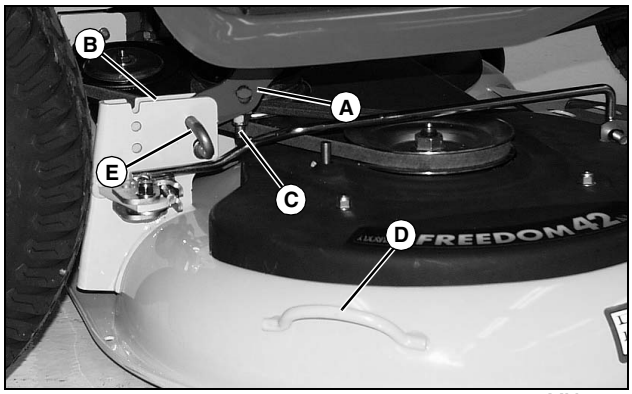
**CAUTION: Avoid injury! Lift pedal is spring-assisted and may have unexpected movement.**

**Lock the lift pedal in rearward position before removing or installing the mower.**

4. Pull back lift pedal and lock handle up.

5. Install draft arms in spring holder.

6. Slide mower under machine.

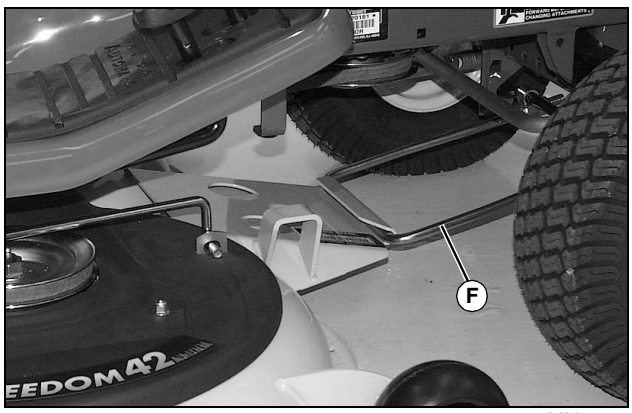



MX3862

7. Place lift arms (A) between mower lift brackets (B).

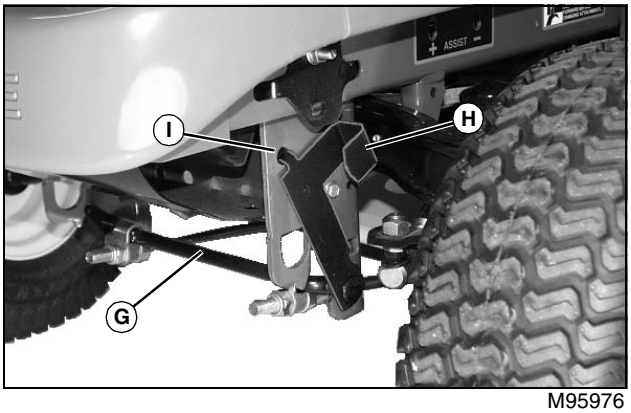
8. Make sure belt is routed to the inside of lift link (C).

9. Lift up on rear of mower using handle (D). Release J-pin (E) to connect mower deck to lift arms. Repeat at other side.




MX0240

10. Hook front lift rod assembly (F) into mower bracket.

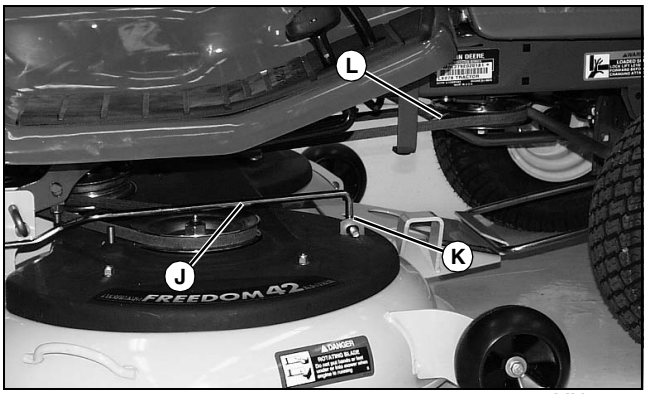



M95976

11. Place front lift rod (G) into frame hooks so lever (H) is at left side of machine. Make sure rod is seated in frame hooks.

12. Push up lever (H) until tab (I) locks into hole in frame.

**CAUTION: Avoid injury! Drive belt tension rod is spring-assisted and under tension. Keep a secure grasp on rod at all times while releasing or applying drive belt tension.**




MX0237

13. Remove drive belt tension rod (J) from bracket (K) and pivot rod clockwise as far as possible.

14. Hold tension rod in the released position. Install mower drive belt (L) onto engine drive sheave.

**CAUTION: Avoid injury! Drive belt tension rod is spring-assisted and under tension. Keep a secure grasp on rod at all times while releasing or applying drive belt tension.**

15. Pivot the drive belt tension rod toward front of machine to tighten drive belt. Hook tension rod into bracket on mower.

16. Adjust the lift assist spring if necessary.

17. Adjust mower level front-to-rear and side-to-side.

18. Adjust mower wheels for desired cutting height.

19. Pull back on lift pedal and push down handle to unlock.

## Adjusting Lift Assist Spring

***NOTE: The weight of the mower affects ease of lifting. Adjust the lift assist spring for your particular mower deck model.***


MX30708

1. Make sure yellow indicator (A) is aligned with the proper mark for the mower deck model installed. If not, adjust the lift assist spring so the indicator is aligned with the correct mower deck mark.

2. Turn adjusting bolt (B) at front of machine frame to adjust lift assist spring:

- Clockwise - Increases spring tension and moves indicator toward front of machine for heavier mowers.
- Counterclockwise - Decreases spring tension and moves indicator toward rear of machine for lighter mowers.

## Checking Mower Blade Timing

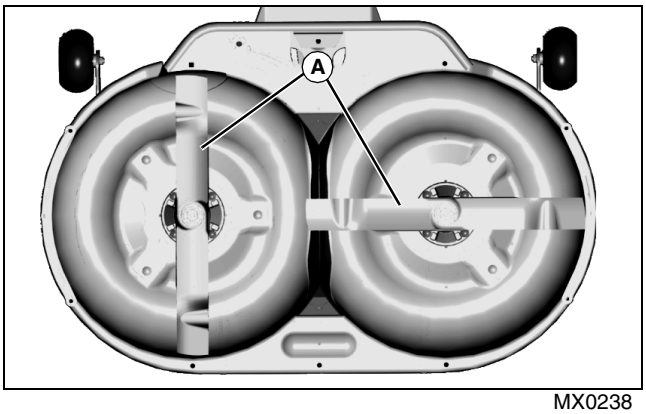
**IMPORTANT: Avoid damage! Mower blade impact can cause blades to become out of time. Do not operate mower before checking blade condition and timing.**

1. Park machine safely. (See Parking Safely in the SAFETY section).

2. Remove mower deck.

3. Check condition of mower blades. Replace if damaged.

**IMPORTANT: Avoid damage! Mower blades can collide if not properly timed. Blades must be aligned perpendicular (90°) to each other.**



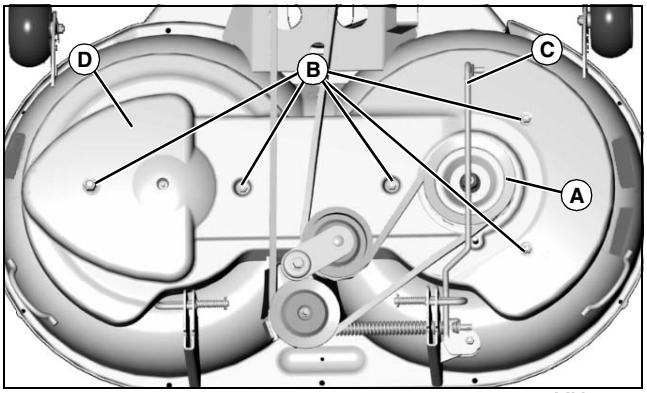

MX0238

4. Make sure mower blades (A) are aligned perpendicular (90°) to each other. If not, adjust mower timing belt.

## Adjusting Mower Timing Belt

1. Park machine safely. (See Parking Safely in the SAFETY section).

2. Remove mower deck.




MX3868

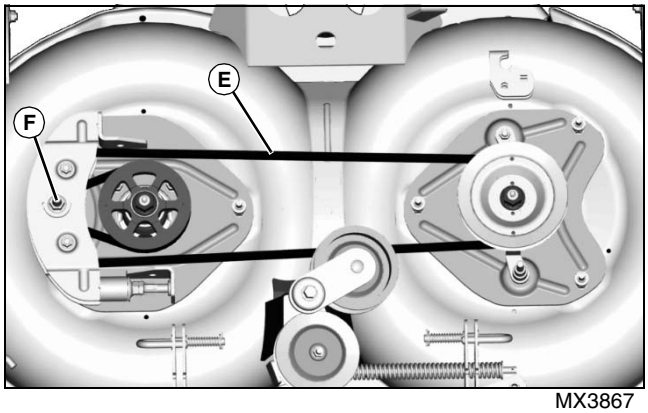
3. Remove drive belt from right spindle sheave (A).

4. Remove five nuts (B).

**CAUTION: Avoid injury! Belt tension rod is spring-assisted and under tension. Keep a secure grasp on rod at all times while releasing or applying drive belt tension.**

5. Remove drive belt tension rod (C) from bracket and pivot rod clockwise as far as possible.

6. Hold tension rod in the released position and remove deck cover (D). Release tension rod slowly.



MX3867

7. Check timing belt (E) for damage.

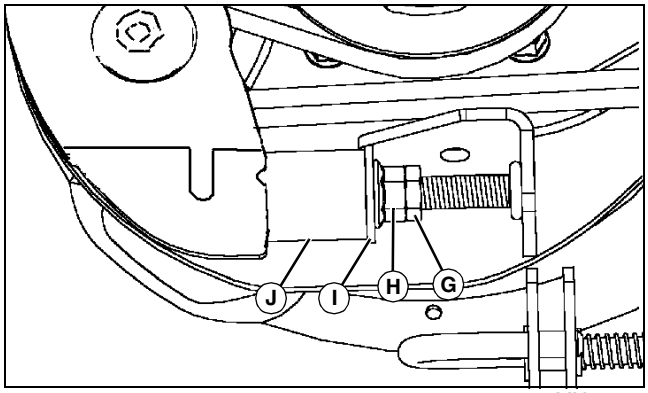
- If belt is damaged, replace it.
- If belt is not damaged, complete remaining steps to adjust belt.

8. Loosen center nut (F) on idler assembly. Do not remove the nut.

**IMPORTANT: Avoid damage! Mower blades can collide if not properly timed. Blades must be aligned perpendicular (90°) to each other.**

9. Make sure mower blades are aligned perpendicular (90°) to each other.

10. Rotate the spindle sprockets clockwise several turns and check belt is seated properly in sprockets and idlers.



MX0234

11. Adjust timing belt tension:

a. Loosen jam nut (G) and adjusting nut (H) so there is a small gap between washer (I) and spring bushing (J).

b. Turn adjusting nut (H) clockwise until washer (I) makes solid contact with spring bushing (J).

12. Tighten center nut on idler assembly to 73 N•m (54 lb-ft).

13. Tighten jam nut against adjusting nut to 27 N•m (20 lb-ft).

14. Hold tension rod in the released position and install the deck cover over timing belt and right spindle. Release tension rod slowly.

15. Make sure deck cover is seated on shoulder of cover support spacers and secure with five nuts.

16. Install drive belt on right spindle sheave.

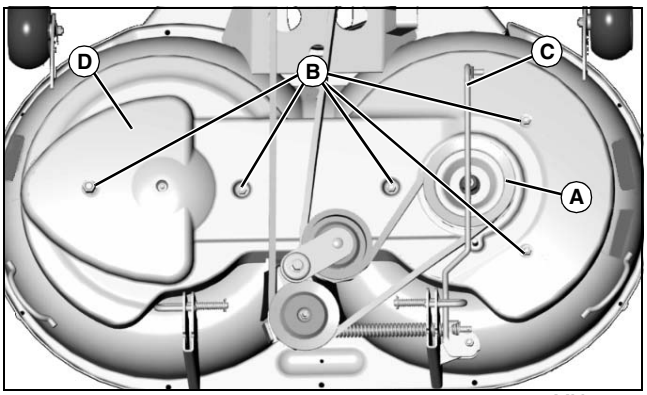
17. Pivot the drive belt tension rod counterclockwise and hook into bracket on mower.

18. Install mower deck.

## Replacing Mower Timing Belt

1. Park machine safely. (See Parking Safely in the SAFETY section).

2. Remove mower deck.



MX3868

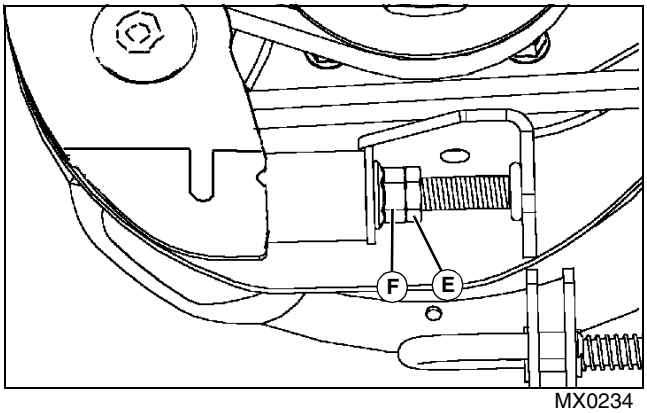
3. Remove drive belt from right spindle sheave (A).

