

JOHN DEERE
WORLDWIDE COMMERCIAL & CONSUMER
EQUIPMENT DIVISION

Wide Area Mower
1600 Turbo

OMTCU16064 A2

OPERATOR'S MANUAL



JOHN DEERE

⚠ WARNING: Diesel engine exhaust
and some of its constituents are known to the
State of California to cause cancer, birth
defects, and other reproductive harm.

California Proposition 65 Warning

North American Version
Litho in U.S.A.



* D C Y *
* O M T C U 1 6 0 6 4 E *

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 John Deere 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 arrow (----->), 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.

PRODUCT IDENTIFICATION

Record Identification Numbers

Wide Area Mower

1600 Turbo PIN (TC1600T010001 -)

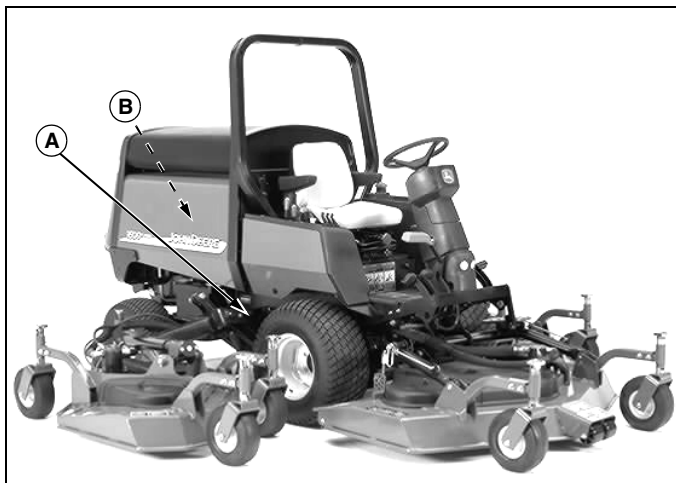
If you need to contact an Authorized Service Center for information on servicing, always provide the product model and identification numbers.

You will need to locate the identification numbers for the product. Record the information in the spaces provided below.

DATE OF PURCHASE:

DEALER NAME:

DEALER PHONE:



MX10674

PRODUCT IDENTIFICATION NUMBER (A):

ENGINE SERIAL NUMBER (B):

TABLE OF CONTENTS

Safety	1
Operating Machine	10
Operating Mower Deck	22
Replacement Parts	26
Service Intervals	27
Service Lubrication	28
Service Engine	32
Service Transmission	43
Service Steering & Brakes	48
Service Mower deck	49
Service Electrical	56
Service Miscellaneous	59
Troubleshooting	63
Storage	66
Specifications	67
Warranty	69
Index	73

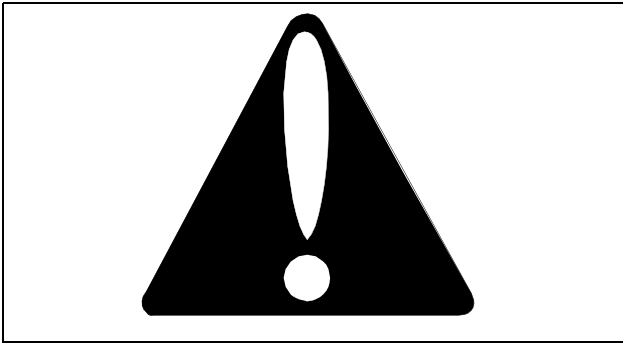
All information, illustrations and specifications in this manual are based on the latest information at the time of publication. The right is reserved to make changes at any time without notice.

COPYRIGHT© 2002
Deere & Co.
John Deere Worldwide Commercial and
Consumer Equipment Division
All rights reserved
Previous Editions
COPYRIGHT© 2001

OMTCU16064 A2 - English

SAFETY

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.

CAUTION



MX10674

AVOID INJURY

- Do not operate mower with shields removed
- Keep hands and feet away
- Stay clear of power driven parts

BEFORE SERVICING

- Shut off engine and remove key
- Lower or secure mower in raised position with service link

WARNING



MX10674

Hot surface

CAUTION



MX10674

HELP AVOID INJURY

- Operator training required
- Read operator's manual
- Know all controls
- Keep shields in place
- Maintain all safety devices
- Look behind before backing
- Keep people a safe distance away
- Stay clear of power driven parts
- Do not operate where machine could tip
- Never carry riders
- Roll-over protection structure (ROPS) should be installed unless prohibited by low clearance operation
- Use seat belt unless machine is operated without ROPS

SAFETY

- Before leaving machine:
 - Stop engine
 - Set park brake
 - Remove key

DANGER



MX10674

To avoid injury from rotating blades and thrown objects, stay clear of deck edge and keep others away.

WARNING



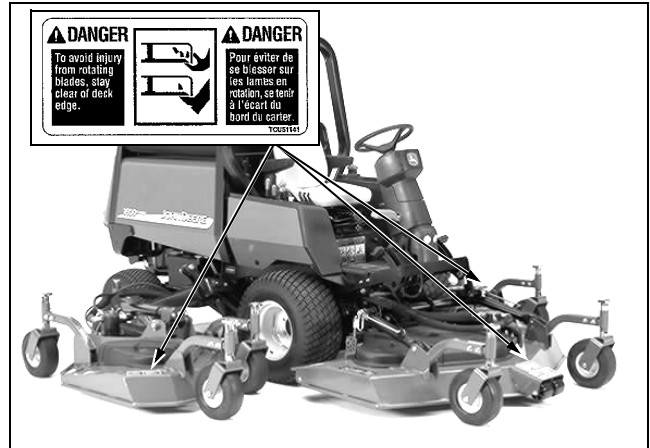
MX10674

To avoid injury while transporting, keep front attachment low and avoid sharp turns with side attachments in transport position.

To avoid injury, avoid quick stops and reduce speed on slopes.

All wheels drive. To avoid injury from crushing, do not operate with only one axle raised.

DANGER



MX10674

To avoid injury from rotating blades, stay clear of deck edge.

WARNING



MX10674

USE SEAT BELT

To avoid injury from crushing, always wear seat belt. Do not jump from machine.

SAFETY

ROLL-OVER PROTECTIVE STRUCTURE



MX10674

To maintain operator protection and ROPS certification:

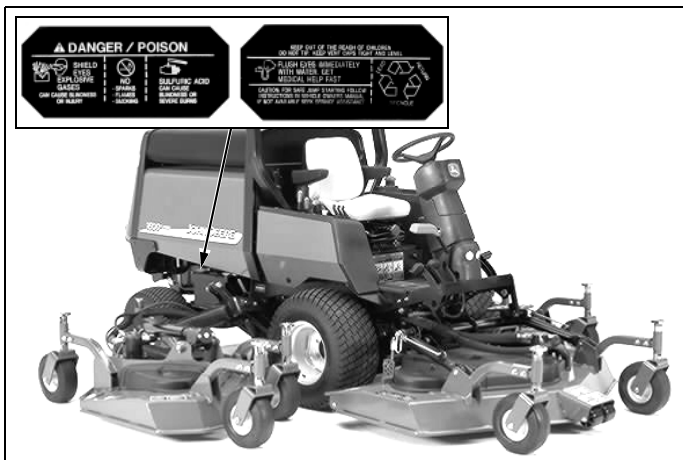
- Replace damaged ROPS, do not repair or revise.
- Any alteration of ROPS must be approved by manufacturer

CERTIFICATION

Performance certified at date of manufacture to:

OSHA: 29 CFR, Part 1928, Subpart C, John Deere Mowers, Deere & Company, Moline, Illinois

DANGER / POISON



MX10674

- Shield eyes. Explosive gases can cause blindness or injury.
- No sparks, flames, smoking.
- Sulfuric acid can cause blindness or severe burns.
- Keep out of the reach of children.
- Do not tip. Keep vent caps tight and level.
- Flush eyes immediately with water. Get medical help

fast.

- Caution: For safe jump starting, follow instructions in vehicle owners manual. If not available, seek service assistance.

Emissions Control System Certification Label (Non-Road Diesel)

IMPORTANT ENGINE INFORMATION	
THIS ENGINE CONFORMS TO [] MODEL YEAR U.S. EPA REGULATIONS NONROAD COMPRESSION IGNITION ENGINES.	
THIS ENGINE IS CERTIFIED TO OPERATE ON "US-2D" FUEL	
ENGINE FAMILY : []	DISPLACEMENT : [] LITERS
ENGINE MODEL : []	EMISSION CONTROL SYSTEM : EM
FUEL RATE : [] MM ³ /STROKE @ [] kW/[] RPM	
REFER OWNER'S MANUAL FOR MAINTENANCE SPECIFICATIONS AND ADJUSTMENTS	
YANMAR DIESEL ENGINE Co., Ltd.	



CAUTION: Avoid injury! Statutes providing severe penalties for tampering with emissions controls may apply at the user's location.

The emissions warranty described in the warranty section applies only to those engines marketed by John Deere that have been certified by the United States Environmental Protection Agency (EPA) and/or California Air Resources Board (CARB); and used in the United States in non-road mobile (self-propelled or portable/transportable¹) equipment. The presence of an emissions label like the one shown signifies that the engine has been certified with the EPA and/or CARB. The EPA and CARB warranties only apply to new engines having the certification label affixed to the engine and sold as stated above in the geographic areas governed by the regulating agencies.

NOTE: The hp/kW rating on the engine emissions certification label specifies the gross engine hp/kW, which is flywheel power without fan. In most applications this will not be the same rating as the advertised vehicle hp/kW rating.

Certification Label

Your product has been tested and evaluated by the manufacturer and conforms with American National Standard Institute B-71.4 "Safety Specifications" for

1. Equipment moved at least once every 12 months.

SAFETY

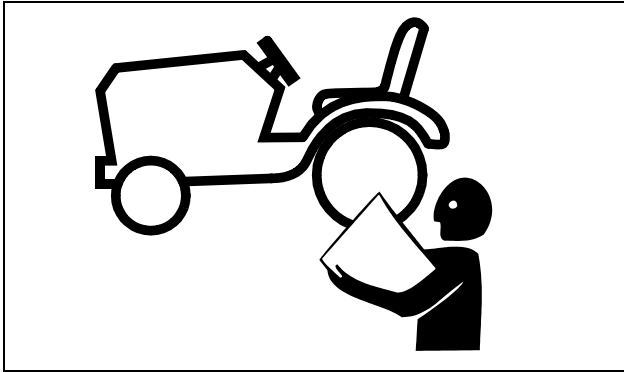
commercial turf care equipment as a ride-on turf tractor.

Operator Training Required

- The owner of the machine is responsible for training the users of the machine.
- The owner/user can prevent and is responsible for accidents or injuries occurring to themselves, other people, or property.
- Do not allow operation of the machine by untrained persons.
- Read the operator's manual and study the safety and operation sections before operating the machine.
- If the operator of the machine cannot read or understand this manual, it is the machine's owner responsibility to explain this material to the operator. This publication is available in other languages.
- Operate machine in an open, unobstructed area under the direction of an experienced operator.
- Learn the use of all controls.
- Operator experience is required to learn the moving, stopping, turning and other operating characteristics of the machine.

- Do not operate machine if you are under the influence of drugs or alcohol.
- Do not change the engine governor setting or overspeed the engine.
- Always wear seat belt if machine has a standard ROPS or a folding ROPS in the upright position.
- Check brake action before you operate. Adjust or service brakes as necessary.
- Stop machine if anyone enters the area.
- Never raise mower decks when blades are running.
- If you hit an object, stop and inspect the machine. Make repairs before you operate. Keep machine and attachments properly maintained and in good working order.
- Do not leave machine unattended when it is running.
- Only operate during daylight or with good artificial light.
- Slow down and be careful of traffic when operating near or crossing roadways. Stop blades before crossing roads or sidewalks. Use care when approaching blind corners, shrubs, trees, or other objects that may obscure vision.
- Be aware of the mower discharge direction and make sure that no one is in the path of the discharge direction.
- Use only accessories and attachments approved by the manufacturer of the machine.

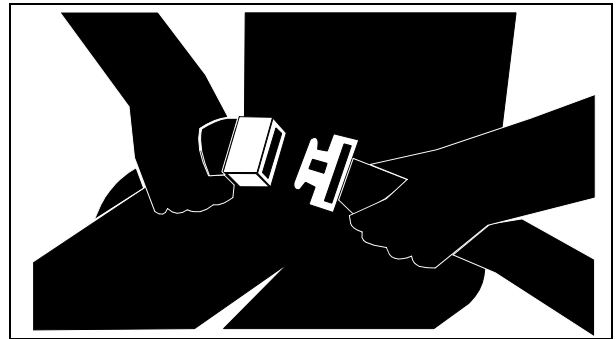
Operating Safely



MIF

- 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.
- Do not operate mower without discharge chute or entire grass catcher in place.
- Check before each use that operator presence controls are functioning correctly. Test safety systems. Do not operate unless they are functioning correctly.

Use Seat Belt Properly

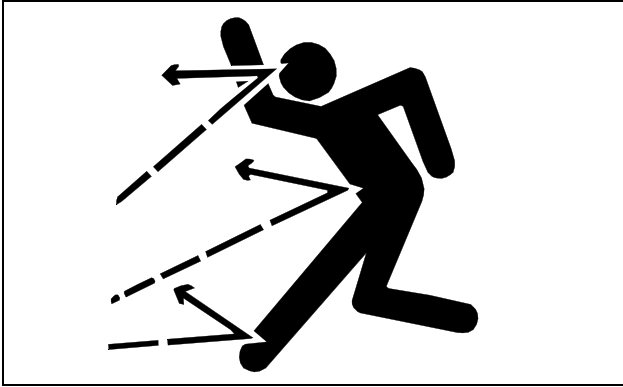


MIF

Use a seat belt when you operate with a Roll-Over Protective Structure (ROPS) to minimize chance of injury from an accident, such as an overturn.

SAFETY

Checking Mowing Area

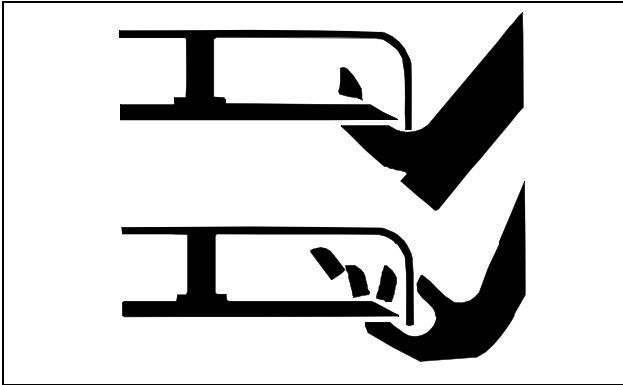


MIF

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

Rotating Blades are Dangerous

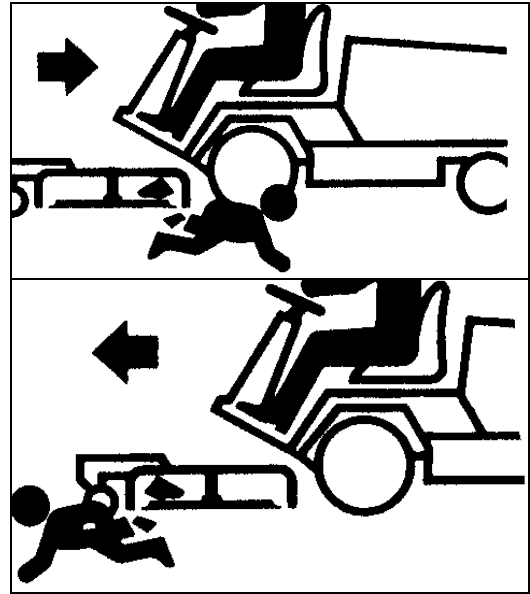
HELP PREVENT SERIOUS OR FATAL ACCIDENTS:



MIF

- Rotating blades can cut off arms and legs.
- Keep hands, feet and clothing away from mower deck when engine is running.
- Be alert at all times, drive forward carefully. People, especially children can move quickly into the mowing area before you know it.
- Before backing up, shut off PTO 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 inspecting or unplugging mower or bagger.

PROTECT CHILDREN:



M73468b, M73468a

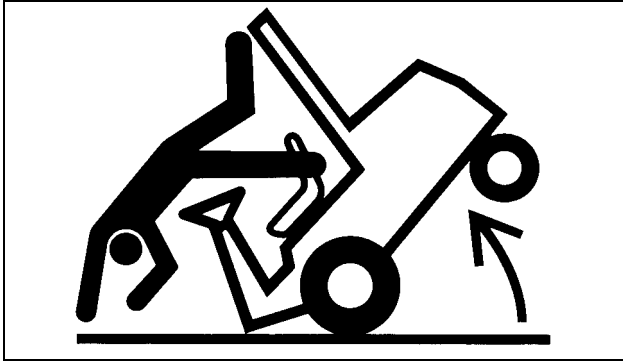
- Never assume that children will remain where you last saw them. Children are attracted to mowing activity, stay alert to the presence of children.
- Keep children indoors when you are mowing. Turn the machine off if a child enters the mowing area.
- Use extra care when you come to blind corners, shrubs, trees, or other objects that may block your vision.
- Do not let children or an untrained person operate the machine.
- Do not carry or let children ride on any attachment or machine even with the blades off. Do not tow children in a cart or trailer.

Parking Safely

1. Stop machine on a level surface, not on a slope.
2. Turn off PTO switch.
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.

SAFETY

Avoid Tipping



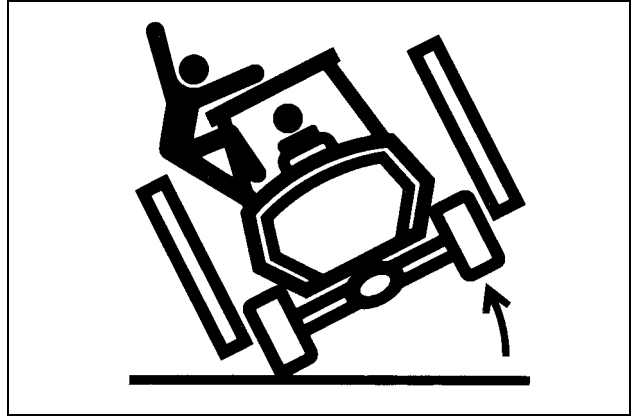
MX0490

- Slopes are a major factor related to loss-of-control and tip-over accidents, which can result in severe injury or death.
- Do not drive where machine could slip or tip.
- Stay alert for holes and other hidden hazards in the terrain.
- Keep away from drop-offs, ditches, and embankments.
- Slow down before you make a sharp turn or operate on a slope.
- Limit loads to those you can safely control. Use only approved hitches when pulling loads.
- Transport machine with decks lowered to improve stability.
- Drive machine very slowly and avoid quick stops if attachment is removed.
- Drive up and down a hill - not across. If necessary, turn slowly and in the downhill direction. Do not shift to neutral and coast downhill.
- Do not stop when going up hill or down hill. If machine stops going up hill, disengage mower blades and back down slowly.
- Mowing when grass is wet can cause reduced traction and sliding.

