

JOHN DEERE
WORLDWIDE COMMERCIAL & CONSUMER
EQUIPMENT DIVISION

John Deere Select Series™
X300 Tractors

OMM153411 K5

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

John Deere Select Series™ - X300 Tractors

PIN (010001-)

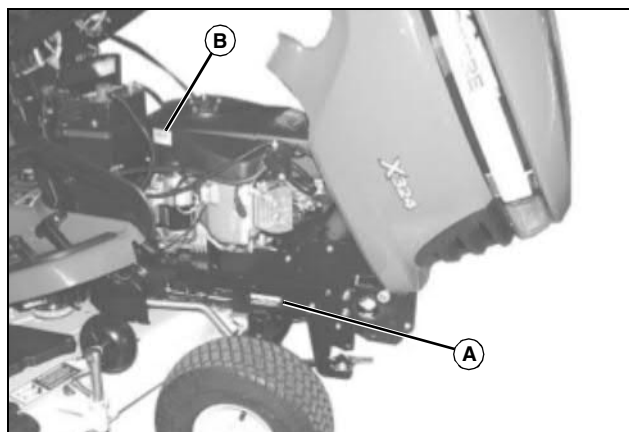
If you need to contact an Authorized Service Center for information on servicing, always provide the product model and identification numbers.

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:



MX36205

PRODUCT IDENTIFICATION NUMBER (A):

ENGINE SERIAL NUMBER (B):

TABLE OF CONTENTS

Safety Labels	1
Safety	4
Operating - Controls	9
Operating	10
Replacement Parts	23
Service Intervals	24
Service Lubrication	25
Service Engine	27
Service Transmission	32
Service Mower	33
Service Electrical	46
Service Miscellaneous	49
Troubleshooting	52
Storage	56
Specifications	58
Warranty	62
Index	65

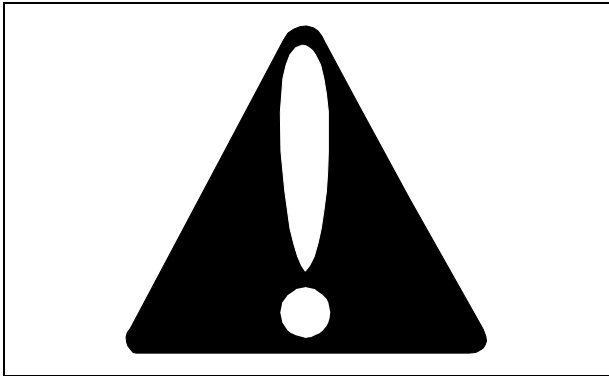
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Consumer Equipment Division
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OMM153411 K5 - English

SAFETY LABELS

Understanding The Machine Safety Labels



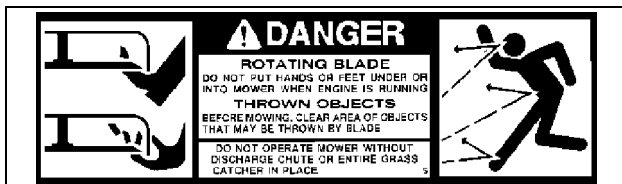
Safety-Alert Symbol

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.

DANGER



M89504

Picture Note: Two on right side of deck.

ROTATING BLADE-THROWN OBJECTS

- Rotating blade.
- Do not put hands or feet under or into mower when engine is running.
- Thrown objects.
- 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



M139128

Picture Note: Two on right side of deck.

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

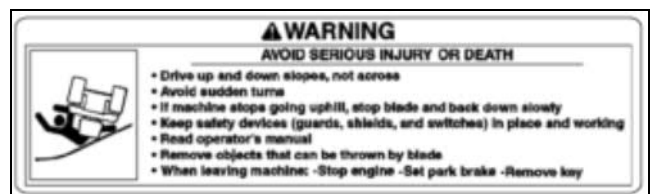


M118610

Picture Note: Located on left side of deck.

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

WARNING



M152347a

AVOID SERIOUS INJURY OR DEATH

- Drive up and down slopes, not across.
- Avoid sudden turns.
- If machine stops going uphill, stop blades and back down slowly.
- Keep safety devices (guards, shields, and switches) in

SAFETY LABELS

place and working.

- Read operator's manual.
- Remove objects that could be thrown by blades.
- When leaving machine:
 - Stop engine
 - Set park brake
 - Remove key

WARNING

To avoid injury from loaded spring



M146577

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

DANGER

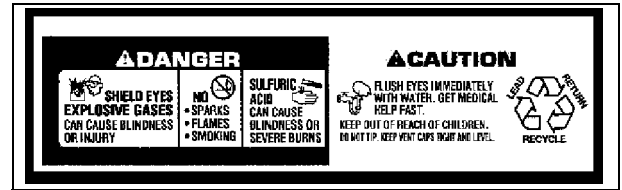
ROTATING BLADES CUT OFF ARMS AND LEGS



M152347b

- 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.

DANGER - CAUTION



M128699

Picture Note: Located 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.

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.

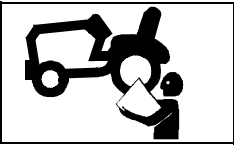
SAFETY LABELS

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.

SAFETY



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.

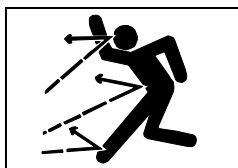
- Follow the manufacturer's recommendation for wheel weights or counterweights.
- Inspect machine before you operate. Be sure hardware is tight. Repair or replace damaged, badly worn, or missing parts. Be sure guards and shields are in good condition and fastened in place. Make any necessary adjustments 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.

SAFETY



Checking Mowing Area

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

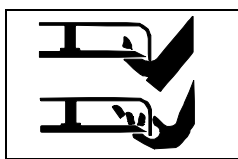
• Low-hanging branches and similar obstacles can injure the operator or interfere with mowing operation. Before mowing, identify potential obstacles such as low-hanging branches, and trim or remove those obstacles.

• 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.

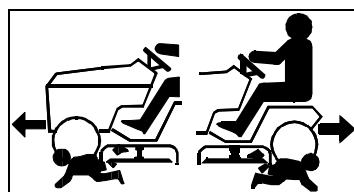


Rotating Blades are Dangerous

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.



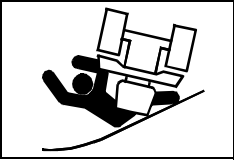
Protect Children

- 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.

SAFETY



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.
- 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.

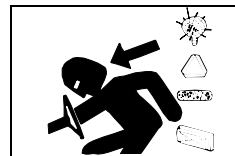
Towing Loads Safely

- 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

SAFETY

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.

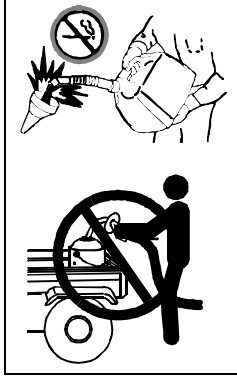
Prevent Fires

- 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,

SAFETY

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.

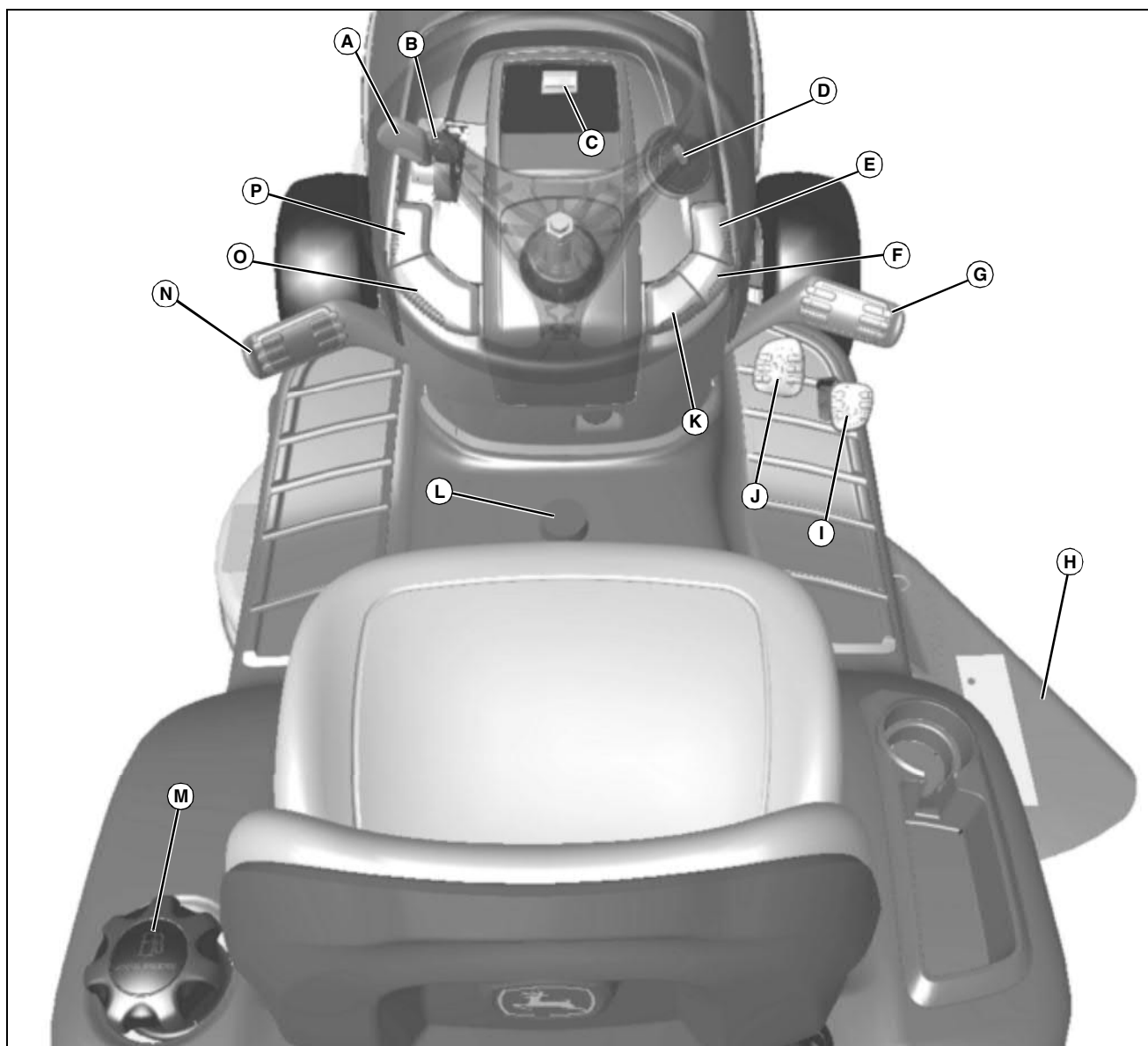
Handling Waste Product and Chemicals

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.

OPERATING - CONTROLS

Operator Station Controls



MX36280a

- A - Throttle Lever
- B - Choke Lever
- C - Hour Meter
- D - Key Switch
- E - Mower/PTO Engagement Switch
- F - Cruise Control Lever
- G - Brake Pedal
- H - Mower Deflector
- I - Reverse Travel Pedal
- J - Forward Travel Pedal
- K - Park Brake Lever
- L - Mower Cutting Height Knob
- M - Fuel Tank Cap

- N - Mower Lift Pedal
- O - Mower Lift Lock Lever
- P - Light Switch

OPERATING

Daily Operating Checklist

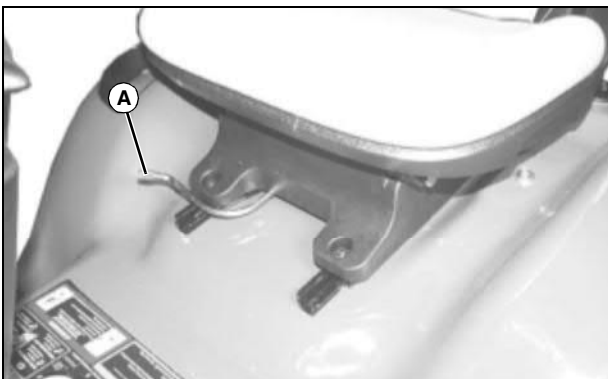
- ☐ Test safety systems.
- ☐ Check fuel level.
- ☐ Check engine oil level.
- ☐ Remove grass and debris from engine compartment and muffler area, before and after operating machine.
- ☐ Clean air intake screen.
- ☐ Check area below machine for leaks.

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.

Adjusting Seat

Adjusting Seat Position



MX36378

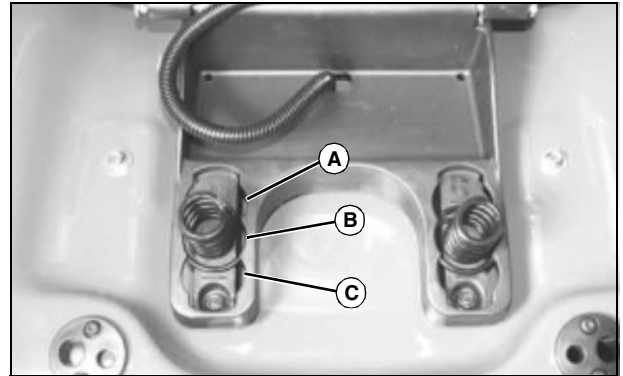
1. Push lever (A) to the left.
2. Slide seat forward or rearward to desired position.
3. Release lever.

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:



MX36267

- 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.

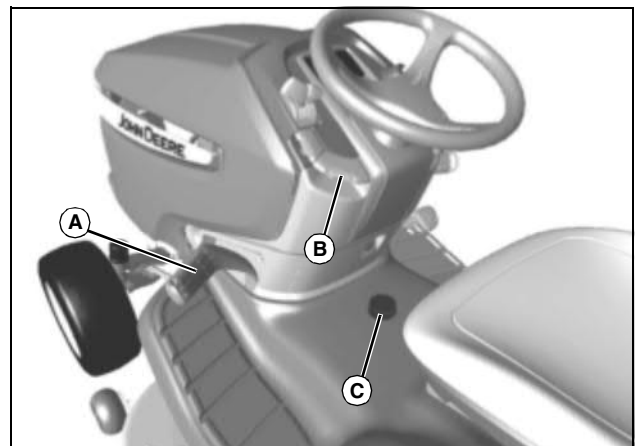
NOTE: Additional suspension coils can be installed for extra support. See your John Deere dealer.

Adjusting Cutting Height

Cutting height can be adjusted from approximately 25-100 mm (1-4 in.). When mower deck is in transport position cutting height is approximately 100 mm (4 in.).

Mower cutting height increments are identified on decal around the cutting height knob. To change or attain cutting height desired:

1. Check tire pressure and adjust as needed.



MX35842

2. Push lift pedal (A) to raise mower deck to highest (transport) position. Lock in raised position with mower lift lock lever (B).
3. Turn mower cutting height knob (C) to desired cutting height position. Mower will be at this cutting height each time it is lowered.

OPERATING

4. Lower mower deck.
5. Adjust mower deck wheels.

Checking and Adjusting Mower Level



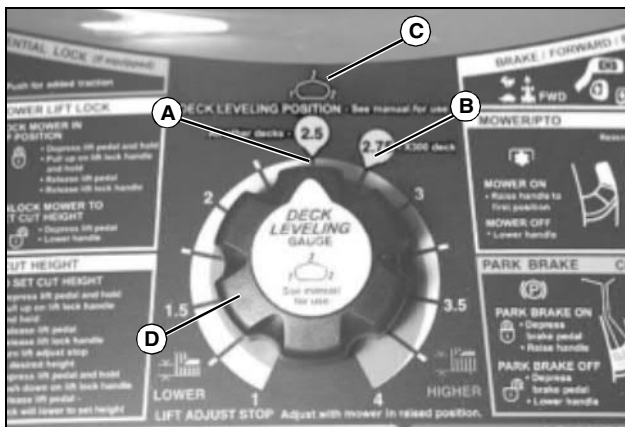
CAUTION: Avoid injury! Rotating blades are dangerous. Before adjusting or servicing mower:

- 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.

Method One

1. Park machine safely on a level surface. (See Parking Safely in the SAFETY section).
2. Inflate tires to the correct pressure.



MX36308

3. The label for the cutting height knob is located on the console of the machine. This label shows deck leveling positions (A & B) and location of deck leveling adjustment points (C). The location of adjustment points will vary slightly between decks:

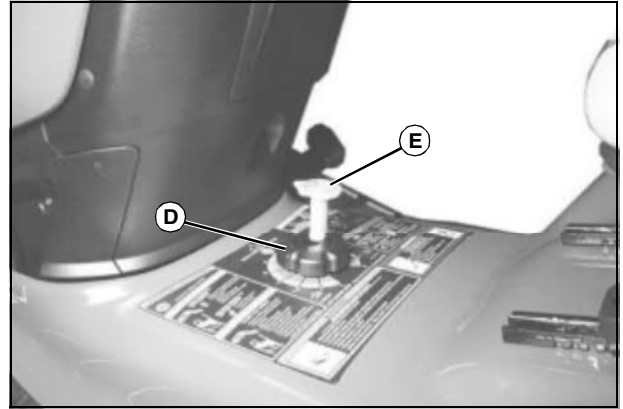
- Adjustment point 1 is located on the left rear deck rim.
- Adjustment point 2 is located on the right rear deck rim.
- Adjustment point 3 is located on the front deck hanger bracket.

4. Set mower cutting height knob (D) to the deck leveling position for your specific mower deck, and lower deck

against stop:

- For X300 models, use position 2.75 (B).
- For X304, X320, X324 and X340 models, use position 2.5 (A).