4. Remove five nuts (B).

**CAUTION: Avoid injury! Belt tension rod is spring-assisted and under tension. Keep a secure grasp on rod at all times while releasing or applying drive belt tension.**

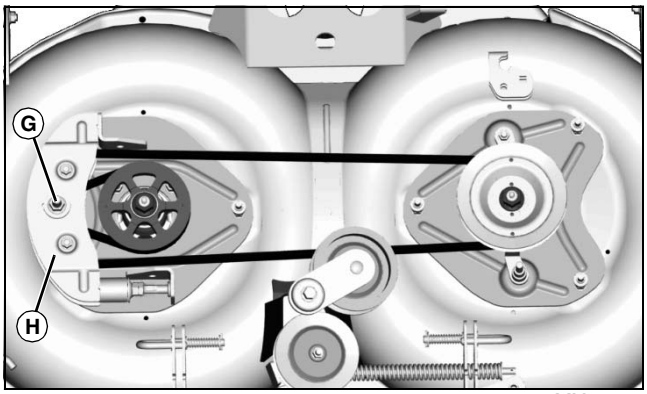
5. Remove drive belt tension rod (C) from bracket and pivot rod clockwise as far as possible.

6. Hold tension rod in the released position and remove deck cover (D). Release tension rod slowly.



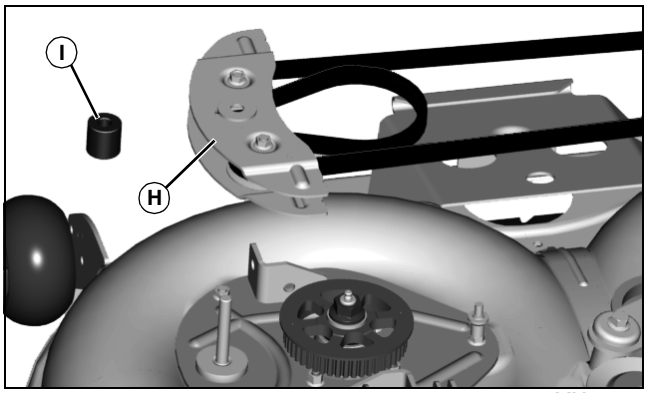
MX0234

7. Turn jam nut (E) and adjusting nut (F) counterclockwise to end of threaded rod. Remove the tensioning spring assembly.



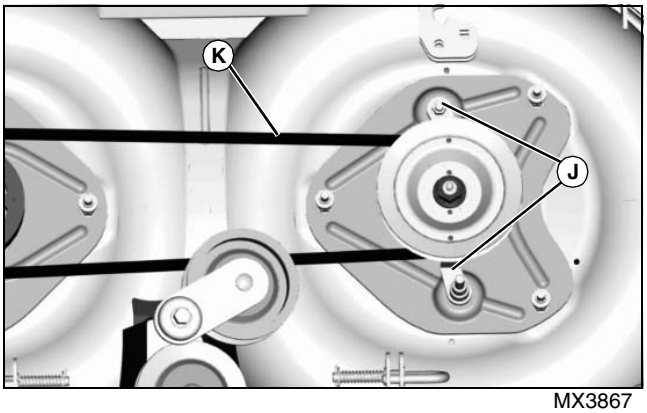
MX3867

8. Remove center nut and washer (G) from the idler assembly. Remove idler assembly (H) from left support plate. Do not loosen the other idler assembly hardware.



MX3863

9. Remove spacer (I) located between the idler assembly plates. Remove idler assembly (H) from timing belt.



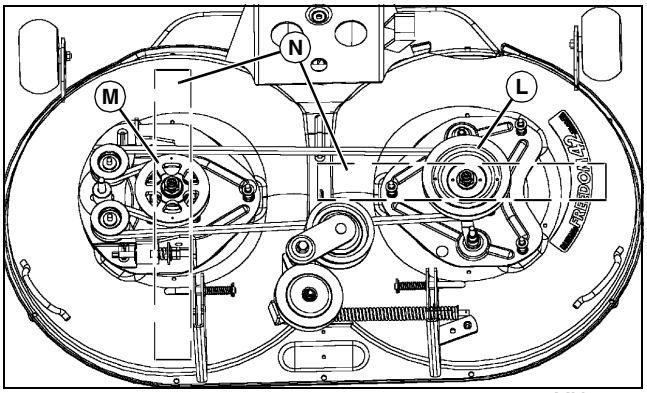
MX3867

10. Loosen belt guides (J) and rotate away from belt.

11. Remove timing belt (K).

**IMPORTANT: Avoid damage! Mower blades can collide if not properly timed. Blades must be aligned perpendicular (90°) to each other.**

***NOTE: The drain holes in sheave (L) and indentations in timing sprocket (M) are in alignment with the mower blades.***

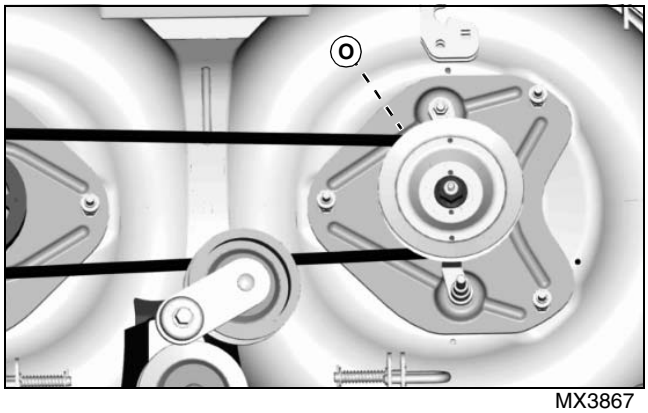


MX0236

12. Position mower blades (N) perpendicular (90°) to each other.

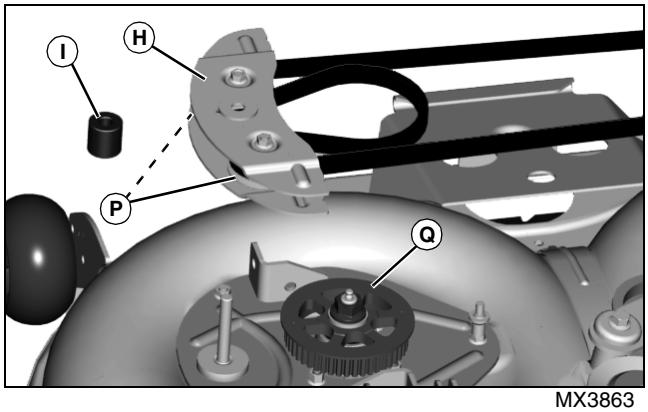
**IMPORTANT: Avoid damage! Handle timing belt with care. Do not crimp, fold, or twist the belt.**

13. Install new timing belt:



MX3867

a. Route belt around right spindle sprocket (O) located under mower drive belt sheave.



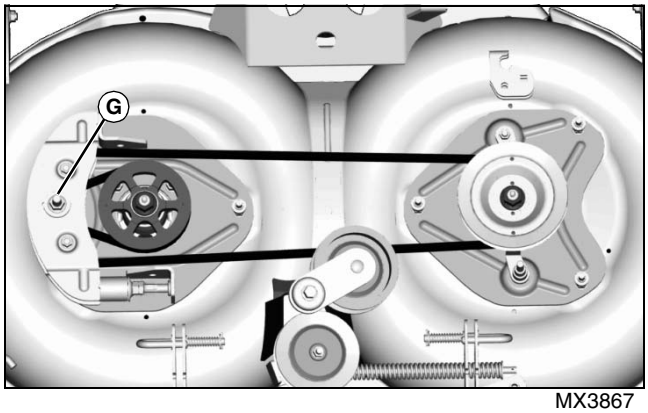
MX3863

b. Route belt around outside of idlers (P). Pull a belt loop between the idlers and through idler assembly (H).

c. Insert spacer (I) between idlers (P).

d. Install idler assembly onto stud of left support plate.

e. Wrap belt loop around spindle sprocket (Q).

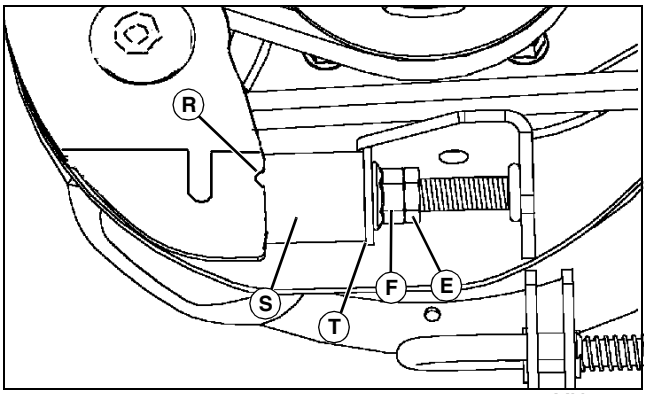


MX3867

14. Install washer and center nut (G) on idler assembly. Leave nut one turn loose.

15. Make sure mower blades are still positioned perpendicular (90°) to each other.

**IMPORTANT: Avoid damage! Do not overtighten the belt tensioning spring assembly.**



MX0234

16. Install tensioning spring assembly and adjust timing belt:

a. Align notch (R) of idler assembly with tab on spring bushing (S).

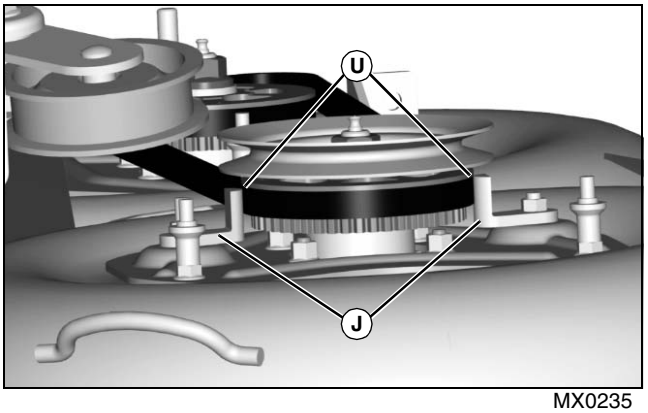
b. Rotate adjusting nut (F) clockwise until washer (T) makes solid contact with spring bushing.

c. Turn adjusting nut an additional 1/2 turn to allow for new belt stretch. Do not overtighten.

d. Rotate right spindle sheave several turns clockwise and observe belt is seated properly in sprockets and idlers.

e. Tighten jam nut (E) against adjusting nut.

17. Tighten center nut on idler assembly to 73 N•m (54 lb-ft).



MX0235

18. Adjust belt guides:

a. Hold a 1 mm (0.039 in.) thickness gauge between belt guides and sprocket rim at location (U).

b. Rotate belt guides (J) against thickness gauge.

c. Tighten belt guide nuts to 24 N•m (18 lb-ft).

d. Remove thickness gage.

e. Rotate the spindle clockwise and make sure belt does not contact belt guides. Clearance between belt and guides must be 1 ± 0.5 mm (0.039 ± 0.020 in.).

19. Hold tension rod in the released position and install the deck cover over timing belt and right spindle. Release tension rod slowly.

20. Make sure deck cover is seated on shoulder of cover support spacers and secure with five nuts.

21. Install drive belt on right spindle.

**CAUTION: Avoid injury! Belt tension rod is spring-assisted and under tension. Keep a secure grasp on rod at all times while releasing or applying drive belt tension.**

22. Pivot the drive belt tension rod counterclockwise and hook into bracket on mower.

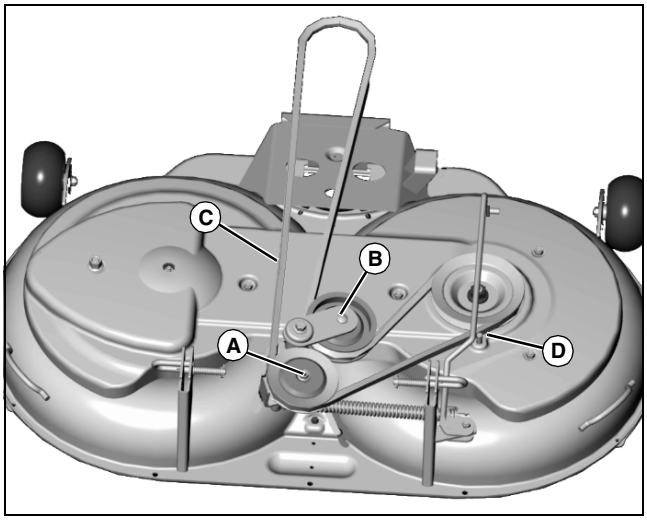
23. Install mower deck.