Checking Wheel Bolts

- A serious accident could occur causing serious injury if wheel bolts are not tight.
- Check wheel bolt 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.

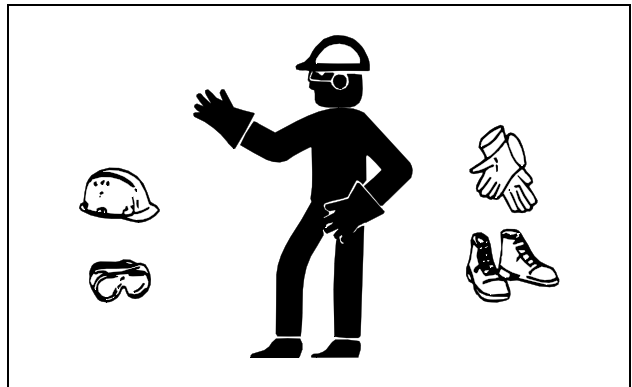
Keep Riders Off



MX0488

- 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.

Wear Appropriate Clothing

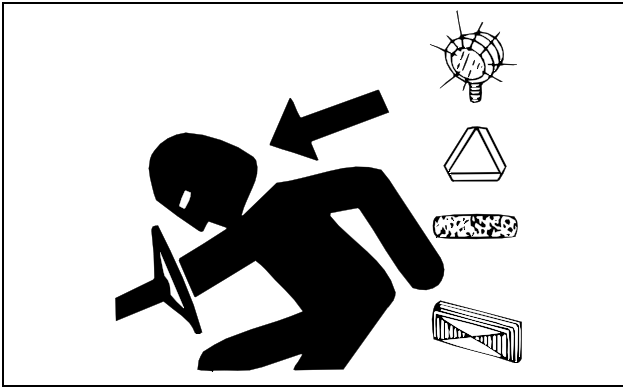


MIF

- Wear close fitting clothing and safety equipment appropriate for the job.
- Always wear safety goggles or safety glasses with side shields when operating the mower.
- Wear a suitable protective device such as earplugs. Loud noise can cause impairment or loss of hearing.
- Do not wear radio or music headphones. Safe service and operation requires your full attention.

SAFETY

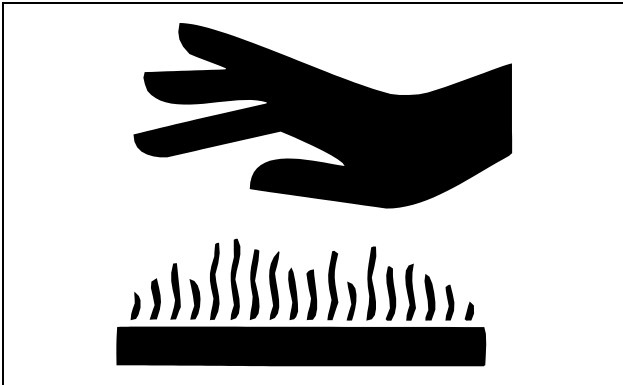
Driving Safely on Public Roads



MIF

- Use safety lights and devices. Slow moving machines when driven on public roads are hard to see, especially at night.
- Use extra care when loading or unloading the machine into a trailer or truck.
- Whenever driving on public roads, use flashing warning lights and turn signals according to local regulations. Extra flashing warning lights may need to be installed.

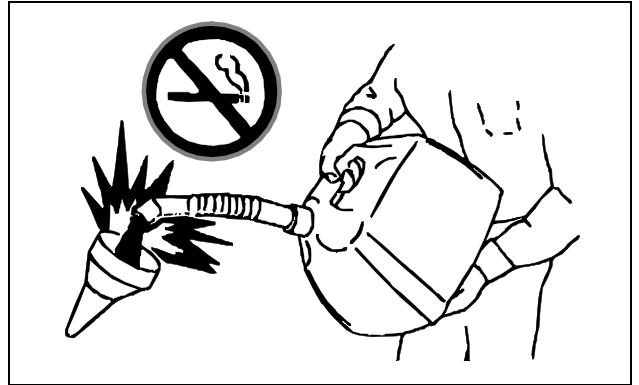
Prevent Fires



- Remove grass and debris from engine compartment and muffler area, before and after operating machine, especially after mowing or mulching in dry conditions.
- To reduce fire hazard, keep engine and engine compartment free of grass, leaves, or excessive grease.
- Allow engine to cool before storing in any enclosure.
- Never remove fuel cap, or add fuel with engine running or hot. Allow engine to cool for several minutes.
- Never store equipment with fuel in the tank inside a building where fumes may reach an open flame or spark.

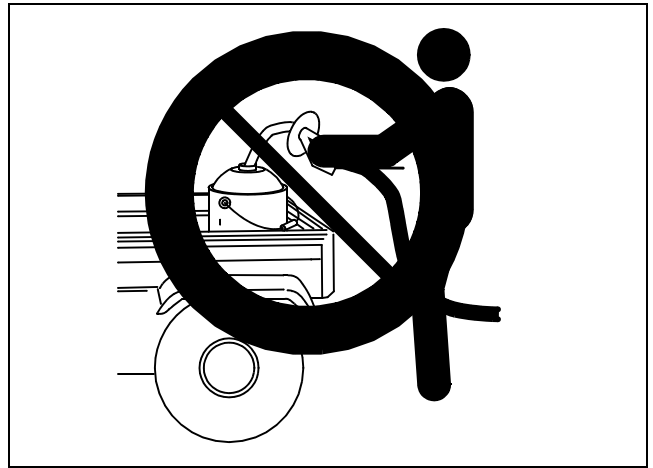
Handling Fuel Safely

Fuel and fuel vapors are highly flammable and explosive:



MIF

- Do not refuel machine while you smoke, when machine is near an open flame or sparks, or when engine is running. Stop engine and allow to cool before filling.
- Never remove the fuel cap or add fuel with the engine running.
- Never fill fuel tank or drain fuel from a machine in an enclosed area. Fill fuel tank outdoors.
- Prevent fires. Clean up spilled fuel immediately.
- Do not store machine with fuel in tank in a building where fumes may reach an open flame or spark.
- Prevent fire and explosion caused by static electric discharge. 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.



MIF

- Static electric discharge can ignite gasoline vapors in an ungrounded fuel container. Remove the fuel container from the bed of a vehicle or the trunk of a car and place on the ground away from the vehicle before filling. Keep nozzle in

SAFETY

contact with container opening while filling.

- When practical, remove equipment from trailers or truck beds and refuel them on the ground. If this is not possible, use a portable, plastic fuel container to refuel equipment on a truck bed or trailer.
- For gasoline engines, do not use gas with methanol. Methanol is harmful to your health and to the environment.

Practice Safe Maintenance



MIF

- Only qualified, trained adults should service this machine.
- Understand service procedure before doing work. Keep area clean and dry.
- Never lubricate, service, or adjust machine while it is moving. Keep safety devices in place and in working condition. Keep hardware tight.
- Keep hands, feet, clothing, jewelry, and long hair away from any moving parts, to prevent them from getting caught.
- Lower attachments to the ground before servicing machine. Disengage all power and stop the engine. Lock park brake and remove the key. Let machine cool.
- Disconnect battery or remove spark plug wire (for gasoline engines) before making any repairs.
- Before servicing machine, carefully release pressure from components with stored energy such as hydraulic components.
- Keep all nuts and bolts tightened, especially blade attachment bolts.
- Securely support any machine elements that must be raised for service work. Lock service latches before working on machine with raised attachments.
- Never run engine unless park brake is locked.
- Keep all parts in good condition and properly installed. Fix damage immediately. Replace worn or broken parts.

Replace all worn or damaged safety and instruction decals.

- To prevent fires, remove any buildup of grease, oil, or debris from the machine, especially the engine compartment.
- 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 modify machine or safety devices. Unauthorized modifications may impair its function and safety.
- Do not wear radio or music headphones while servicing the machine. Safe service requires your full attention.

Avoid High Pressure Fluids



MIF

- 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.

SAFETY

Tire Safety



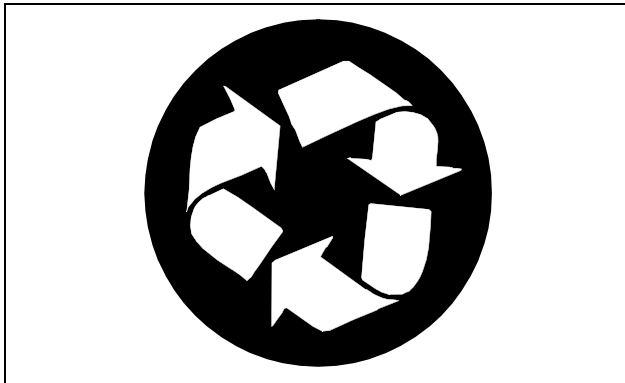
MIF

- 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.

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.

Handling Waste Product and Chemicals

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



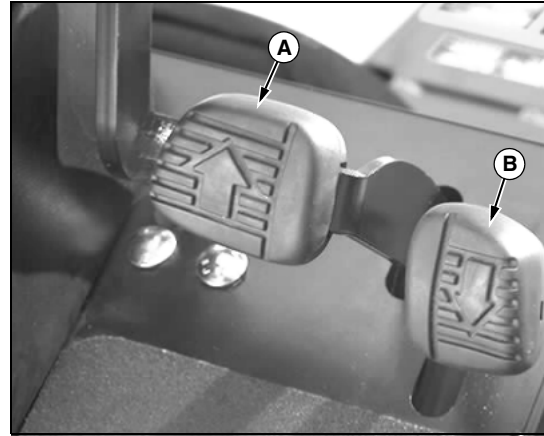
MIF

- DO NOT use beverage containers for waste fluids - someone may drink from them.
- See your local Recycling Center or John Deere 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,

OPERATING MACHINE

Daily Operating Checklist

- ☐ Test safety systems.
- ☐ Check tire pressure.
- ☐ Check fuel level.
- ☐ Check engine, transmission, and hydraulic oil levels.
- ☐ 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.
- ☐ Check air restriction indicator.
- ☐ Check engine coolant level.



MX13885

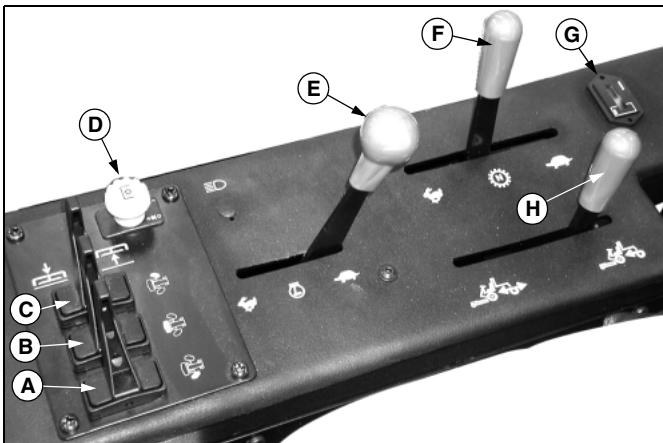
A - Forward Hydrostatic Pedal

B - Reverse Hydrostatic Pedal

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.

Operator Station Controls



MX13884

A - Left Mower Deck Lift Lever

B - Front Mower Deck Lift Lever

C - Right Mower Deck Lift Lever

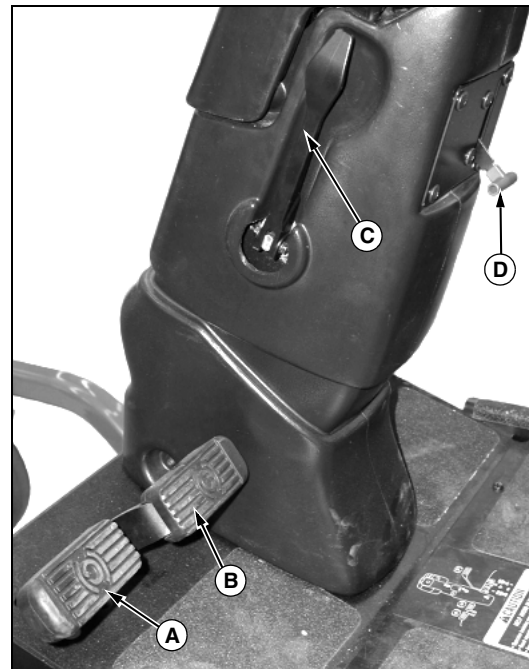
D - PTO Switch

E - Throttle Lever

F - Speed Range Lever

G - Hour Meter

H - Four Wheel Drive Lever



MX13886

A - Left Turn Brake Pedal

B - Right Turn Brake Lever

C - Steering Column Tilt Lock

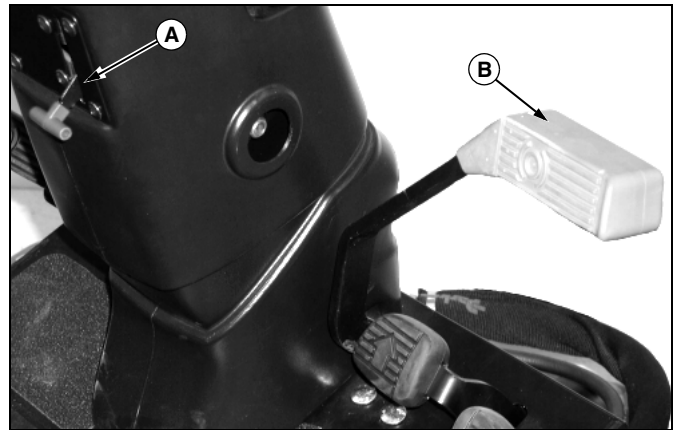
D - Park Brake Lock

OPERATING MACHINE



MX5286

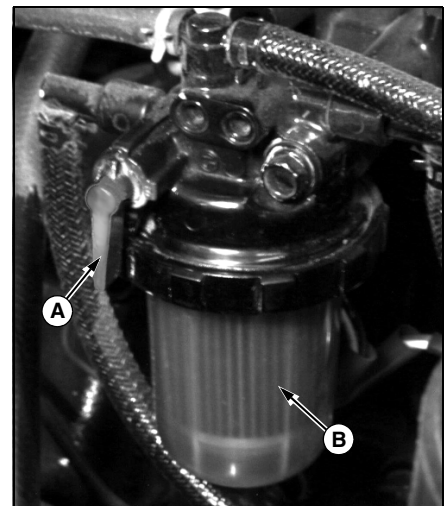
- A - Lumbar Support Adjustment
- B - Backrest Tilt Lever
- C - Seat Spring Adjustment Knob
- D - Seat Height Adjustment Knob
- E - Seat Belt
- F - Seat Adjustment Lever



MX13888

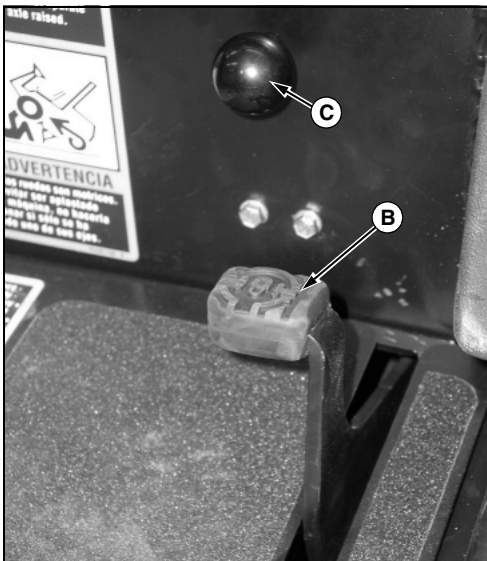
- A - Park Brake Lock Lever
- B - Master Brake Pedal

Miscellaneous Controls



MX0450

- A - Fuel Shutoff Valve
- B - Fuel Filter/Water Separator

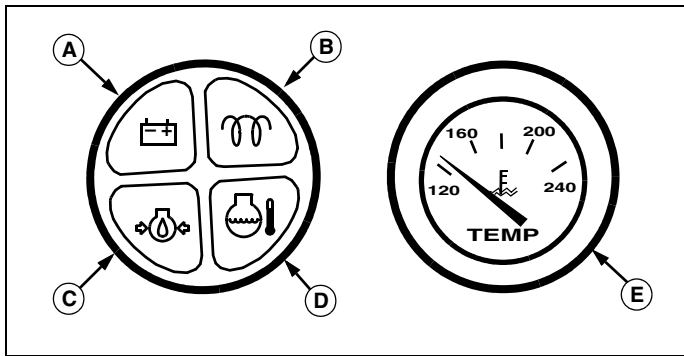


MX13887

- A - Seat Platform Release Knob
- B - Differential Lock

OPERATING MACHINE

Instrument Panel



- A - Battery Discharge Lamp
- B - Engine Manifold Heater Lamp
- C - Engine Oil Pressure Lamp
- D - Engine Coolant Temperature Lamp
- E - Engine Coolant Temperature Gauge

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

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

Testing PTO Switch

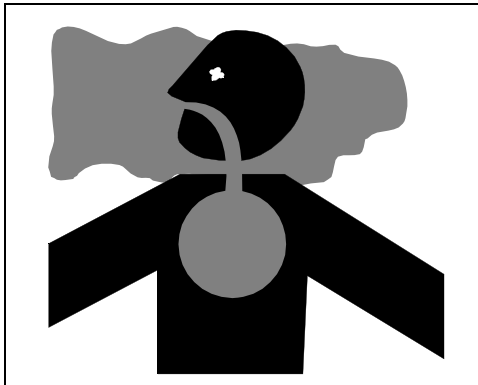
1. Sit on the seat.
2. Lock the park brake.
3. Pull PTO switch up to the on position.
4. Try to start the engine.

Result: Engine must not start. If engine starts, there is a problem with your safety interlock circuit.

5. Unlock park brake. Try and start engine.

Result: Engine must not start. If engine starts, there is a problem with your safety interlock circuit.

Testing Safety Systems



Testing Seat and Park Brake Switch

1. Sit on seat.
2. Push the PTO switch down to the off position.
3. Unlock the park brake.
4. Start the engine.
5. Raise up off of the seat, but do not get off of the machine.

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

Testing Park Brake

1. Stop the machine on a 17° slope (30% grade). Stop the engine and lock the park brake.
2. Put transmission in N (neutral).
3. Check to be sure the park brake will hold the machine without rolling.

Result: The park brake must prevent machine from moving. If machine moves, brakes need to be adjusted. See your John Deere Distributor.



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

Move the vehicle 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.

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

OPERATING MACHINE

Getting On and Off of Machine

NOTE: Always get on and off from left side of machine to avoid bumping controls and pedals.



MX0466

1. Place right foot on mower deck (A) and use steering wheel to balance yourself while stepping up onto machine.
2. Use step on lift arm (B) to get up to operator's platform.