5. Adjust mower deck gage wheels as necessary so they do not contact the ground surface.

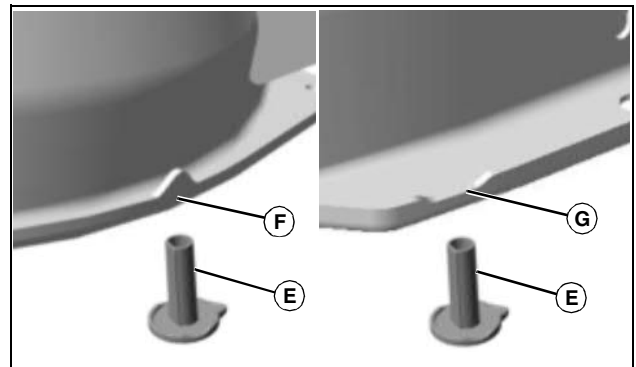


MX36309

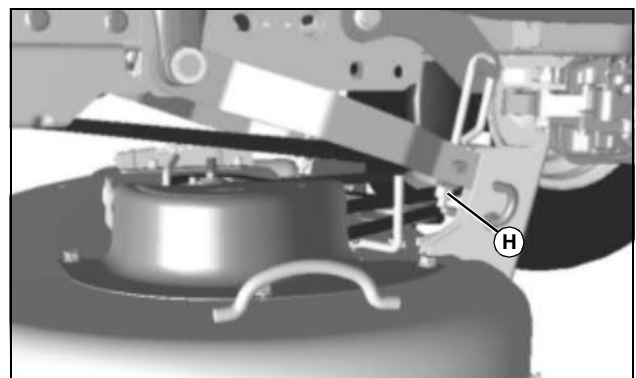
6. Remove the mower deck level gage (E) stored in the mower cutting height knob (D).

7. Adjust mower deck side-to-side level:

NOTE: Adjustment points 1 and 2 on 38, 42 mulching, 48 and 54 mowers have a raised marker (F) for side-to-side measurement; 42 mowers have a recessed area (G).



MX22016a, MX22015, MX36291



MX35843

OPERATING

a. Use gage (E) to measure the height between the floor and lower deck rim at adjustment point 1 on left rear deck rim. Adjust the left rear adjustment nut (H) until the gage just slips under the deck rim at adjustment point 1.

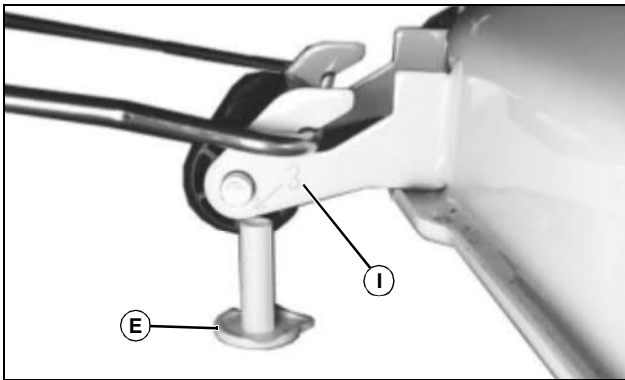
b. Use gage (E) to measure the height between the floor and lower deck rim at adjustment point 2 on right rear deck rim. Adjust the right rear adjustment nut until the gage just slips under the deck rim at adjustment point 2.

NOTE: If an adjustment of more than 1/8 in. is required, adjust both points alternately. A large adjustment on one side can move the other side in the opposite direction.

c. Repeat step a and b, as necessary.

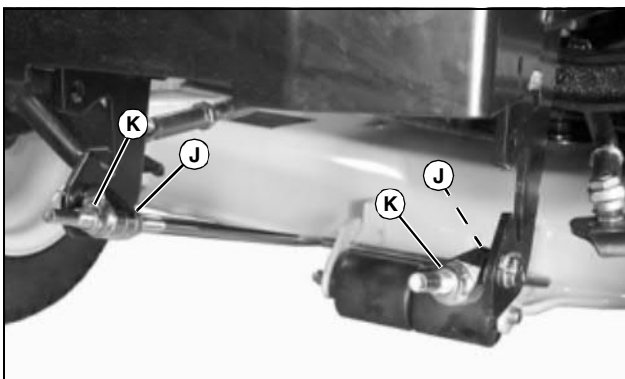
8. Adjust mower deck front-to-back level:

NOTE: Adjustment point 3 has a stamped "3" on side of front deck hanger bracket (I).



MX36292

a. Use gage (E) to measure the height between the floor and front deck hanger bracket at adjustment point 3.



MX36204

b. Adjust mower level, if necessary, by loosening rear nut (J) equally on each side of front lift rod. Turn front nut (K) equally on each side clockwise to raise front of mower or counterclockwise to lower it until gage just slips under adjustment point 3. Tighten rear nuts after

adjustment is complete.

NOTE: Before storing gage, verify that deck will latch in transport position. If it does not latch, turn both rear adjusting nuts counter-clockwise equally to lower rear of deck until deck latch will engage. Check front draft arm adjustment, adjust if necessary.

9. Return the gage to its storage position.

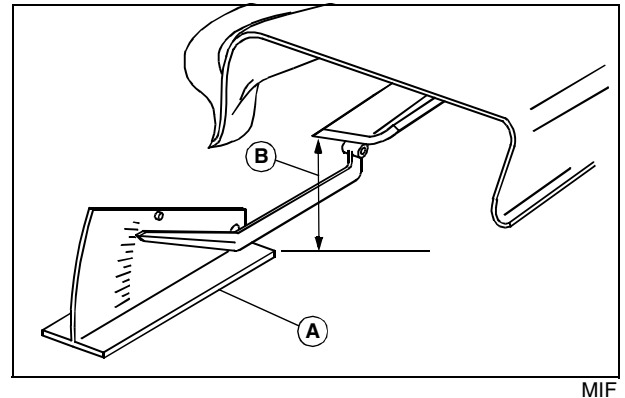
Method Two

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

2. Inflate tires to the correct pressure.

3. Set mower cutting height knob to preferred cutting height, and lower deck into the mowing position.

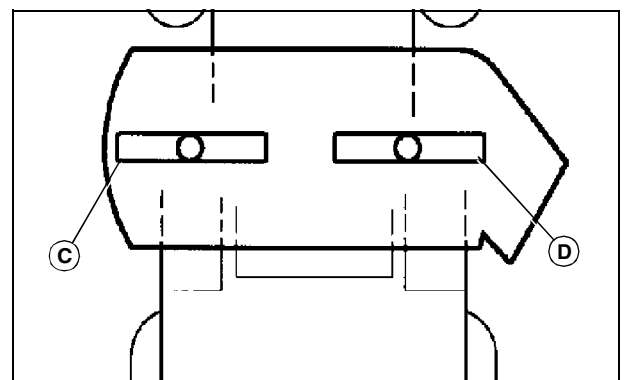
4. Measure mower level (side-to-side).



MIF

Picture Note: A convenient leveling gauge (A) (AM130907) is available from your dealer.

a. Position mower blades as follows and measure from each outside blade tip (B) to the level surface.

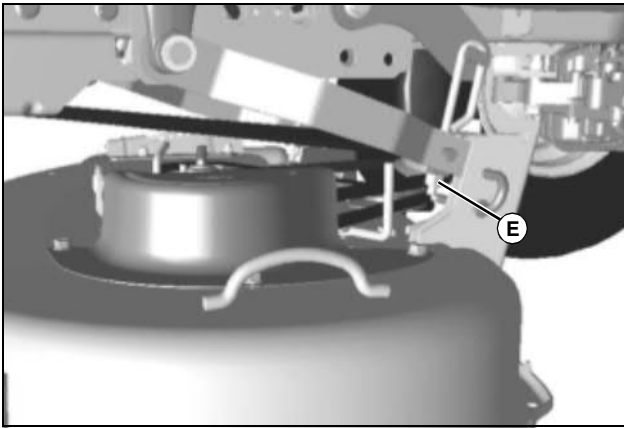


MX4896

b. Turn left blade (C) as shown. Hold drive belt and turn right blade (D) as shown. Take measurement for both blades.

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

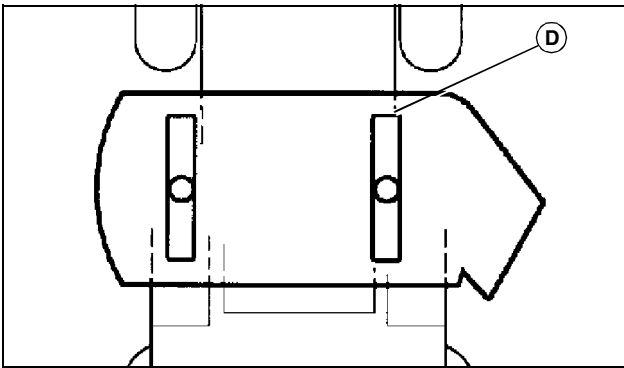
OPERATING



MX35843

c. Adjust mower level, if necessary, by turning nuts (E) clockwise to raise the side of the mower deck, or counterclockwise to lower the mower deck.

5. Measure mower level (front-to-rear).



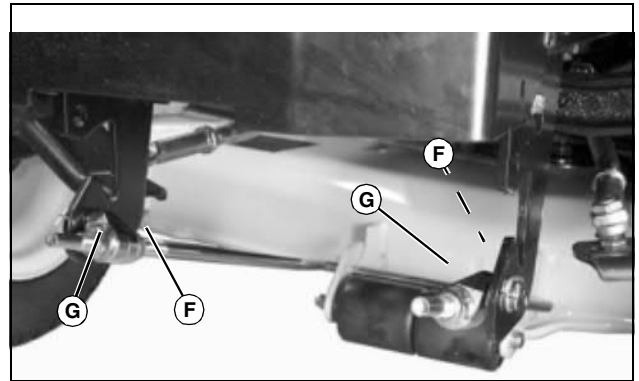
MX4896a

a. Turn right blade (D) so blade tip points straight forward.

b. Measure from blade tip to the surface. Take measurement for both blades.

38 and 42 Mowers - The front blade tip must be 3 mm (1/8 in.) lower than rear blade tip.

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



MX36204

c. Adjust mower level, if necessary, by loosening rear nut (F) equally on each side of front lift rod. Turn front nut (G) equally on each side clockwise to raise front of mower or counterclockwise to lower it. Tighten rear nuts after adjustment is complete.

NOTE: Verify that deck will latch in transport position. If it does not latch, turn both rear adjusting nuts counter-clockwise equally to lower rear of deck until deck latch will engage. Check front draft arm adjustment, adjust if necessary.

Adjusting Mower Wheels



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.

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

- Wheels must not ride on ground supporting mower weight.
- Check wheel adjustment each time cutting height is changed.

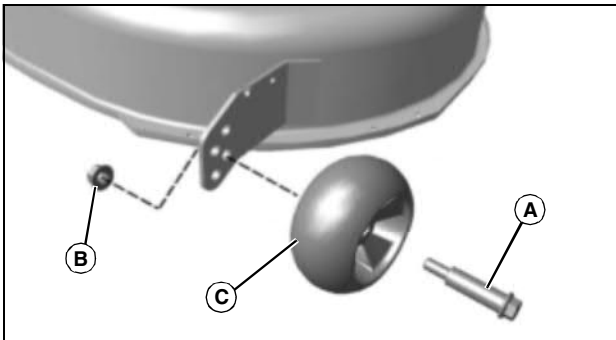
1. Park machine safely on a level surface. (See Parking Safely in the SAFETY section).
2. Inflate tires to correct pressure.
3. Press lift pedal and lock in place.
4. Adjust cutting height.
5. Lower mower to cutting position.

OPERATING

6. Measure distance between mower wheels and ground surface:

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

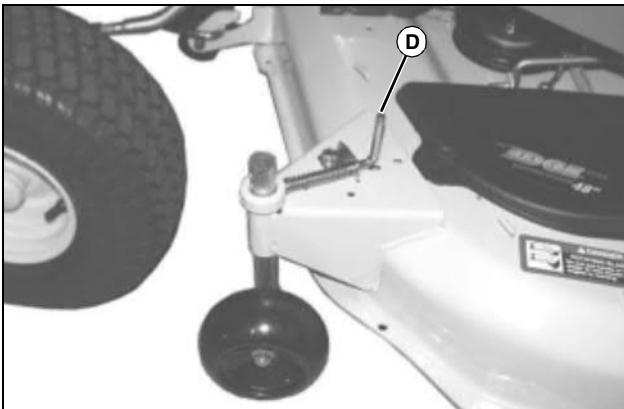
7. Adjust mower wheels to correct height:



MX36202

Picture Note: 38 mower shown.

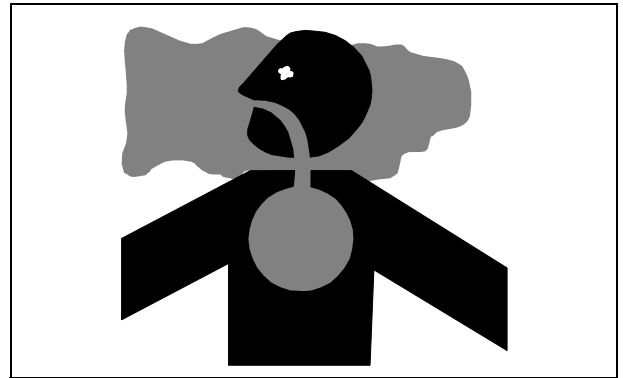
- 38 and 42 Mowers - Remove shoulder bolt (A) and nut (B). Move wheel (C) to proper hole position. Secure with shoulder bolt and nut. Tighten nut to 34 N•m (25 lb-ft).



MX36203

- 48 and 54 Mowers - Pull pin (D) outward and move wheel to proper hole position. Release pin to lock wheel in position.

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

OPERATING

problem with your safety interlock circuit.

Testing Park Brake

1. Park machine safely. (See Parking Safely in the SAFETY section.)
2. Lock the park brake.
3. 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

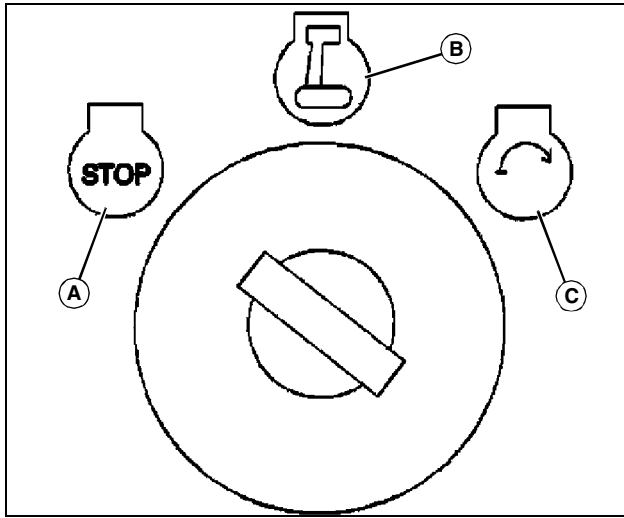
1. Push and hold down brake pedal.
2. Pull up park brake lever to lock park brake.
3. Release brake pedal. Pedal should stay down and park brake lever should stay up in locked position.

Unlocking Park Brake

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

OPERATING

Using Key Switch



A - STOP (off) position - With key in the STOP position, all switched power is off, and engine should not run.

B - Run (on) position - Turn key from STOP to this position, and all switched power circuits will be on.

C - Start position - Turn key to start position to crank the engine. Release key after engine has started and it will automatically return to the on position. The engine will continue to run.

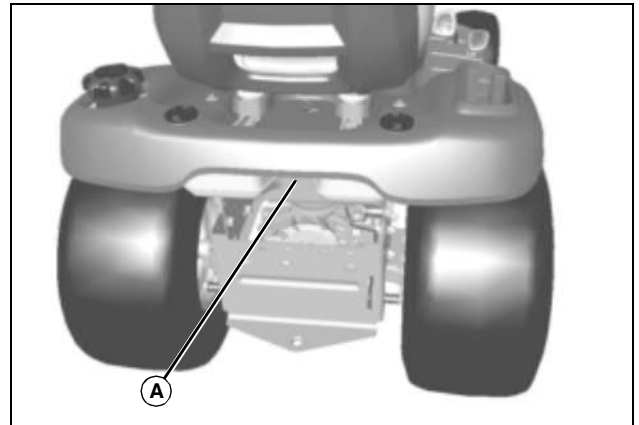
Using Headlights

- Pull up on light switch lever to turn headlights on.
- Push down on light switch lever to turn headlights off.

Using Hour Meter

- The 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 mower engagement off. Use the hour meter to determine when your machine has reached the recommended service intervals.
- Turn the key to STOP position when not using the machine.
- Hour meter cannot be reset.

Checking Fuel Level



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.

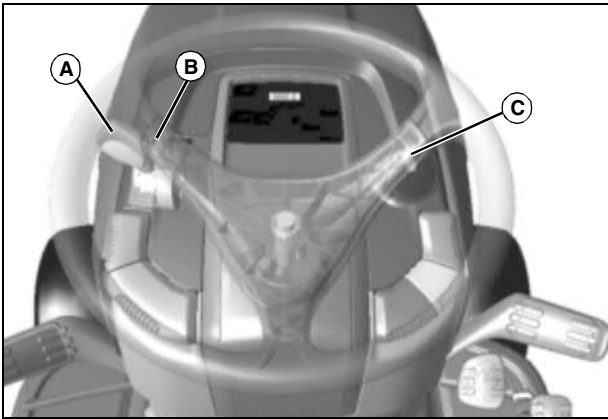
- **Connect a pipe extension to the engine exhaust pipe to direct the exhaust fumes out of the area.**

- **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 mower is disengaged.