## Replacing Mower Drive (Primary)

**IMPORTANT: Avoid damage! Mower blades can collide if not properly timed. Blades must be aligned perpendicular (90°) to each other.**

1. Park machine safely. (See Parking Safely in the SAFETY section).

2. Remove mower deck.




MX0239

3. Loosen idler sheave (A) and tensioning sheave (B).

4. Remove drive belt (C).

5. Clean belt with a clean cloth.

6. Inspect belt for wear or damage. Replace as necessary.

**IMPORTANT: Avoid damage! Make sure belt is routed to the inside of the belt guide.**

7. Install belt to mower so it is routed to the inside of belt guide (D).

8. Tighten idler sheave and tensioning sheave.

9. Install the mower.

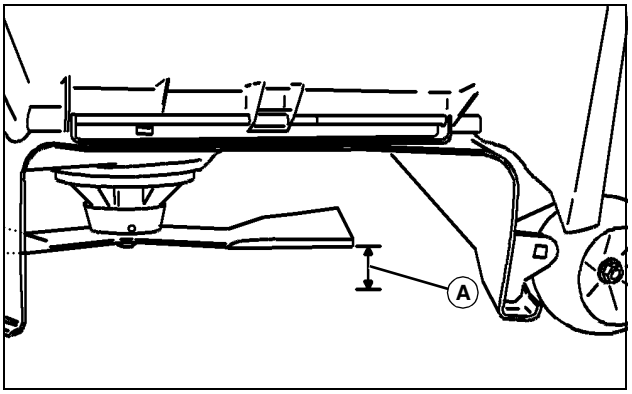
## Checking for Bent Mower Blades

**CAUTION: Avoid injury! Mower blades are sharp. Always wear gloves when handling mower blades or working near blades.**

**Replace blades if defective. Never straighten or weld them.**

1. Park machine safely. (See Parking Safely in the SAFETY section.)

2. Raise mower deck to highest position to access blades.




MX4897

**Picture Note: Mower deck with side discharge used for illustration**

3. Measure distance (A) between blade tip and flat ground surface.

4. Rotate blade 180° and measure distance between other blade tip and flat ground surface.

5. Install new blade if the difference between the two measurements is more than 3 mm (1/8 in.).

6. Repeat for all blades.

## Servicing Mower Blades

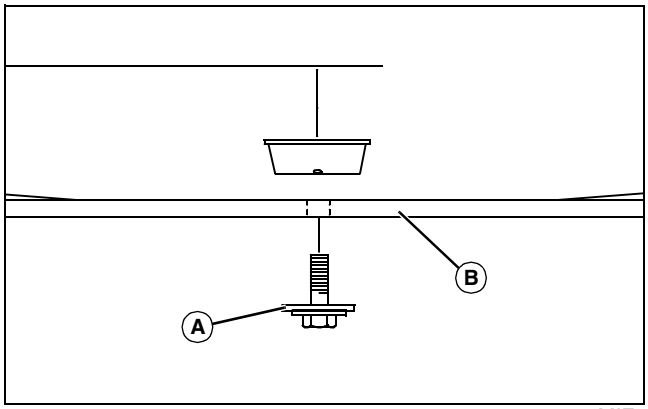
**CAUTION: Avoid injury! Mower blades are sharp. Always wear gloves when handling mower blades or working near blades.**

### Removing Mower Blades

1. Park machine safely. (See Parking Safely in the SAFETY section.)

2. Raise or remove mower deck.

3. Hold mower blade with glove to prevent blade from spinning.




MIF

4. Loosen and remove bolt with washer (A) and blade (B).

5. Inspect blade condition. Sharpen, balance, or replace blades as necessary.

### Installing Mower Blades

**IMPORTANT: Avoid damage! Mower blades must be installed properly to prevent loosening and damage:**

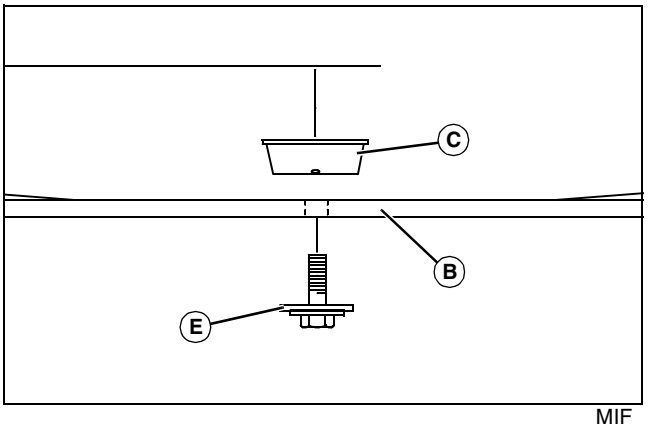
**• Bottom side of blades are marked RIGHT and LEFT with directional arrows for proper installation.**

**• Do not lubricate or use power tools to install blade bolts. Use hand torque wrench to tighten blade bolts.**


MX0237

1. Identify right and left sides of mower deck. Rear draft brackets (A) are marked “R” (right) and “L” (left).

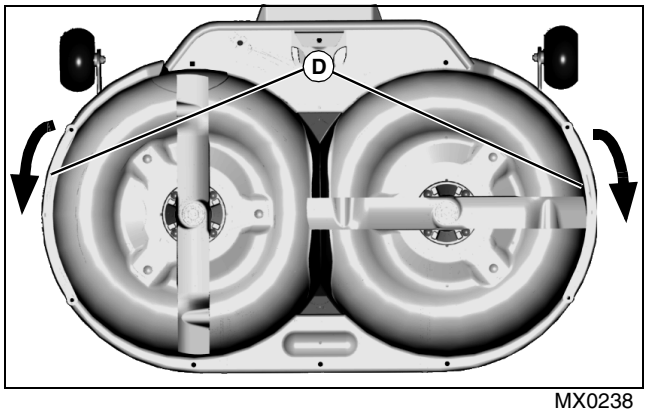
2. Identify “RIGHT” and “LEFT” blades as marked on bottom side of each blade.




MIF

3. Position correct side mower blade (B) onto mower spindle with cutting edge towards the ground. Align key on bottom of spindle with slot in blade.

4. Make sure deflector cup (C) is seated properly between mower spindle and blade.



MX0238

5. Locate directional arrows (D) on outside edges of mower deck. Make sure directional arrow on blade matches directional arrow on mower.

6. Install bolt with washer (E). Hand tighten bolt until blade makes complete contact with spindle.

7. Hold mower blade with glove to prevent blade from spinning. Tighten blade bolt to 62 N•m (46 lb-ft).

8. Check mower blade timing and adjust if necessary.

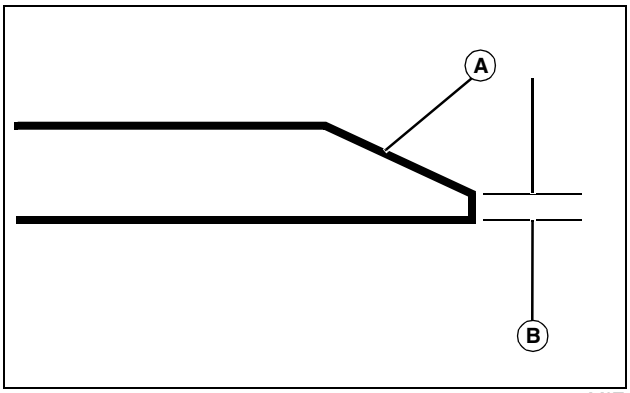
## Sharpening Blades

**CAUTION: Avoid injury! Mower blades are dangerous!**

**• Always wear gloves while working on blades.**

**• Always wear safety eye protection when grinding.**

• Sharpen blades with grinder, hand file, or electric blade sharpener.



MIF

• Keep original bevel (A) when grinding.

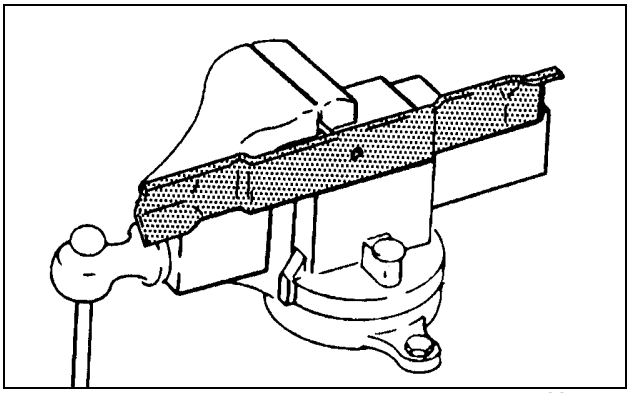
• Blade should have 0.40 mm (1/64 in.) cutting edge (B) or less.

• Balance blades before installing.

## Balancing Blades

**CAUTION: Avoid injury! Mower blades are sharp. Always wear gloves when handling mower blades or working near blades.**

1. Clean blade.


M61524

2. Put blade on nail in a vise. Turn blade to horizontal position.

3. Check balance. If blade is not balanced, heavy end of blade will drop.

4. Grind bevel of heavy end. Do not change blade bevel.

## Removing Mower

**CAUTION: Avoid injury! Rotating blades are dangerous. Before adjusting or servicing mower:**

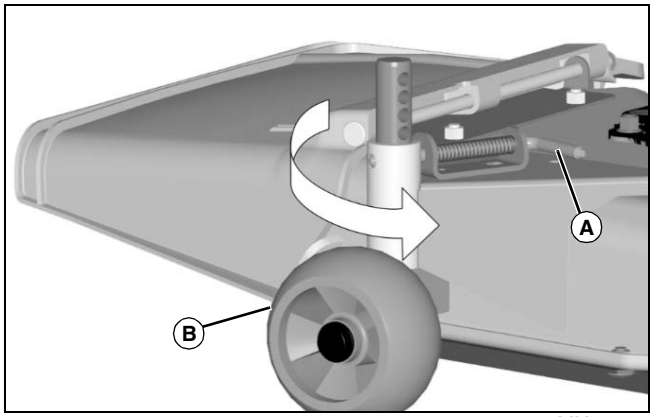
**• Disconnect spark plug wire(s) or battery negative (-) cable to prevent engine from starting accidently.**

**• Always wear gloves when handling mower blades or working near blades.**

1. Park machine safely. (See Parking Safely in the SAFETY section.)

2. Press lift pedal in the transport position and pull lock handle up.

3. Turn mower height control knob to “0” position.




MX8331

4. 54 Inch Mower Only - Rotate all mower wheels to allow mower deck to be rolled outward away from machine:

a. Pull out on pin (A).

b. Rotate mower wheel (B) 90° and align hole in wheel shaft with pin.

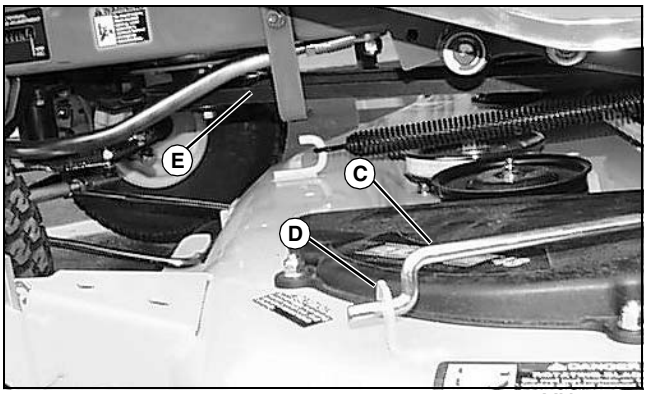
c. Release pin to lock mower wheel in rotated position.

**CAUTION: Avoid injury! Lift pedal is spring-assisted and may have unexpected movement.**

**Lock the lift pedal in rearward position before removing or installing the mower.**

5. Release lift pedal, pull back and pull lock handle up.

**CAUTION: Avoid injury! Drive belt tension rod is spring-assisted and under tension. Keep a secure grasp on rod at all times while releasing or applying drive belt tension.**




MX30337

6. Remove drive belt tension:

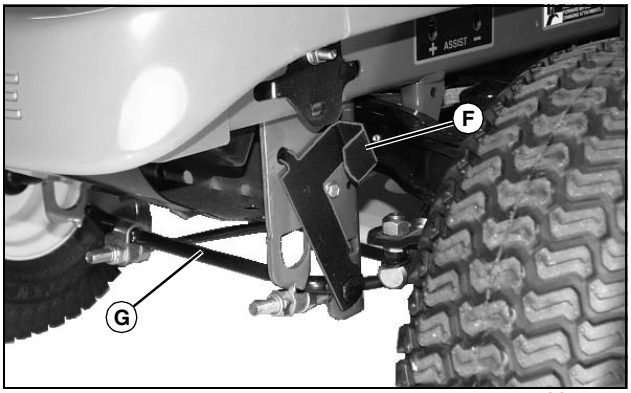
a. Grasp and hold tension rod (C) securely.

b. Disengage rod from retaining bracket (D).

c. Move rod as far as possible toward rear wheel to remove all belt tension.

7. Hold tension rod in the released position. Remove mower drive belt (E) from engine drive sheave.

8. Move tension rod to the latched position.

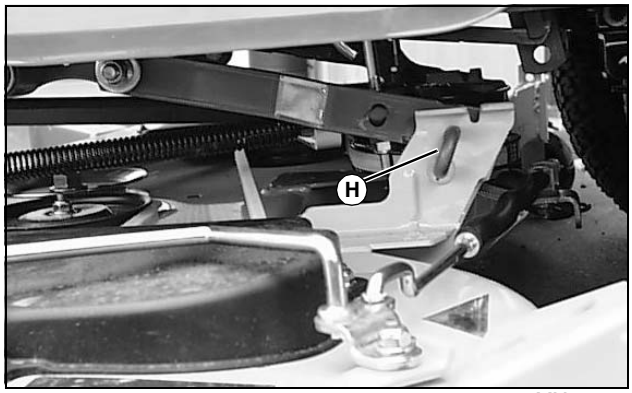



M95976

9. Pull out and push down on lever (F) to release front lift rod assembly.

10. Remove front lift rod assembly (G) from machine and mower deck.

***NOTE: It may be necessary to manually lift up on rear of mower deck to pull out J-pins.***




MX30338

11. Pull outward on J-pins (H) at both sides of mower to disconnect draft arms.

12. Install draft arms on spring holders.

13. Slide mower deck out from under machine. Remove 54 mower from right side only.

## Installing Mower

**CAUTION: Avoid injury! Rotating blades are dangerous. Before adjusting or servicing mower:**

- **Disconnect spark plug wire(s) or battery negative (-) cable to prevent engine from starting accidently.**
- **Always wear gloves when handling mower blades or working near blades.**

**IMPORTANT: Avoid damage! If equipped, remove tire chains before installing mower to machine to prevent mower damage.**

1. Park machine safely. (See Parking Safely in the SAFETY section.)

2. Press lift pedal in the transport position.

3. Turn mower height control knob to “0” position.

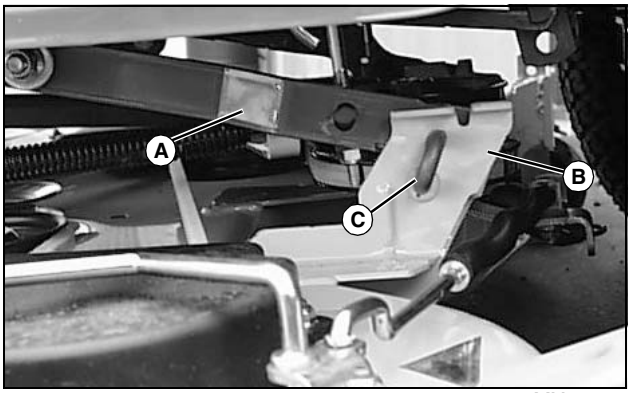
4. Release, pull back pedal and pull uplock handle.