Adjusting Seat

To adjust seat position:



MX5286

1. Pull seat adjustment lever (A) up, out of locked position.
2. Slide seat forward or rearward to desired position.

3. Release lever.

To adjust seat backrest:

1. Pull up backrest tilt lever (B), while moving backrest to most comfortable position. Release lever to lock backrest in place.
2. Turn lumbar support knob (C) rearward to increase lumbar support, or forward to decrease support.

To adjust seat spring tension:

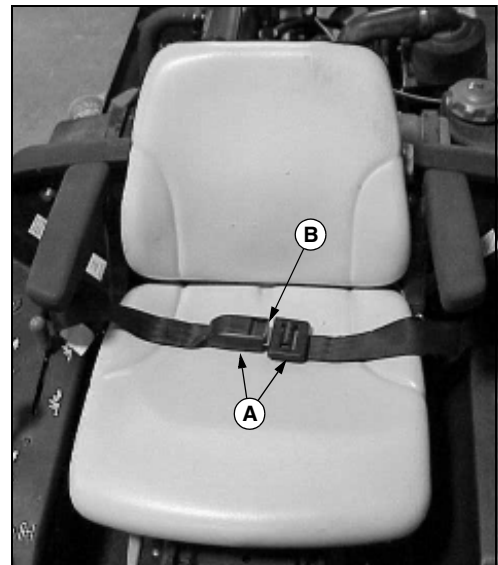
1. Turn seat spring adjustment knob (D) to the right to decrease seat spring tension, or to the left to increase tension.
2. Sit on operator's seat and turn seat height adjustment knob (E) to one of the following positions to set limits on how high the seat will travel:
 - 0 – Lowest position
 - I – Medium low position
 - II – Medium high position
 - III – Highest position

Using Seat Belt



CAUTION: Avoid injury!

- Use a seat belt when you operate with a Roll-Over Protective Structure (ROPS) to minimize chance of injury from an accident, such as an overturn.



MX5285

- Connect both ends of the seat belt (A) until they click

OPERATING MACHINE

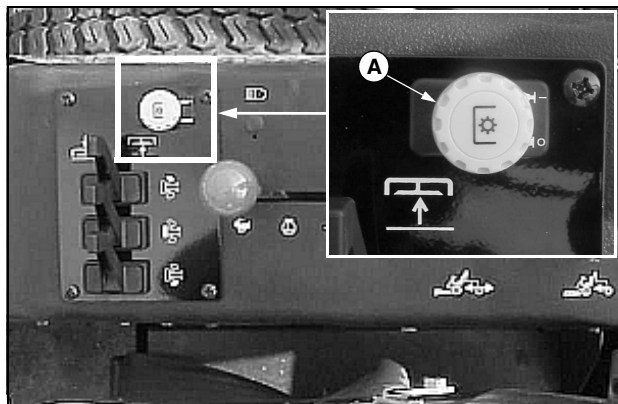
together. Loosen or tighten seat belt until operator is firmly held onto the seat.

Release Belt

- Press red button (B) to release seat belt.

Using PTO Switch

NOTE: Starter will not crank if PTO is engaged. PTO will disengage when master brake pedal is depressed.



MX5267, MX5273a

- Pull PTO knob (A) up to engage the PTO.
- Push PTO knob (A) down to disengage the PTO.

Using Key Switch

NOTE: Starter will not crank if any of the following conditions exist:

- PTO is engaged.
- Hydrostatic drive pedals are not in centered (neutral) position.
- Park brake is not locked and operator is out of seat.

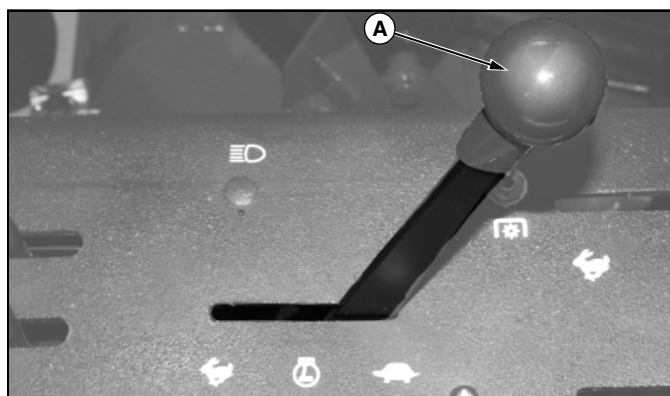


MX13889

- To turn ignition off, turn the key switch (A) to the stop position (B).
- To turn ignition on, turn key switch to the run position (C). Indicator lights on instrument panel should go on, and beeper will sound.
- To start engine, wait for engine manifold heater light to turn off, turn key switch to the start position (D). Once engine begins to run, release key switch back to the run position.

IMPORTANT: Avoid damage! Allow engine to idle for five minutes before shutting down to avoid damage to turbocharger.

Using Throttle Lever

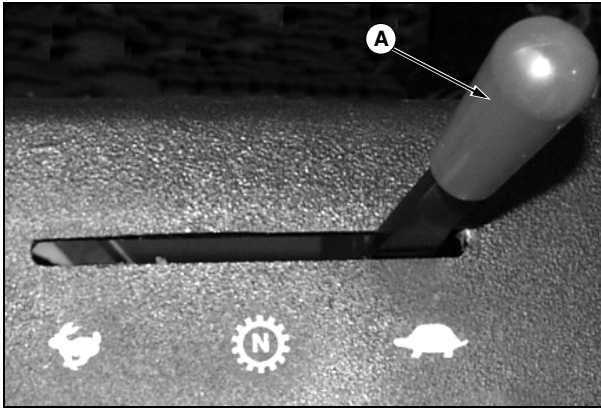


MX0454

- Pull the throttle lever (A) to the rear for slow idle. Use this position to start engine and maneuver the mower in confined spaces.
- Push throttle lever fully forward to the fast idle position for transporting and mowing.

OPERATING MACHINE

Using Speed Range Lever



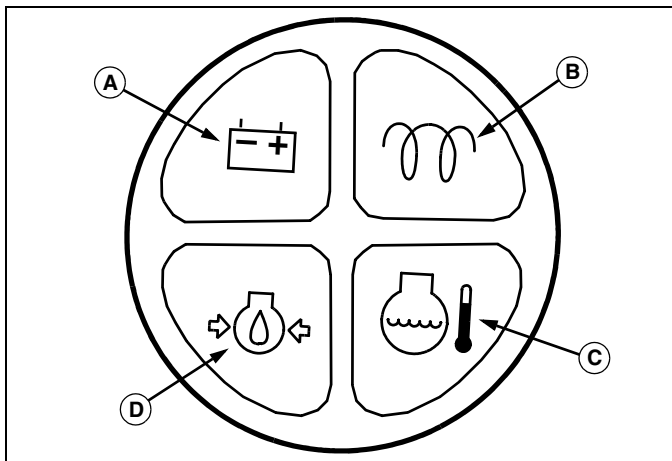
MX0464

- Place speed range lever (A) in centered neutral position (N) to stop blades and prevent machine from being driven.
- Pull speed range lever to rear for low speed range for mowing and low speed transport. Blade PTO can be engaged in this position.
- Push lever to front position for high speed range used for high speed transport. Blade PTO will not operate in this position.

Indicator Lights

IMPORTANT: Avoid damage! If an indicator light turns on while the engine is running, stop the engine to avoid engine damage. Before you restart the engine, find and correct the cause.

Battery Discharge Light



MIF

- The battery discharge light (A) indicates the battery is not getting enough charge from the alternator. The light should come on when the key switch is turned from off to run. The light should go off once the engine starts.

Engine Manifold Heater Indicator Light

- The manifold heater light (B) will light to indicate the intake manifold heater is energized and the operator should wait until it goes off before starting the engine.
- The manifold heater is controlled by a temperature sensitive timer, and will turn off sooner in warm weather.
- Starting the engine before indicator turns off will waste fuel, create smoke, and put unnecessary wear on starter.
- The engine manifold heater light will also flash trouble codes if the operator tries to start the engine without the proper conditions. (See Starting the Engine in this section.)

Engine Coolant Temperature Light

- The engine coolant temperature light (C) indicates that the engine is overheating. A warning beeper will sound anytime the light is turned on.
- If the light lights while mowing, perform the following steps:
 - a. Remove foot from hydrostatic pedal to stop travel.
 - b. Disengage PTO.
 - c. Lock park brake.
 - d. Set throttle to slow idle.
 - e. If a major coolant leak is seen coming from the engine compartment, stop the engine immediately.
 - f. If no coolant or steam can be seen leaking from the engine, open the engine cover and allow engine to idle for five minutes, or until coolant temperature light goes off, then stop engine.
- Check and clean area around radiator and hydraulic oil cooler for buildup of debris and grass.
- Fill coolant overflow tank with a 50/50 mix of coolant and water.
- Allow engine to cool. Inspect cooling system for damage and repair. Fill radiator with 50/50 mix of coolant and water.

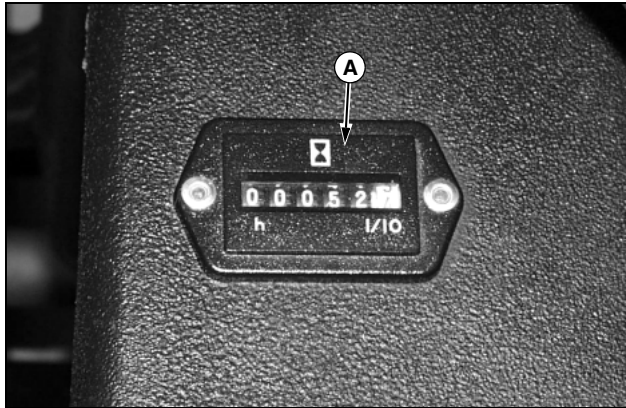
Engine Oil Pressure Light

IMPORTANT: Avoid damage! If an indicator light turns on while the engine is running, stop the engine to avoid engine damage. Before you restart the engine, find and correct the cause.

- The engine oil pressure light (D) indicates the engine oil pressure is low. The indicator should light when the key switch is turned to the run position. A warning beeper will sound anytime the light is turned on. The light (and beeper) should go off once the engine starts.

OPERATING MACHINE

Hour Meter



MX0455

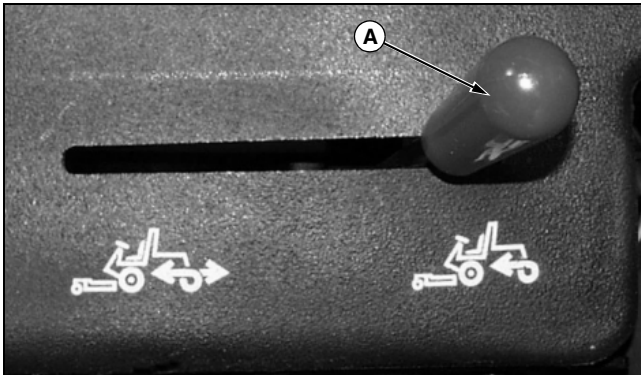
The hour meter (A) records the number of hours the engine has run.

Use the hour meter and the periodic service chart (located in the engine compartment) to determine when service procedures need to be performed on the machine and mower deck.

Using Four Wheel Drive Lever



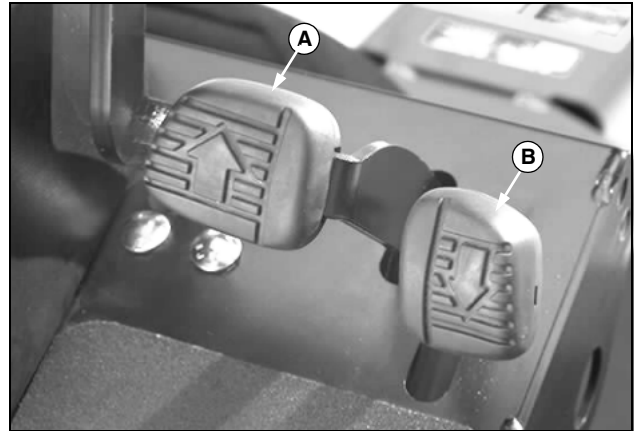
CAUTION: Avoid injury! To avoid loss of control or unnecessary damage to turf, do not attempt sharp corners or high speed cornering while machine is in four wheel drive. Do not use full time four wheel drive any longer than required.



MX0465

- Pull back on four wheel drive lever (A) (position shown) to use “on-demand” four wheel drive. Rear wheels will engage whenever rear wheel slip is detected, and will disengage automatically.
- Push four wheel drive lever forward to engage full time four wheel drive. Four wheel drive is locked in for forward and reverse travel.

Using Hydrostatic Pedals



MX13885

Using Forward Travel Pedal:

1. Push the forward travel pedal (A) down to begin driving machine. Push the pedal down more to travel faster.
2. Release the pedal to return to neutral and stop the mower

Using Reverse Travel Pedal:



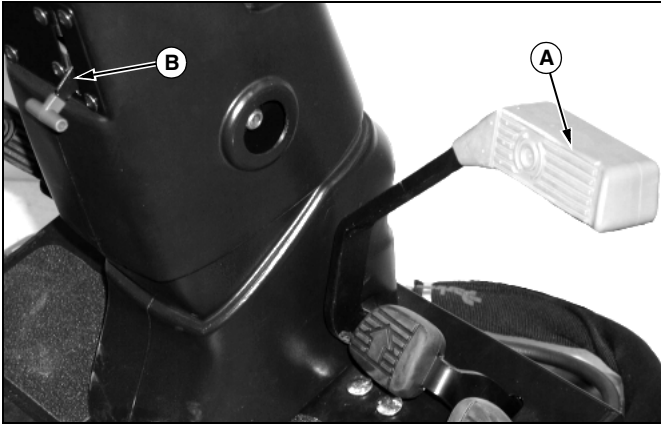
CAUTION: Avoid injury! Children or bystanders may be injured by runover and rotating blades. Before traveling in reverse, carefully check area behind machine.

1. Push the reverse travel pedal (B) down to back the machine. Push the pedal down more to travel faster.
2. Release pedal to return to neutral and stop the machine.

OPERATING MACHINE

Using Brakes

Using Master Brake Pedal



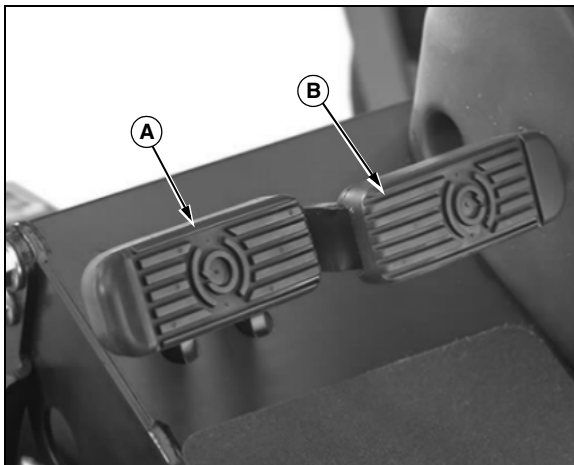
MX13888

1. Push the master brake pedal (A) down to hold the machine stationary on a slope or for an emergency stop. PTO will disengage when master brake pedal is depressed, and PTO switch will have to be recycled to restart PTO once brake is released.

Using Park Brake

1. Lock the park brake by fully depressing the master brake pedal, and pulling the park brake lock lever (B) upwards.
2. Unlock the park brake by depressing the master brake pedal, and pushing the park brake lock lever down. Release the master brake pedal.

Using Turn Brakes



MX13890

The turn brakes are used to change direction quickly within the width of machine. Avoid locking the tire with the turn brake in areas where turf damage is not acceptable. The turn brakes will not turn the machine if the differential lock is engaged.

1. Depress the left turn brake pedal (A) to slow or stop the rotation of the left front tire, while power is applied to the right wheel. The machine will turn to the left. Release the turn brake pedal to resume driving in a straight line.
2. Depress the right turn brake pedal (B) to turn to the right.

Using Differential Lock Pedal



MX13887

The differential lock is used to help improve traction on slopes and in slippery surfaces. The front drive axle will lock so that the front wheels turn together.

IMPORTANT: Avoid damage! Use the pedal only when you need more traction. Do not lock the differential at high speed or make sharp turns when the differential is locked, or turf damage may result.

To lock the differential:

1. Push the pedal down with the left foot and hold it.

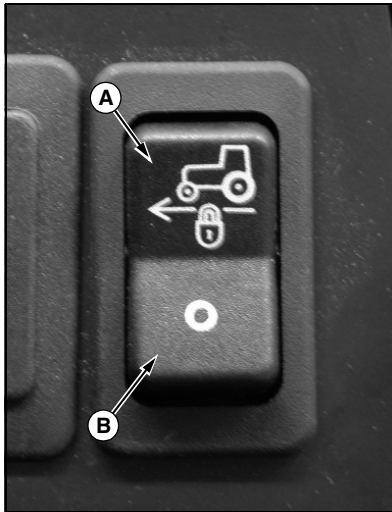
To unlock the differential:

1. Release the pedal.
2. The differential will stay locked as long as wheel slip is unequal. Once the load on the transmission is equalized and reduced, the differential lock will disengage.

OPERATING MACHINE

Using Cruise Control

Engaging Cruise Control



MX13891

1. Push the forward travel pedal down until the machine has reached the desired travel speed.
2. Push the cruise control switch (A) fully forward, then release. Allow switch to spring back to the centered position.
3. Remove foot pressure from forward travel pedal. Machine should continue to run at desired speed.

Disengaging Cruise Control

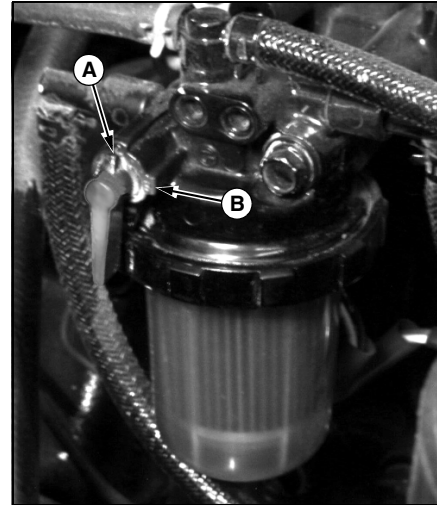
To disengage the cruise control, do one of the following:

- Push down on the master brake pedal.
- Push down on the bottom (B) of the cruise control switch.

Using Fuel Shutoff Valve

NOTE: Shut off fuel flow when transporting machine on a trailer or storing machine.