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

OPERATING



MX36280

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.

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.

6. Turn key (C) to start position for no more than 5 seconds.

7. Release key to run position 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.

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

Stopping the Engine

1. Stop the machine.
2. Move throttle lever to half throttle position and allow engine to run at half throttle for several seconds.
3. Turn key to stop position.
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.
3. Push down slowly on forward pedal 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 mower engagement 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.

Stopping

1. Release either travel pedal, machine will automatically return to neutral and stop.
2. Push down brake pedal.

OPERATING

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.

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.

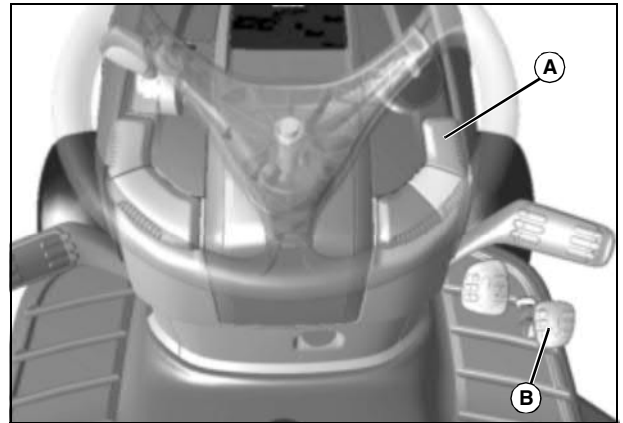
Engaging Cruise Control

1. Push forward pedal down until you reach desired travel speed.
2. Lift up cruise lever.
3. Remove foot from forward pedal.
4. Release cruise lever.

Disengaging Cruise Control

NOTE: Cruise control will also disengage if forward travel pedal is pressed.

- Push brake pedal down.



MX36280

3. Lift mower engagement switch (A) past the mower engagement position then depress reverse foot pedal (B) slightly.

NOTE: If the attachment stops while positioning the machine, return mower engagement lever to off position. Repeat this procedure from the beginning.

4. As the machine begins to move backward, release the mower engagement lever and position the machine.
5. Resume forward travel. The attachment should continue operating.
6. Repeat procedure to position the machine again.

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.

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.

1. Press lift pedal, make sure pedal latch handle 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.

OPERATING

Using Mower Engagement Lever

NOTE: Mower engagement operation will stop if reverse pedal is depressed. Understand the Reverse Implement Option (RIO) system before operating the mower.

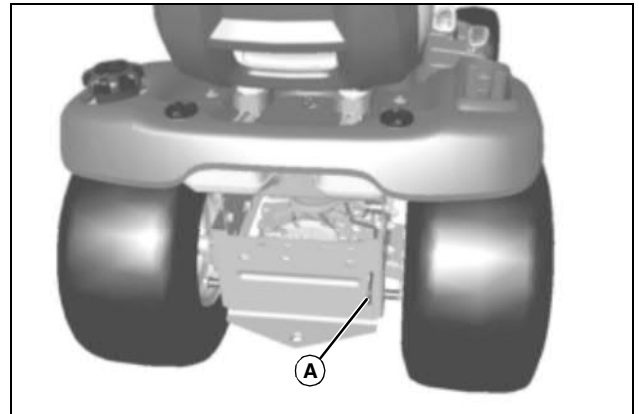
1. Start the engine. If necessary, allow engine to warm up before operating mower.

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

2. Move throttle lever to fast position.

3. Move mower engagement switch to desired position:

- Engage mower - Lift up on switch lever to "I" position.
- Disengage mower - Push down on switch lever to "O" position.
- Maintain mower engagement in reverse - Lift and hold switch in the highest position. Depress reverse foot pedal to start moving in reverse, release mower engagement lever.



MX35841

2. Pull out free-wheeling lever (A) at rear of machine.

3. Push machine to desired location.

IMPORTANT: Avoid damage! The transmission might be damaged if the free-wheeling lever is not pushed back to operating position before attempting to start the engine. Do not start or operate the machine with the free-wheeling lever in the push position.

4. Push in free-wheeling lever.

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 towed or moved incorrectly:

- Move machine by hand only.
- Do not use another vehicle to move machine.
- Do not tow machine.

1. Unlock the park brake.

Using Mower Gates (42 in. Mulching Mower)



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

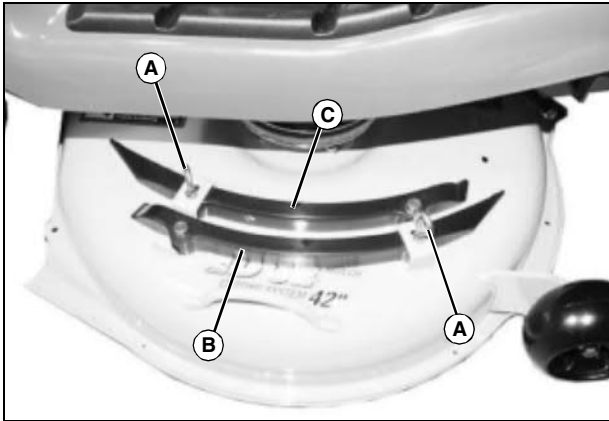
- Rotating blades are dangerous. Shut off the engine and remove the key before getting off the seat to inspect the machine and attachment.
- Thrown objects can cause serious injury. Make sure all machine parts are stopped before raising hopper top or removing chutes.

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

2. Raise and lock mower in the raised position.

OPERATING

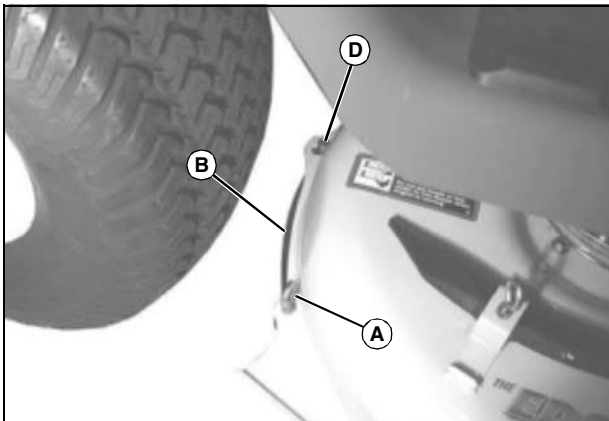
NOTE: Mower deck gates can be removed for allowing excess grass to exit bottom rear of mower deck.



MX36281

Picture Note: Gate storage position shown.

3. Remove bolts (A) and right (B) and left (C) mower deck gates. Retain hardware.



MX36282

4. Install right mower deck gate (B) onto slotted hole (D) on bottom of mower deck, and secure opposite end with bolt (A), removed earlier. Repeat for opposite side.

5. To remove gates, remove bolt (A), and remove mower deck gates. Install in storage position on top of deck.

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

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

OPERATING



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! Transmission damage may occur if the machine is towed or moved incorrectly:

- Move machine by hand only.
- Do not use another vehicle to move machine.
- Do not tow machine.

1. Park trailer on level surface.
2. Raise mower deck, if installed, before driving machine onto trailer.
3. Drive machine onto heavy-duty trailer.
4. Lower mower deck to trailer deck.
5. Lock park brake.
6. Turn off machine and remove key.
7. Fasten lawn tractor to trailer with heavy-duty straps, chains, or cables. Both front and rear straps must be directed down and outward from tractor.
8. Strap down hood.

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.
Remove weights when not required.**

IMPORTANT: Avoid damage! Never use liquid in tires or wheel weights as ballast. Transmission damage can occur.

When rear ballast is needed, use only the approved rear weight bracket and attaching weights.

NOTE: See your authorized dealer for recommended weights.

- Install front weights for added stability and steering control when you use equipment such as the rear-mounted grass bagger.
- Install rear weights when using the snow blade or snowblower.
- Remove weights when not required.

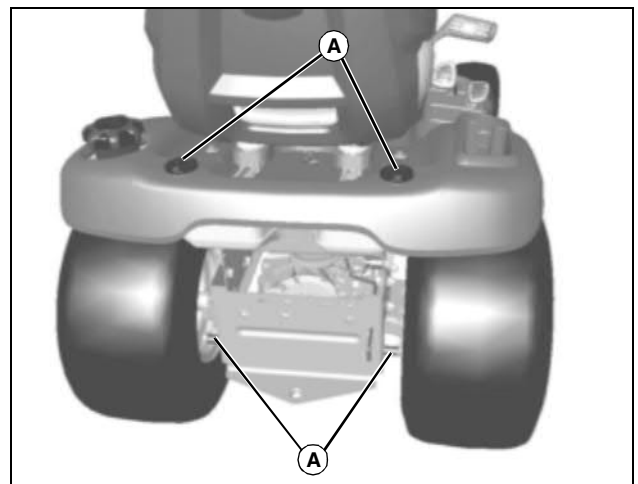
Using Tire Chains

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.

Using Accessories



MX35841

Using Heavy Duty CargO Mount™ System

The front and rear Heavy Duty CargO Mount™ brackets (A) can be used for easy attachment of selected optional equipment.

Use John Deere approved optional equipment only. See your Authorized Service Center for approved optional equipment.

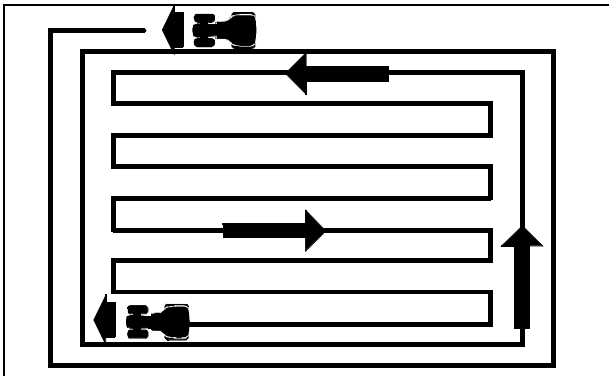
OPERATING

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.

Higher cut heights will reduce clippings, but cut quality may decline.



- 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 disperse 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 disperse 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.

REPLACEMENT PARTS

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.

Part Numbers

Item	Part Number
Light Bulb	AD2062R
Headlight Lens	M152322
Fuse:	
• 7.5 Amp	99M7064
• 10 Amp	57M7121
• 15 Amp	99M7065
Air Cleaner Element (Foam):	
X300 and X304	MIU10999
X320, X324, and X340	M140295
Air Cleaner Element (Paper):	
X300 and X304	MIU10998
X320, 324 and X340	M150949
Fuel Filter	AM116304
Oil Filter	AM107423
Battery Replacement	TY25220

Item	Part Number
Spark Plug:	
X300 and X304	TY6081
X320, X324 and X340	M805853
Belts:	
• 38 Mower	M154601
• 42 Mower	M154621
• 42 Mulching Mower	M153160
• 48 Mower	
• Primary (engine to mower)	M154987
• Mower	M154958
• 54 Mower	
• Primary (engine to mower)	M154987
• Mower	M154960
Traction Drive Belt:	
X300	M152284
X304, X320, X324 and X340	M151277
Blades for 38 Mower:	
• Blade - Side Discharge	M153118
• Blade - Bagging	M154159
• Blade - Mulching	M154158
Blades for 42 Mulching Mower	
• Blade - Mulching (Right)	M149422
• Blade - Mulching (Left)	M149421
Blades for 42 Mower:	
• Blade - Side Discharge	M154061
• Blade - Bagging	M154062
• Blade - Mulching	M149422
Blades for 48 Mower:	
• Standard	M145476
• Mulching	M127673
Blades for 54 Mower:	
• 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.

Service Intervals

Break-In after 8 Hours

Change engine oil and filter.

Every 50 Hours or Annually

Lubricate front axle pivot and axle spindles.

Lubricate mower spindles, pivot points, and lift pedal.

Lubricate rear U-Joints - 4-Wheel Steer Models.

Every 100 Hours or Annually

Change engine oil and filter.

Replace spark plugs.

Replace air filter elements, both foam and paper.

Replace fuel filter.

Clean engine cooling fins.

Check mower belt.

Sharpen / replace blades.

Clean bottom side of deck.

Check tire pressure.

Every 200 Hours

Check / adjust valve clearance. See your John Deere dealer for this service.

SERVICE LUBRICATION

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:

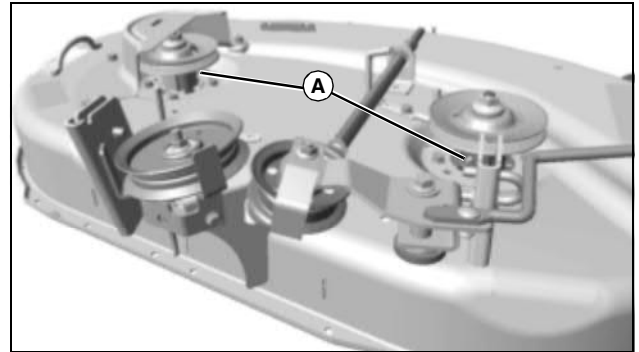
- John Deere Multi-Purpose SD Polyurea Grease
- John Deere Multi-Purpose HD Lithium Complex Grease

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

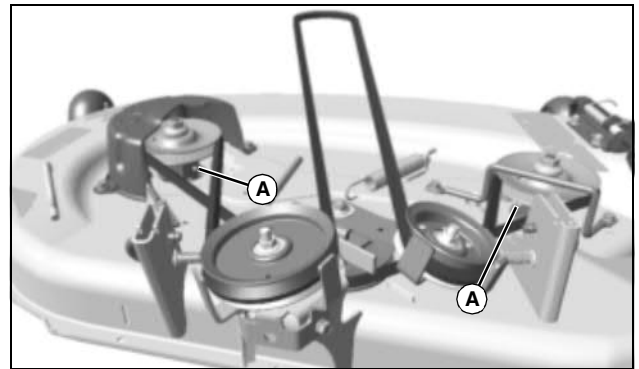
Wet or high speed conditions may require use of a special-use grease. Contact your Servicing dealer for information.

Lubricating Pivot Points

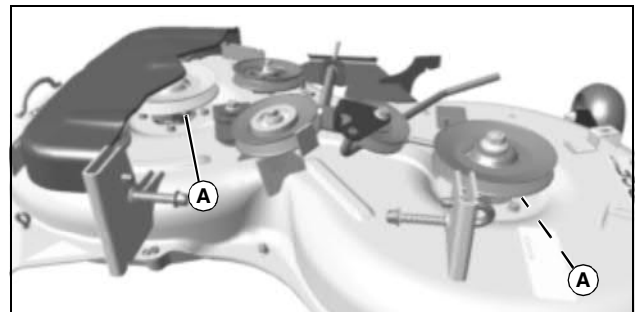
38 and 42 Mowers:



Picture Note: 38 mower shown.



Picture Note: 42 mower shown.

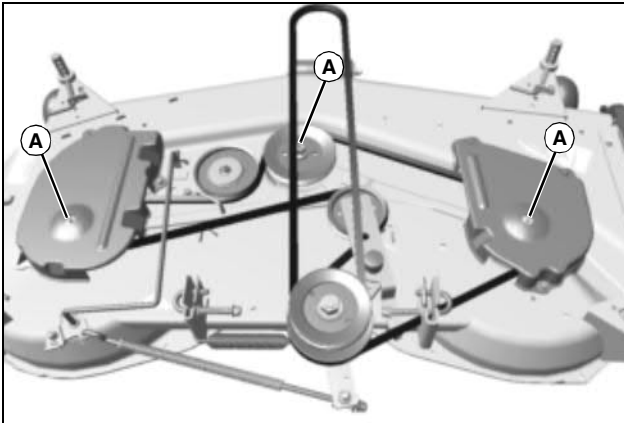


Picture Note: 42 mulching mower shown.

- Lubricate two mower spindle grease fittings (A) with two pumps of grease at specified interval.

SERVICE LUBRICATION

48 and 54 Mowers:

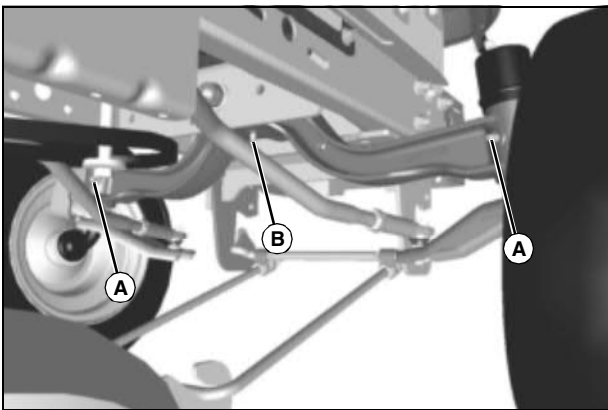


MX36275

Picture Note: 54 mower shown.

- Lubricate three mower spindle grease fittings (A) with two pumps of grease at specified interval.

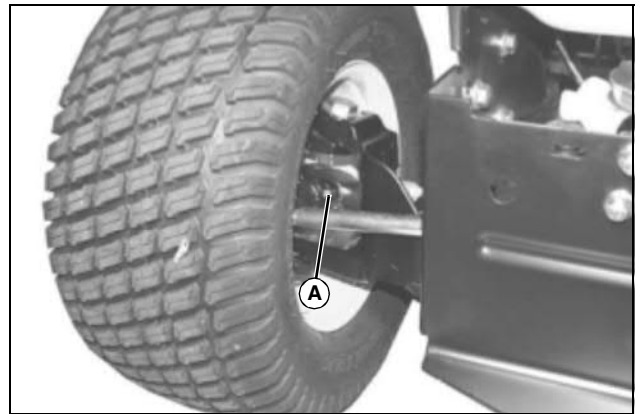
Lubricating Front Axle



MX36271

1. Lubricate grease fitting (A) on each spindle with one or two pumps of general all-purpose grease.
2. Turn wheels to distribute grease on spindles.
3. Lubricate front axle center pivot grease fitting (B) with one or two pumps of general all-purpose grease.