5. Install draft arms on spring holders.

**CAUTION: Avoid injury! Lift pedal is spring-assisted and may have unexpected movement.**

**Lock the lift pedal in rearward position before removing or installing the mower.**

6. Slide mower under machine.



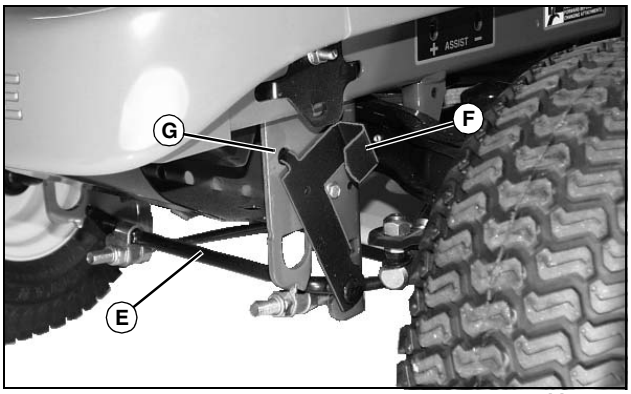

MX30338

7. Place lift arms (A) between mower lift brackets (B).

8. Release J-pin (C) to connect mower deck to lift arms. Repeat at other side.


MX30339

9. Hook front lift rod assembly (D) into mower bracket.



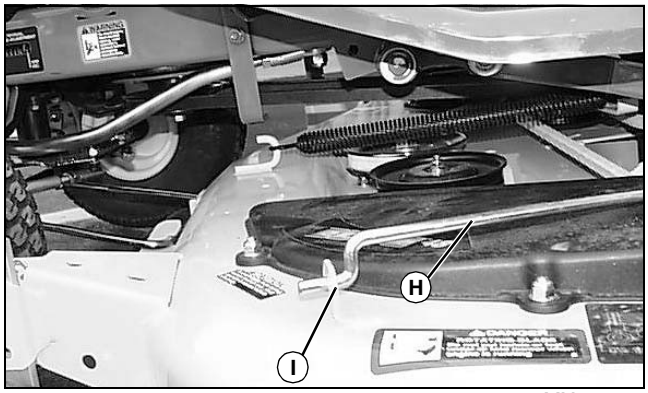

M95976

10. Place front lift rod (E) into frame hooks so lever (F) is at left side of machine. Make sure rod is seated in frame

hooks.

11. Push up lever (F) until tab (G) locks into hole in frame.

**CAUTION: Avoid injury! Drive belt tension rod is spring-assisted and under tension. Keep a secure grasp on rod at all times while releasing or applying drive belt tension.**




MX30337

12. Remove drive belt tension rod (H) from bracket (I) and pivot rod as far as possible toward rear wheel to remove all belt tension.

13. Hold tension rod in the released position. Install mower drive belt (J) onto engine drive sheave.

**CAUTION: Avoid injury! Drive belt tension rod is spring-assisted and under tension. Keep a secure grasp on rod at all times while releasing or applying drive belt tension.**

14. Pivot the drive belt tension rod toward front of machine to tighten drive belt. Hook tension rod into bracket on mower.

15. 54 Inch Mower Only - Rotate mower wheels to operating position.

16. Adjust the lift assist spring if necessary.

17. Adjust mower level front-to-rear and side-to-side.

18. Adjust mower wheels for desired cutting height.

19. Pull back on lift pedal and push down handle to unlock.

## Adjusting Lift Assist Spring

***NOTE: The weight of the mower affects ease of lifting. Adjust the lift assist spring for your particular mower deck model.***


MX30708

1. Make sure yellow indicator (A) is aligned with the proper mark for the mower deck model installed. If not, adjust the lift assist spring so the indicator is aligned with the correct mower deck mark.

2. Turn adjusting bolt (B) at front of machine frame to adjust lift assist spring:

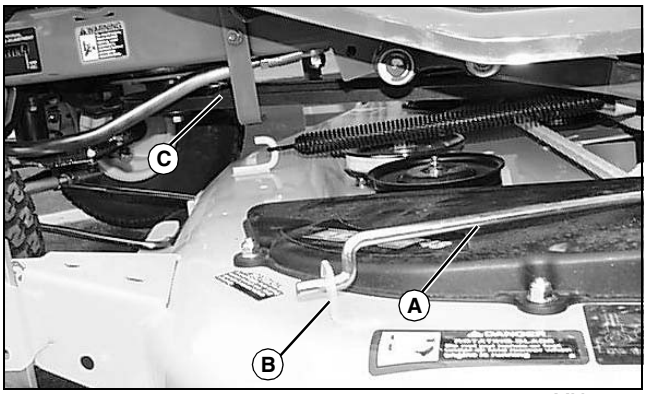
- Clockwise - Increases spring tension and moves indicator toward front of machine for heavier mowers.
- Counterclockwise - Decreases spring tension and moves indicator toward rear of machine for lighter mowers.

## Replacing Mower Drive (Primary) Belt

1. Park machine safely. (See Parking Safely in the SAFETY section).

2. Pull back on lift pedal and lock with handle in up position.

**CAUTION: Avoid injury! Drive belt tension rod is spring-assisted and under tension. Keep a secure grasp on rod at all times while releasing or applying drive belt tension.**




MX0068

3. Remove drive belt tension:

a. Grasp and hold tension rod (A) securely.

b. Disengage rod from retaining bracket (B).

c. Move rod as far as possible toward rear wheel to remove all belt tension.

4. Hold tension rod in the released position.

5. Remove mower drive belt (C) from engine drive sheave and mower drive sheave.

6. Clean belt with a clean cloth.

7. Inspect belt for wear or damage. Replace as necessary.

8. Install belt on mower sheave and engine sheave.

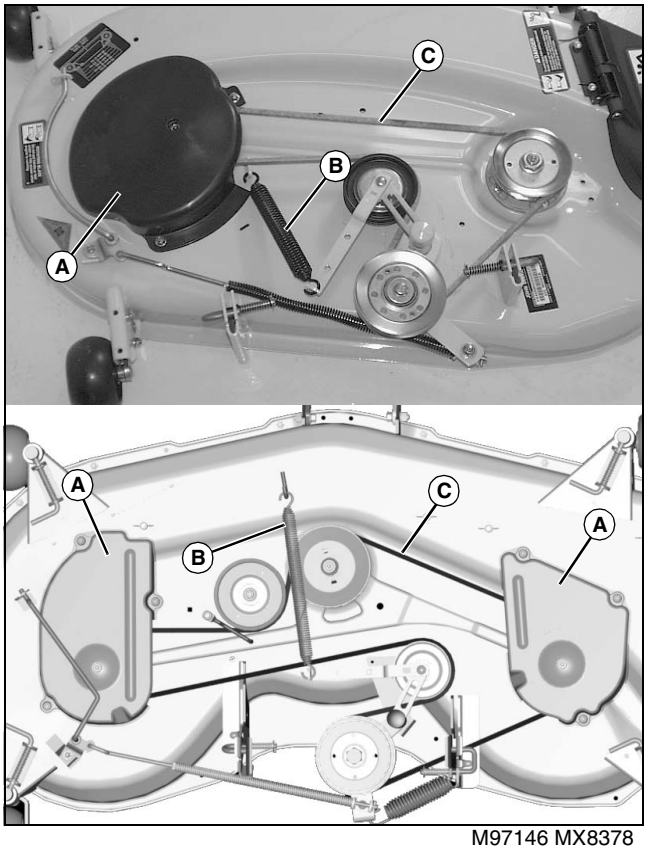
9. Pivot the drive belt tension rod toward front of machine to tighten drive belt. Hook tension rod into bracket on mower.

10. Pull back lift pedal and push handle down to unlock.

## Replacing Mower Deck (Secondary) Belt

1. Park machine safely. (See Parking Safely in the SAFETY section).

2. Remove mower deck.




M97146 MX8378

**Picture Note: 42 Inch Mower shown upper, 48 Inch and 54 Inch Mowers shown lower.**

3. Remove belt shields (A).

**CAUTION: Avoid injury! Springs are installed under tension. Use caution when attaching or disconnecting springs. Wear eye protection.**

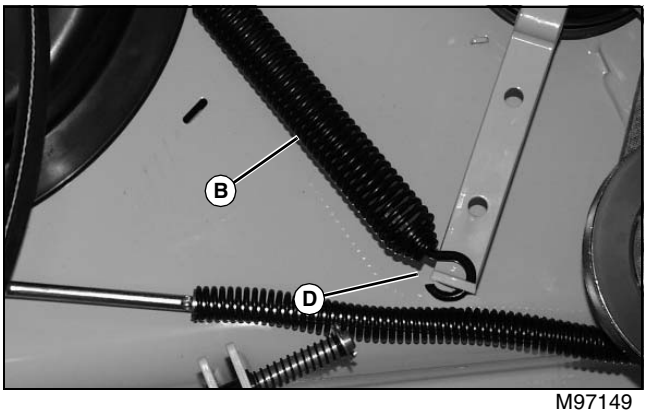
4. Disconnect idler spring (B).

5. Remove mower belt (C).

6. Clean upper mower deck and sheaves.

7. Inspect belt for wear and damage. Replace if necessary.

8. Install belt on mower.




M97149

9. Connect idler spring (B). Make sure open end (D) of the spring hook faces outward on the idler arm.

10. Install belt shields.

11. Install mower to machine.

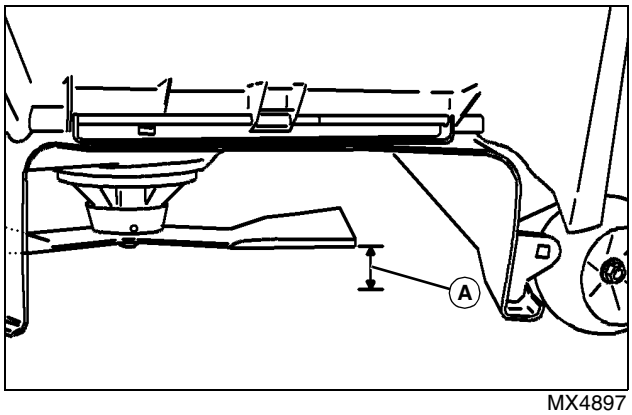
## Checking for Bent Mower Blades

**CAUTION: Avoid injury! Mower blades are sharp. Always wear gloves when handling mower blades or working near blades.**

**Replace blades if defective. Never straighten or weld them.**

1. Park machine safely. (See Parking Safely in the SAFETY section.)

2. Raise mower deck to highest position to access blades.




MX4897

**Picture Note: Mower deck with side discharge used for illustration**

3. Measure distance (A) between blade tip and flat ground surface.

4. Rotate blade 180° and measure distance between other blade tip and flat ground surface.

5. Install new blade if the difference between the two measurements is more than 3 mm (1/8 in.).

6. Repeat for all blades.

## Servicing Mower Blades

**CAUTION: Avoid injury! Service mower blades safely:**

**• Disconnect spark plug wires or negative (-) battery cable to prevent accidental startup.**

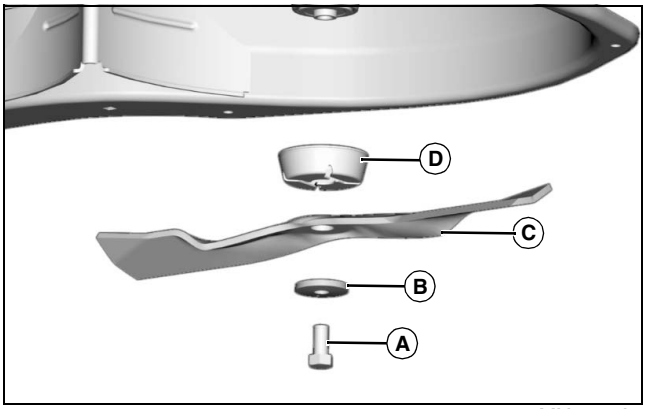
**• Mower blades are sharp. Always wear gloves when handling mower blades or working near blades.**

### Removing Mower Blades

1. Park machine safely. (See Parking Safely in the SAFETY section.)

2. Raise or remove mower deck.

3. Block mower blade with a piece of wood to prevent it from spinning.




MX7589A

4. Loosen and remove bolt (A), washer (B), and blade (C).

5. Inspect blade condition. Sharpen, balance, or replace blades as necessary.

### Installing Mower Blades

1. Make sure deflector cup (D) is seated properly between mower spindle and blade.

2. Position mower blade (C) with cutting edge towards the ground onto the mower spindle.

3. Install blade washer (B) with cup side toward the blade.

4. Install and tighten bolt (A) by hand until mower blade is in full contact (fully seated) with spindle.

5. Block mower blade with a piece of wood to prevent spinning.

6. Tighten blade bolt:

- 42 Mower - 75 N•m (55 lb-ft).
- 48 and 54 Mowers - 68 N•m (50 lb-ft).

7. Repeat for all blades.

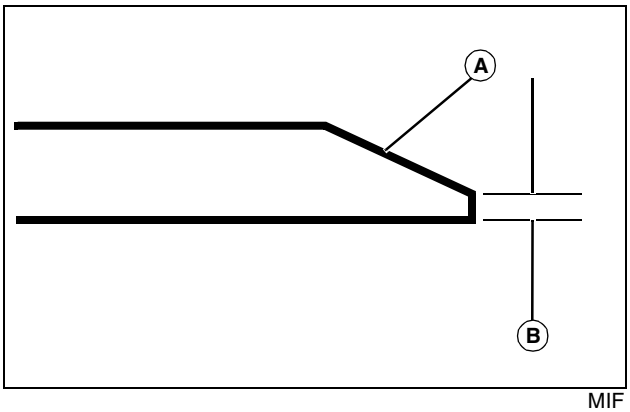
## Sharpening Blades

**CAUTION: Avoid injury! Mower blades are dangerous!**

**• Always wear gloves while working on blades.**

**• Always wear safety eye protection when grinding.**

• Sharpen blades with grinder, hand file, or electric blade sharpener.



MIF

• Keep original bevel (A) when grinding.