1. Lift and open the engine cover.
2. Rotate the fuel shutoff valve to the open or closed position as follows:

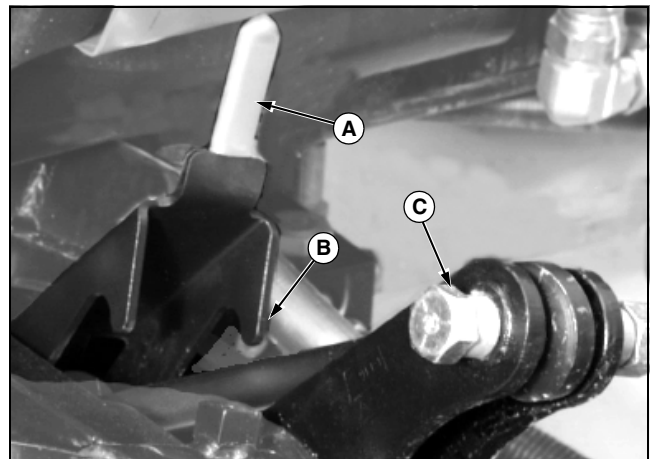


MX0450

- To open, turn the handle so the pointer (A) is facing upwards (as shown).
- To close, turn the handle so the pointer is facing to the rear (B).

Using Mower Deck Transport Locks

1. Bring machine to a stop.
2. Raise side decks to top of travel.



MX0467

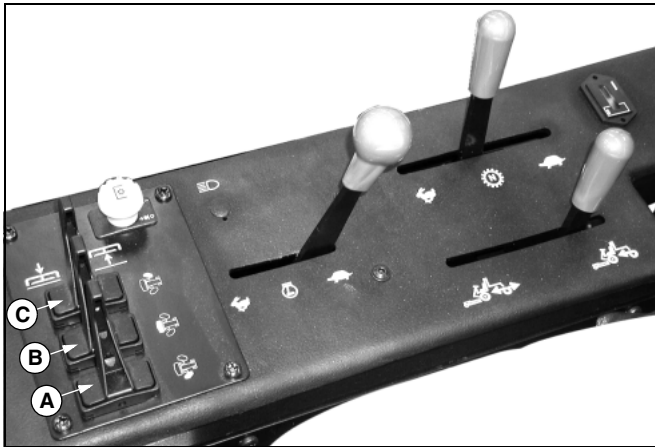
3. Push left and right side transport lock levers (A) down until hooks (B) are over pivot pins (C).
4. Lift transport lock handle to unlock. If mower deck has been lowered while lock is engaged, it will be necessary to raise deck up to unlock transport lock.

OPERATING MACHINE

Raising and Lowering Mower Decks



CAUTION: Avoid injury! Do not raise the mower decks on slopes or when traveling at high speeds, as the machine could become unstable. Check to be sure area under mower deck is clear of obstructions before lowering deck. Deck lowers quickly when control lever is pushed forward. Deck will lower with ignition key in the start position and operator on seat, even if engine is not running. Never operate controls while not on seat.

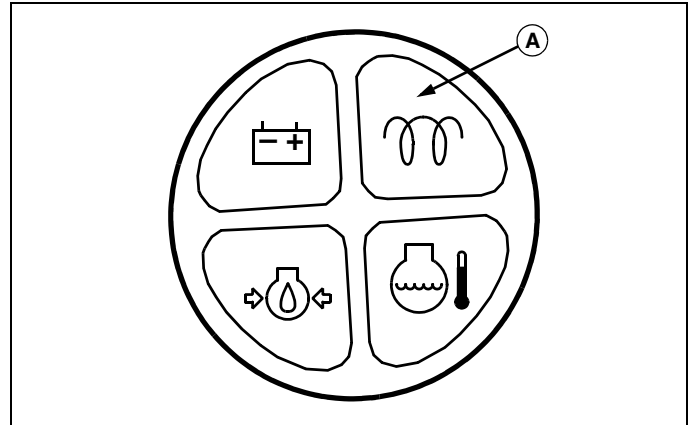


MX13884

- A - Left Mower Deck Lift Lever**
- B - Front Mower Deck Lift Lever**
- C - Right Mower Deck Lift Lever**

1. To raise a mower deck, pull the correct mower deck lift lever rearward. Mower deck will raise up until the lever is released, or the mower deck reaches the top of its travel, whichever occurs first.
2. To lower a mower deck, momentarily push lever forward. Mower deck will drop fully down to the ground. If deck needs to be stopped before it lowers completely, momentarily pull the lift lever rearward, and then allow it to return to center.
 - Raising a side deck will stop the blades for that deck. Lowering the side deck will restart the blades.
 - Raising the front deck will stop the blades for all decks. To restart blades, lower the front mower deck, and cycle the PTO switch from on to off, to on again.

Using Starting Trouble Codes



MIF

If starter will not engage when key switch is turned to start position, one of the start conditions has not been met. A trouble code will flash on the instrument panel at the engine manifold heater light (A) when the key switch is held in the start position. The trouble codes are presented as a sequence of flashes and pauses that must be counted and converted to a two digit number:

- One flash, a short pause, and two flashes – Operator attempted to start machine without park brake locked **and** operator is off of seat. (One of these conditions must be met for starter to engage.)
- One flash, a short pause, and three flashes – Operator attempted to start machine with PTO engaged.
- Two flashes, a short pause, and one flash – Hydrostatic pedals are not centered into the neutral position.

Starting Engine



CAUTION: Avoid injury! Avoid sickness or possible death from engine exhaust fumes.

DO NOT run an engine in an enclosed area without:

- **An exhaust pipe extension connected to the exhaust pipe of the engine directing the exhaust fumes out of the area.**
- **Doors and windows open allowing fresh outside air into the area and getting the exhaust fumes out.**

NOTE: Engine will not start unless the PTO is off, and the hydrostatic pedals are in the centered (neutral) position.

1. Open the fuel shutoff valve (if closed).

OPERATING MACHINE

2. Sit on the operator's seat. Put on seat belt.
3. Lock the park brake.
4. Push the PTO switch to the off position.
5. Pull the throttle lever back to the slow idle position.
6. Turn the key switch to the run position. Wait for the engine preheat light to turn off.

IMPORTANT: Avoid damage! Do not overheat starter.

- Do not operate starter more than ten seconds at a time. Wait two minutes before trying again if engine does not start.

7. Turn the key switch to the start position for no longer than ten seconds. Release key to run position after engine starts.

- If starter engages, but engine does not start, wait two minutes and try again for no longer than ten seconds.
- If starter does not engage, the engine preheat light may blink starting trouble codes while the key switch is in the start position. See Using Starter Trouble Codes to help determine why the engine will not start.

IMPORTANT: Avoid damage! Do not idle engine for long periods of time. Excessive idling can cause engine overheating, carbon build-up, and poor performance.

8. Let engine run at half-speed position for two minutes to allow it to warm up before operating machine.

Stopping Engine

1. Stop PTO by moving PTO switch to off position.
2. Move throttle lever (A) to slow idle position.
3. Lock the park brake.
4. Lower the mower decks to the ground.

IMPORTANT: Avoid damage! Allow engine to idle for five minutes before shutting down to avoid damage to turbocharger.

5. Turn key switch to stop position.
6. Remove key.

Transporting Machine

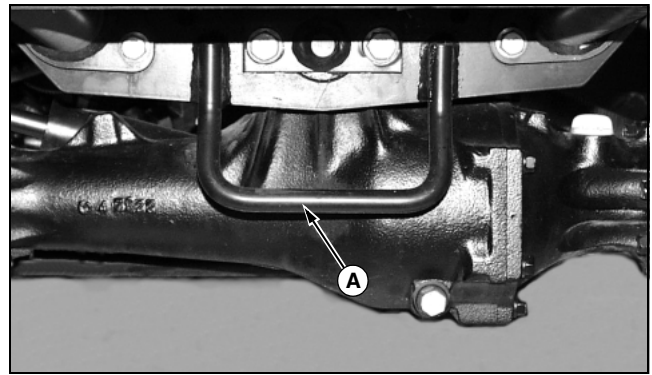
1. Turn PTO switch to off position.
2. Lower front mower deck.

3. Lower left and right side mower decks. (If necessary to transport with side decks raised, engage transport locks and keep transport speeds low).
4. Move speed range lever forward to transport position.

Towing Machine

IMPORTANT: Avoid damage! Do not tow machine faster than 15 mph. Steering will be more difficult with engine off. Do not tow machine unnecessarily.

1. Unlock the park brake.
2. Put range shift lever in neutral (N) position.



MX0491

3. Attach heavy chain or tow strap to tow loop (A) of machine at rear axle.
4. Pull machine slowly, using brakes when necessary.
5. Do not use machine to pull or tow any other vehicle or trailer.

Transporting Machine on Trailer

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

1. Raise side decks and engage transport locks.
2. Drive forward onto heavy-duty trailer with front deck raised.
3. Lower front deck down to platform of trailer.
4. Stop engine, remove key, lock park brake.
5. Close the fuel shutoff valve.
6. Fasten machine to trailer with heavy-duty straps, chains, or cables. Fasten rear straps to rear tow loop behind rear axle. Fasten front straps to tie down holes on operator's platform. Both front and rear straps must be directed down and outward from machine.
7. Check that engine cover latches are locked down.

OPERATING MACHINE

Mowing Tips

Before mowing, be sure deck is leveled and mower deck caster wheels are at the proper height.

Check all machine and deck tires for proper inflation.

When mowing an area for the first time, travel slow and set cutting height high so you can:

- Learn the terrain.
- Learn the best mowing pattern.
- Help prevent hitting objects hidden in the grass.

Mow grass only when it is dry; wet grass can plug mower and leave a trail of grass clumps.

Mow grass often; short grass clippings will decay quickly.

Mow at full throttle for best performance.

Use travel speed that fits conditions:

- Travel slow when you mow thick, tall grass.
- Fast travel or sharp turns may produce stripes or an uneven cut: slow down.
- Travel at moderate speed when you mow a thin stand of grass.

Mow often enough so you cut only 1/3 of grass blade in one mowing. Cutting grass too short may kill grass and let weeds grow easily.

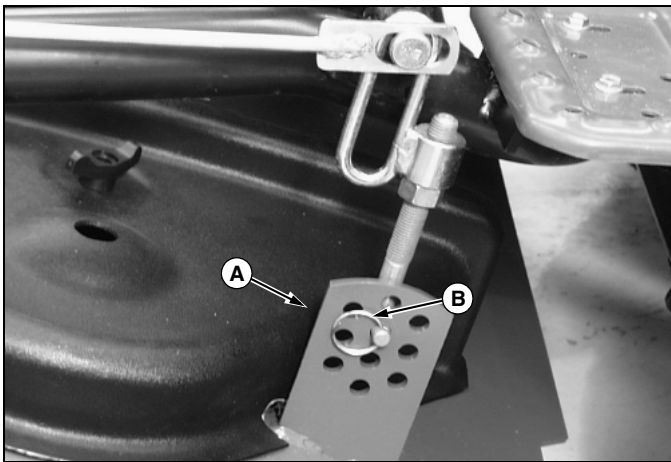
Aerate lawn to help stimulate root growth.

OPERATING MOWER DECK

Adjusting Cutting Height

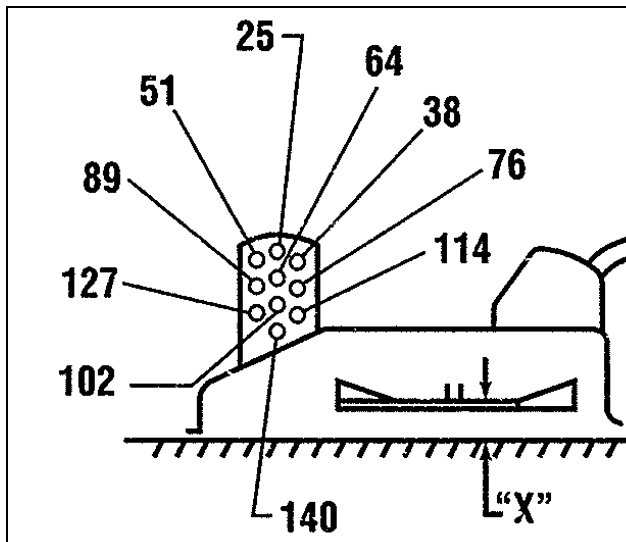
1. Stop machine on level surface, PTO off, park brake locked.
2. Raise all mower decks. Engage left and right side deck transport locks. Stop engine.
3. Check tire pressures on all machine tires, and deck caster wheels.
 - Machine front tires: 140 kPa (20 psi)
 - Machine rear tires: 140 kPa (20 psi)
 - Mower deck caster wheels: 275 kPa (40 psi)

Adjusting Front Deck Cutting Height



MX3718

1. Remove retainer ring (A) from deck hanger pin (B) on left and right side of front deck.



MX0459

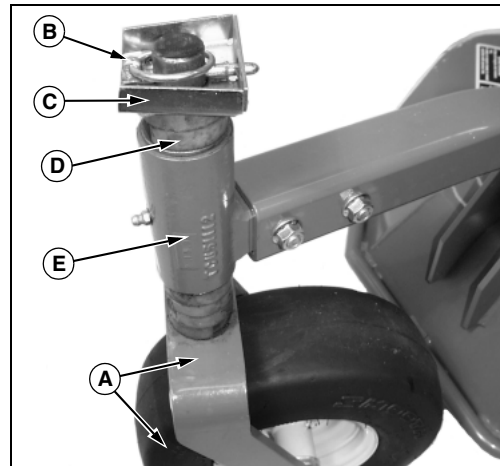
2. Using the figure above, or decal mounted on front deck, place deck hangers into holes that match desired cutting height.

3. Install retainer rings into hanger pins.
4. Adjust caster wheels on front deck to match cutting height selected on hanger.

Adjusting Caster Wheels Cutting Height

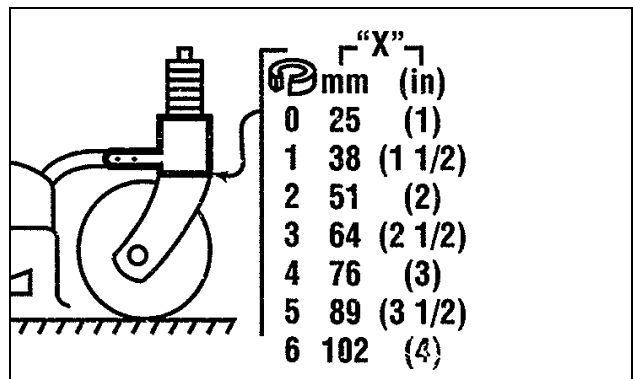
NOTE: This adjustment is for all caster wheels on front and side mower decks.

1. Raise mower decks.



MX0462

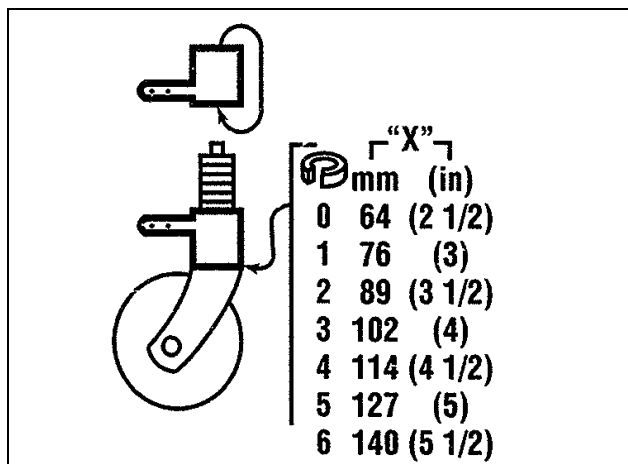
2. Support the caster wheel and bracket (A) with one hand, while removing quick-lock pin (B) and spacer guard (C).
3. Remove the spacers (D) from the top of the caster pivot shaft.
4. Lower the caster and pivot shaft out of the caster support bracket (E).



MX0459

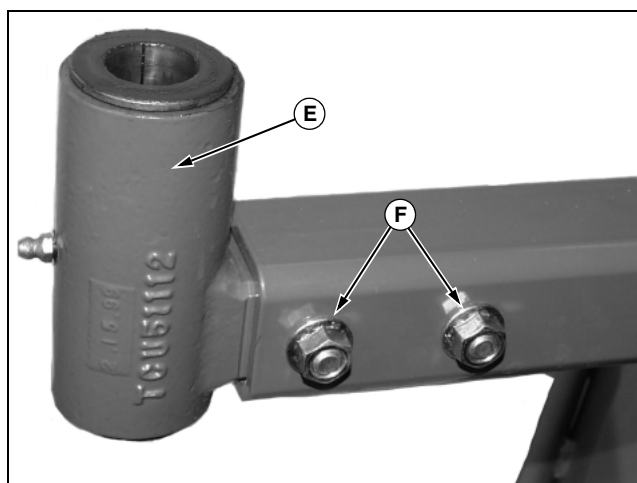
5. Use the figures above, or decal mounted on front mower deck to select the number of spacers needed to set caster wheel to desired height.

OPERATING MOWER DECK



MX0460

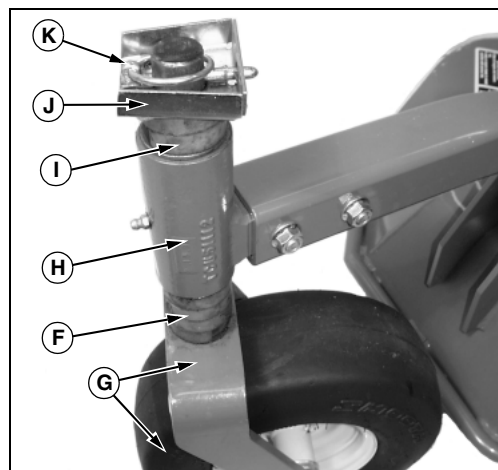
6. Flip caster support brackets over to adjust blades to higher than 102 mm (4 in.) cutting height.



MX0463

- To flip the caster support brackets (E), remove two cap screws, nuts, and bushings (F), holding support bracket to mower deck arm. Remove bracket from arm, flip over bracket, and install back into arm.

7. Install cap screws and nuts, but do not tighten nuts at this time.



MX0462

8. Install the proper number of spacers (F) onto the caster shaft.

9. Install the caster wheel and bracket (G) up through the caster support bracket (H).

10. Install remaining spacers (I) onto the top of the caster shaft.

NOTE: When adjusting side decks to 25 mm (1 in.) height of cut, do not install spacer guard (J) on inside caster wheel pivot. Spacer guard may contact engine cover when side deck is raised.

11. Install the spacer guard (J) with open end facing forward (as shown).

12. Install quick-lock pin (K) into caster shaft and hole in spacer guard. Snap retainer loop over caster shaft.

13. If cutting height was adjusted above 102 mm (4 in.), perform the follow steps:

- Lower mower deck to ground.
- Turn caster wheels so they are trailing to the rear (as would happen during normal forward travel).
- Tighten caster support bracket hardware.

Checking Mower Deck Level

- Park machine safely. (See Parking Safely in the SAFETY section.)
- Lower all mower decks completely to ground.
- Check tire pressures on all machine tires, and deck caster wheels.
 - Machine front tires: 140 kPa (20 psi)
 - Machine rear tires: 140 kPa (20 psi)
 - Mower deck caster wheels: 275 kPa (40 psi)
- Set the mower decks at the desired cutting height.