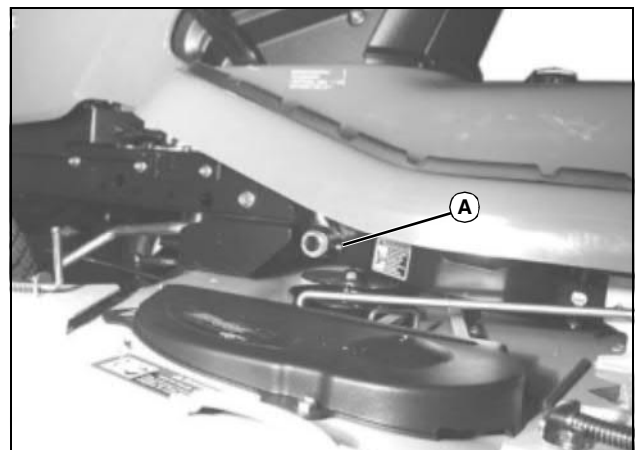
Lubricating Rear U-Joints (4-Wheel Steer Models)



MX36301

1. Lubricate steering pivot grease fitting (A) at each wheel with recommended grease.
2. Turn steering wheel back and forth to distribute grease.

Lubricating Lift Pedal Assembly



MX36270

Picture Note: Location of grease fitting under left side of fender deck.

1. Lubricate grease fitting (A) for lift pedal with enough grease to flush out dirt.
2. Remove excess grease.

SERVICE ENGINE

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



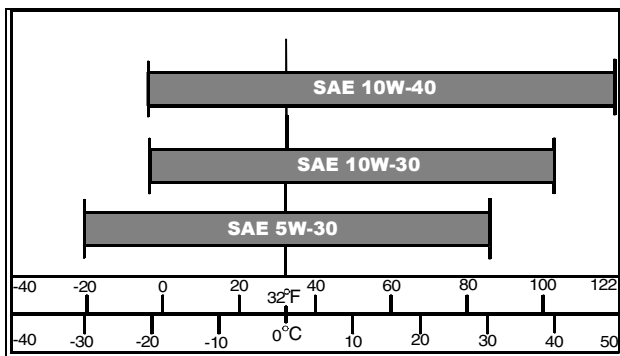
CAUTION: Avoid injury! Engine exhaust fumes contain carbon monoxide and can cause serious illness or death.

Do not run an engine in an enclosed area, such as a garage, even with doors or windows opened.

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

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



MX36268

4. Remove dipstick (A). 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.
7. Check oil level on dipstick. Oil must be between ADD and FULL marks.
8. If oil level is low, add oil to bring oil level no higher than FULL mark on dipstick. Do not overfill.
9. Install and tighten dipstick. Lower hood.

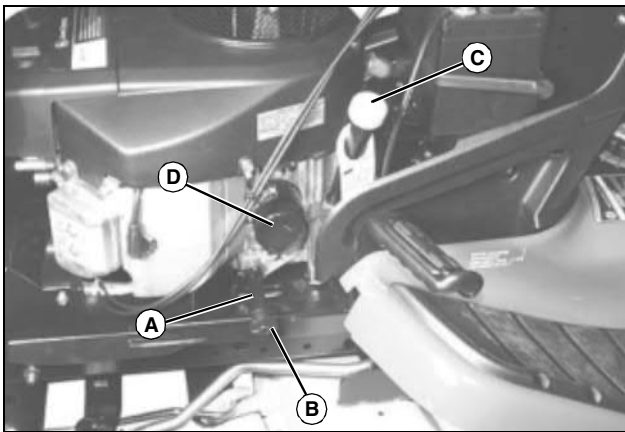
SERVICE ENGINE

Changing Engine Oil and Filter

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.

1. Run engine to warm oil.
2. Park machine safely on level surface. (See Parking Safely in the SAFETY section.)
3. Lift hood.



MX36268

4. Put drain pan under drain valve (A).
5. Remove drain cap (B) and drain oil into drain pan. Allow oil to drain completely.
6. Remove dipstick (C).
7. Wipe dirt from around oil filter (D).
8. Place a drain pan or funnel under oil filter tray.
9. Remove old filter and wipe off filter tray.
10. Put a light coat of fresh, clean oil on the filter gasket.
11. Install replacement oil filter by turning oil filter to the right (clockwise) until the rubber gasket contacts filter base. Tighten filter an additional one-half turn.
12. Install and tighten drain cap (B).
13. Add oil no higher than FULL mark on dipstick. Do not overfill.
 - X300 and X304: Begin with approximately 1.7 L (1.8 qt) (57 oz).
 - X320, X324, and X340 : Begin with approximately 1.9 L (2.1 qt) (64 oz).

14. Install dipstick.
15. Start and run engine at idle to check for leaks. Stop engine. Fix any leaks before operating.
16. 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).

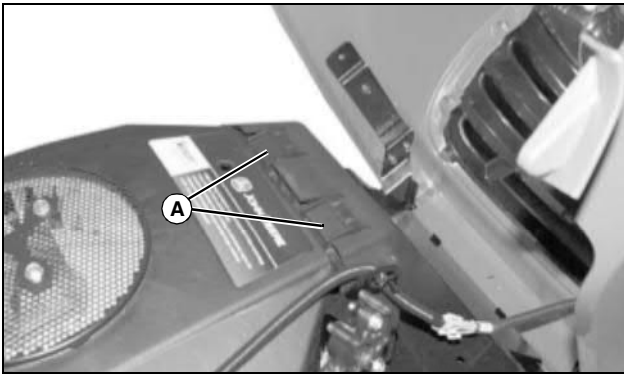
IMPORTANT: Avoid damage! An obstructed air intake screen can cause engine damage due to overheating. Keep air intake screen and other external surfaces of the engine, including cooling fins, clean at all times to allow adequate air intake.

1. Park machine safely. (See Parking Safely in the SAFETY section.)
2. Lift hood.
3. Clean air intake screen on top of engine and external surfaces with rag, brush, vacuum or compressed air.
4. Lower hood.

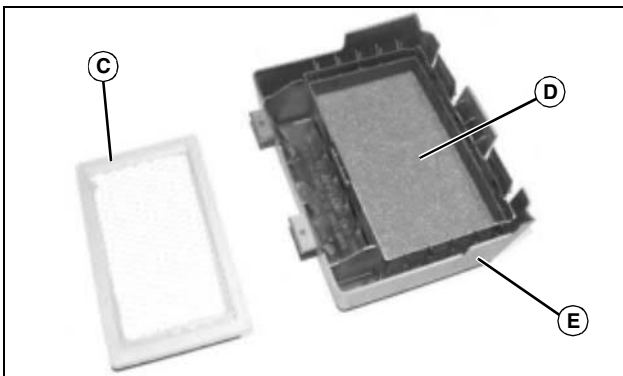
Checking and Cleaning Air Cleaner Elements (X300 and X304 Models)

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

SERVICE ENGINE



3. Push down on clips (A) on both sides of air cleaner cover and remove cover.



MX36265

Picture Note: X300 and X304

4. Remove paper element (C) and inspect foam precleaner (D) in cover (E).

5. If the foam precleaner is dirty:

- Remove the filter carefully.
- Wash precleaner in a solution of warm water and liquid detergent.

NOTE: Do not put engine oil on precleaner. Engine oil on precleaner can result in poor engine performance.

- Rinse precleaner thoroughly. Squeeze out excess water in a dry cloth until precleaner is completely dry.

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.

6. Inspect paper element (C).

7. If the paper filter element is damaged or dirty, replace filter.

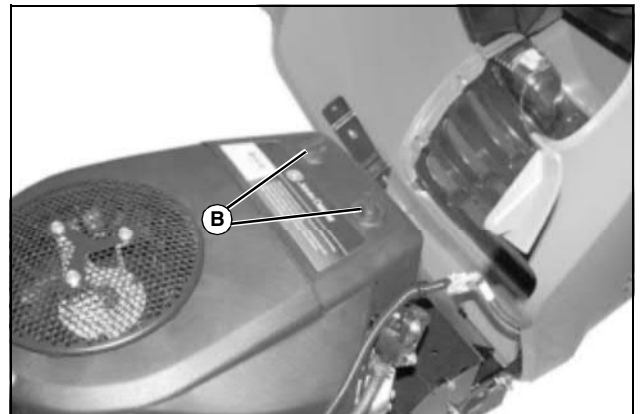
8. Clean air cleaner base very carefully, preventing any dirt from falling into carburetor.

9. Install foam precleaner (D) into cover (E). Install paper element (C) into cover, and install cover onto carburetor base, making sure clips (A) are holding cover in place.

Checking and Cleaning Air Cleaner Elements (X320, X324, and X340 Models)

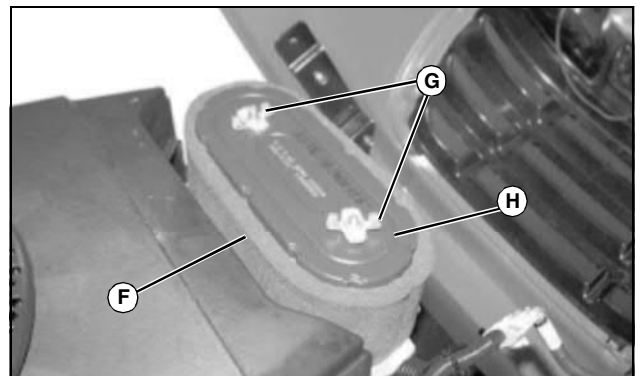
1. Park machine safely (See Parking Safely in the SAFETY section).

2. Lift hood.



MX36264

3. Loosen nuts (B) on both sides of air cleaner cover and remove cover.



MX36266

4. Inspect the foam precleaner (F) without removing it.

5. If the foam precleaner is dirty:

- Remove the filter carefully.
- Wash precleaner in a solution of warm water and liquid detergent.

SERVICE ENGINE

NOTE: Do not put engine oil on precleaner. Engine oil on precleaner can result in poor engine performance.

- Rinse precleaner thoroughly. Squeeze out excess water in a dry cloth until precleaner is completely dry.

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.

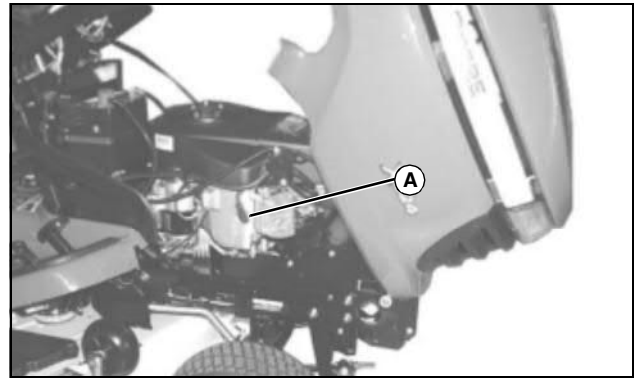
6. Remove foam precleaner (F), wing nuts (G), and paper element (H). Inspect paper element.
7. If the paper filter element is damaged or dirty, replace filter.
8. Clean air cleaner base very carefully, preventing any dirt from falling into carburetor.
9. Install foam precleaner (F) onto paper filter element (H). Install paper element onto carburetor base, and secure with two wing nuts (G). Install air cleaner cover and tighten nuts (B).

Checking Spark Plug



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.

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

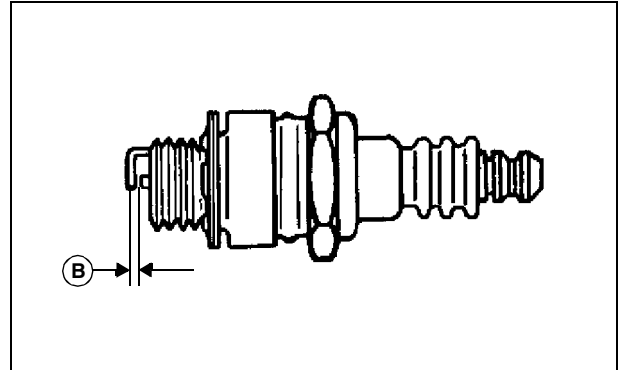


MX36205

3. Disconnect spark plug wire (A), one on each side of engine.
4. Remove each spark plug.
5. Clean spark plug carefully with a wire brush.
6. Inspect spark plug for:
 - Cracked porcelain.
 - Pitted or damaged electrodes.
 - Other wear or damage.

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

7. Replace spark plugs as necessary.



M85200

8. Check plug gap (B) with a wire feeler gauge. To change gap, move the outer electrode. Gap must be 0.75 mm (0.030 in.).
9. Install spark plugs:
 - X300 and X304 -Tighten spark plugs to 15 N•m (133 lb-in.).
 - X320, X324, and X340 -Tighten spark plugs to 20 N•m (15 lb-ft).
10. Connect spark plug wires and lower hood.

SERVICE ENGINE

Adjusting Carburetor

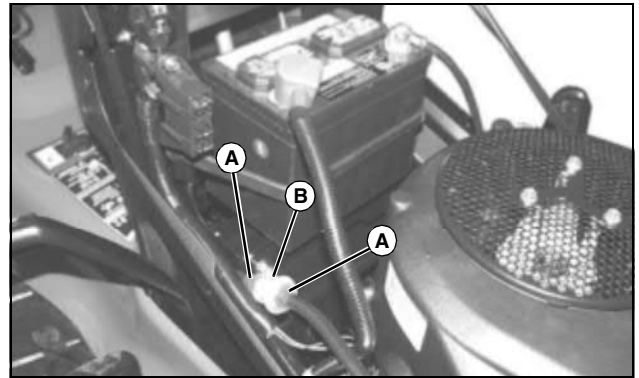
NOTE: Carburetor is calibrated by the engine manufacturer and is not adjustable.

If engine is operated at altitudes above 1006 m (3,300 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.



MX36201

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.

1. Park machine safely. (See Parking Safely in the SAFETY section).
2. Lift hood.
3. Let engine cool.
4. Put a drain pan under fuel filter.

5. Slide hose clamps (A) away from fuel filter (B) using pliers.

6. 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.

7. Connect hoses to new filter making sure the filter arrow is pointing in the direction of the fuel flow.

8. Install clamps and check for leaks.

9. Lower hood.

SERVICE TRANSMISSION

Checking Transmission

The transmission is a sealed component. No maintenance is required on this transmission. If you suspect any transmission problems, please contact your authorized dealer.

SERVICE MOWER

Removing Mower (38 Mower)

1. Park machine safely. (See Parking Safely in the SAFETY section.)
2. Allow engine and muffler to cool completely.



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.

3. Adjust mower cutting height to lowest position.



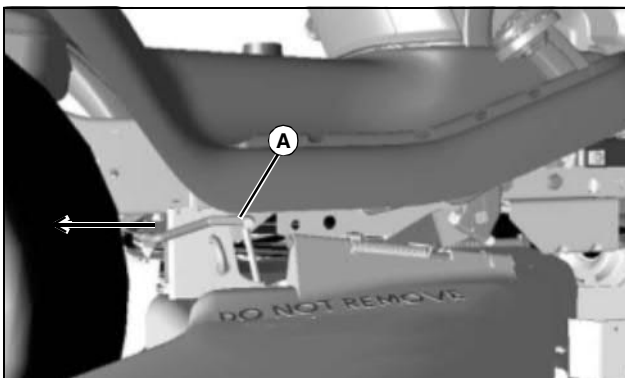
CAUTION: Avoid injury! Lift pedal is spring-assisted and may have unexpected movement. Lock lift pedal when installing or removing mower deck.

NOTE: Because a lift assist may be installed on your machine, you will need to lower deck and then pull lift pedal back by hand to lock the lift lever.

4. Lower mower deck, pull back lift pedal by hand, and pull lift lever up to lock.



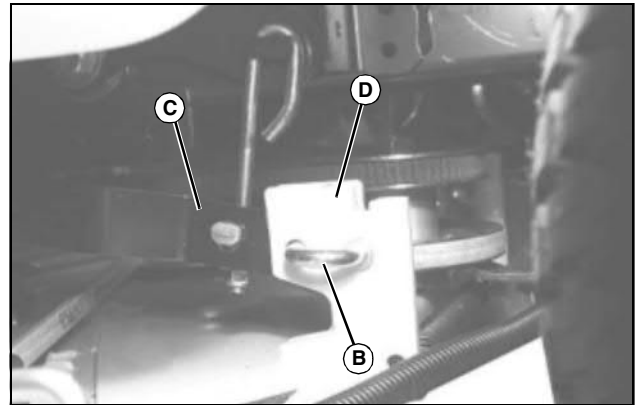
CAUTION: Avoid injury! Belt tension rod is spring-assisted and under tension. Keep a secure grasp on rod at all times while releasing or applying drive belt tension.