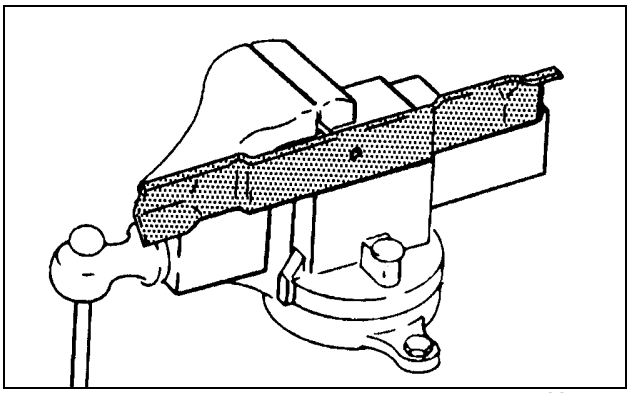
• Blade should have 0.40 mm (1/64 in.) cutting edge (B) or less.

• Balance blades before installing.

## Balancing Blades

**CAUTION: Avoid injury! Mower blades are sharp. Always wear gloves when handling mower blades or working near blades.**

1. Clean blade.


M61524

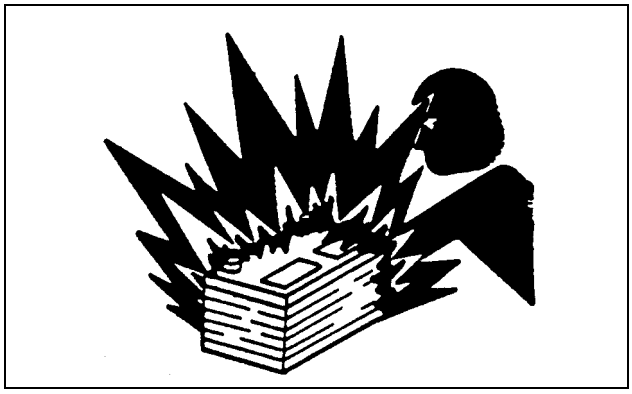
2. Put blade on nail in a vise. Turn blade to horizontal position.

3. Check balance. If blade is not balanced, heavy end of blade will drop.

4. Grind bevel of heavy end. Do not change blade bevel.

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

## Service the Battery Safely



**CAUTION: Avoid injury! Battery electrolyte contains sulfuric acid. It is poisonous and can cause serious burns:**

- **Wear eye protection and gloves.**
- **Keep skin protected.**
- **If electrolyte is swallowed, get medical attention immediately.**
- **If electrolyte is splashed into eyes, flush immediately with water for 15-30 minutes and get medical attention.**
- **If electrolyte is splashed onto skin, flush immediately with water and get medical attention if necessary.**

**The battery produces a flammable and explosive gas. The battery may explode:**

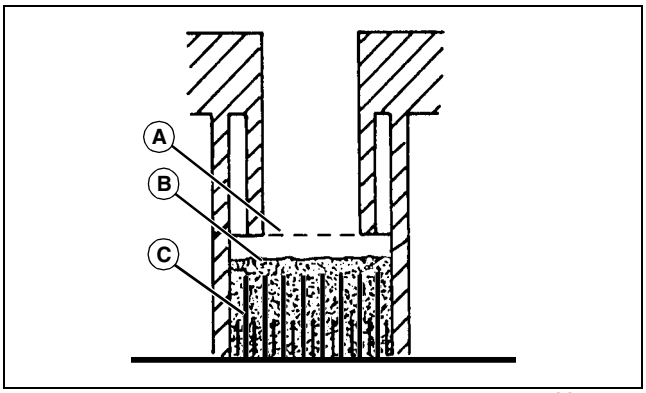
- **Do not smoke near battery.**
- **Wear eye protection and gloves.**
- **Do not allow direct metal contact across battery posts.**
- **Remove negative cable first when disconnecting.**
- **Install negative cable last when connecting.**

## Checking Battery Electrolyte Level

***NOTE: Add only distilled water to replace battery electrolyte.***

1. Park the machine safely. (See Parking Safely in the SAFETY section.)

2. Remove battery cell caps. Make sure cap vents are not plugged.




M39772

3. Check electrolyte level. Electrolyte (B) should be approximately halfway between bottom of filler neck (A) and top of plates (C).

**IMPORTANT: Avoid damage! Do not overfill battery. Electrolyte can overflow when battery is charged and cause damage.**

4. Add only distilled water if necessary.

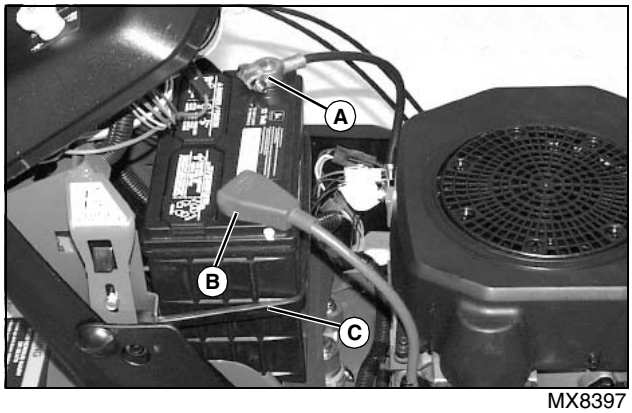
5. Install battery cell caps.

## Removing and Installing the Battery

### Removing

1. Park machine safely. (See Parking Safely in the SAFETY section.)

2. Raise the hood.



MX8397

3. Disconnect negative (–) battery cable (A).

4. Push red cover (B) away from positive (+) battery terminal and remove cable from battery.

5. Unhook rubber strap (C).

6. Remove battery.

**Installing**

**IMPORTANT: Avoid damage! Follow instructions carefully. Battery and battery cables must be installed correctly.**

**When installing battery, make sure battery posts are facing toward front of machine.**

1. Place battery on battery tray so battery posts are facing toward front of machine.

2. Connect positive (+) battery cable.

3. Connect negative (–) battery cable.

4. Apply general purpose grease or silicone spray to terminals to help prevent corrosion.

5. Slide red cover over positive battery terminal.

6. Secure black rubber strap (C).

## Cleaning Battery and Terminals

1. Park machine safely. (See Parking Safely in the SAFETY section.)

2. Disconnect and remove battery.

3. Wash battery with solution of four tablespoons of baking soda to one gallon of water. Be careful not to get the soda solution into the cells.

4. Rinse the battery with plain water and dry.

5. Clean terminals and battery cable ends with wire brush until bright.

6. Install battery.

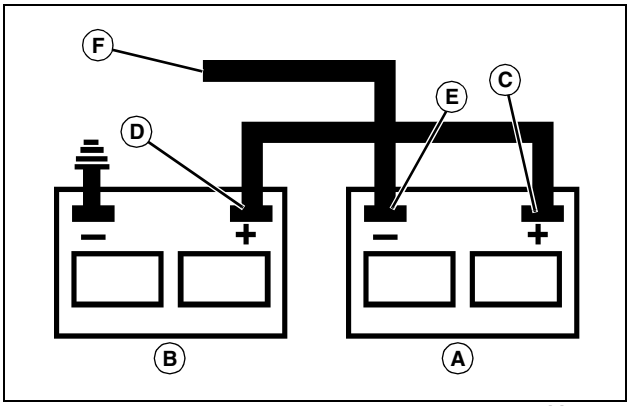
7. Attach cables to battery posts using washers and nuts.

8. Apply spray lubricant to terminal to prevent corrosion.

## Using Booster Battery

**CAUTION: Avoid injury! The battery produces a flammable and explosive gas. The battery may explode:**

- **Do not smoke or have open flame near battery.**
- **Wear eye protection and gloves.**
- **Do not jump start or charge a frozen battery. Warm battery to 16°C (60°F).**
- **Do not connect the negative (-) booster cable to the negative (-) terminal of the discharged battery. Connect at a good ground location away from the discharged battery.**



M71044

**A - Booster Battery**

**B - Disabled Vehicle Battery**

1. Connect positive (+) booster cable to booster battery (A) positive (+) post (C).

2. Connect the other end of positive (+) booster cable to the disabled vehicle battery (B) positive (+) post (D).

3. Connect negative (–) booster cable to booster battery negative (–) post (E).

**IMPORTANT: Avoid damage! Electric charge from booster battery can damage machine components. Do not install negative booster cable to machine frame. Install only to the engine block.**

**Install negative booster cable away from moving parts in the engine compartment, such as belts and fan blades.**

4. Connect the other end (F) of negative (–) booster cable to a metal part of the disabled machine engine block away from battery.

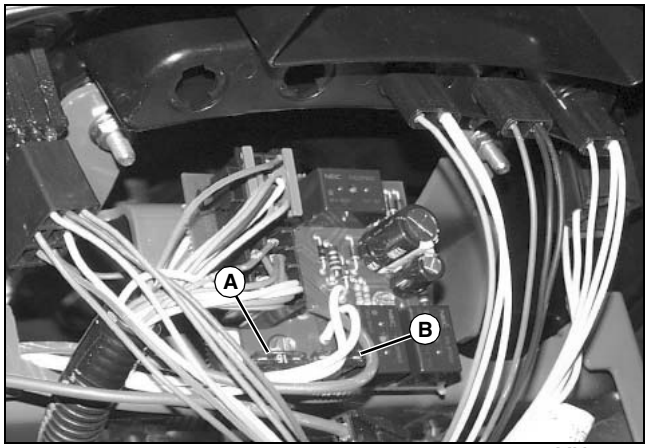
5. Start the engine of the disabled machine and run machine for several minutes.

6. Carefully disconnect the booster cables in the exact reverse order: negative cable first and then the positive cable.

## Replacing Fuses

1. Park machine safely. (See Parking Safely in the SAFETY section.)

2. Raise hood.



MX8398

3. Pull defective starter fuse (A) or headlight fuse (B) out of socket.

4. Check metal clip in fuse window and discard fuse if clip is broken.

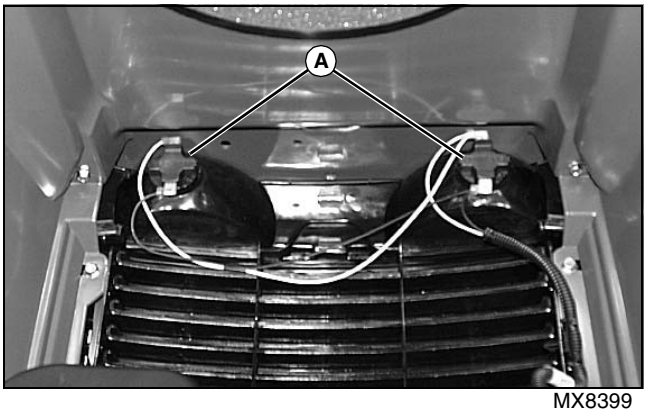
5. Push new 15 Amp fuse into socket.

6. Lower hood.

## Replacing Headlight Bulb

1. Park machine safely. (See Parking Safely in the SAFETY section.)

2. Raise hood.



MX8399

3. Turn bulb socket (A) 1/4 turn counterclockwise to remove socket from headlight housing.

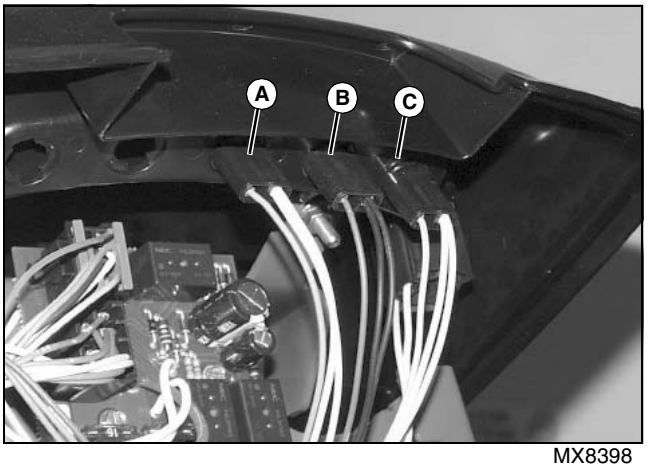
4. Push bulb down and rotate 1/8 turn counterclockwise to remove bulb from the socket.

5. Replace defective bulb with new bulb.

6. Insert bulb socket into housing, push in and rotate 1/4 turn clockwise to install.

7. Lower hood.

## Replacing Indicator Light Bulb



MX8398

1. Rotate indicator bulb socket 1/8 turn counterclockwise to remove:

- Model LX289 Only - Coolant temperature light (A).
- Battery discharge light (B).
- Oil pressure indicator light (C).

2. Pull bulb from socket.

3. Push new bulb into socket.

4. Install socket into holder and rotate 1/8 turn clockwise to secure.

## Using Proper Fuel

Use regular grade unleaded fuel with an octane rating of 87 octane or higher. Fuel blends containing up to 10% ethanol or up to 15% MTBE reformulated fuel are acceptable. Do not use fuel or additives containing methanol as engine damage can occur.

Always use fresh, clean fuel that is purchased in a quantity that can be used within approximately 30 days, or add fuel stabilizer.

Fuel is blended to give best seasonal performance. To avoid engine performance problems such as hard starting or vapor lock, use in-season fuel. Use fuel during warm weather that was purchased during that season, and use fuel during cold weather that was purchased during that season.

Fuel can become stale in machines with engines that are used seasonally or infrequently during a season. Stale fuel can produce varnish and plug carburetor components which can affect engine performance.

Keep fuel storage container tightly covered and in a cool area out of direct sunlight. Fuel can break down and degrade if not sealed properly or exposed to sun and heat.

Condensation may collect in the fuel tank because of a variety of operating or environmental conditions and, over time, may affect your machine's operation. Fill fuel tank at the end of daily use and store fuel in plastic containers to reduce condensation.

For best year-round performance and fuel-handling, add stabilizer to fuel immediately after fuel purchase. Such practice helps prevent engine performance problems and allows fuel storage in the machine all year without draining.