OPERATING MOWER DECK

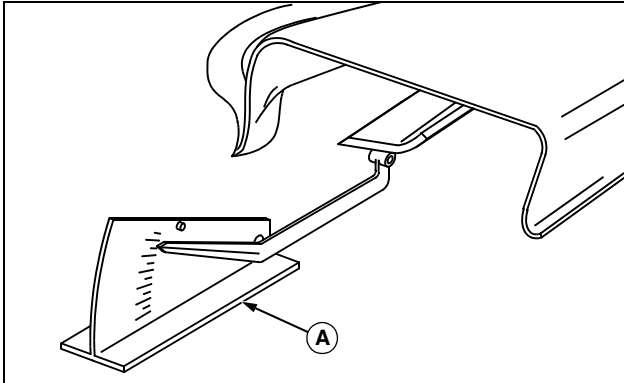
5. Check that the front mower deck caster wheels and rear hangers are all set to the same height.



CAUTION: Avoid injury! Blades are sharp! Wear heavy gloves while rotating blades to protect your hands.

6. Check that all caster wheels are trailing towards the rear, as they would be during normal forward travel.

7. Turn the blades until parallel to the front axle.



MIF

Picture Note: A convenient leveling gauge (A) is available from your John Deere dealer that will slip under the lip of the deck and measure blade height.

8. Measure distance from tip of outside blade (B), to the ground. Repeat for blade on other side of deck. Mower blades should be level on both sides of deck.

9. Turn outer mower blades to face front-to-rear.

10. Measure height of front and rear of outer blade to ground. Repeat for other side.

Results:

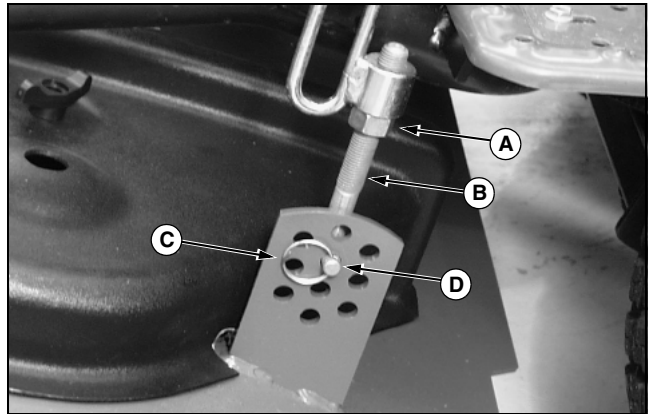
- The blade cutting heights should be level side-to-side.
- The rear tips of the blades should be 6mm (0.25 in.) higher than the front blade tips.

Adjusting Mower Deck Level

1. Park machine safely. (See Parking Safely in the SAFETY section.)
2. Lower all mower decks completely to ground.
3. Check tire pressures on all machine tires, and deck caster wheels.
 - Machine front tires: 140 kPa (20 psi)
 - Machine rear tires: 140 kPa (20 psi)
 - Mower deck caster wheels: 275 kPa (40 psi)
4. Set the mower decks at the desired cutting height.

5. Turn all caster wheels so they are trailing to the rear (as would happen during normal forward travel).

Adjusting Front Mower Deck Level



MX3718

1. Loosen lock nut (A) on deck hanger (B).
2. Remove retainer ring (C) on hanger pin (D).
3. Turn rear hanger up or down to adjust deck height until blades are level side-to-side and front-to-rear.
4. Insert hanger pin (D) back into proper height adjuster hole, and secure with retainer ring.
5. Tighten lock nut (A).

NOTE: It may be necessary to reduce caster wheel air pressure on one side only to help level mower deck.

Adjusting Side Mower Deck Level

The side mower deck level can be adjusted by lowering the air pressure in the two caster wheels on the side which is high. Do not exceed recommended air pressure in tires.

Engaging Blades



CAUTION: Avoid injury! Keep hands and feet away from mower decks while PTO is engaged. Before engaging PTO, clear area of bystanders, ESPECIALLY CHILDREN.

NOTE: Operate engine at full throttle while mowing.

1. Start engine and warm up.
2. Move the speed range lever to the low speed position.
3. Unlock the park brake.
4. Lower the mower decks to ground.
5. Move throttle forward to full throttle position.
6. Pull up on PTO switch.

OPERATING MOWER DECK

- Blades should start.
- If one side deck is not lowered, the blades for that deck will not start up until deck is lowered.
- If front deck is not lowered, none of the blades will start up.

7. Raise decks to disengage blades:

- If a side deck is raised while mowing, the blades for that deck will stop. Blades will start up again once the deck is lowered.
- If the front deck is raised while mowing, all blades on all decks will stop. Once front deck is lowered, the PTO switch will have to be cycled on–off–on to restart blades.
- Move the PTO switch to the off position to stop all blades.

REPLACEMENT PARTS

Service Literature

Numbers may be different outside the U.S.A.)

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 your machine serial number and engine serial number. These are the numbers that you have recorded in the Introduction section of this manual.

ITEM	PART NUMBER
Air Cleaner Elements: • Primary (Large) • Secondary (Small)	AP33330 AP33331
Fuel Filter / Water Separator Element:	T111383
Oil Filters: • Engine • Hydraulic	M801002 AL77061
Battery	AH128039
Belts: • Front Deck • Left Deck • Right Deck • Engine Alternator / Water Pump	TCU14537 TCU14539 TCU14538 M801821
Mower Deck Blades:	TCU51118
Fuses: • 15 Ampere • 20 Ampere	99M7065 57M7691
Radiator Cap:	AT173610
Indicator Light Bulbs	57M7943

(Part numbers are subject to change without notice. Part

SERVICE INTERVALS

Break-In

Check Often During First 100 Hours of Operation

- Check wheel bolt torque.

After First 25 Hours of Operation

- Check for loose and missing hardware.
- Inspect tires and check air pressure.

After First 50 Hours of Operation

- Change engine oil and filter.

Every 25 Hours

- Lubricate caster wheels and caster arm bushings (20 places).
- Lubricate mower blade spindles (7 places).
- Lubricate side deck lift arms (2 places).
- Lubricate front deck lift arms (4 places).
- Check for bent or dull mower blades.

Every 50 Hours

- Check battery fluid level. Clean battery posts as needed.
- Check wheel bolt torque.
- Inspect tires and check air pressure.
- Check mechanical four wheel drive (MFWD) oil level.

Every 100 Hours

- Power wash mower decks with shields removed.
- Lubricate side mower deck lift cylinders-4 places.
- Lubricate steering cylinder.
- Lubricate mechanical four wheel drive shaft universal joints (2 places).
- Lubricate hydrostatic creep adjustment eccentric (1 place).
- Lubricate rockshaft pivot areas (2 places).
- Lubricate tie rod ends (2 places).
- Lubricate rear axle pivot (1 place).
- Inspect mower deck drive belt condition.
- Check and adjust mower deck drive belt tension.

- Clean debris from radiator fins with pressurized air.
- Lubricate pedal linkages.

Every 200 Hours

- Change engine oil and filter.
- Check fuel filter sediment bowl.
- Inspect alternator belt and fan belt for wear and proper tension.
- Check tightness of air intake and coolant hose clamps.

Every 400 Hours

- Change hydraulic oil and filter.

Every 500 Hours

- Change mechanical four wheel drive oil.
- Change fuel filter and clean sediment bowl.
- Check roll-over protection system (ROPS) hardware for proper torque.
- Check brake adjustment.
- Have your authorized dealer service the fuel injectors, rear axle pivot pin, valve clearance, and engine idle speed.

Seasonal

- Change transmission oil.
- Change engine coolant.

SERVICE LUBRICATION

Grease

IMPORTANT: Avoid damage! Use of incorrect greases can result in premature wear of parts and component failures.

Recommended John Deere greases are effective within an average air temperature range of -29 to 135°C (-20 to 275°F). If operating outside this temperature range, see your John Deere dealer for extreme temperature greases.

The following greases are preferred:

High Speed Applications

Use John Deere Multi-Purpose SD Polyurea Grease or John Deere Multi-Purpose HD Lithium Complex Grease for the following high speed applications:

- Mower Spindles (7 places).
- Rear Axle Bearings (1 place).
- Mechanical Four Wheel Drive Shaft Universal Joints (2 places).

Other Applications

Use John Deere Multi-Purpose HD Lithium Complex Grease or John Deere Moly High Temperature EP Grease for all other applications:

- Caster Wheels (10 places).
- Caster Arm Bushings (10 places).
- Mower Deck Lift Arms (4 places).
- Rockshaft (2 places).
- Side Mower Deck Lift Cylinders (4 places).
- Hydraulic Steering Cylinder (2 places).
- Rear Tie Rod (2 places).
- Hydrostatic Creep Adjustment Eccentric (1 place).

If not using any of the preferred greases, be sure to use a general purpose grease with a NLGI grade No. 2 rating. Avoid use of John Deere Moly High Temperature EP Grease on high speed applications such as mower spindles and the rear axle.

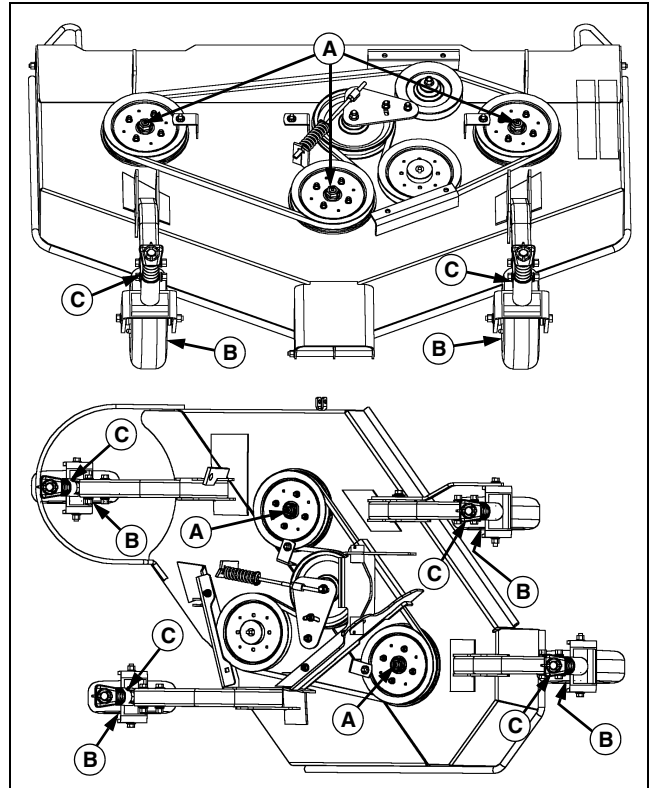
Operating in extremely wet conditions may require use of special purpose greases. See your John Deere dealer.

Wipe off all grease fittings before and after lubrication to prevent contamination.

Lubricate Mower Spindles, Caster Wheels, and Caster Wheel Yokes

1. Lower mower decks completely.

2. Park machine safely. (See Parking Safely in the Safety Section.)



MX3730, MX3741

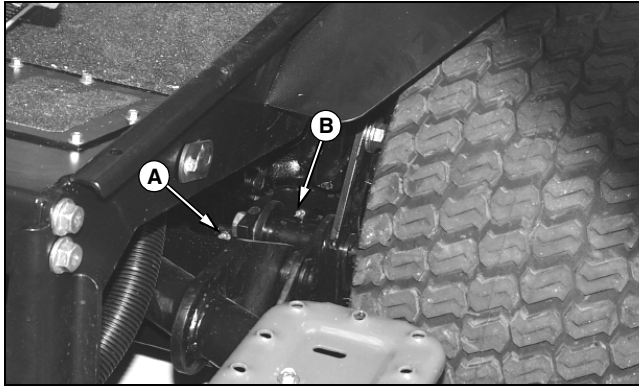
Picture Note: Front deck shown upper, side deck shown lower. Belt shields shown removed for clarity.

3. Lubricate mower deck grease fittings:
 - Mower blade spindles (A) with John Deere Multi-Purpose SD Polyurea grease or John Deere Multi-Purpose HD Lithium Complex Grease.
 - Caster wheels (B) and caster arm bushings (C) with John Deere Multi-Purpose HD Lithium Complex Grease or John Deere Moly High Temperature EP Grease.

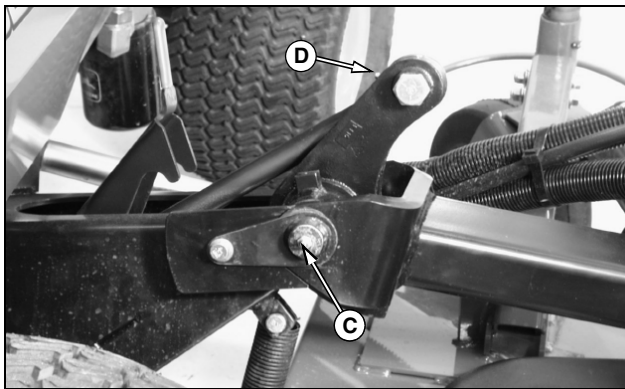
Lubricate Mower Lift Arms, Rockshaft, and Lift Cylinders

1. Lower mower decks completely.
2. Park machine safely. (See Parking Safely in the Safety Section.)

SERVICE LUBRICATION

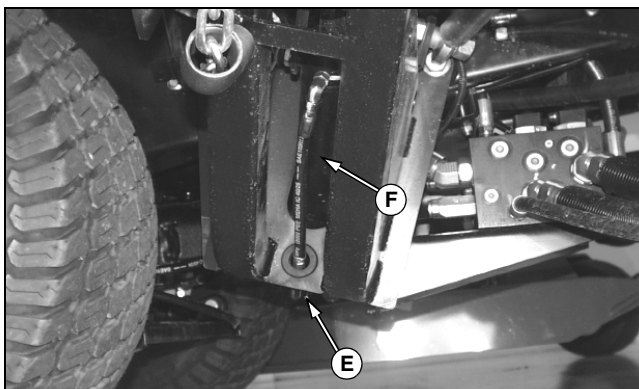


3. Lubricate front mower deck lift arm pivot joint (A) and rockshaft pivot joint (B) at both sides of machine with John Deere Multi-Purpose HD Lithium Complex Grease or John Deere Moly High Temperature EP Grease.



4. Lubricate the side deck lift arm pivot joint (C) and lift cylinder pivot joint (D) at both sides of machine with John Deere Multi-Purpose HD Lithium Complex Grease or John Deere Moly High Temperature EP Grease.

5. Start machine. Raise side decks completely.
6. Engage both side deck transport locks.
7. Stop engine and remove the key.



8. Lubricate grease fitting (E) at the base end of side deck lift cylinder (F) at both sides of machine with John Deere

Multi-Purpose HD Lithium Complex Grease or John Deere Moly High Temperature EP Grease.

Lubricate Rear Axle Pivot Pin

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

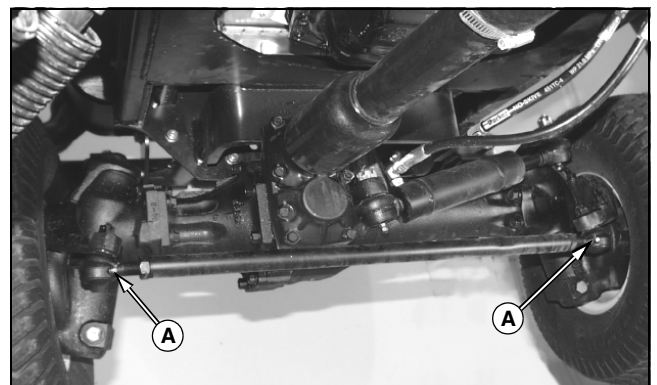


2. Lubricate grease fitting (A) at left side of rear axle with John Deere Multi-Purpose SD Polyurea Grease or John Deere Multi-Purpose HD Lithium Complex Grease.

Lubricate Rear Tie Rod

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

CAUTION: Avoid injury! Allow engine and exhaust system to cool before greasing tie rods to prevent burns.

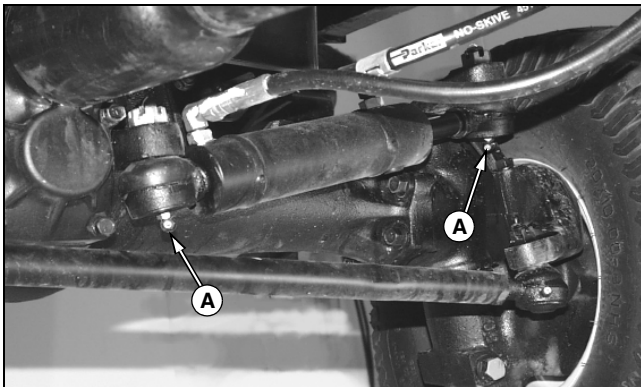


2. Lubricate rear tie rod ends (A) with John Deere Multi-Purpose HD Lithium Complex Grease or John Deere Moly High Temperature EP Grease.

SERVICE LUBRICATION

Lubricate Hydraulic Steering Cylinder

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

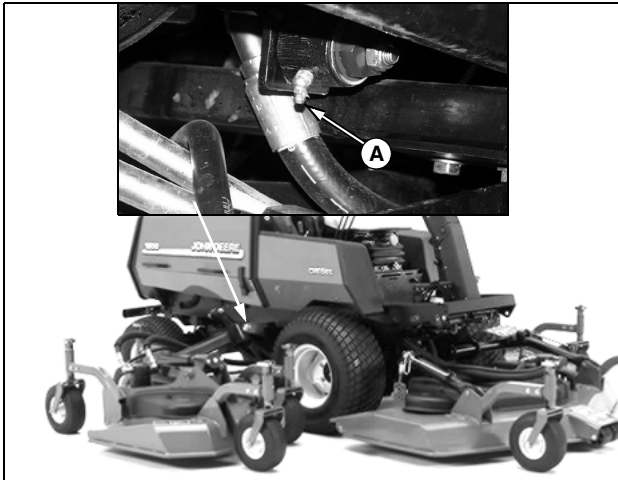


MX3747

2. Lubricate hydraulic steering cylinder ends (A) at rear of machine with John Deere Multi-Purpose HD Lithium Complex Grease or John Deere Moly High Temperature EP Grease.

Lubricate Hydrostatic Control Arm

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



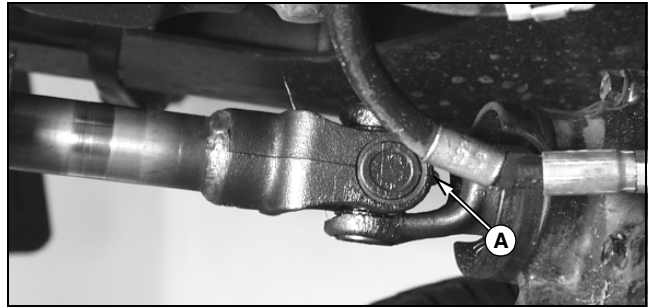
MX3748, MX0439

2. Lubricate hydrostatic creep adjustment eccentric (A) with John Deere Multi-Purpose HD Lithium Complex Grease or John Deere Moly High Temperature EP Grease.