MX36283

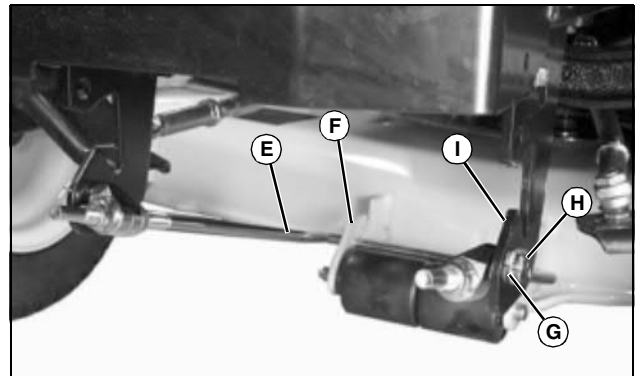
Picture Note: 38 mower. Lever on right side.

5. Grasp tension rod (A), under footdeck, securely. Push and hold tension rod rearward, while removing mower belt from engine sheave.



MX36288

6. Pull and rotate J-pin (B) to release and move rear draft arm (C) away from deck bracket (D). Raise deck slightly via handle to remove pressure on pin when pulling out. Repeat on other side.



MX36204

7. Remove front draft rod (E) from machine bracket (F).
8. When operating the machine without the mower deck:
 - Remove locking clip (G) from stud (H) on each side, and remove front draft rod from draft bracket (I). Note orientation of stud offset when removing, correct offset is above rod.
9. Raise draft arms to transport position:
 - a. Pull and hold lift pedal by hand.
 - b. Unlock lift latch handle.
 - c. Push lift pedal downward.
 - d. Pull up latch handle to lock draft arms in transport position.
10. Slide mower out from under the machine.

Removing Mower (42 Mower)

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

SERVICE MOWER

2. Allow engine and muffler to cool completely.



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.

3. Adjust mower cutting height to lowest position.



CAUTION: Avoid injury! Lift pedal is spring-assisted and may have unexpected movement. Lock lift pedal when installing or removing mower deck.

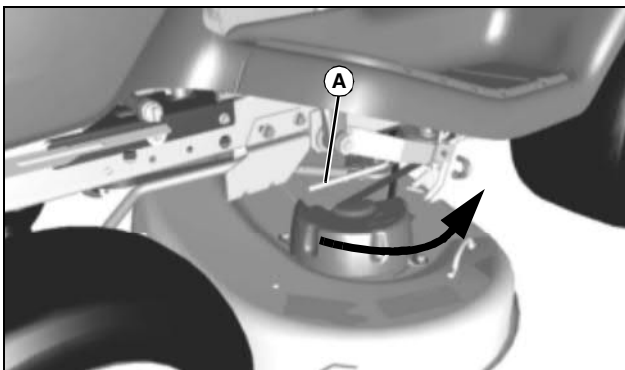
NOTE: Because a lift assist may be installed on your machine, you will need to lower deck and then pull lift pedal back by hand to lock the lift lever.

4. Lower mower deck, pull back lift pedal by hand, and pull lift lever up to lock.



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.

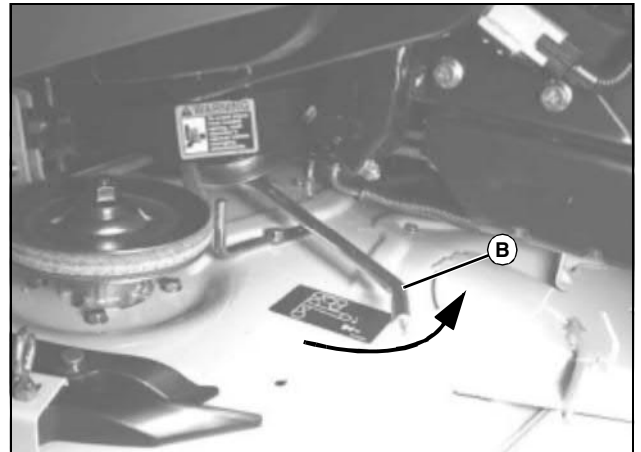
5. Disconnect mower drive belt:



MX36284

Picture Note: 42 mower. Lever on left side.

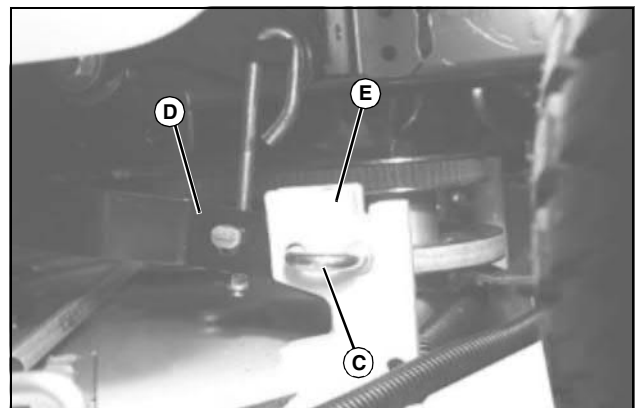
- 42 mower- Grasp tension rod (A) securely, and pull and hold tension rod counterclockwise, while removing mower belt from engine sheave.



MX36285

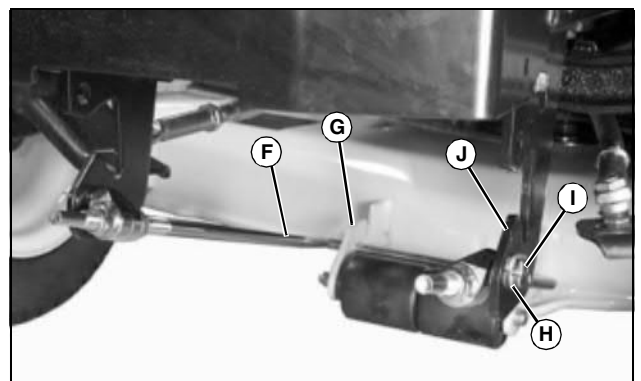
Picture Note: 42 mulching mower. Lever on right side.

- 42 mulching mower- Grasp tension rod (B) securely, and pull and hold tension rod counterclockwise, while removing mower belt from engine sheave.



MX36288

6. Pull and rotate J-pin (C) to release and move rear draft arm (D) away from deck bracket (E). Raise deck slightly via handle to remove pressure on pin when pulling out. Repeat on other side.



MX36204

7. Remove front draft rod (F) from machine bracket (G).

SERVICE MOWER

8. When operating the machine without the mower deck:
 - Remove locking clip (H) from stud (I) on each side, and remove front draft rod from draft bracket (J). Note orientation of stud offset when removing, correct offset is above rod.
9. Raise draft arms to transport position:
 - a. Pull and hold lift pedal by hand.
 - b. Unlock lift latch handle.
 - c. Push lift pedal downward.
 - d. Pull up latch handle to lock draft arms in transport position.
10. Slide mower out from under the machine.

Removing Mower (48 and 54 Mowers)

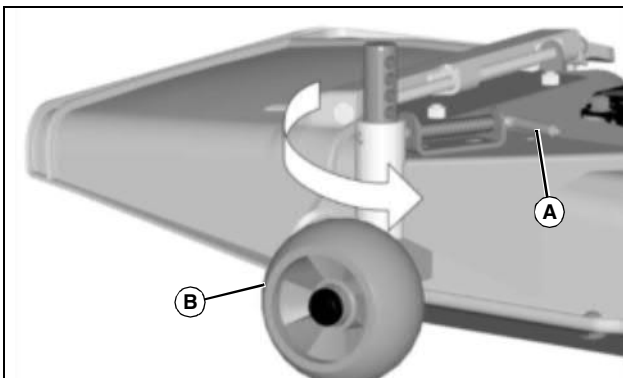
1. Park machine safely. (See Parking Safely in the SAFETY section.)
2. Allow engine and muffler to cool completely.



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.

3. Adjust mower cutting height to lowest position.



MX8331

Picture Note: 54 mower shown.

4. 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.



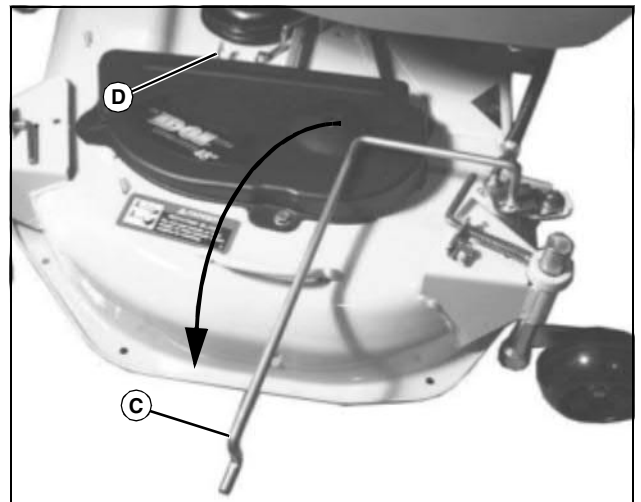
CAUTION: Avoid injury! Lift pedal is spring-assisted and may have unexpected movement. Lock lift pedal when installing or removing mower deck.

NOTE: Because a lift assist may be installed on your machine, you will need to lower deck and then pull lift pedal back by hand to lock the lift lever.

5. Lower mower deck, pull back lift pedal by hand, and pull lift lever up to lock.



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.

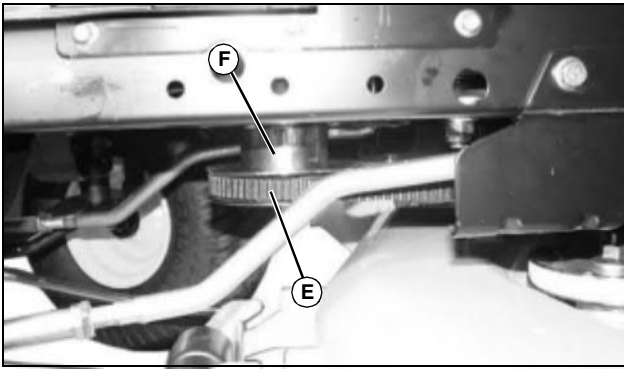


MX36286

Picture Note: 48 mower shown. Lever on left side.

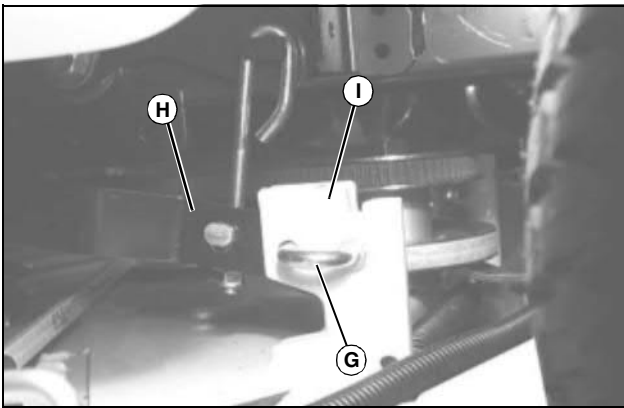
6. Grasp and hold tension rod (C) securely. Disengage rod from retaining bracket (D) by rotating rod counterclockwise. Move rod as far as possible toward rear wheel to remove all belt tension.

SERVICE MOWER



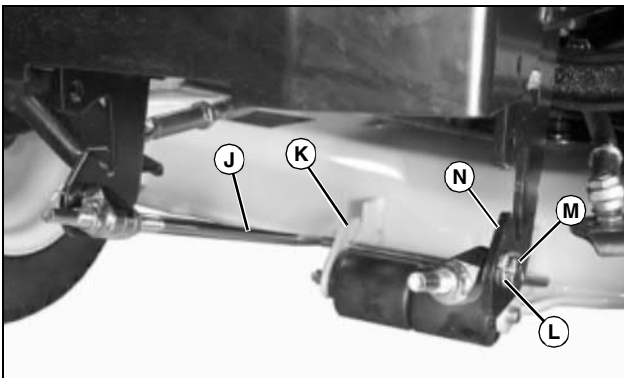
MX36287

7. Remove separate drive belt (E) from engine sheave (F), and move tension rod back into retaining bracket.



MX36288

8. Pull and rotate J-pin (G) to release and move rear draft arm (H) away from deck bracket (I). Raise deck slightly via handle to remove pressure on pin when pulling out. Repeat on other side.



MX36204

9. Remove front draft rod (J) from machine bracket (K).

10. When operating the machine without the mower deck:

- Remove locking clip (L) from stud (M) on each side, and remove front draft rod from draft bracket (N). Note orientation of stud offset when removing, correct offset is above rod.

11. Raise draft arms to transport position:
 - a. Pull and hold lift pedal by hand.
 - b. Unlock lift latch handle.
 - c. Push lift pedal downward.
 - d. Pull up latch handle to lock draft arms in transport position.
12. Slide mower out from under the machine.

Installing Mower (38 Mower)

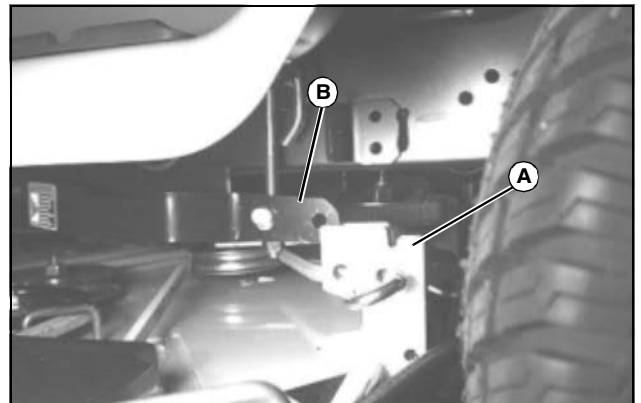
1. Park machine safely. (See Parking Safely in the SAFETY section.)
2. Allow engine and muffler to cool completely.



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.

3. Adjust mower cutting height to lowest position.



MX36289

4. Slide mower deck under tractor and line up deck bracket (A) with draft arm (B).
5. Unlock lift latch handle.

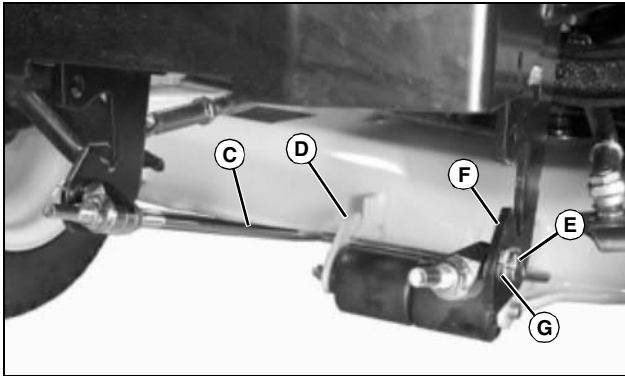


CAUTION: Avoid injury! Lift pedal is spring-assisted and may have unexpected movement. Lock lift pedal when installing or removing mower deck.

6. Pull lift pedal by hand to lower draft arms. Hold pedal

SERVICE MOWER

securely and lock lift latch handle.

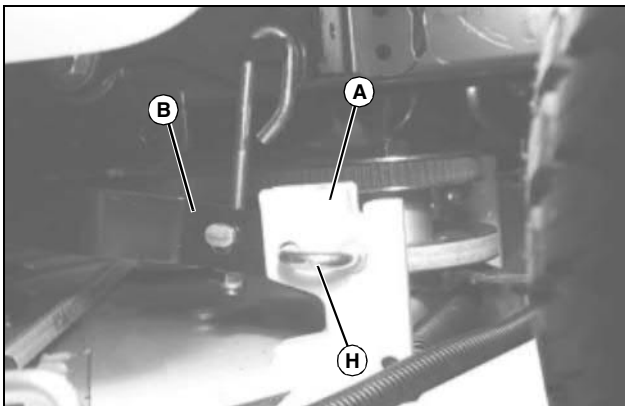


MX36204

7. Install front draft rod (C) into mower bracket (D).

If draft rod assembly has been removed from machine:

- Install mounting stud (E) into draft bracket (F) at each side. Note orientation of stud offset when installing, correct orientation is for stud to be offset above draft rod.
- Secure each side with locking clip (G).
- Install draft rod into mower bracket.



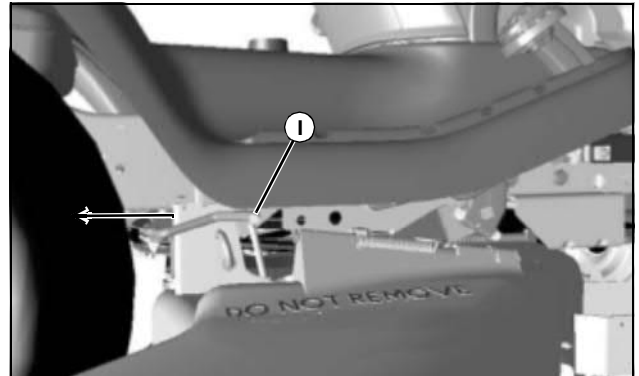
MX36288

8. Pull back J-pin (H) and insert through deck bracket (A) and draft arm (B). Make sure pin installs completely through deck bracket. Repeat for other side.



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.

IMPORTANT: Avoid damage! The belt will be damaged if installed wrong. Route the belt properly through belt guides. See belt routing label on mower deck.



MX36283

Picture Note: 38 mower deck. Lever on right side.

9. Grasp tension rod (I) securely, and push and hold tension rod rearward, while installing mower belt onto engine sheave.

10. Level mower.

Installing Mower (42 Mower)

- Park machine safely. (See Parking Safely in the SAFETY section.)
- Allow engine and muffler to cool completely.