## Filling Fuel Tank

**CAUTION: Avoid injury! Fuel vapors are explosive and flammable:**

- **Shut engine off before filling fuel tank.**
- **Do not smoke while handling fuel.**
- **Keep fuel away from flames or sparks.**
- **Fill fuel tank outdoors or in well ventilated area.**
- **Clean up spilled fuel immediately.**
- **Use clean approved non-metal container to prevent static electric discharge.**
- **Use clean approved plastic funnel without screen or filter to prevent static electric discharge.**

**IMPORTANT: Avoid damage! Dirt and water in fuel can cause engine damage:**

- **Clean dirt and debris from the fuel tank opening.**
- **Use clean, fresh, stabilized fuel.**
- **Fill the fuel tank at the end of each day's operation to keep condensation out of the fuel tank.**
- **Use a non-metallic funnel with a plastic mesh strainer when filling the fuel tank or container.**

Fill fuel tank at the end of each day's operation to prevent condensation and freezing during cold weather.

1. Park machine safely. (See Parking Safely in the SAFETY section.)
2. Allow engine to cool.
3. Remove any trash from area around fuel tank cap.
4. Remove fuel tank cap slowly to allow any pressure built up in tank to escape.
5. Fill fuel tank only to bottom of filler neck.
6. Install fuel tank cap.

## Checking Tire Pressure

**CAUTION: Avoid injury! Explosive separation of tire and rim parts is possible when they are serviced incorrectly:**

- **Do not attempt to mount a tire without the proper equipment and experience to perform the job.**
- **Do not inflate the tires above the recommended pressure.**
- **Do not weld or heat a wheel and tire assembly. Heat can cause an increase in air pressure resulting in an explosion. Welding can structurally weaken or deform the wheel.**
- **Do not stand in front or over the tire assembly when inflating. Use a clip-on chuck and extension hose long enough to allow you to stand to one side.**

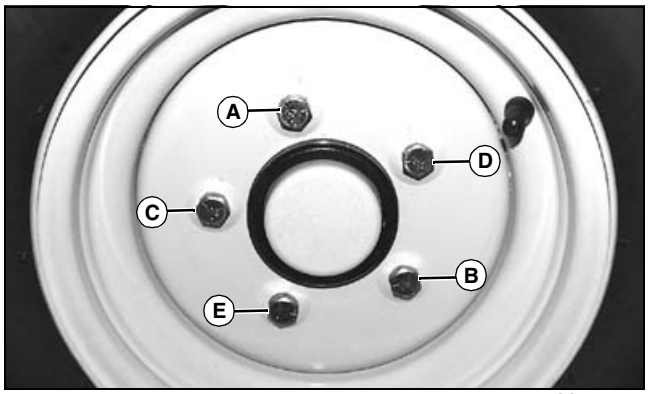
1. Check tires for damage.

***NOTE: Refer to the SPECIFICATIONS section for tire pressures.***

2. Check tire pressure with an accurate gauge.
3. Add or remove air, if necessary.

## Checking Wheel Bolt Torque (LX280AWS)

***NOTE: Check wheel bolt torque often during the first 100 hours of operation.***




M99521

Tighten rear wheel bolts evenly in proper sequence (A), (B), (C), (D), and (E) until snug. Finish tightening to 55 N•m (41 lb-ft).

## Cleaning Plastic Surfaces

**IMPORTANT: Avoid damage! Improper care of machine plastic surfaces can damage that surface:**

**• Do not wipe plastic surfaces when they are dry. Dry wiping will result in minor surface scratches.**

**• Use a soft, clean cloth (bath towel, diaper, automotive mitt).**

**• Do not use abrasive materials, such as polishing compounds, on plastic surfaces.**

**• Do not spray insect repellent near machine.**

1. Rinse hood and entire machine with clean water to remove dirt and dust that may scratch the surface.

2. Wash surface with clean water and a mild liquid automotive washing soap.

3. Dry thoroughly to avoid water spots.

4. Wax the surface with a liquid automotive wax. Use products that specifically say “contains no abrasives.”

**IMPORTANT: Avoid damage! Do not use a power buffer to remove wax.**

5. Buff applied wax by hand using a clean, soft cloth.

## Cleaning and Repairing Metal Surfaces

**Cleaning:**

Follow automotive practices to care for your vehicle painted metal surfaces. Use a high-quality automotive wax regularly to maintain the factory look of your vehicle’s painted surfaces.

**Repairing Minor Scratches (surface scratch):**

1. Clean area to be repaired thoroughly.

**IMPORTANT: Avoid damage! Do not use rubbing compound on painted surfaces.**

2. Use automotive polishing compound to remove surface scratches.

3. Apply wax to entire surface.

**Repairing Deep Scratches (bare metal or primer showing):**

1. Clean area to be repaired with rubbing alcohol or mineral spirits.

2. Use paint stick with factory-matched colors available from your authorized dealer to fill scratches. Follow directions included on paint stick for use and for drying.

3. Smooth out surface using an automotive polishing compound. Do not use power buffer.

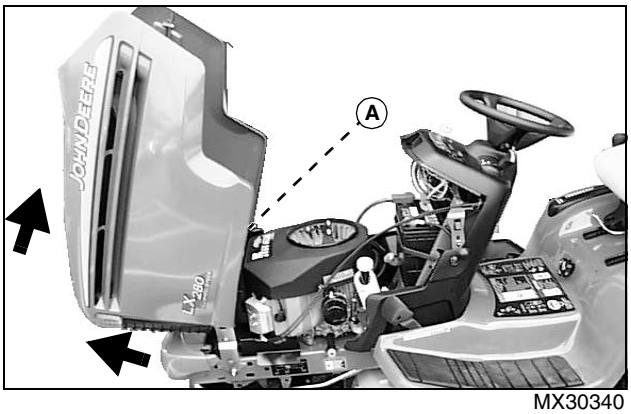
4. Apply wax to surface.

## Removing and Installing Hood

**Removing Hood**

1. Park machine safely. (See Parking Safely in the SAFETY section.)

2. Raise the hood.



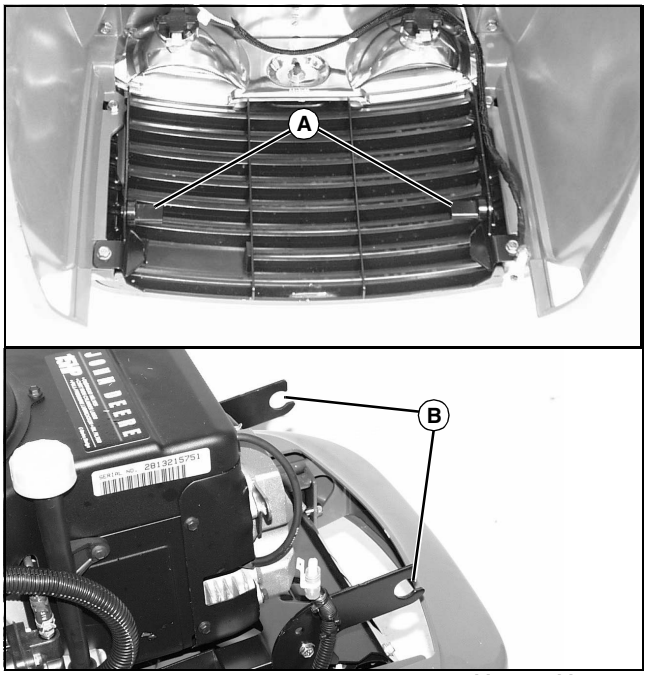

MX30340

3. Disconnect headlight wiring harness (A).

4. Lift and pull hood away from machine.

**Installing Hood**

**IMPORTANT: Avoid damage! Use care not to pinch or scrape headlight harness when installing hood.**

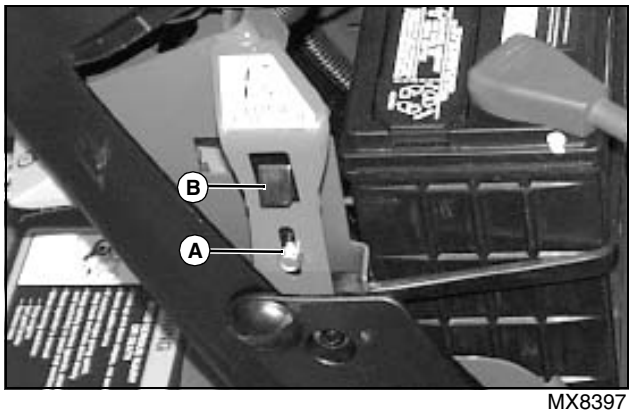



M96024 M96435

1. Align hood pivot studs (A) with pivot brackets (B) and install hood.
2. Connect wiring harness.
3. Close hood.

## Adjusting Hood Latches

1. Park machine safely. (See Parking Safely in the SAFETY section.)




MX8397

2. Lift hood.
3. Loosen cap screw (A).
4. Move latch up or down as needed.
5. Tighten cap screw.
6. Adjust hood latch on other side.

## Removing and Installing Wheel Assembly (Models with E-Clip)

**Removing**

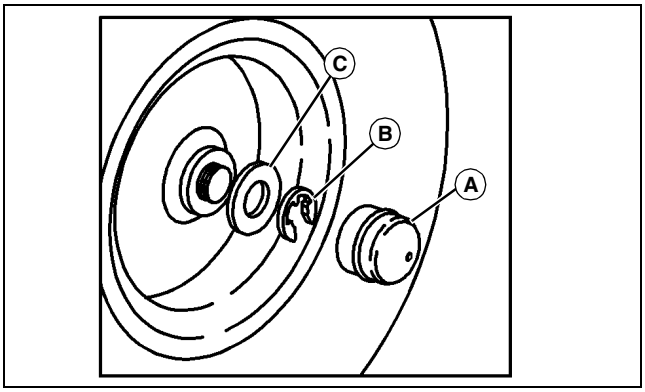
1. Park machine safely. (See Parking Safely in the Safety section.)

**CAUTION: Avoid injury! The machine can fall or slip from an unsafe lifting device or supports.**

- **Use a safe lifting device rated for the load to be lifted.**
- **Lower machine onto jack stands or other stable supports and block wheels before servicing.**

**IMPORTANT: Avoid damage! Place jack stands under frame, not under transmission or engine, when raising or supporting machine.**

2. Raise machine with a safe lifting device and lower machine onto jack stands or other stable supports. Block wheels remaining on the ground to prevent machine movement.




MX23092

3. Remove the cap (A) from the end of the axle hub.

**CAUTION: Avoid injury! Snap rings and E-clips have spring tension and can come loose unexpectedly when removing and installing. Wear eye protection.**

4. Remove the E-clip (B) and washer (C).

***NOTE: When removing rear wheel assembly, a shaft key may fall out of the axle shaft. If so, be sure to retain for installation.***

5. Remove the wheel assembly.

**CAUTION: Avoid injury! Explosive separation of tire and rim parts is possible when they are serviced incorrectly:**

**• Do not attempt to mount a tire without the proper equipment and experience to perform the job.**

6. Take wheel assembly to an authorized service dealer for repairs.

**Installing**

1. Apply multipurpose grease to spindle shaft before installing wheel assembly.

***NOTE: On rear wheel, be sure shaft key is in place on axle shaft before installing wheel assembly.***

2. Install wheel assembly with valve stem to the outside and align slot in wheel assembly with key in axle shaft.

3. Install washer and E-clip.

4. Install cap.

## Removing and Installing Rear Wheel Assembly

**Removing**

1. Park machine safely. (See Parking Safely in the Safety section.)

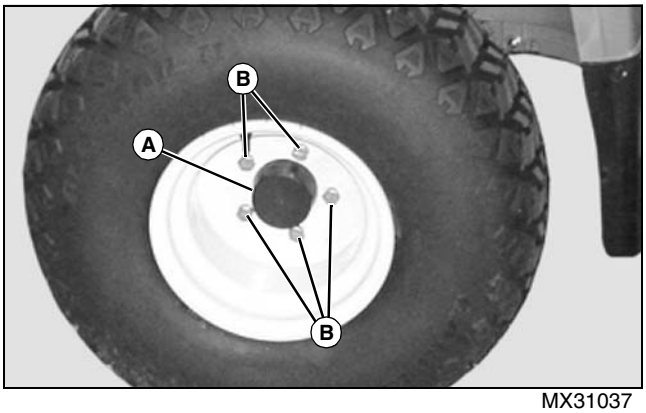
**CAUTION: Avoid injury! The machine can fall or slip from an unsafe lifting device or supports.**

**• Use a safe lifting device rated for the load to be lifted.**

**• Lower machine onto jack stands or other stable supports and block wheels before servicing.**

**IMPORTANT: Avoid damage! Place jack stands under frame, not under transmission or engine, when raising or supporting machine.**

2. Raise machine with a safe lifting device and lower machine onto jack stands or other stable supports. Block wheels remaining on the ground to prevent machine movement.



MX31037

**Picture Note: Wheel may or may not have a cap (A) to remove when removing the wheel.**

3. Remove the wheel bolts (B).

4. Remove the wheel assembly.

**CAUTION: Avoid injury! Explosive separation of tire and rim parts is possible when they are serviced incorrectly:**

**• Do not attempt to mount a tire without the proper equipment and experience to perform the job.**

5. Take wheel assembly to an authorized service dealer for repairs.

**Installing**

1. Apply multipurpose grease to spindle shaft before installing wheel assembly.

2. Install wheel assembly with valve stem to the outside.

3. Tighten wheel bolts evenly in alternating sequence until snug.

4. Lower machine completely to the ground.

5. Tighten wheel bolts to 88 N•m (65 lb-ft).

## Using Troubleshooting Chart

If you are experiencing a problem that is not listed in this chart, see your authorized dealer for service.

When you have checked all the possible causes listed and you are still experiencing the problem, see your authorized dealer.