Lubricate Drive Shaft

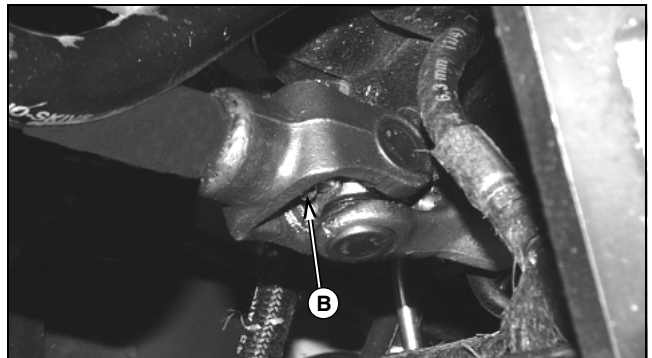
1. Raise side mower decks completely.
2. Engage both side deck transport locks.
3. Park machine safely. (See Parking Safely in the Safety

Section.)



MX3750

4. Lubricate rear universal joint (A) with John Deere Multi-Purpose SD Polyurea Grease or John Deere Multi-Purpose HD Lithium Complex Grease.

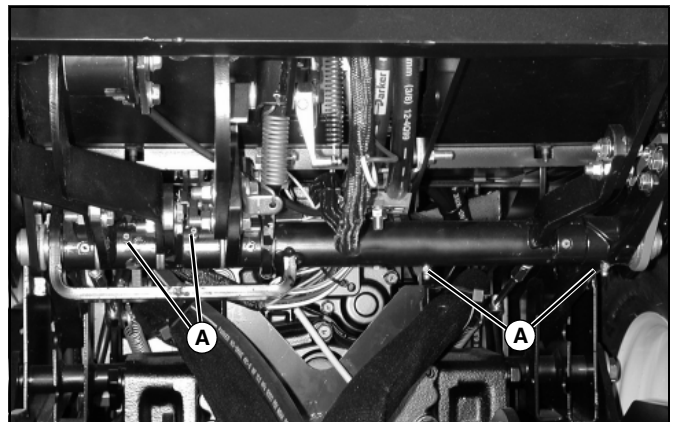


MX3751

5. Lubricate front universal joint (B) with John Deere Multi-Purpose SD Polyurea Grease or John Deere Multi-Purpose HD Lithium Complex Grease.

Lubricate Pedal Linkages

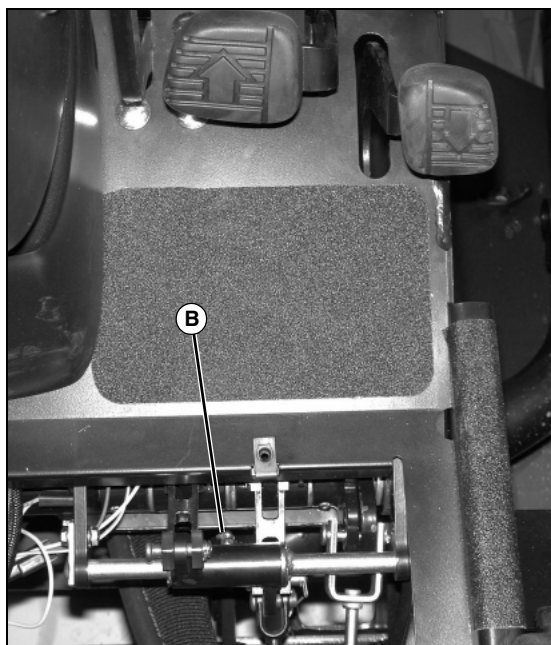
1. Park machine safely. (See Parking Safely in the Safety Section.)



MX13910

2. Lubricate four grease fittings (A) located on brake pivot shaft located under operator's platform.

SERVICE LUBRICATION



MX13911

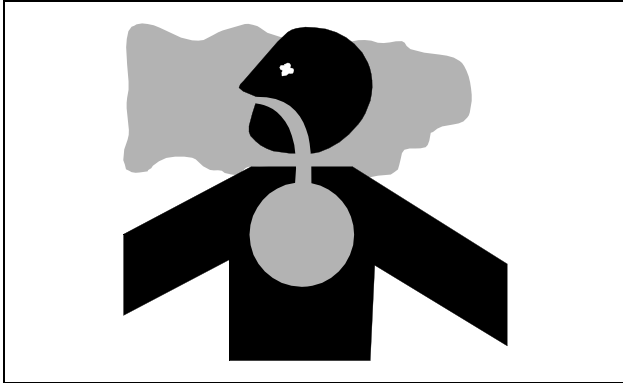
3. Remove the service hatch on the floor of the operator's platform, and lubricate the hydrostatic pedal linkage at (B).

SERVICE ENGINE

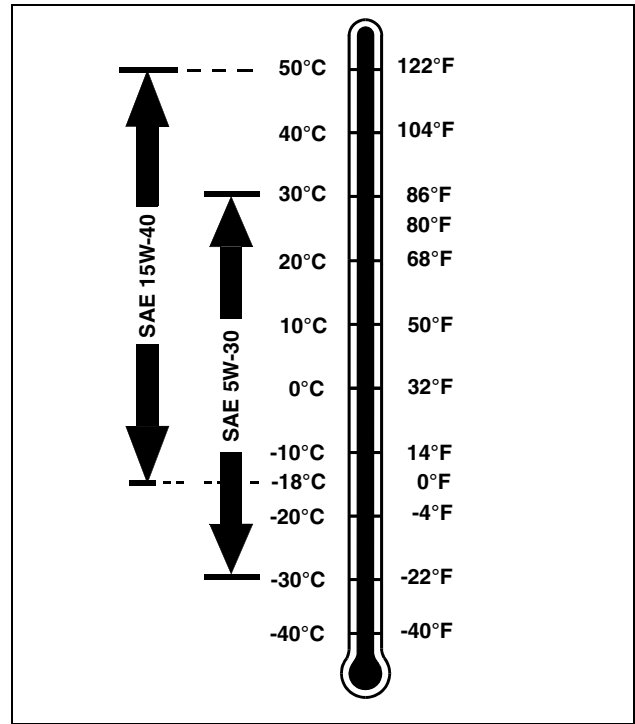
Engine Warranty Maintenance Statement

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



MIF



MIF

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

- TORQ-GARD SUPREME®
- PLUS-50®

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

- API Service Classification SH/CF or higher.

Engine Oil

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

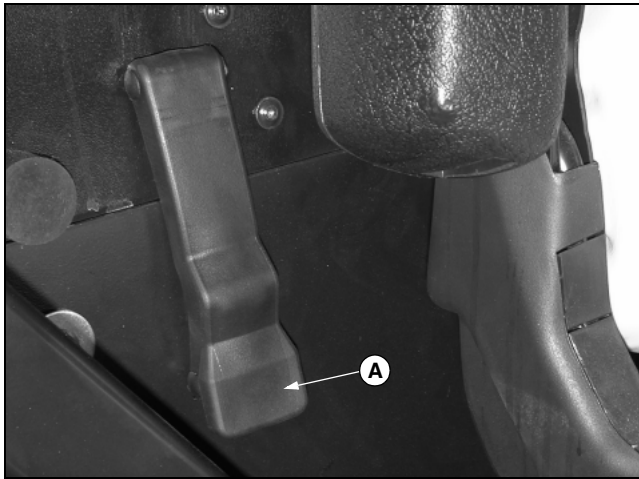
SERVICE ENGINE

Raising and Lowering the Engine Cover



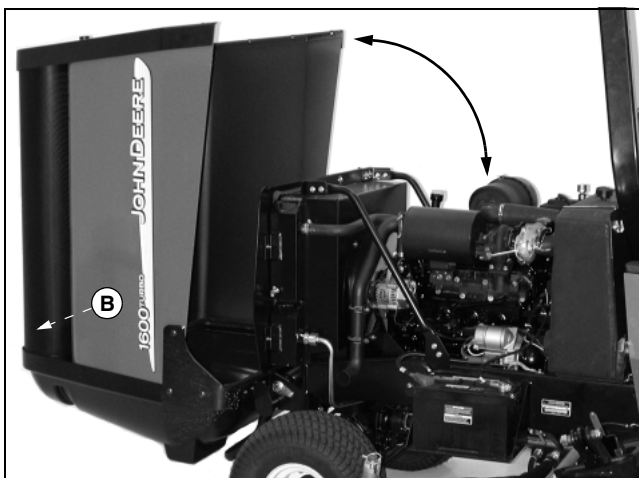
CAUTION: Avoid injury! The engine cover is heavy. To avoid pinched fingers, carefully raise and lower the engine cover by using the handles provided on each side of the engine cover.

IMPORTANT: Avoid damage! DO NOT operate the machine with the engine cover in the raised position.



MX13892

1. Pull out on the bottom of engine cover latches (A) on left and right side of machine, behind operator's seat.
2. Unhook tops of the engine cover latches from the hooks on engine cover.



MX13893

3. Raise engine cover using handle (B). Open engine cover completely until it comes to rest.

IMPORTANT: Avoid damage! Do not drop the engine cover to close it.

4. Carefully lower engine cover using handle (B).
5. Hook the tops of the engine cover latches onto engine cover, and press in on bottom of latches to lock closed.

Raising and Lowering Seat Platform

To raise the operator's seat platform:



CAUTION: Avoid injury! Fingers may get caught in seat frame pinch point. Use care when raising and lowering the seat.

1. Stand on the operator's platform facing the operator's seat.

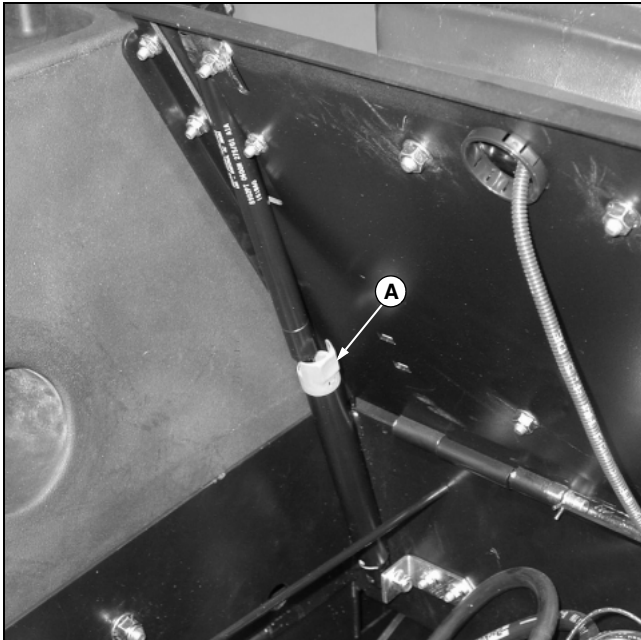


MX13908

2. Pull forward on the lift release knob (A), while pulling forward and upward on the backrest of the operator's seat.
3. The seat platform will latch in the raised position.

SERVICE ENGINE

To lower the operator's seat platform:



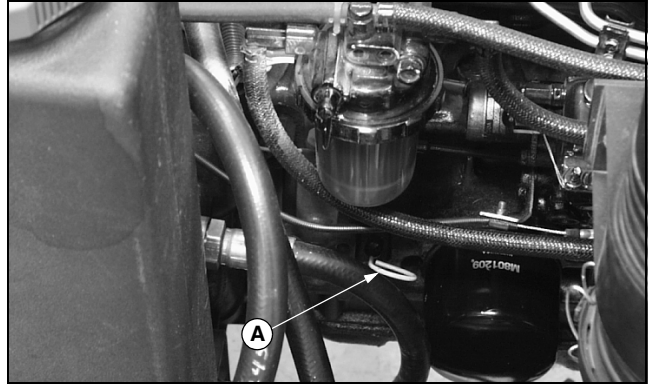
MX13894

1. Push in on the orange lock lever (A) on the support rod.
2. Hold in the lock lever while pushing rearward on the backrest of the operator's seat.
3. Release the lock lever while continuing to lower the operator's seat platform until it latches in the fully lowered position.

Checking Engine Oil

1. Park machine safely. (See Park Safely in the Safety section.)
2. Raise engine cover.

IMPORTANT: Avoid damage! Avoid dirt and other contaminants from entering the oil dipstick tube location. Clean area around dipstick before removing.



MX3204

3. Remove dipstick (A) located on the LEFT side of the engine. Wipe dipstick with a clean cloth.
4. Install dipstick.



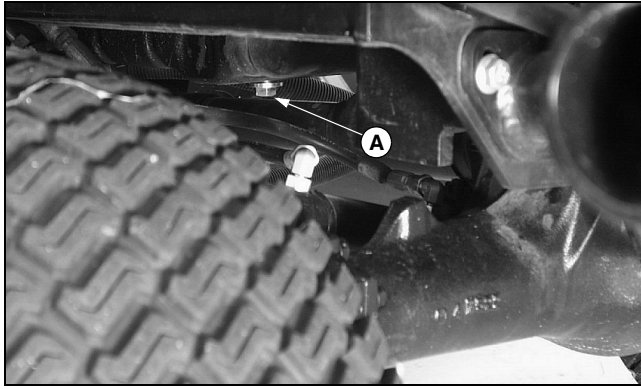
MX3320

5. Remove dipstick. Check oil level. Oil should be between levels (B) and (C) on the dipstick.
 - If oil is low, add oil to bring oil level no higher than level (B) on the dipstick.
 - If oil is above level (B) on the dipstick, drain to proper level.
6. Install dipstick.
7. Lower engine cover.

Changing Engine Oil and Filter

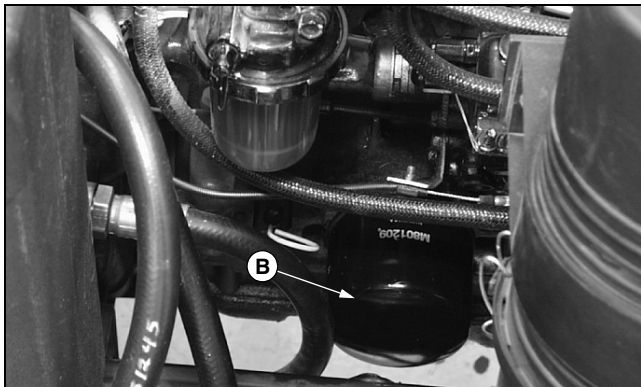
1. Run engine to warm oil.
2. Park machine safely. (See Parking Safely in the Safety section.)
3. Raise engine cover.
4. Place a drain pan under the oil drain location.

SERVICE ENGINE



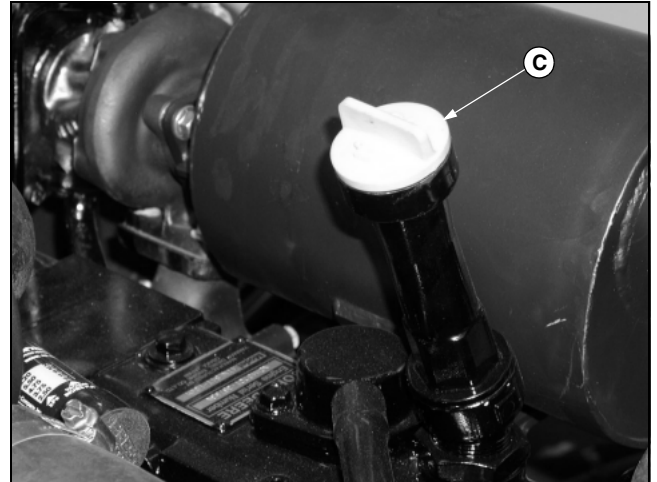
MX3217

5. Remove drain plug (A) located under the engine.



MX3204

6. Remove oil filter (B) located under the LEFT side of the engine. Turn filter counterclockwise to remove.
7. Clean filter mounting surface on engine with a clean cloth.
8. Apply a film of clean engine oil on gasket of new filter.
9. Install new filter.
 - Turn filter clockwise until filter makes contact with the mounting surface. Tighten 1/2–3/4 turn after gasket contact.
10. Install oil drain plug. DO NOT overtighten.

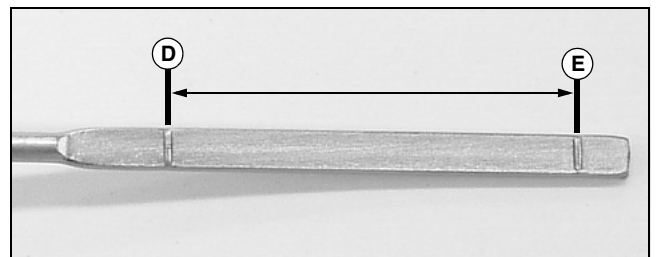


MX13895

11. Remove oil fill cap (C) on top of engine.
12. Add approximately 6.6 L (7 qt) of oil.
13. Install oil fill cap.
14. Start engine.
 - Run engine at a slow throttle speed for approximately two minutes.
 - Check area under engine for oil leaks.
15. Stop engine.
16. After approximately two minutes check engine oil level.

IMPORTANT: Avoid damage! Avoid dirt and other contaminants from entering the oil dipstick tube location. Clean area around dipstick before removing.

17. Remove dipstick. Wipe with a clean cloth.
18. Install dipstick.



MX3220

19. Remove dipstick. Check oil level. Oil should be between levels (D) and (E) on the dipstick.
 - If oil is low, add oil to bring oil level no higher than level (D) on the dipstick.
 - If oil is above level (D) on the dipstick, drain to proper level.
20. Install dipstick.
21. Lower engine cover.

SERVICE ENGINE

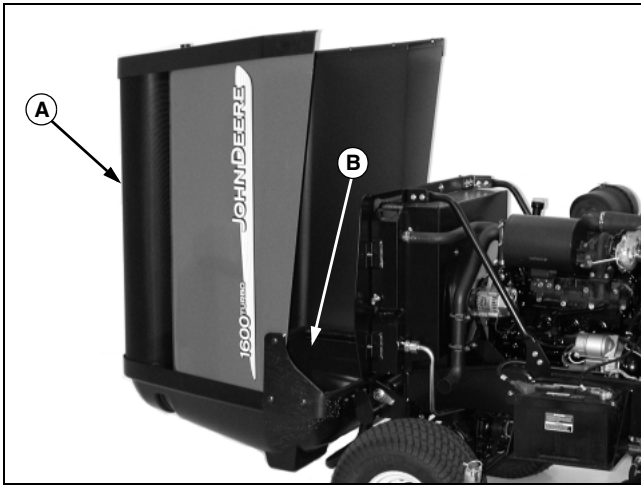
Cleaning Engine Cover Screen



CAUTION: Avoid injury! Wear personal eye protection when using compressed air for cleaning purposes.

IMPORTANT: Avoid damage! Engine cover screen must be clean to prevent the engine from overheating and to allow adequate air intake.