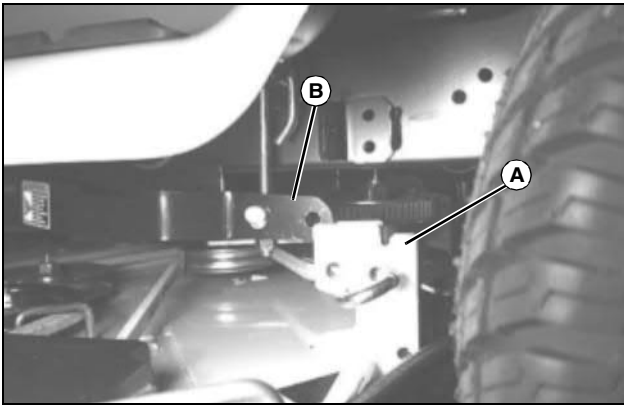


CAUTION: Avoid injury! Rotating blades are dangerous. Before adjusting or servicing mower:

- 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.

3. Adjust mower cutting height to lowest position.

SERVICE MOWER



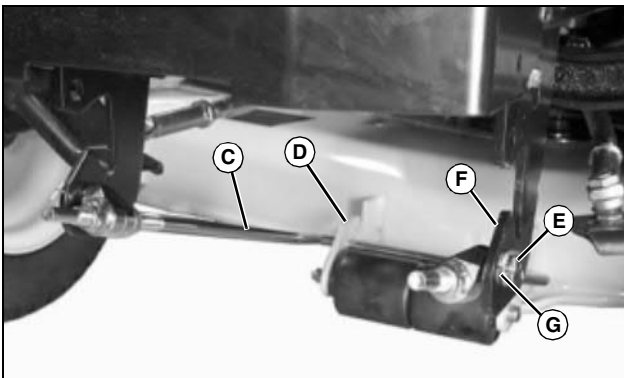
MX36289

4. Slide mower deck under tractor and line up deck bracket (A) with draft arm (B).
5. Unlock lift latch handle.



CAUTION: Avoid injury! Lift pedal is spring-assisted and may have unexpected movement. Lock lift pedal when installing or removing mower deck.

6. Pull lift pedal by hand to lower draft arms. Hold pedal securely and lock lift latch handle.

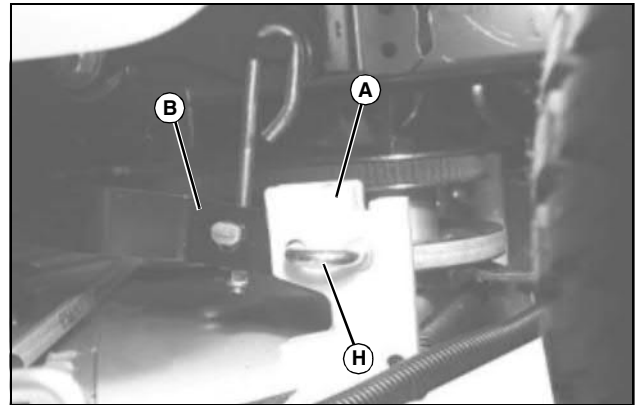


MX36204

7. Install front draft rod (C) into mower bracket (D).

If draft rod assembly has been removed from machine:

- a. Install mounting stud (E) into draft bracket (F) at each side. Note orientation of stud offset when installing, correct orientation is for stud to be offset above draft rod.
- b. Secure each side with locking clip (G).
- c. Install draft rod into mower bracket.



MX36288

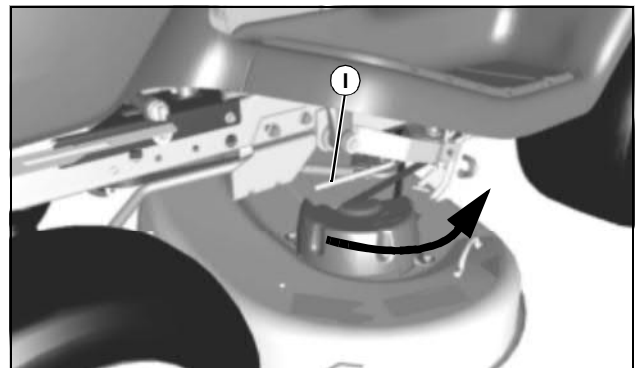
8. Pull back J-pin (H) and insert through deck bracket (A) and draft arm (B). Make sure pin installs completely through deck bracket. Repeat for other side.



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.

IMPORTANT: Avoid damage! The belt will be damaged if installed wrong. Route the belt properly through belt guides. See belt routing label on mower deck.

9. Install mower drive belt:

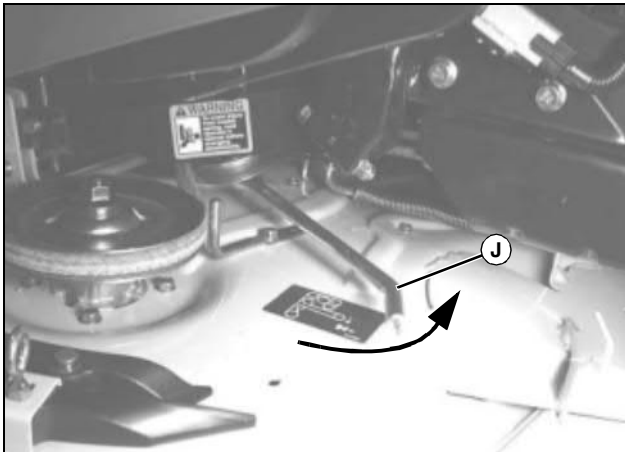


MX36284

Picture Note: 42 mower. Lever on left side.

- 42 mower - Grasp tension rod (I) securely, and pull and hold tension rod counterclockwise, while installing mower belt onto engine sheave.

SERVICE MOWER



MX36285

Picture Note: 42 mulching mower. Lever on right side.

- 42 mulching mower - Grasp tension rod (J) securely, and pull and hold tension rod counterclockwise, while installing mower belt onto engine sheave.

10. Level mower.

Installing Mower (48 and 54 Mowers)

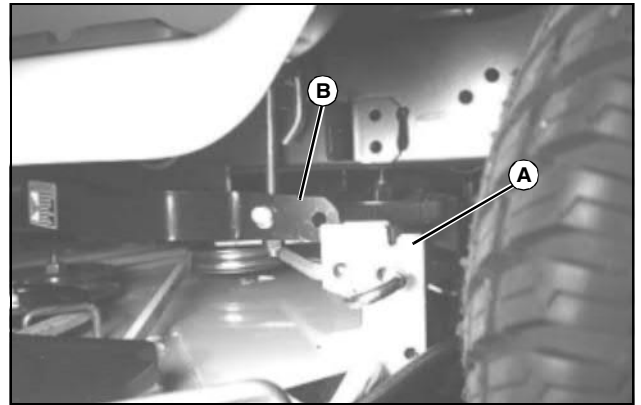
1. Park machine safely. (See Parking Safely in the SAFETY section.)
2. Allow engine and muffler to cool completely.



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.

3. Adjust mower cutting height to lowest position.



MX36289

4. Slide mower deck under tractor and line up deck bracket (A) with draft arm (B).

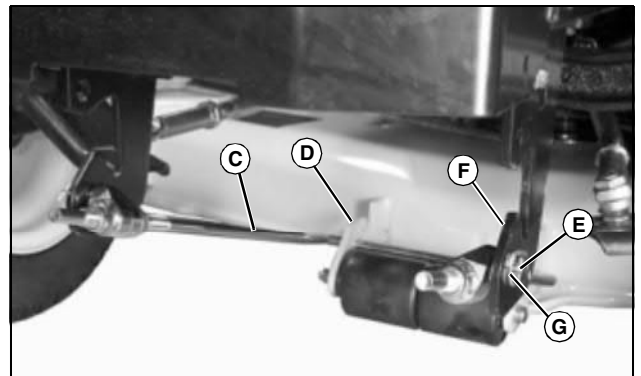
5. Unlock lift latch handle.



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

Lock lift pedal when installing or removing mower deck.

6. Pull lift pedal by hand to lower draft arms. Hold pedal securely and lock lift latch handle.



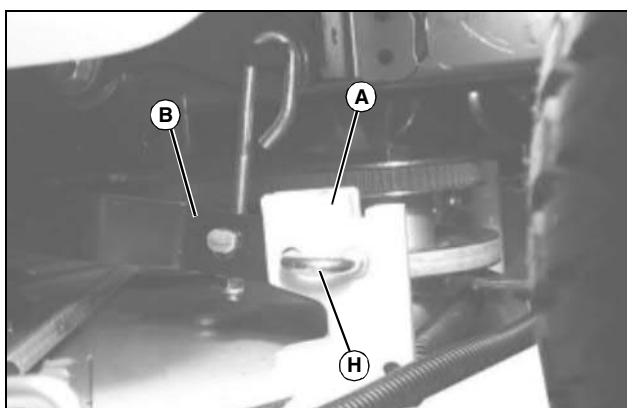
MX36204

7. Install front draft rod (C) into mower bracket (D).

If draft rod assembly has been removed from machine:

- a. Install mounting stud (E) into draft bracket (F) at each side. Note orientation of stud offset when installing, correct orientation is for stud to be offset above draft rod.
- b. Secure each side with locking clip (G).
- c. Install draft rod into mower bracket.

SERVICE MOWER



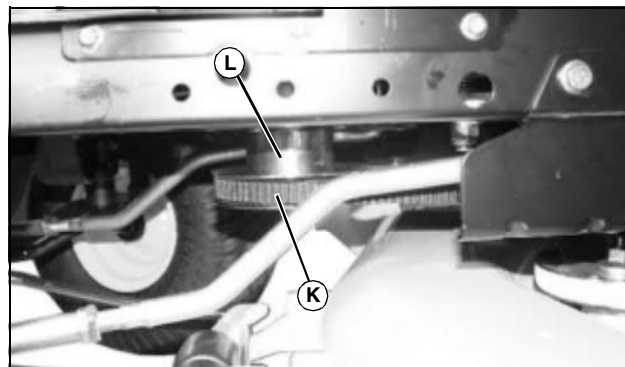
MX36288

8. Pull back J-pin (H) and insert through deck bracket (A) and draft arm (B). Make sure pin installs completely through deck bracket. Repeat for other side.

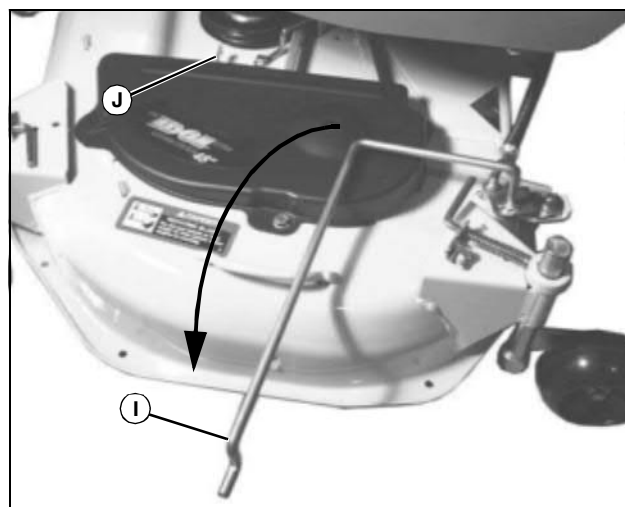


CAUTION: Avoid injury! Belt tension rod is spring-assisted and under tension. Keep a secure grasp on rod at all times while releasing or applying drive belt tension.

IMPORTANT: Avoid damage! The belt will be damaged if installed wrong. Route the belt properly through belt guides. See belt routing label on mower deck.



MX36287



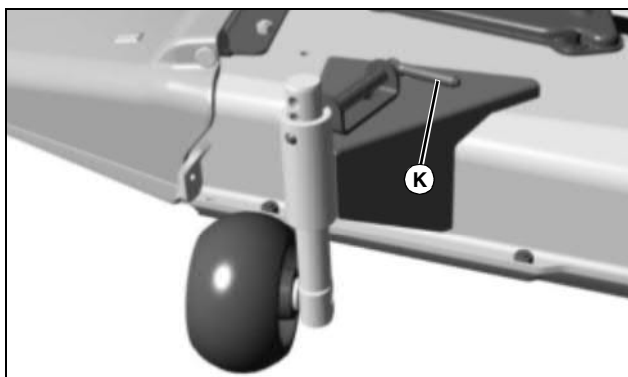
MX36286

Picture Note: 48 mower shown. Lever on left side.

9. Grasp and hold tension rod (I) securely. Disengage rod from retaining bracket (J) by rotating rod counterclockwise. Move rod as far as possible toward rear wheel. Install separate drive belt (K) onto mower deck and engine sheave (L), and move tension rod back into retaining bracket.

10. Level mower.

SERVICE MOWER



MX8332

Picture Note: 54 mower shown.

11. Raise the deck to cutting height and rotate all mower wheels to operation position:

- Pull pin (K) outward and move wheel to proper hole position. Release pin to lock wheel in position.

Adjusting Lift Assist Spring

NOTE: Weight of mower or attachment affects ease of lifting. Adjust lift assist spring for your particular mower deck model.



MX36293

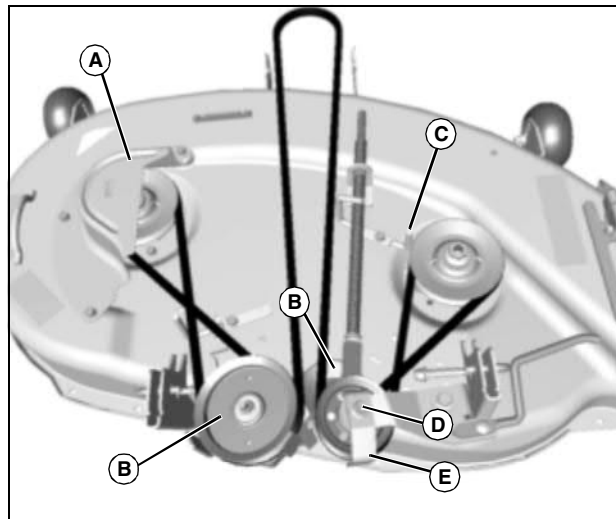
1. Make sure yellow indicator (A) is aligned with proper mark for mower deck model installed. If not, adjust lift assist spring so indicator is aligned with correct mower deck mark.

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 Belt (38 Mower)

1. Park machine safely. (See Parking Safely in SAFETY section.)
2. Allow engine and muffler to cool completely.
3. Remove mower deck.
4. Remove drive belt.



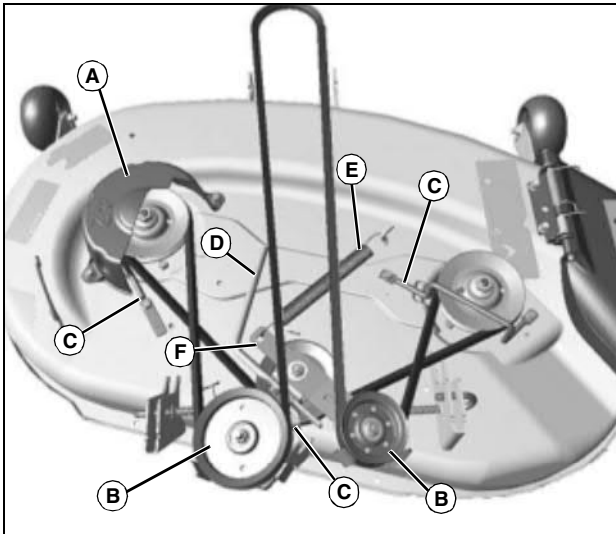
MX36277

- Remove three cap screws and belt shield (A).
 - Loosen hardware for two sheaves (B) and belt guide (C).
 - Remove top nut (D) and belt guide (E).
 - Remove mower belt.
5. Inspect belt for wear or damage; replace as necessary.
 6. Clean top surface of mower deck and sheaves.
 7. Install belt on mower deck as shown. Make sure belt is in the groove of each sheave and inside belt guide (C).
 8. Tighten belt guide (C).
 9. Install belt guide (E) and top nut (D).
 10. Tighten sheave hardware to 54 N•m (40 lb-ft).
 11. Install belt shield.
 12. Install mower deck.

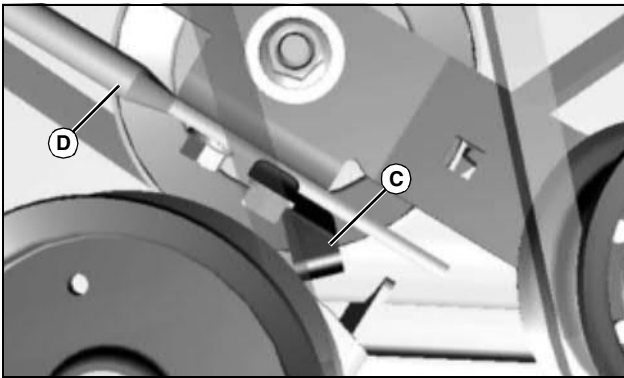
Replacing Mower Drive Belt (42 Mower)

1. Park machine safely. (See Parking Safely in SAFETY section.)
2. Allow engine and muffler to cool completely.
3. Remove mower deck.
4. Remove drive belt.

SERVICE MOWER



MX36278a



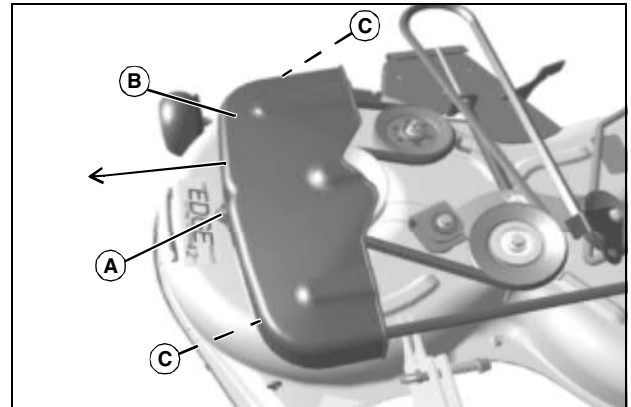
MX36615

Picture Note: Detail view of belt guide (C), on tension handle (D).