## Engine

| If | Check |
|---|---|
| Poor Engine Performance | **Fuel**<br>• Dirt in fuel system or fuel is old. Replace fuel with fresh stabilized fuel. Obtain fuel from another supplier before suspecting machine problems. Suppliers blend fuels differently and changing suppliers will generally solve any performance problems.<br>• Fuel blended with alcohol or ether may contribute to performance problems by causing gum and varnish deposits, especially if fuel is stored for several weeks or more. Obtain fresh fuel.<br>**Break-in:**<br>• Improper break-in or incomplete break-in time. Repeat break-in following proper procedures, or extend break-in time 5 hours before suspecting machine problems. |
| Engine Will Not Start | Brake is not pushed down.<br>PTO lever switch is in ON position.<br>Fuse is blown.<br>Spark plug wire is loose or disconnected.<br>Spark plug not gapped correctly.<br>Water in fuel tank. |
| Engine Is Hard To Start | Fuel filter is gummed or plugged.<br>Spark plug is fouled.<br>Faulty spark plug or wire.<br>Spark plug is not gapped correctly.<br>Loose or corroded electrical connections.<br>Stale fuel.<br>Choke adjusted incorrectly.<br>Water in fuel tank. |
| Engine Misses Under Load | Faulty spark plug.<br>Stale fuel. |
| Engine Vapor Locks | Fuel tank vent plugged.<br>Dirt in fuel filter.<br>Seasonally-blended fuel with incorrect specifications. |

| If | Check |
|---|---|
| Engine Runs Unevenly | Engine not broken-in.<br>Cooling fins plugged.<br>Loose electrical connections.<br>Choke or throttle cable sticking.<br>Water in fuel tank. |
| Engine Overheats | Air cleaner element plugged.<br>Engine air intake screen plugged.<br>Engine oil low.<br>Model LX289 - Radiator cooling fins plugged.<br>Engine operated too long at slow engine speed. |
| Engine Will Not Idle | Spark plug not gapped correctly.<br>Faulty spark plug. |
| Engine Has Low Power or Compression | Engine not broken-in.<br>Engine overheating.<br>Too much oil in engine.<br>Dirty air cleaner.<br>Faulty spark plug.<br>Travel speed is too fast for conditions. |
| Engine Knocks | Low engine speed.<br>Stale or low octane fuel.<br>Engine overloaded. |
| Engine Backfires | Faulty spark plug. |
| High Oil Consumption | Engine not broken-in. |
| Blue or White Exhaust Smoke | Engine not broken-in. |
| Spark Plugs Foul | Engine not broken-in. |
| Fuel in the Engine Oil | Engine not broken-in. |

## Machine

| If | Check |
|---|---|
| Machine Vibrates Too Much | Attachment drive belts worn or damaged.<br>Traction drive belt damaged or worn.<br>Dirt on drive sheaves. |
| Machine Will Not Move With Engine Running | Parking brake locked.<br>Transmission oil level low. |

| If | Check |
|---|---|
| Machine Moves With Engine Running And Foot Pedals In Neutral | Linkage out of adjustment. |
| Machine Rolls Or Freewheels On An Incline With Engine On Or Off And Pedals In Neutral | Normal situation. Always set parking brake. |
| Cruise Control Lever Creeps Or Requires High Effort To Move | Cruise control lever not adjusted properly. |

## Electrical

| If | Check |
|---|---|
| Starter Does Not Work Or Will Not Turn Engine | Brake pedal not down.<br>PTO lever switch is in on position.<br>Battery terminals corroded.<br>Battery dead or low charge.<br>Fusible link in starting circuit is blown. See your John Deere dealer. |
| Battery Will Not Charge | Dead cell in battery.<br>Low engine speed or excessive idling.<br>Battery cables and terminals dirty. |
| Lights Do Not Operate | Light plug disconnected.<br>Loose or burned out bulb. |

## Mower

| If | Check |
|---|---|
| Discharge Chute Plugged | Travel speed too fast.<br>Grass too long.<br>Grass too wet.<br>Engine rpm not at wide open throttle.<br>Restricted air flow.<br>Belt installed incorrectly. |
| Patches Of Grass Uncut | Travel speed too fast.<br>Engine rpm not at wide open throttle.<br>Mower deck needs cleaning.<br>Mower blades are dull or damaged. |
| Belt Slipping | Debris in sheaves.<br>Worn belt. |

| If | Check |
|---|---|
| Too Much Vibration | Debris on mower deck or in sheaves.<br>Damaged drive belt.<br>Damaged sheaves or sheaves out of alignment.<br>Blades out of balance. |
| Blades Scalping Grass | Cutting too low.<br>Mower wheels not adjusted correctly.<br>Turning speed too fast.<br>Ridges in terrain.<br>Rough or uneven terrain.<br>Low tire pressure. |
| Mower Loads Down Machine | Engine rpm too low.<br>Travel speed too fast.<br>Debris wrapped around mower spindles. |
| Uneven Cut | Mower deck not leveled properly.<br>Travel speed too fast.<br>Blades dull.<br>Mower wheels not adjusted correctly.<br>Tire pressure unequal. |
| Uneven Clipping Distribution | Cutting height set too low.<br>Travel speed too fast.<br>Grass is too wet.<br>42 Inch Mulching Mower - Right and left blades may be interchanged. |
| Mower Makes Unusual Noise (42 Inch Mulching Mower Only) | Timing belt out of adjustment. |
| Mower Deck Is Difficult To Lift | Lift assist spring not adjusted properly for deck size. |
| Grass Tips Are Jagged And Turn Grayish Brown After Mowing | Dull mower blades.<br>Mower deck not leveled properly. |
| Mower (Or Other Attachment) Stops When Reverse Foot Pedal Is Depressed And Attachment Is Engaged | Normal operation of Reverse Implement Option. |

# STORAGE

## Storing Safety

**CAUTION: Avoid injury! Fuel vapors are explosive and flammable. Engine exhaust fumes contain carbon monoxide and can cause serious illness or death:**

**• Run the engine only long enough to move the machine to or from storage.**

**• Do not store vehicle with fuel in the tank inside a building where fumes may reach an open flame or spark.**

**• Allow the engine to cool before storing the machine in any enclosure.**

## Preparing Machine for Storage

1. Repair any worn or damaged parts. Replace parts if necessary. Tighten loose hardware.

2. Repair scratched or chipped metal surfaces to prevent rust.

3. Remove grass and debris from machine.

4. Clean under the deck and remove grass and debris from inside chute and bagger.

5. Wash the machine and apply wax to metal and plastic surfaces.

6. Run machine for five minutes to dry belts and pulleys.

7. Apply light coat of engine oil to pivot and wear points to prevent rust.

8. Lubricate grease points and check tire pressure.

## Preparing Fuel and Engine For Storage

**Fuel:**

If you have been using “Stabilized Fuel,” add stabilized fuel to tank until the tank is full.

***NOTE: Filling the fuel tank reduces the amount of air in the fuel tank and helps reduce deterioration of fuel.***

If you are not using “Stabilized Fuel:”

1. Park machine safely in a well-ventilated area. (See Parking Safely in the SAFETY section.)

***NOTE: Try to anticipate the last time the machine will be used for the season so very little fuel is left in the fuel tank.***

2. Turn on engine and allow to run until it runs out of fuel.

3. For machines equipped with key switch, turn key to off position.

**IMPORTANT: Avoid damage! Stale fuel can produce varnish and plug carburetor or injector components and affect engine performance.**

**• Add fuel conditioner or stabilizer to fresh fuel before filling tank.**

4. Mix fresh fuel and fuel stabilizer in separate container. Follow stabilizer instructions for mixing.

5. Fill fuel tank with stabilized fuel.

6. Run engine for a few minutes to allow fuel mixture to circulate through carburetor on gas engine or fuel injectors on diesel engine.

**Engine:**

Engine storage procedure should be used when vehicle is not to be used for longer than 60 days.

1. Change engine oil and filter while engine is warm.

2. Service air filter if necessary.

3. Clean debris from engine air intake screen.

4. On gas engines:

- Remove spark plugs. Put 30 mL (1 oz) of clean engine oil in cylinder(s).
- Install spark plugs, but do not connect spark plug wires.
- Crank the engine five or six times to allow oil to be distributed.

5. Clean the engine and engine compartment.

6. Remove battery.

7. Clean the battery and battery posts. Check the electrolyte level, if your battery is not maintenance free.

8. Close fuel shut-off valve, if your machine is equipped.

9. Store the battery in a cool, dry place where it will not freeze.

***NOTE: The stored battery should be recharged every 90 days.***

10. Charge the battery.

**IMPORTANT: Avoid damage! Prolonged exposure to sunlight could damage the hood surface. Store machine inside or use a cover if stored outside.**

11. Store the vehicle in a dry, protected place. If vehicle is stored outside, put a waterproof cover over it.

## Removing Machine From Storage

1. Check tire pressure.

2. Check engine oil level.

3. Check battery electrolyte level, if your battery is not maintenance free. Charge battery if necessary.

4. Install battery.

5. On gas engines: Check spark plug gap. Install and tighten plugs to specified torque.

6. Lubricate all grease points.

7. Open fuel shut-off valve, if your machine is equipped.

8. Run the engine 5 minutes without the mower or any attachments running to allow oil to be distributed throughout engine.

9. Be sure all shields and guards or deflectors are in place.

# SPECIFICATIONS

## Engine

**Model LX280, LX280AWS, LX289**

**Make** . . . . . **Kawasaki**
**Engine Model Number: LX289** . . . . . **FD501V**
**Engine Model Number: LX280 and LX280AWS** . . . . . **FH580V**
**Bore : LX289** . . . . . **67 mm (2.64 in.)**
**Bore:LX280 and LX280AWS** . . . . . **74 mm (2.91 in.)**
**Stroke : LX289** . . . . . **71.19 mm (2.80 in.)**
**Stroke:LX280 and LX280AWS** . . . . . **68 mm (2.68 in.)**
**Displacement : LX289** . . . . . **501 $cm^3$ (30.6 cu.in.)**
**Displacement:LX280 and LX280AWS** . . . . . **585 $cm^3$ (35.7 cu.in.)**
**Cylinders** . . . . . **Two**
**Cycle** . . . . . **Four**
**Cooling Type: LX280, LX280AWS** . . . . . **Air**
**Cooling Type: LX289** . . . . . **Liquid**
**Oil Filter** . . . . . **Replaceable Full Flow Filter**
**Air Cleaner** . . . . . **Paper Element with Foam Precleaner**

**Spark Plug Gap**

**LX280, LX280AWS** . . . . . **1 mm (0.040 in.)**
**LX289** . . . . . **0.7 mm (0.028 in.)**

**Spark Plug Torque**

**LX280, LX280AWS** . . . . . **15 N•m (133 lb-in.)**
**LX289** . . . . . **17 N•m (150 lb-in.)**

**Ignition Coil Air Gap**

**LX280, LX280AWS** . . . . . **0.30 mm (0.012 in.)**
**LX289** . . . . . **Fixed Position**

**Valve Clearance (Intake and Exhaust)**

**LX280, LX280AWS** . . . . . **0.10 - 0.15 mm (0.004 - 0.006 in.)**

**Valve Clearance (Cold)**

**LX289** . . . . . **0.15 mm (0.006 in.)**

## Drivetrain

**Transaxle** . . . . . **Tuff Torq, Hydrostatic**
**Number of Speeds** . . . . . **Variable**

# SPECIFICATIONS

## Travel Speeds at Full Engine RPM

**Forward . . . . . .0 - 8.8 km/h (0 - 5.5 mph)**

**Reverse . . . . . 0 - 4.8 km/h (0 - 3 mph)**

## Battery

**Voltage. . . . . .12 V**

**CCA . . . . . 500 amp**

**Reserve Capacity . . . . . 85 minutes**

**BCI Group Size . . . . . 51**

## Tires

**Front . . . . . 16 x 6.50 - 8**

**Rear . . . . . 22 x 11.00 - 10**

**Inflation Front . . . . . .70 - 97 kPa (10 - 14 psi)**

**Inflation Rear . . . . . .56 - 70 kPa (8 - 10 psi)**

## Steering and Brakes

**Steering . . . . . Open Sector and Pinion**

**Brakes . . . . . .Internal Wet Disc**

## Capacities

**Fuel Tank**

**LX280, LX289 . . . . . .11.5 L (3.0 gal)**

**LX280AWS . . . . . .10.4 L (2.75 gal)**

**Coolant System (LX289 only) . . . . . .2.6 L (2.8 qt)**

**Engine Oil (with filter)**

**LX280, LX280AWS, LX289 . . . . . .1.8 L (1.9 qt)**

## Dimensions

**Wheelbase**

**LX280, LX289 . . . . . 124.5 cm (49 in.)**

**LX289AWS. . . . . 122.7 cm (48.3 in.)**

**Overall Height**

**LX280; LX289 . . . . . 111 cm (43.7 in.)**

**LX280AWS. . . . . 110.5 cm (43.5 in.)**

**Overall Length**

**LX280, LX289 . . . . . 170 cm (67 in)**

**LX280AWS. . . . . 177.8 (70 in.)**

**Overall Width**

**LX280, LX289 . . . . . 95.3 cm (37.5 in.)**

**LX280AWS. . . . . 97.3 cm (38.3 in.)**

## Weight

**Net Weight (Without Mower or Fuel)**

**LX280 . . . . . 221 kg (487 lb)**

**LX280AWS . . . . . 254 kg (560 lb)**

**LX289 . . . . . 222 kg (490 lb)**

## 42 Inch Mulching Mower

**Mower Type. . . . . Mulch**

**Cutting Blades . . . . . 2**

**Mower Weight . . . . . 42 kg (92.5 lb)**

**Blade Bolt Torque . . . . . 62 N•m (46 lb-ft)**

**Cutting Width . . . . . 106.7 cm (42 in.)**

**Cutting Height (approximate) . . . . . 25 - 102 mm (1 - 4 in.)**

**Height Adjustment . . . . . 13-Position, 6.35 mm (1/4 in.) Increments**

## 42 Inch Mower

**Mower Type. . . . . Mulch, Bag or Side Discharge**

**Cutting Blades . . . . . 2**

**Mower Weight . . . . . 37 kg (82 lb)**

**Blade Bolt Torque . . . . . 75 N•m (55 lb-ft)**

**Cutting Width . . . . . 106.7 cm (42 in.)**

**Cutting Height (approximate) . . . . . 25 - 102 mm (1 - 4 in.)**

**Height Adjustment . . . . . 13-Position, 6.35 mm (1/4 in.) Increments**

## 48 Inch Mower

**Mower Type. . . . . Mulch, Bag or Side Discharge**

**Cutting Blades . . . . . 3**

**Mower Weight . . . . . 53 kg (117 lb)**

**Blade Bolt Torque . . . . . 68 N•m (50 lb-ft)**

**Cutting Width . . . . . 121.9 cm (48 in.)**

**Cutting Height (approximate) . . . . . 25 - 102 mm (1 - 4 in.)**

**Height Adjustment . . . . . 13-Position, 6.35 mm (1/4 in.) Increments**

## 54 Inch Mower

**Mower Type . . . . . Mulch, Bag or Side Discharge**
**Cutting Blades . . . . . 3**
**Mower Weight . . . . . 67 kg (148 lb)**
**Blade Bolt Torque . . . . . 68 N•m (50 lb-ft)**
**Cutting Width . . . . . 137.2 cm (54 in.)**
**Cutting Height (approximate) . . . . . 25 - 102 mm (1 - 4 in.)**
**Height Adjustment . . . . . 13-Position, 6.35 mm (1/4 in.) Increments**

## Recommended Lubricants

**Engine Oil . . . . . TURF-GARD® or PLUS-4®**
**Transmission Oil. . . . . SAE 5W30**
**Grease . . . . . John Deere Multi-Purpose SD Polyurea Grease**
**. . . . . John Deere Multi-Purpose HD Lithium Complex Grease**
**. . . . . John Deere Moly High Temperature EP Grease**

# WARRANTY

## Product Warranty

Product warranty is provided as part of John Deere's support program for customers who operate and maintain their equipment as described in this manual.