1. Park machine safely. (See Parking Safely in the Safety section.)
2. Raise engine cover.



MX13893

3. Clean engine cover screen (A) with a brush, compressed air, or water.
4. Check for debris inside engine cover at (B).
5. Close engine cover and latch.

Cleaning Oil Cooler and Radiator

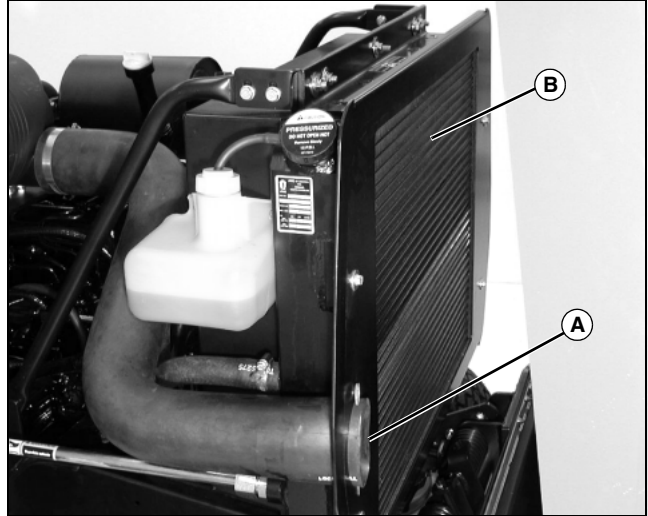


CAUTION: Avoid injury! Wear personal eye protection when using compressed air for cleaning purposes.

IMPORTANT: Avoid damage! Oil cooler coils and radiator cooling fins must be clean to prevent the engine from overheating and to allow adequate air intake.

1. Park machine safely. (See Parking Safely in the Safety section.)
2. Allow engine to cool.
3. Open engine cover.

IMPORTANT: Avoid damage! When cleaning the oil cooler and radiator fins do not allow water and debris to enter air cleaner intake hose (A). Keep compressed air nozzle at least 150 mm (6 in.) away from fins while cleaning.



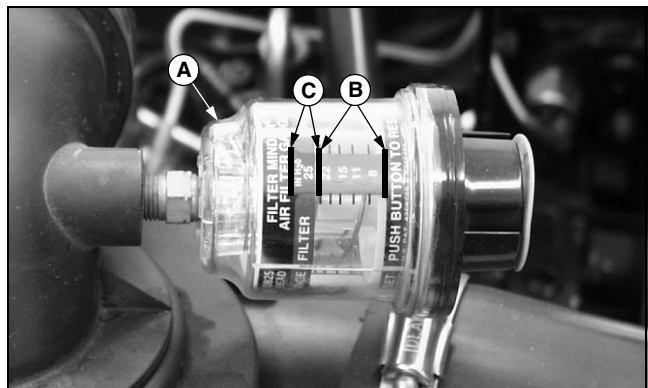
MX13896

4. Remove dirt and debris from oil cooler and radiator (B) by directing a stream of compressed air or water from the front side of radiator to the rear.
5. Check oil cooler coils and radiator fins for damage.
6. Lower engine cover.

Checking Air Filter Restriction Indicator

1. Park machine safely. (See Parking Safely in the Safety section.)
2. Raise engine cover.

NOTE: Indicator will not function correctly if plastic indicator housing is damaged.



MX3210

3. Check air restriction indicator (A).
 - When the yellow plunger inside the indicator is visible

SERVICE ENGINE

in the green zone (B), no air cleaner service is required.

- When yellow plunger inside the indicator is visible inside the red zone (C), air cleaner needs replacement.

4. Lower engine cover.

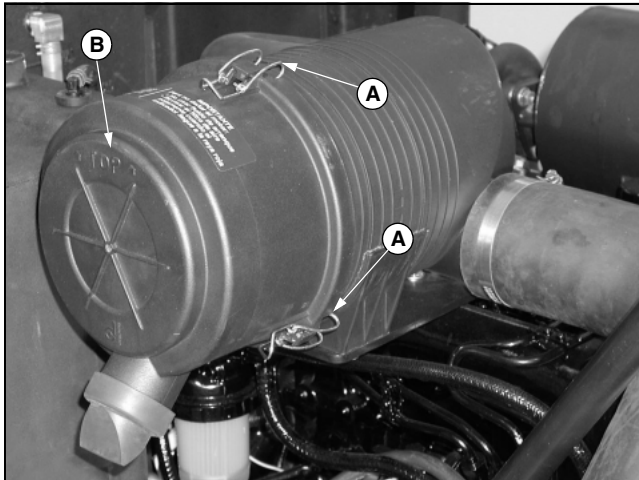
Servicing Air Cleaner Elements

IMPORTANT: Avoid damage!

- When operating the machine in extreme heat, dust or other severe conditions, check the air restriction indicator daily.
- Never run the engine without the air cleaner elements installed.

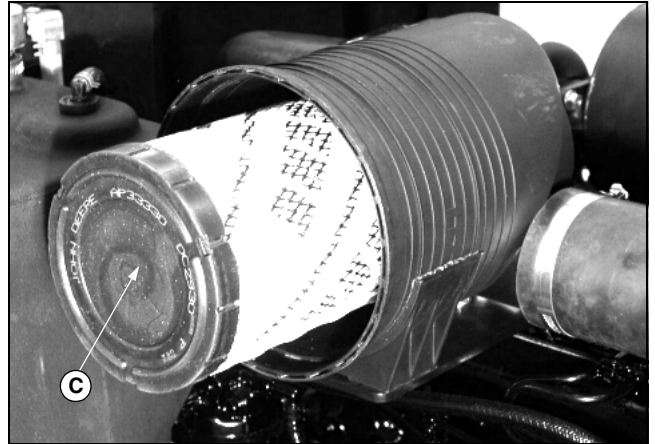
Primary Air Filter Element

1. Park machine safely. (See Parking Safely in the Safety section.)
2. Allow engine to cool.
3. Raise engine cover.



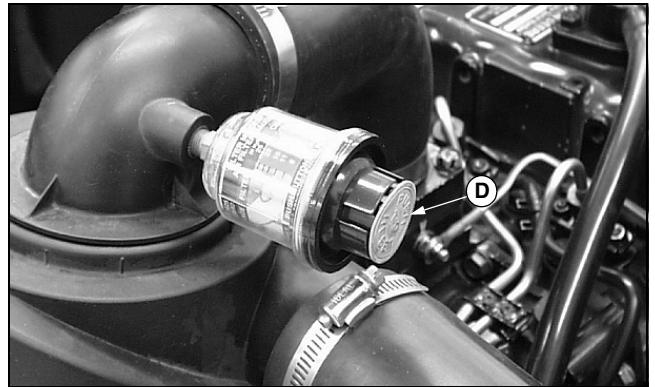
MX13897

4. Release the three latches (A) (one not shown) and remove air cleaner canister cover (B).



MX13898

5. Remove and discard primary element (C). Replace with a new primary filter element.
6. Install air cleaner canister cover.



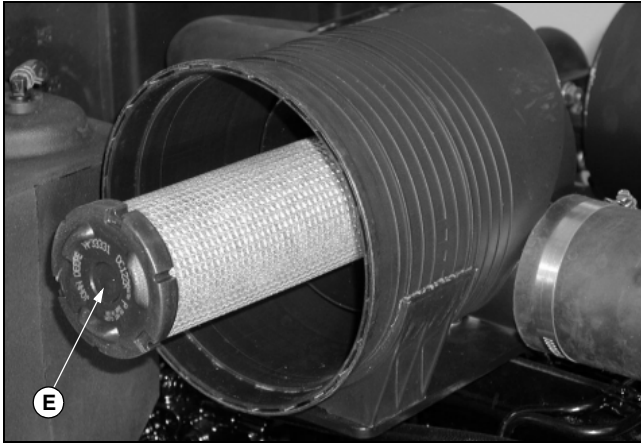
MX3211

7. Push reset button (D) on the air restriction indicator.
8. Start engine. Allow engine to run approximately one minute at maximum throttle speed. Return to idle speed and run for another minute.
9. Stop engine.
10. Check air restriction indicator.
 - If yellow plunger inside the indicator is visible inside the red zone, replace secondary air filter element.

Secondary Air Filter Element

1. Remove air cleaner canister cover.
2. Remove primary air filter element.

SERVICE ENGINE



MX13899

3. Remove and discard secondary air filter element (E). Replace with a new secondary air filter element.
4. Install primary air filter element.
5. Install air cleaner canister cover.
6. Lower engine cover.

Cleaning Rubber Dust Unloading Valve

IMPORTANT: Avoid damage! Never operate the engine without air cleaner elements and rubber dust unloading valve installed.

1. Park machine safely. (See Parking Safely in the Safety section.)
2. Allow engine to cool.
3. Raise engine cover.

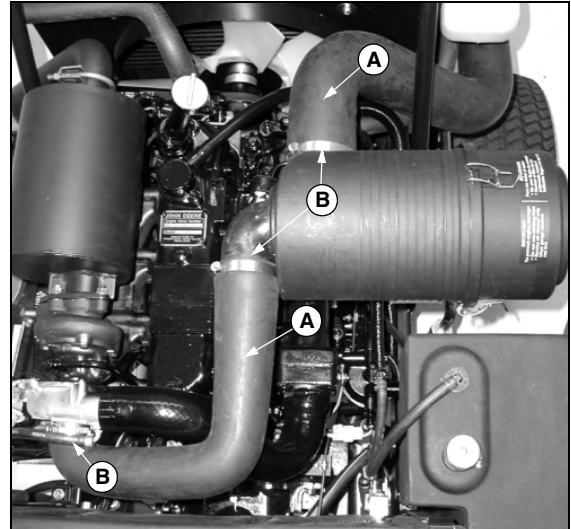


MX13897

4. Remove dust unloading valve (A) and clean. Replace if damaged.
5. Install dust unloading valve.
6. Lower engine cover.

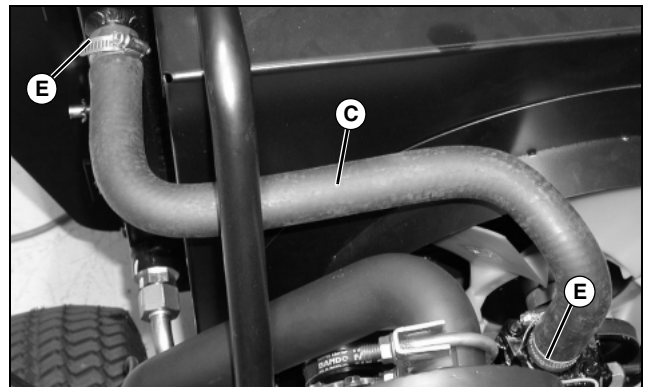
Checking Radiator Hoses, Air Intake Hoses and Clamps

1. Park machine safely. (See Parking Safely in the Safety section.)
2. Allow engine to cool.
3. Raise engine cover.



MX13909

4. Check air intake hoses (A).
 - Tighten hose clamps (B).
 - Check hoses for cracks or damage. Replace if necessary.



MX13900

5. Check upper radiator hose (C) and lower radiator hose (Not Shown).
 - Tighten hose clamps (E).
 - Check hoses for cracks or damage. Replace if necessary.
6. Lower engine cover.

SERVICE ENGINE

Recommended Engine Coolant

The following John Deere coolant is preferred:

- COOL-GARD™ PRE-DILUTED SUMMER COOLANT (TY16036).
- COOL-GARD™ CONCENTRATED SUMMER COOLANT (TY16034)

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

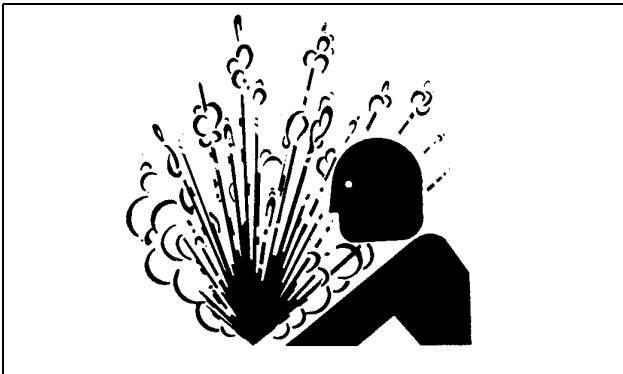
- ASTM D4985 (JDM H24A2)

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

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

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

Service Cooling System Safely



CAUTION: Avoid injury! Explosive release of fluids from pressurized cooling system can cause serious burns. Built-up pressure may cause explosive release of coolant when the radiator cap is removed:

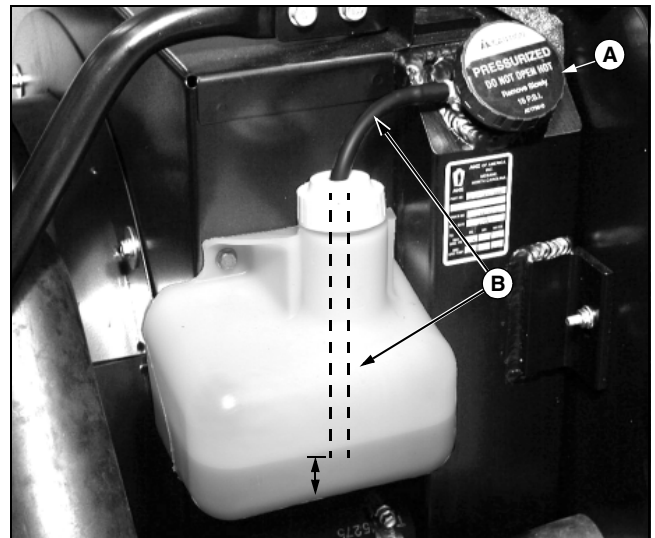
- Shut off engine and allow to cool.
- Do not remove the cap unless the radiator and the engine are cool enough to touch with bare hands. Slowly loosen cap to first stop to relieve pressure before removing completely.

Checking Coolant Level

IMPORTANT: Avoid damage! Using incorrect coolant mixture can cause engine damage.

- Do not operate engine without coolant.
- Do not pour coolant into the radiator when the engine is hot.
- Use antifreeze approved for use in aluminum engines.
- To prevent engine overheating, DO NOT exceed more than 50 percent antifreeze in cooling system.

1. Park machine safely. (See Parking Safely in the Safety section.)
2. Allow engine to cool. Raise engine cover.



MX13902

3. Remove radiator cap (A) and check coolant level is up to filler neck.
4. If coolant is low, add specified ratio of antifreeze and water.
5. Install radiator cap.

NOTE: Coolant recovery tank is used to catch overflow from radiator, and will be about half full during full power operation. Coolant will flow back into radiator as system cools.

6. Check coolant recovery tank. Make sure the overflow hose (B) is not touching the bottom of the recovery tank.
7. Coolant recovery tank should be half full at engine operating temperature.
8. If necessary, clean debris from the engine cover screen, oil cooler coils and radiator cooling fins.
9. Check condition of hoses and clamps. Check for leaks or loose connections.

SERVICE ENGINE

Servicing the Cooling System

Draining Cooling System



CAUTION: Avoid injury! DO NOT remove the radiator cap unless the engine is cool. Slowly loosen cap to the first stop. Release all pressure before removing cap. When the engine is hot, the explosive release of fluids from the pressurized cooling system could cause serious burns.

Antifreeze is hazardous to the environment. Dispose of antifreeze in a proper container.

IMPORTANT: Avoid damage!

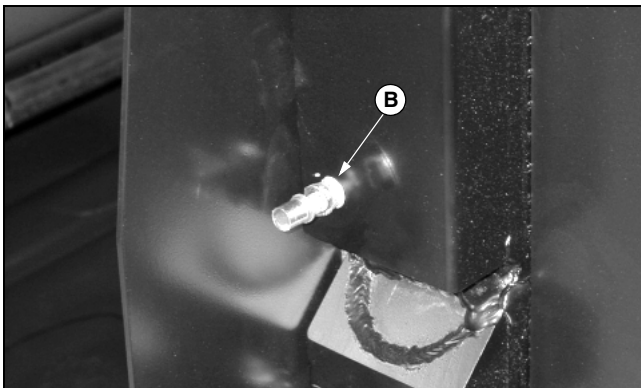
- **DO NOT operate engine without coolant.**
- **DO NOT pour coolant into the radiator when the engine is hot.**

1. Park machine safely. (See Parking Safely in the Safety section.)
2. Allow engine to cool.
3. Raise engine cover.



MX13901

4. Slowly open radiator cap (A) to the first stop to release all pressure.



MX13902

5. Open petcock (B) located on the right side of the radiator. Drain coolant into a pan.

6. Close petcock after all coolant has drained from the radiator.
7. Flush the cooling system.

Flushing Cooling System

IMPORTANT: Avoid damage!

- **DO NOT flush the cooling system when the engine is hot.**
- **DO NOT operate engine without coolant.**

1. Drain cooling system and add John Deere Cooling System Cleaner, or John Deere Cooling System Quick Flush or equivalent. Fill system with clean water. Follow directions on can.
2. Install and tighten radiator cap.
3. Start and run engine until it reaches operating temperature.
4. Stop engine.
5. Open radiator petcock.
 - Drain cooling system immediately before rust and dirt settle.
6. Close radiator petcock.
7. Fill cooling system with clean water and repeat flushing until system is clean.
8. Drain system and fill with coolant.

Filling Cooling System

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

- **DO NOT use straight antifreeze or more than 50% antifreeze in the cooling system.**
- **DO NOT mix or add any other type additives to the cooling system.**

1. With engine and cooling system cool, open radiator cap to the first stop to release all pressure. Press down on cap slightly and turn counterclockwise to remove.

NOTE: Cooling system capacity is 7.5 L (8 qt).

2. Fill cooling system.
 - Certain geographical areas may require lower temperature protection. See the label on your antifreeze container or consult your John Deere dealer to obtain the latest information and recommendations.
 - John Deere Cooling System Sealer or its equivalent may be added to the radiator to seal leaks. DO NOT use any other additives in the cooling system.
3. Start engine and watch coolant level in radiator. Add

SERVICE ENGINE

coolant if necessary to bring coolant level up to filler neck.

4. Install and tighten radiator cap. Run engine until at operating temperature.
5. Stop engine and allow to cool down.
6. Add coolant if necessary.
7. Check condition of hoses and clamps. Check for leaks or loose connections.