- Remove two cap screws and belt shield (A).
 - Loosen hardware for two sheaves (B) and three belt guides (C).
 - Remove mower belt.
5. Inspect belt for wear or damage; replace as necessary.
 6. Clean top surface of mower deck and sheaves.
 7. Install belt on mower deck as shown. Make sure belt is in the groove of each sheave, and on the inside of the guides at sheaves (B).
 8. Tighten three belt guides (C).
 9. Tighten sheave hardware to 54 N•m (40 lb-ft).
 10. Install belt shield.
 11. Before installing deck, make sure tension spring is installed. Rotate tension handle (D) clockwise and install spring (E) onto hole in tension arm (F).

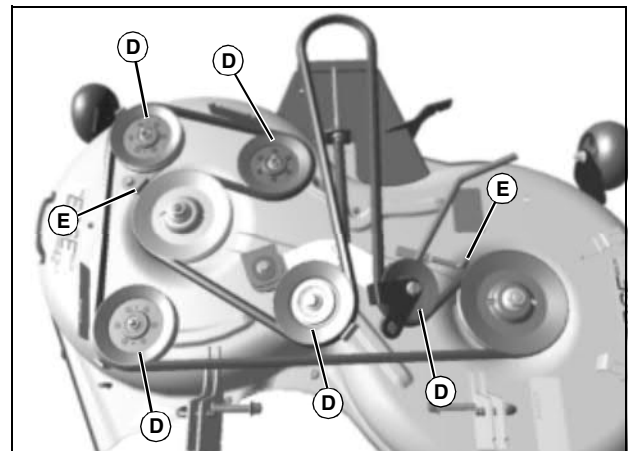
Replacing Mower Drive Belt (42 Mulching Mower)

1. Park machine safely. (See Parking Safely in SAFETY section.)
2. Allow engine and muffler to cool completely.
3. Remove mower deck.
4. Remove drive belt:



MX36279

- Remove one cap screw (A) and slide belt shield (B) outward and off of two slotted holes (C) on top of mower deck.



MX36299

- Loosen hardware for five sheaves (D).
 - Loosen hardware for belt guides (E).
 - Remove mower belt.
5. Inspect belt for wear or damage; replace as necessary.
 6. Clean top surface of mower deck and sheaves.
 7. Install belt on mower deck as shown. Make sure belt is in the groove of each sheave, there is no twist in the belt, and the belt is inside belt guides.
 8. Tighten belt guides.

SERVICE MOWER

9. Tighten sheave hardware to 54 N•m (40 lb-ft).
10. Install belt shield, making sure shield is secured onto two slotted holes on top of mower deck. Secure with cap screw.
11. Install mower deck.

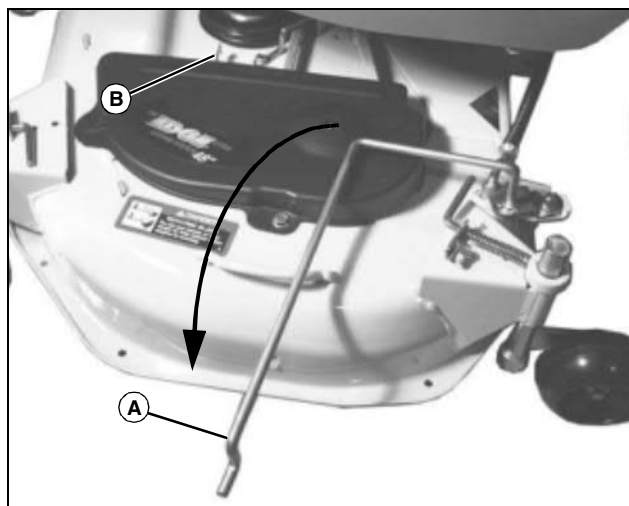
Replacing Mower Drive Belt (Primary) (48 and 54 Mowers)

1. Park machine safely. (See Parking Safely in SAFETY section.)
2. Allow engine and muffler to cool completely.
3. Lock mower deck in lowered position.



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.

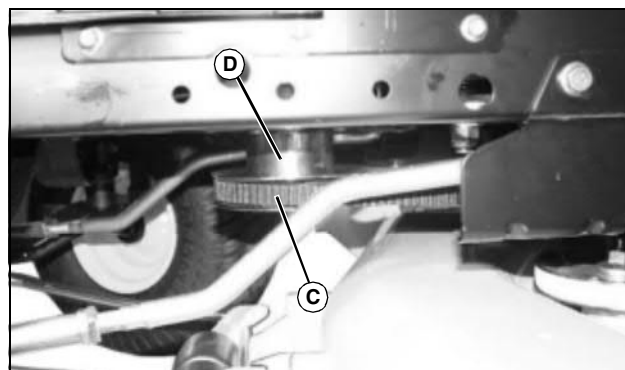
4. Remove drive belt tension:



MX36286

Picture Note: 48 mower shown. Lever on left side.

- Grasp and hold tension rod (A) securely.
- Disengage rod from retaining bracket (B) by rotating rod counterclockwise.
- Move rod as far as possible toward rear wheel to remove all belt tension.

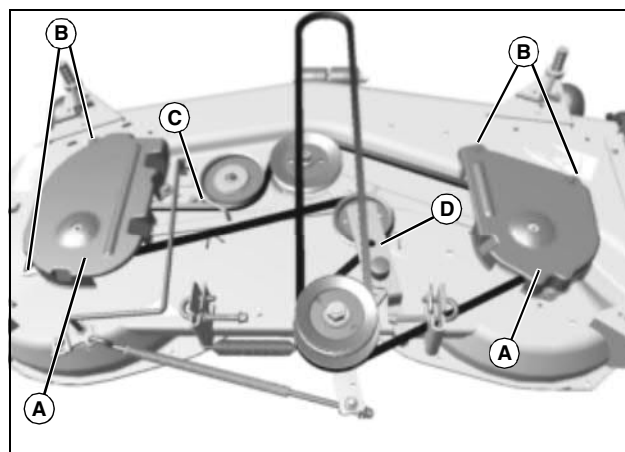


MX36287

5. Remove primary mower drive belt (C) from engine sheave (D), and move tension rod back into retaining bracket.
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 drive belt tension rod toward front of machine to tighten drive belt. Hook tension rod into bracket on mower.

Replacing Mower Drive Belt (Secondary) (48 and 54 Mowers)

1. Park machine safely. (See Parking Safely in SAFETY section.)
2. Allow engine and muffler to cool completely.
3. Remove mower deck.
4. Remove drive belt:



MX36275

Picture Note: 54 mower shown.

- Remove one cap screw on each belt shield (A), and slide belt shields outward to remove tabs on belt shields from slotted holes (B) in mower deck.

SERVICE MOWER

- Remove bolt and belt guide (C).



CAUTION: Avoid injury! Wear protective eyewear when removing belt from drive sheave. Tension spring may come loose.

- To remove belt, rotate tension arm (D) slightly counterclockwise, and remove belt from sheaves.
5. Inspect belt for wear or damage; replace as necessary.
 6. Clean top surface of mower deck and sheaves.
 7. Install belt on mower deck as shown. Make sure belt is in the groove of each sheave and inside belt guide (C), and if necessary, rotate tension arm (D) slightly to place belt onto the last sheave.
 8. Install and tighten belt guide.
 9. Install belt shields onto slotted holes on mower deck and slide each shield towards center of deck. Secure each shield with one cap screw.
 10. Install mower deck.

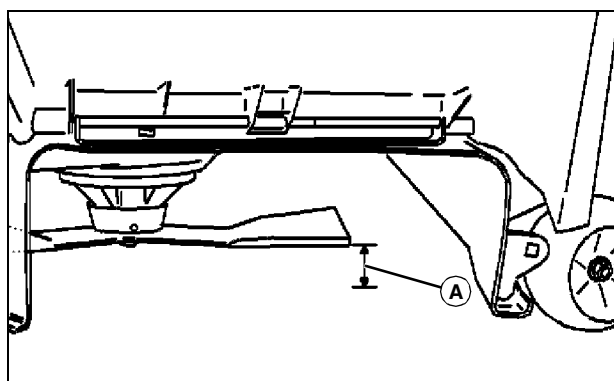
Checking for Bent Mower Blades



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



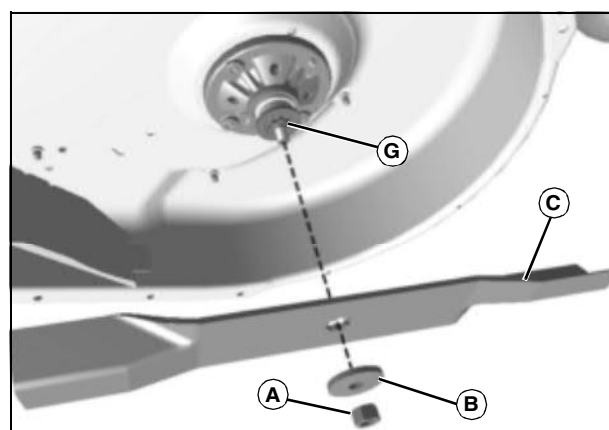
CAUTION: Avoid injury! Rotating blades are dangerous. Before adjusting or servicing mower:

- 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.

Removing Mower Blades

1. Park machine safely. (See Parking Safely in the SAFETY section.)
2. Raise mower deck to gain access to mower blades. If necessary, remove mower deck.
3. Block mower blade with a piece of wood to prevent it from spinning.
4. Remove mower blade(s):

38 and 42 Mowers

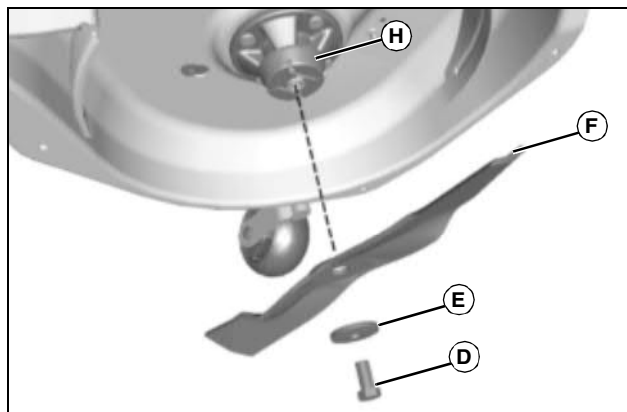


MX36276

- Loosen and remove nut (A), washer (B), and blade (C).

SERVICE MOWER

48 and 54 Mowers



MX36300

- Loosen and remove bolt (D), washer (E), and blade (F).

5. Inspect blades; sharpen, balance or replace blades as necessary.

Installing Mower Blades

38 and 42 Mowers

IMPORTANT: Avoid damage! On 42 mulching mower, blades are marked right and left on bottom side of each blade. Make sure to install correct blade to right and left sides of deck.

1. Align the splined center hole in the blade (C) with the splined spindle shaft (G) and put the blade onto the mower spindle shaft with cutting edge toward ground.
2. Install washer (B), with cupped side towards blade, and install nut (A) to secure blade onto splined spindle shaft
3. Block mower blade with a piece of wood to prevent spinning and tighten nut to 68 N•m (50 lb-ft).

48 and 54 Mowers

1. Make sure deflector cup (H) is seated properly between mower spindle and blade.
2. Position mower blade (F) with cutting edge toward ground onto mower spindle.
3. Install washer (E), with cupped side towards blade, and install bolt (D) to secure blade onto spindle shaft.
4. Block mower blade with a piece of wood to prevent spinning and tighten bolt to 68 N•m (50 lb-ft).

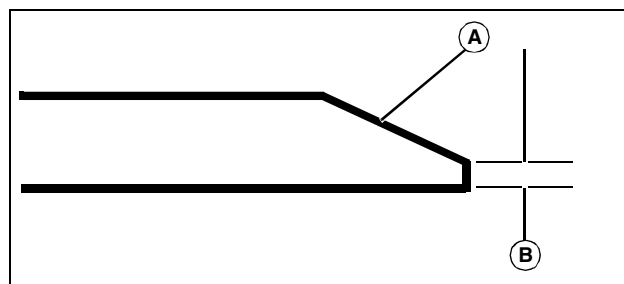
Sharpening Blades



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

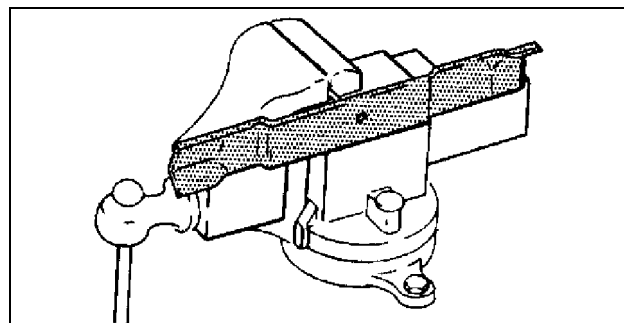
- Keep original bevel (A) when grinding.
- Blade should have 0.40 mm (1/64 in.) cutting edge (B) or less.
- Balance blades before installing.

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.

SERVICE ELECTRICAL

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



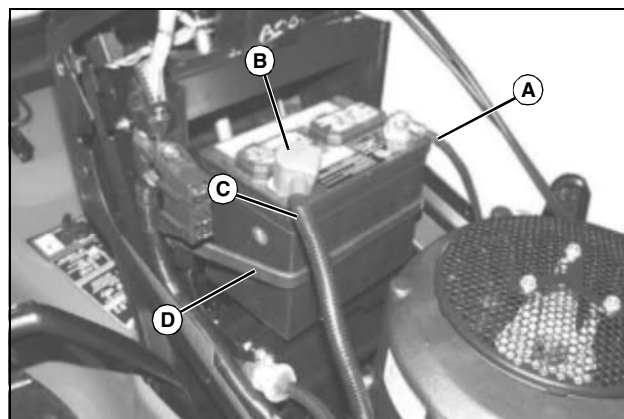
CAUTION: Avoid injury! The battery produces a flammable and explosive gas. The battery may explode:

- 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.

Removing and Installing the Battery

Removing

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



MX36201

2. Disconnect negative (-) battery cable (A).
3. Push red cover (B) away from positive (+) battery terminal and remove cable (C) from battery.
4. Remove hold down strap (D).
5. Remove battery.

Installing

1. Place battery into battery tray so battery posts are facing toward front of machine.
2. Install hold down strap.
3. Connect positive (+) cable to battery first, then negative (-) cable.
4. Apply general purpose grease or silicone spray to terminal to help prevent corrosion.
5. Slide red cover over positive battery terminal.

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 general purpose grease or silicone spray to terminal to prevent corrosion.

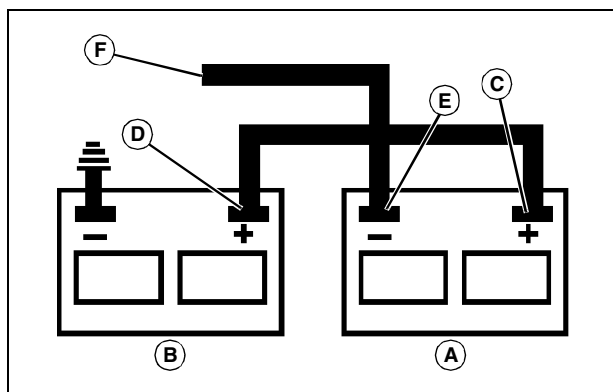
SERVICE ELECTRICAL

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.



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.

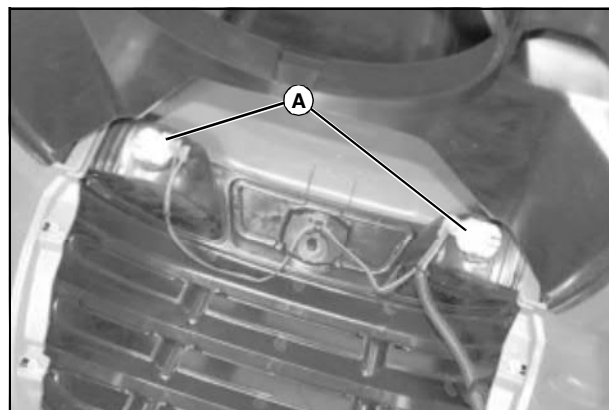
Install negative booster cable away from moving parts in the engine compartment, such as belts and fan blades.

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 Headlight Bulb

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

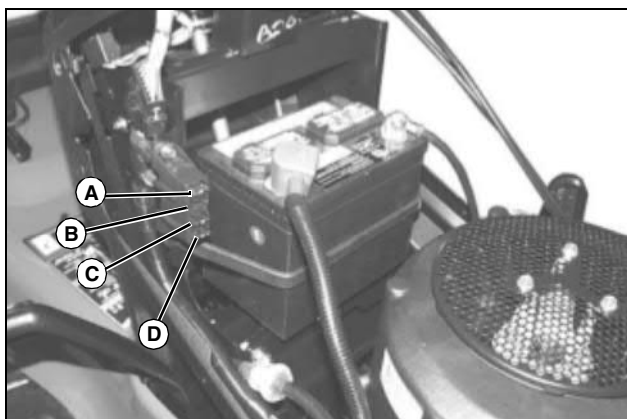


3. Turn bulb socket (A) 1/4 turn counterclockwise to remove.
4. Replace defective bulb with a new bulb.
5. Insert bulb socket into housing, push in and turn 1/4 turn clockwise to install.
6. Lower hood.