Engine related warranties stated in this manual refer only to emissions-related parts and components of your engine. The complete engine warranty, less emission-related parts and components, is provided separately as the "Limited Warranty for New John Deere Commercial & Consumer Equipment".

## John Deere, Federal and California Emissions Control System Warranty Statement (Small Off-Road Gas Engines)

**Your Warranty Rights and Obligations**

California Air Resources Board (CARB), the United States Environmental Protection Agency (EPA), and John Deere are pleased to explain the emissions control system warranty on your small off-road engine and equipment. In California, 2006 and later small off-road engines and equipment must be designed, built and equipped to meet the State's stringent anti-smog standards. (In other states, 1997 and later model year equipment engines must be designed, built and equipped to meet the U.S. EPA regulations for small non-road, spark ignition engines.) John Deere must warrant the emissions control system on your small off-road engine and equipment for the periods of time listed below provided there has been no abuse, neglect or improper maintenance of your small off-road engine and equipment.

Your emissions control system may include parts such as the carburetor, fuel hose, fuel-injection system and ignition system. Also included may be connectors and other emissions related assemblies.

Where a warrantable condition exists, John Deere will repair your small off-road engine and equipment at no cost to you including diagnosis, parts and labor.

**John Deere Emissions Control System Warranty Coverage**

Small off-road engines and equipment are warranted relative to emissions control parts for two years. If any emissions related part on your engine or equipment is defective, the part will be repaired or replaced by John Deere.

**Owner's Warranty Responsibilities**

As the small off-road engine and equipment owner, you are responsible for the performance of the required maintenance listed in your owner's manual. John Deere recommends that you retain all receipts covering maintenance on your small off-road engine and equipment, but John Deere cannot deny warranty solely for lack of receipts or for your failure to ensure the performance of all scheduled maintenance.

As the small off-road engine and equipment owner, you should however be aware that John Deere may deny you warranty coverage if your small off-road engine and equipment or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.

You are responsible for presenting your small off-road engine and equipment to an authorized John Deere Commercial and Consumer Equipment Retailer as soon as a problem exists. The warranty repairs should be completed in a reasonable amount of time, not to exceed 30 days.

If you have any questions regarding your warranty rights and responsibilities, you should contact your John Deere Commercial and Consumer Equipment Retailer, or the John Deere Customer Contact Center at 1-800-537-8233.

**Length Of Warranty Coverage**

John Deere warrants to the initial owner and each subsequent purchaser that the small off-road engine and equipment is:

• Designed, built and equipped so as to conform with all applicable regulations adopted by the California Air Resources Board (CARB) for 2006 and later engines and equipment, and all applicable regulations of the United States Environmental Protection Agency (EPA) for 1997 and later equipment engines; and

• Free from defects in materials and workmanship which can cause the failure of an emissions warranted part for a period of two years after the engine and equipment is delivered to the initial retail purchaser. John Deere is liable for damages to other engine components caused by the failure of a warranted part during the warranty period. If any emissions related part on your engine or equipment is defective, the part will be repaired or replaced by John Deere.

**Warranted Parts**

Coverage under this warranty extends only to the parts listed below (the emissions control system parts) to the extent these parts were present on the engine and equipment purchased.

Fuel Metering System:

• Carburetor and internal parts (or fuel injection system).

• Air/fuel ratio feedback and control system.

• Cold start enrichment system.

• Fuel hose, line, fittings, clamps.

• Fuel pump.

Air Induction System:

• Air Cleaner

• Intake manifold.

Ignition System:

• Spark plugs.

• Magneto or electronic ignition system.

• Spark advance/retard system.

Exhaust System:

• Exhaust manifold.

• Catalyst.

Miscellaneous Items Used in Above Systems

• Vacuum and temperature switches.

• Electronic controls.

• Hoses, belts, connectors and assemblies.

Since emissions related parts may vary slightly from model to model, certain models may not contain all of these parts and certain models may contain functionally equivalent parts.

**Warranty Service And Charges**

Warranty service shall be provided during customary business hours at any authorized John Deere Commercial and Consumer Equipment Retailer. Repair or replacement of any warranted part will be performed at no charge to the owner, including diagnostic labor which leads to the determination that a warranted part is defective, if the diagnostic work is performed at an authorized John Deere Commercial and Consumer Equipment Retailer. Any parts replaced under this warranty shall become the property of John Deere.

**Maintenance Warranty Coverage**

a) Any warranted part that is not scheduled for replacement as required maintenance is warranted as to defects for the warranty period. Any such part repaired or replaced under the warranty is warranted for the remaining warranty period.

b) Any warranted part that is scheduled only for regular inspection to the effect of “repair or replace as necessary” is warranted as to defects for the warranty period. Any such part repaired or replaced under the warranty is warranted for the remaining warranty period.

c) Any warranted part which is scheduled for replacement as required maintenance is warranted as to defects only for the period of time up to the first scheduled replacement for that part. Any such part repaired or replaced under the warranty is warranted for the remainder of the period prior to the first scheduled replacement point for that part.

d) Normal maintenance, replacement or repair of emissions control devices and systems, which are being done at the customer’s expense, may be performed by any repair establishment or individual; however, warranty repairs must be performed by an authorized John Deere Commercial and Consumer Equipment Retailer.

e) Any replacement part that is equivalent in performance and durability may be used in the performance of any non-warranty maintenance or repairs, and shall not reduce the warranty obligations of John Deere.

**Consequential Warranty Coverage**

Warranty coverage shall extend to the failure of any engine components caused by the failure of any warranted part still under warranty.

**Limitations**

This Emissions Control System Warranty shall NOT cover any of the following:

a) Repair or replacement required as a result of (i) misuse or neglect, (ii) improper maintenance or unapproved modifications, (iii) repairs improperly performed or replacements improperly installed, (iv) use of replacement parts or accessories not conforming to John Deere specifications which adversely affect performance and/or durability, (v) alterations or modifications not recommended or approved in writing by John Deere.

b) Replacement parts, other services and adjustments necessary for normal maintenance.

c) Transportation to and from the John Deere Commercial and Consumer Equipment Retailer, or service calls made by the Retailer.

**Limited Liability**

a) The liability of John Deere under this Emissions Control System Warranty is limited solely to the remedying of defects in materials or workmanship. This warranty does not cover inconvenience or loss of use of the small off-road engine and equipment or transportation of the equipment to or from the John Deere Commercial And Consumer Equipment Retailer. JOHN DEERE SHALL NOT BE LIABLE FOR ANY OTHER EXPENSE, LOSS, OR DAMAGE, WHETHER DIRECT, INCIDENTAL, CONSEQUENTIAL (EXCEPT AS LISTED ABOVE UNDER “COVERAGE”) OR EXEMPLARY ARISING IN CONNECTION WITH THE SALE OR USE OF OR INABILITY TO USE THE SMALL OFF-ROAD ENGINE AND EQUIPMENT FOR ANY OTHER PURPOSE.

b) NO EXPRESS EMISSIONS CONTROL SYSTEM WARRANTY IS GIVEN BY JOHN DEERE WITH RESPECT TO THE ENGINE AND EQUIPMENT EXCEPT AS SPECIFICALLY SET FORTH IN THIS DOCUMENT. ANY EMISSIONS CONTROL SYSTEM WARRANTY IMPLIED BY LAW, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, IS EXPRESSLY LIMITED TO THE EMISSIONS CONTROL SYSTEM WARRANTY TERMS SET FORTH IN THIS DOCUMENT.

c) No dealer is authorized to modify this Federal, California and John Deere Emissions Control System Warranty.

## Tire Warranty

John Deere warranty applies for tires available through the John Deere parts system. For tires not available through the John Deere parts system, the tire manufacturer’s warranty applicable to your machine may not apply outside the U.S. (See your John Deere dealer for specific information.)

## Limited Battery Warranty

***NOTE: Applicable in North America only. For complete machine warranty, reference a copy of the John Deere warranty statement. Contact your John Deere dealer to obtain a copy.***

**TO SECURE WARRANTY SERVICE**

The purchaser must request warranty service from a John Deere dealer authorized to sell John Deere batteries, and present the battery to the dealer with the top cover plate codes intact.

**FREE REPLACEMENT**

Any new battery which becomes unserviceable (not merely discharged) due to defects in material or workmanship within 90 days of purchase will be replaced free of charge. Installation costs will be covered by warranty if (1) the unserviceable battery was installed by a John Deere factory or dealer, (2) failure occurs within 90 days of purchase, and (3) the replacement battery is installed by a John Deere dealer.

**PRO RATA ADJUSTMENT**

Any new battery which becomes unserviceable (not merely discharged) due to defects in material or workmanship more than 90 days after purchase, but before the expiration of the applicable adjustment period, will be replaced upon payment of the battery’s current list price less a pro rata credit for unused months of service. The applicable adjustment period is determined from the Warranty Code printed at the top of the battery and chart below. Installation costs are not covered by warranty after 90 days from the date of purchase.

**THIS WARRANTY DOES NOT COVER**

A. Breakage of the container, cover, or terminals.

B. Depreciation or damage caused by lack of reasonable and necessary maintenance or by improper maintenance.

C. Transportation, mailing, or service call charges for warranty service.

**LIMITATION OF IMPLIED WARRANTIES AND PURCHASER’S REMEDIES**

To the extent permitted by law, neither John Deere nor any company affiliated with it makes any warranties, representations, or promises as to the quality, performance or freedom from defect of the products covered by this warranty. IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, TO THE EXTENT APPLICABLE, SHALL BE LIMITED IN DURATION TO THE APPLICABLE ADJUSTMENT PERIOD SET FORTH HERE. THE PURCHASER’S ONLY REMEDIES IN CONNECTION WITH THE BREACH OR PERFORMANCE OF ANY WARRANTY ON JOHN DEERE BATTERIES ARE THOSE SET FORTH HERE. IN NO EVENT WILL THE DEALER, JOHN DEERE OR ANY COMPANY AFFILIATED WITH JOHN DEERE BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES. (Note: Some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages. So these limitations and exclusions may not apply to you.) This warranty gives you specific legal rights, and you may also have some rights which vary from state to state.

**NO DEALER WARRANTY**

The selling dealer makes no warranty of it's own and the dealer has no authority to make any representation or promise on behalf of John Deere, or to modify the terms or limitations of this warranty in any way.

**PRO RATA MONTHS OF ADJUSTMENT**

***NOTE: If your battery is not labeled with a warranty code, it is a warranty code "B".***

| Warranty Code | Warranty Period |
|---|---|
| A | 40 Months |
| B | 36 Months |
| C | 24 Months |

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# NOTES

# JOHN DEERE QUALITY STATEMENT

## John Deere Quality

John Deere equipment is more than just a purchase, it's an investment in quality. That quality goes beyond our equipment to your John Deere dealer's parts and service support. This support is needed to keep you a satisfied customer.

That's why John Deere has initiated a process to handle your questions or problems, should they arise. The following three steps will help guide you through the process.

**Step 1**

**Refer to your operator's manual**

A. It has many illustrations and detailed information on the safe and proper operation of your equipment.

B. It gives troubleshooting procedures, and specification information.

C. It gives ordering information for parts catalogs, service and technical manuals.

D. If your questions are not answered in the operator's manual, then go to Step 2.

**Step 2**

**Contact your dealer**

A. Your John Deere dealer has the responsibility, authority, and ability to answer questions, resolve problems, and fulfill your parts and service needs.

B. First, discuss your questions or problems with your dealer's trained parts and service staff.

C. If the parts and service people are unable to resolve your problem, see the dealership manager or owner.

D. If your questions or problems are not resolved by the dealer, then go to Step 3.

**Step 3**

**Call the John Deere Customer Contact Center**

A. Your John Deere dealer is the most efficient source in addressing any concern, but if you are not able to resolve your problem after checking your operator's manual and contacting your dealer, call the Customer Contact Center.

B. For prompt, effective service, please have the following ready before you call:

The name of the dealer with whom you've been working.

Your equipment model number.

Number of hours on machine (if applicable).

Your 13-digit serial number which you recorded on the inside front cover of this manual.

If the problem is with an attachment, your attachment identification number.

C. Then call 1-800-537-8233 and our advisor will work with your dealer to investigate your concern.

# SERVICE RECORD

## Record Service Dates

| Oil Change | Oil Filter Change | Lubricate Machine | Air Cleaner Element Check/Clean | Fuel Filter Change | Coolant Change |
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