Replacing Fuse

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

SERVICE ELECTRICAL



MX36201

3. Pull blown 15 amp fuse (A), or 7.5 amp fuse (C) or 7.5 amp fuse (D), out of socket.

- Fuse identification:

Position	Circuit	Fuse Size
A	Main Circuit	15 amp
B	12 Volt Power Port (10 amp) (Optional)	open
C	Headlight Circuit	7.5 amp
D	System Circuit	7.5 amp

4. Check metal strip in fuse window and discard fuse(s) if strip is broken.

5. Push new 15 or 7.5 amp fuse into correct socket.

6. Lower hood.

SERVICE MISCELLANEOUS

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.

SERVICE MISCELLANEOUS

Removing and Installing Wheel Assembly (Models with E-Clip)

Removing

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

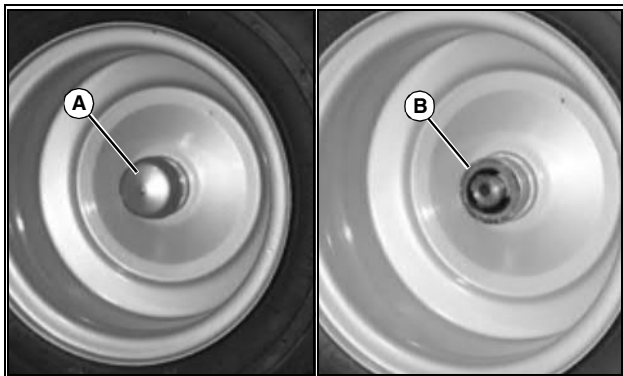


CAUTION: Avoid injury! The machine can fall or slip from an unsafe lifting device or supports.

- 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.



M89736, M89737

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.

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 Wheel Assembly (Models with Wheel Bolt)

Removing

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



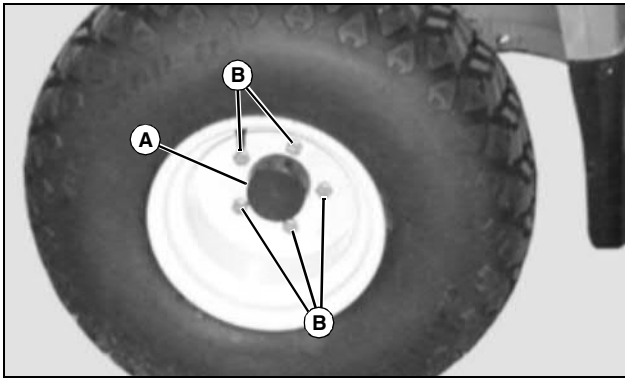
CAUTION: Avoid injury! The machine can fall or slip from an unsafe lifting device or supports.

- 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.

SERVICE MISCELLANEOUS



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).

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.

TROUBLESHOOTING

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	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 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.
Engine Will Not Start - No Crank	Brake pedal not depressed. PTO is engaged. Defective brake, mower engagement, or key switch. Electrical problem - See Electrical Troubleshooting Section
Engine Cranks But Will Not Start	Spark plug wire is loose or disconnected. Improper fuel. Plugged fuel filter. Electrical problem - See Electrical Troubleshooting Section
Engine Is Hard To Start	Carburetor is not adjusted properly or dirty. Plugged fuel filter. Faulty spark plug. Stale or improper fuel. Loose or corroded electrical connections. Engine oil viscosity.
Engine Runs Unevenly	Cooling fins plugged. Loose electrical connections. Choke or throttle cable sticking. Fuel line or fuel filter plugged. Stale or dirty fuel. Improper fuel. Air cleaner element plugged.

TROUBLESHOOTING

IF	CHECK
Engine Misses Under Load	Faulty spark plug. Stale or dirty fuel. Plugged fuel filter.
Engine Vapor Locks	Fuel tank vent plugged. Dirt in fuel filter. Cooling fins plugged. Loose hose connection at fuel filter or fuel pump.
Engine Overheats	Engine air intake screen plugged. Cooling fins plugged. Engine oil low or too high. Engine operated too long at a slow idle speed.
Engine Will Not Idle	Spark plug not gapped correctly. Faulty spark plug. Operator raising off the seat.
Engine Knocks	Stale or low octane fuel. Engine overloaded. Low engine speed. Oil level low.
Engine Stops Or Misses When Operating On Hillside	Fuel tank less than half full of fuel. Operator raising off of the seat.
Engine Backfires	Faulty spark plug. Operator raising off of the seat.
Engine Loses Power	Engine overheating. Too much oil in engine. Dirty air cleaner. Faulty spark plug. Travel speed is too fast for conditions. Improper fuel.
Excessive Fuel Consumption	Choke is not fully open.
Black Exhaust Smoke	Air filter is dirty or oil soaked.
Engine Stops When REVERSE Foot Pedal Is Depressed And Attachment Is Engaged (Hydrostatic)	Normal condition. (See Using Reverse Implement Option in the OPERATING section.)

TROUBLESHOOTING

Electrical

IF	CHECK
Starter Does Not Work Or Will Not Turn Engine	Brake pedal is not depressed. PTO is engaged. Battery terminals are corroded. Battery not charged. Blown fuse. Defective key switch Fusible Link is blown - See your authorized dealer
Battery Will Not Charge	Dead cell in the battery. Battery cables and terminals are dirty. Low engine speed or excessive idling.
Lights Do Not Work	Light plug disconnected. Loose or burned out bulb.

Machine

IF	CHECK
Machine Vibrates Too Much Or Rattles Excessively	Attachment drive belts worn or damaged. Traction drive belt damaged or worn. Dirt on drive sheaves.
Machine Will Not Move With Engine Running	Parking brake locked. Transmission hydraulic oil level low. Free-wheeling lever is engaged.
Machine Moves With Engine Running And Hydrostatic Control In Neutral	Linkage out of adjustment.
Mower Lift Will Not Latch in Transport	Deck is adjusted to high. Move the deck leveling knob to the next higher position and level deck.

TROUBLESHOOTING

Mower

IF	CHECK
Discharge Chute Plugged	Travel speed too fast. Grass too long. Grass too wet. Engine rpm not at wide open throttle. Restricted air flow. Belt installed incorrectly.
Patches Of Grass Uncut	Travel speed too fast. Engine rpm not at wide open throttle. Mower deck needs cleaning.
Belt Slipping	Debris in sheaves. Worn belt.
Too Much Vibration	Debris on mower deck or in sheaves. Damaged drive belt. Damaged sheaves or sheaves out of alignment. Blades out of balance.
Blades Scalping Grass	Cutting too low. Mower wheels not adjusted correctly. Turning speed too fast. Ridges in terrain. Rough or uneven terrain. Low tire pressure.
Mower Loads Down Tractor	Engine rpm too low. Travel speed too fast. Debris wrapped around mower spindles.
Uneven Cut	Mower deck not leveled properly. Travel speed too fast. Blades dull. Mower wheels not adjusted correctly. Tire pressure unequal.
Mower (Or Other Attachment) Stops When Vehicle Is Operated in REVERSE	Normal condition. (See Using Reverse Implement Option in the OPERATING section.)

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.

STORAGE

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

X300 and X304

Make..... Kawasaki
Model Number..... FH491V
Cylinders..... V-Twin
Cycle..... Four
Spark Plug Gap..... 0.75 mm (0.030 in.)
Spark Plug Torque..... 15 N•m (11 lb-ft)

X320 and X324

Make..... Kawasaki
Model Number..... FH661V
Cylinders..... V-Twin
Cycle..... Four
Spark Plug Gap..... 0.75 mm (0.030 in.)
Spark Plug Torque..... 20 N•m (15 lb-ft)

X340

Make..... Kawasaki
Model Number..... FH721V
Cylinders..... V-Twin
Cycle..... Four
Spark Plug Gap..... 0.75 mm (0.030 in.)
Spark Plug Torque..... 20 N•m (15 lb-ft)

Drivetrain

Transaxle..... Kanzaki, Variable Speed Hydrostatic
Model X300..... K46
Model X304, X320, X324, and X340..... K58

Fuel System

Fuel..... Regular Grade 87 Octane Unleaded
Fuel Filter..... Replaceable - paper element
Fuel Pump..... Pulse
Fuel Delivery..... Carburetor

Electrical System

Battery Type..... 12 Volt

SPECIFICATIONS

Cold Cranking Capacity 160 Amps

Tires

Front (X300, X304, X324) 15x6.00-6

Front (X320, X340) 15x6.50-8

Rear (X300) 20x10.00-8

Rear (X304, X324) 20x10.00-10

Rear (X320, X340) 22x11.00-10

Inflation - Front 97 kPa (14 psi)

Inflation - Rear 69 kPa (10 psi)

Capacities

Crankcase with oil filter (X300 and X304) 1.7 L (1.8 qt)

Crankcase with oil filter (X320, X324, and X340) 1.9 L (2.1 qt)

Fuel 13.2 L (3.5 gal)

Travel Speeds at Full Engine RPM

X300, X304 and X324

Forward 0-8.9 km/h (0-5.5 mph)

Reverse 0-5.6 km/h (0-3.5 mph)

X320 and X340

Forward 0-9.3 km/h (0-5.8 mph)

Reverse 0-5.6 km/h (0-3.5 mph)

Dimensions

X300

Height 109 cm (43 in.)

Overall Width (without mower deck) 97 cm (38 in.)

Length (Overall) 173 cm (72 in.)

Weight 271 kg (598 lb)

X304 and X324

Height 109 cm (43 in.)

Overall Width (without mower deck) 104 cm (41 in.)

Length (Overall) 173 cm (72 in.)

Weight 271 kg (598 lb)

SPECIFICATIONS

X320 and X340

Height	109 cm (43 in.)
Overall Width (without mower deck)	98 cm (38.5 in.)
Length (Overall)	173 cm (72 in.)
Weight	271 kg (598 lb)

The Edge™ 38 Mower

Cutting Width	97 cm (38 in.)
Blades-Rotary	2
Blade Nut Torque	62 N•m (46 lb-ft)
Cutting Height (Approximately)	25 - 102 mm (1 - 4 in.)

The Edge™ 42 Mower

Cutting Width	1.07 m (42 in.)
Blades-Rotary	2
Blade Nut Torque	68 N•m (50 lb-ft)
Cutting Height (Approximately)	25 - 102 mm (1 - 4 in.)

The Edge™ 42 Mulching Mower

Cutting Width	1.07 m (42 in.)
Blades-Rotary	2
Blade Nut Torque	68 N•m (50 lb-ft)
Cutting Height (Approximately)	25 - 102 mm (1 - 4 in.)

The Edge™ 48 Mower

Cutting Width	1.22 m (48 in.)
Blades-Rotary	3
Blade Bolt Torque	68 N•m (50 lb-ft)
Cutting Height (Approximately)	25 - 102 mm (1 - 4 in.)

The Edge™ 54 Mower

Cutting Width	1.37 m (54 in.)
Blades-Rotary	3
Blade Bolt Torque	68 N•m (50 lb-ft)
Cutting Height (Approximately)	25 - 102 mm (1 - 4 in.)

SPECIFICATIONS

Recommended Lubricants

Engine Oil TURF-GARD® OR PLUS-4®

Grease:

..... John Deere MOLY HIGH TEMPERATURE EP GREASE

..... John Deere Multi-Purpose SD Polyurea Grease

..... John Deere Multi-Purpose HD Lithium Complex Grease

(Specifications and design subject to change without notice.)

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

WARRANTY

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.

WARRANTY

NO DEALER WARRANTY

The selling dealer makes no warranty of its 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

INDEX

A

Air Cleaner Elements, Checking and Cleaning (X300 and X304)	28
Air Cleaner Elements, Checking and Cleaning (X320, X324, X340)	29

B

Balancing Blades	45
Battery and Terminals, Cleaning	46
Battery, Removing and Installing	46
Battery, Service Safely	46
Battery, Using Booster	47
Blades, Balancing	45
Blades, Checking Mower	44
Blades, Servicing Mower	44
Blades, Sharpening	45
Brake Switch, Testing Park	14
Brake, Testing Park	15
Brake, Using Park	15
Bulb, Replacing Headlight	47

C

Capacities, Specifications	59
Carburetor, Adjusting	31
Certification Label	3
Checking and Cleaning Air Cleaner Elements	29
Cleaning Air Intake Screen	28
Controls	9
Cruise Control, Using	18
Cutting Height, Adjusting	10

D

Daily Operating Checklist	10
Dimensions	59
Drive Train Specifications	58

E

Electrical System Specifications	58
Electrical Troubleshooting	54
Emission Compliance Period	2
Emission Control System Certification Label	2
Engine Oil	27
Engine Oil Level, Checking	27
Engine Oil and Filter, Changing	28
Engine Specifications	58
Engine Troubleshooting	52
Engine Warranty Maintenance Statement	27
Engine and Fuel Storage, Preparing	56
Engine, Starting	16
Engine, Stopping	17

F

Filter, Replacing Fuel	31
Front Wheel Steering Spindles, Lubricating	26

Fuel Filter, Replacing	31
Fuel Level, Checking	16
Fuel Safety	8
Fuel Storage	56
Fuel System Specifications	58
Fuel Tank, Filling	49
Fuel, Using Proper	49
Fuse, Replacing	47

G

Grease	25
--------------	----

H

Headlight Bulb, Replacing	47
Headlights, Using	16
Hour Meter and Indicator Lights, Using	16

I

Indicator Lights and Hour Meter, Using	16
--	----

L

Label, Certification	3
Labels, Safety	1
Lift Assist Spring, Adjusting	41
Lift Lever, Using Mower	18
Lights, Using	16
Literature, Service	23
Lubricants, Recommended	61
Lubrication, Front Wheel Steering Spindles	26
Lubrication, Lift Pedal Assembly	26
Lubrication, Mower Spindles	25
Lubrication, Rear U-Joints (4-Wheel Steer Models)	26

M

Machine Troubleshooting	54
Metal Surfaces, Repairing and Cleaning	51
Mower (38 Mower), Installing	36
Mower (38 Mower), Removing	33
Mower (42 Mower), Installing	37
Mower (42 Mower), Removing	33
Mower (48 and 54 Mowers), Installing	39
Mower (48 and 54 Mowers), Removing	35
Mower Blades, Checking	44
Mower Blades, Servicing	44
Mower Drive Belt (38 Mower), Replacing	41
Mower Drive Belt (42 Mower), Replacing	41
Mower Drive Belt (42 Mulching Mower), Replacing	42
Mower Drive Belt (Primary) (48 and 54 Mowers), Replacing	43
Mower Drive Belt (Secondary) (48 and 54 Mowers), Replacing	43
Mower Engagement Lever, Using	19
Mower Gates, Using	19
Mower Lift Lever, Using	18
Mower Spindles, Lubricating	25
Mower Troubleshooting	55
Mower Wheels, Adjusting	13

INDEX

Mower, Using	19	Travel Speeds, Specifications	59
Mowing Tips	22	Troubleshooting Chart	52
O			
Oil Level, Checking Engine	27	U	
Oil and Filter, Changing Engine	28	Unplugging Mower, Bagger, Material Collection System	20
Oil, Engine	27	W	
Operating Checklist, Daily	10	Warranty Maintenance Statement, Engine	27
P			
PTO Switch, Testing	15	Warranty, Product	62
Park Brake Switch, Testing	14	Weights, Using	21
Park Brake, Testing	15	Wheel Assembly (Models with E-Clip), Removing and In-	
Park Brake, Using	15	stalling	50
Parts Catalog	23	Wheel Assembly (Models with Wheel Bolt), Removing and	
Parts, Replacement	23	Installing	50
Plastic And Painted Surfaces, Avoid Damage To	10		
Plastic Surfaces, Cleaning	51		
R			
Reverse Implement Option (RIO), Testing	15		
Reverse Implement Option (RIO), Using	18		
S			
Safety Messages	4		
Safety Systems, Testing	14		
Safety, Tire	8		
Safety-Alert Symbol	1		
Seat Switch, Testing	15		
Seat, Adjusting	10		
Service Literature	23		
Sharpening Blades	45		
Spark Arrestor, Using	4		
Spark Plug, Checking	30		
Specifications, Capacities	59		
Specifications, Dimensions	59		
Specifications, Drive Train	58		
Specifications, Electrical System	58		
Specifications, Engine	58		
Specifications, Tires	59		
Specifications, Travel Speeds	59		
Spindles, Lubricating Mower	25		
Steering Spindles, Lubricating Front Wheel	26		
Storage, Preparing Fuel and Engine for	56		
Storage, Preparing Machine for	56		
Storage, Removing Machine from	57		
Storing Safety	56		
T			
Technical Manual	23		
Testing Safety Systems	14		
Tire Pressure, Check	49		
Tires, Specifications	59		
Tractor, Pushing	19		
Transmission, Checking (See your John Deere dealer) .	32		
Transporting Machine on Trailer	20		
Travel Controls, Using	17		

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. | C. It gives ordering information for parts catalogs, service and technical manuals. |
| B. It gives troubleshooting procedures, and specification information. | 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. | C. If the parts and service people are unable to resolve your problem, see the dealership manager or owner. |
| B. First, discuss your questions or problems with your dealer's trained parts and service staff. | 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 13-digit serial number which you recorded on the inside front cover of this manual. |
| Your equipment model number. | If the problem is with an attachment, your attachment identification number. |
| Number of hours on machine (if applicable). | |
- 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 (If Equipped)	Lubricate Machine	Air Cleaner Element Check/Clean	Fuel Filter Change