Servicing Fuel Filter Sediment Bowl



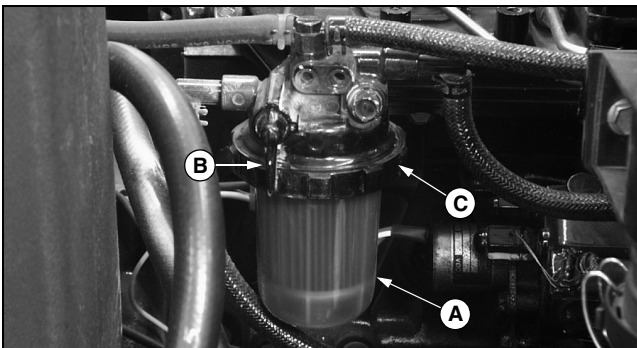
CAUTION: Avoid injury! Avoid possible death from fumes, fire or explosion when working on fuel-related parts:

- Do not smoke.
- Keep away from flames or sparks.
- Shut off engine.
- Cool engine before servicing.
- Work in a well ventilated area.
- Clean up spilled fuel immediately.
- Drain fuel into an approved non-metallic container.

NOTE: Change filter when fuel level is low.

Checking

1. Park machine safely. (See Parking Safely in the Safety section.)
2. Allow engine to cool.
3. Raise engine cover.
4. Locate the fuel filter sediment bowl on the LEFT side of the engine.



MX3205

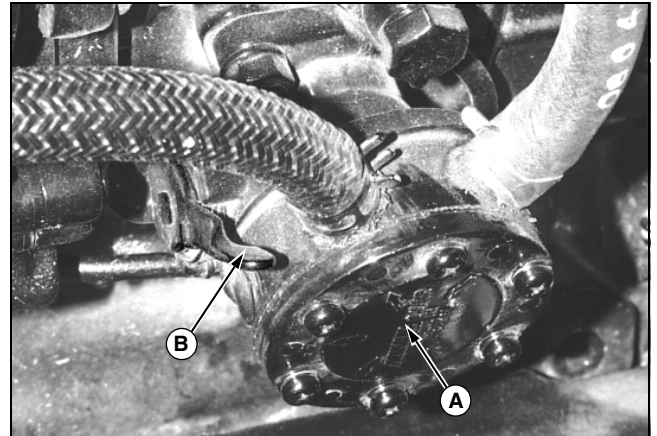
5. Look for water and deposits in the sediment bowl (A).

Cleaning and Replacing

1. Close fuel shut-off valve (B) by turning to the horizontal position.
2. Turn collar (C) to remove bowl and filter. Discard filter.
3. Clean bowl and install new filter.
4. Install bowl and collar. Tighten collar hand tight.
5. Open fuel shut-off valve by turning lever to vertical position (shown).
6. Prime fuel system using primer lever on fuel pump.
7. Start engine and check for leaks.

Priming Fuel System

NOTE: It may be necessary to prime the fuel system after running out of fuel or changing the fuel filter.



MX0493

1. Locate the fuel pump (A) on left rear side of engine behind air cleaner housing.
2. Pump priming lever (B) on fuel pump until fuel fills up glass bowl of fuel filter.
3. Start engine. If engine will not start, repeat priming system.

Checking and Adjusting Alternator Belt



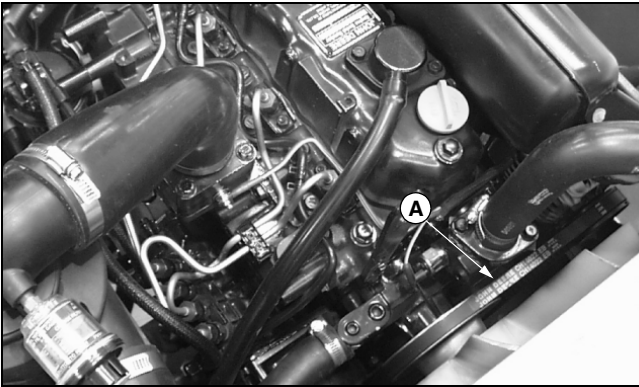
CAUTION: Avoid injury! Fingers or loose clothing can get caught in rotating parts. Stop engine and wait for all moving parts to stop.

Check Belt Tension

1. Park machine safely. (See Parking Safely in the Safety section.)
2. Allow engine to cool.

SERVICE ENGINE

3. Raise engine cover.

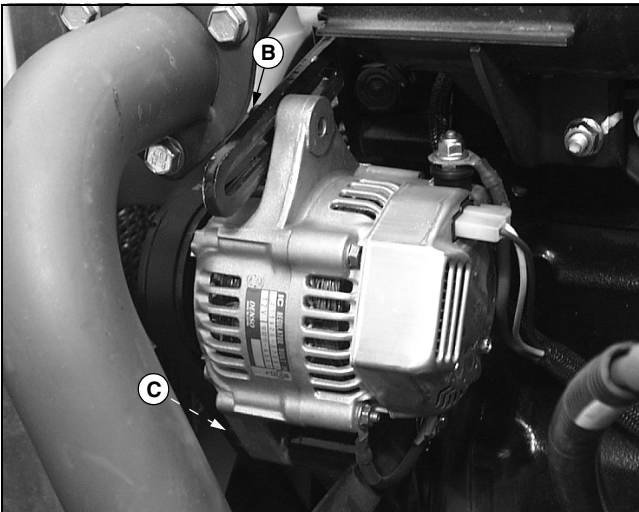


MX3206

4. Check alternator belt (A).

- Inspect belt for excessive wear, damage or stretching while in position on the fan, alternator and flywheel sheaves.
- Apply thumb pressure to the belt approximately halfway between the sheaves. Belt should deflect inward approximately 10-15 mm (3/8 - 1/2 in.).

Adjusting Belt Tension



MX3225

Picture Note: Alternator located on RIGHT side of engine.

1. Loosen adjustment bolt (B).
2. Loosen alternator mounting bolt (C).
3. Apply outward pressure to the alternator housing.
4. Tighten adjustment bolt (B) and mounting bolt (C).
5. Check belt tension:
 - Apply thumb pressure to the belt approximately halfway between the sheaves. Belt should deflect inward approximately 9.5 mm (3/8 in.).

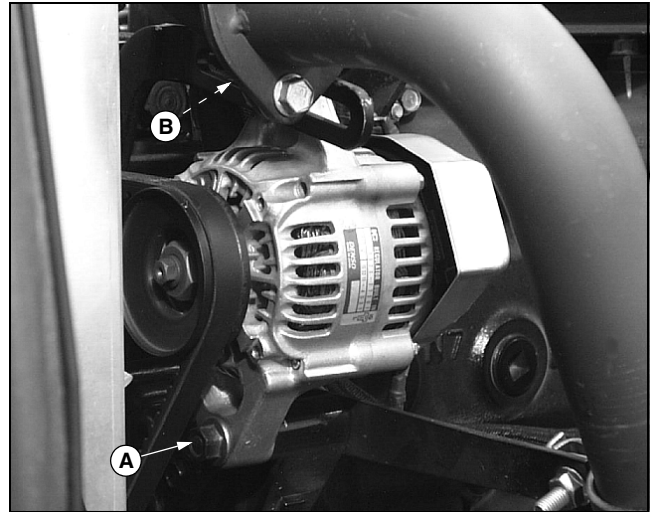
6. Lower engine cover.

Replacing Alternator Belt



CAUTION: Avoid injury! Entanglement in a belt, pulley or contact with a rotating fan blade can occur when performing this service procedure. Stop engine and wait for all moving parts to stop.

1. Park machine safely. (See Parking Safely in the Safety section.)
2. Allow engine to cool.
3. Raise engine cover.



MX3226

Picture Note: Alternator located on RIGHT side of engine.

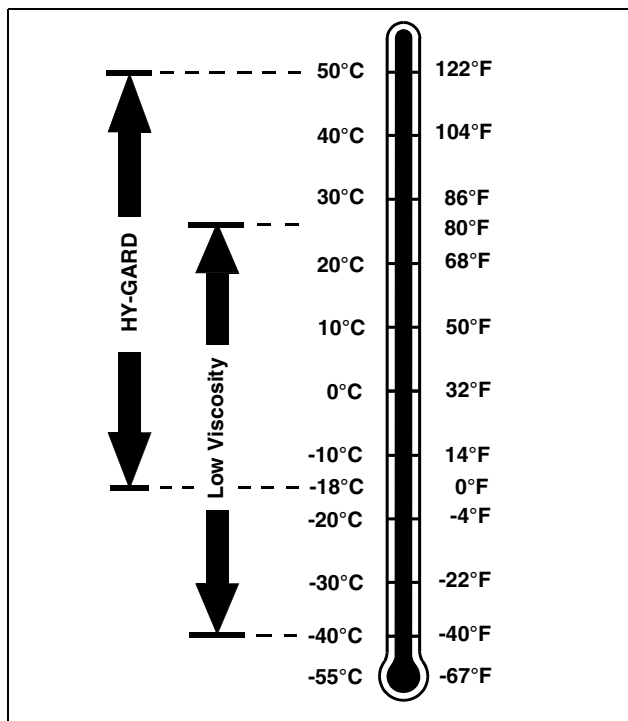
4. Loosen alternator mounting bolt (A).
5. Loosen and remove adjustment bolt (B).
6. Apply inward pressure to the alternator housing.
7. Remove worn belt from the alternator sheave and both engine sheaves.

NOTE: It may be necessary to loosen nuts holding radiator fan shroud to radiator, and to raise or lower shroud until enough clearance can be gained to pull belt between fan blades and shroud.

8. Install new belt over fan blades and engine sheaves, and over alternator pulley.

SERVICE TRANSMISSION

Transmission and Hydraulic Oil



MIF

NOTE: Tractor is filled with John Deere HY-GARD® (J20C) transmission oil at the factory. **DO NOT mix oils.**

Use only HY-GARD® (J20C) transmission oil.

Do not use type "F" automatic transmission fluid.

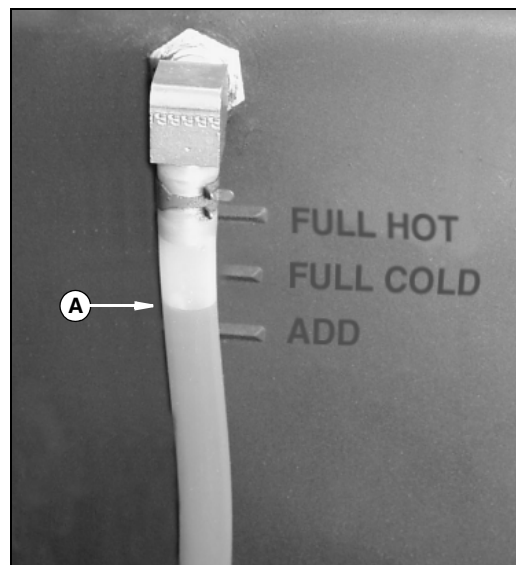
John Deere HY-GARD® (J20C) transmission oil is specially formulated to provide maximum protection against mechanical wear, corrosion, and foaming.

IMPORTANT: Avoid damage! If operating temperatures are below -18°C (0°F), you must use Low Viscosity HY-GARD® (J20D) or transmission damage will occur.

Checking the Hydraulic Oil Level

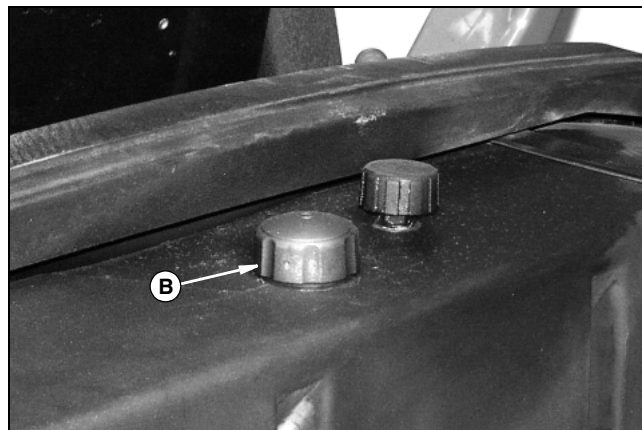
Check the oil level before you start the engine.

1. Open the engine cover.



MX0468

2. Check the oil level in the sight tube (A) located on the rear of the hydraulic oil reservoir. Oil level should be between the FULL COLD and ADD marks on the tube when machine is cold.



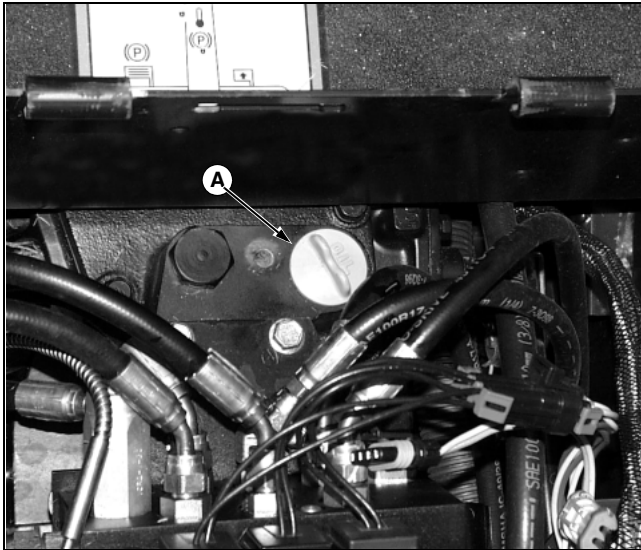
MX0469

3. If oil level is below add mark, remove reservoir cap (B) and add oil until oil level is up to full mark on sight tube.
4. Install reservoir cap and close engine cover.

SERVICE TRANSMISSION

Checking the Transmission Oil Level

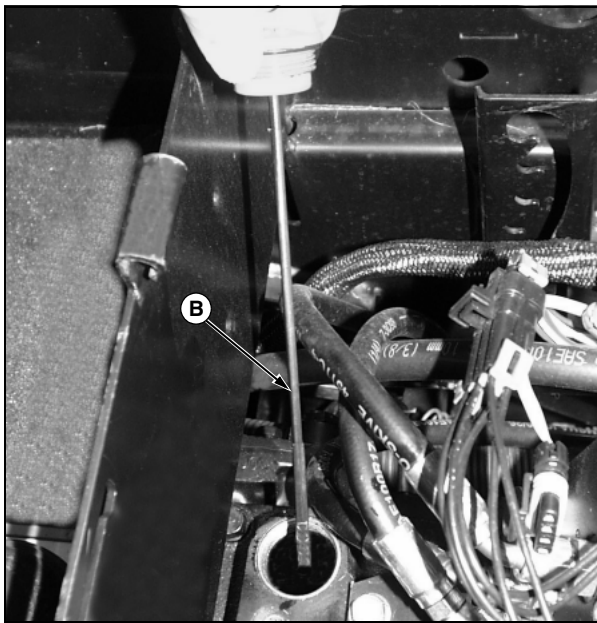
NOTE: The hydrostatic transmission oil is separate from the hydraulic system oil and has an oil filler cap/dipstick located under the operator's seat platform.



MX0476

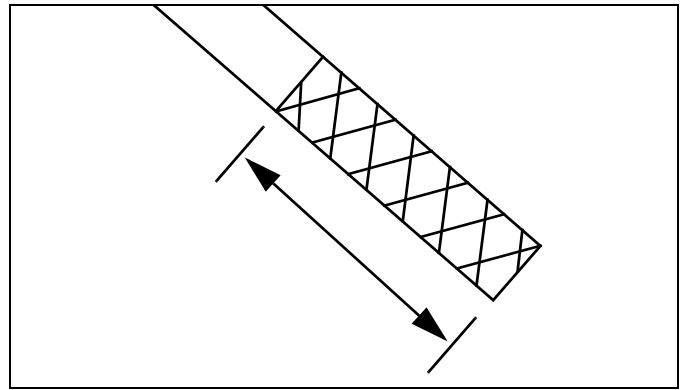
Picture Note: Seat platform removed for photo.

1. Lift operator's seat platform and locate the yellow oil filler cap (A) on top of transmission.



MX0477

2. Unscrew the oil filler cap and wipe the dipstick (B) off with a clean shop towel.
3. Insert the dipstick until the cap contacts the transmission housing and remove again.



MIF

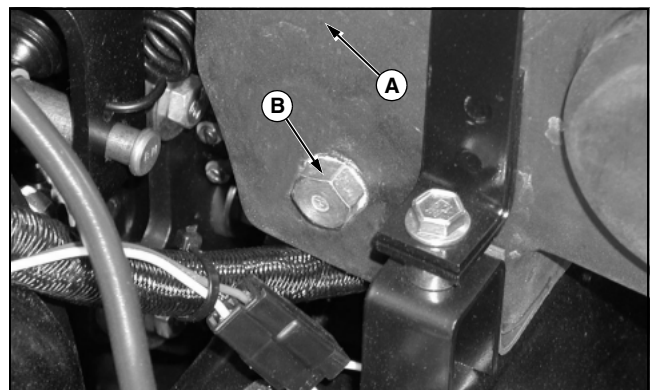
4. Oil level should be in XXX range on dipstick. Add oil to transmission if level does not show on dipstick.
5. Install dipstick and lower seat platform. If oil was added, check oil level after driving machine.

Changing the Hydraulic Oil and Filter



CAUTION: Avoid injury! Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by stopping engine and lowering decks to ground before beginning service. Tighten all components before starting engine. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

1. Park safely. Wait until the engine and the transmission are cool before beginning service.



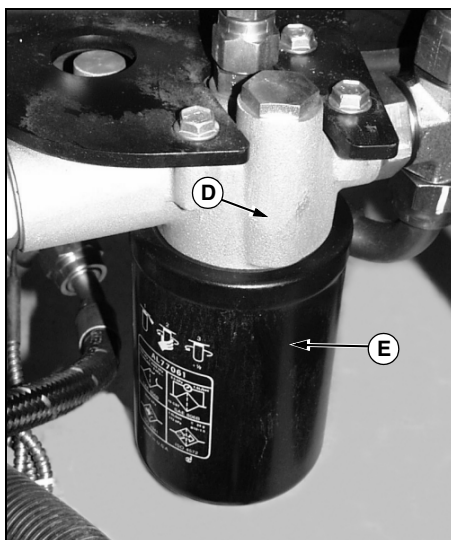
MX13903

A - Hydraulic Reservoir

B - Right Side Reservoir Drain

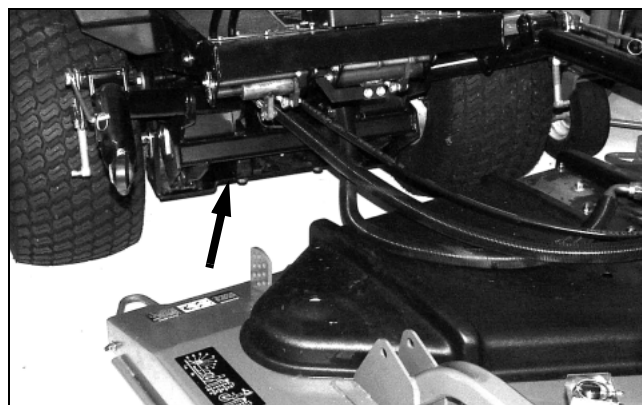
2. Drain the hydraulic reservoir using a siphon pump and the two drain plugs on left and right side rear corners of reservoir. (Right side drain plug shown, left side similar).
3. Install drain plugs.

SERVICE TRANSMISSION



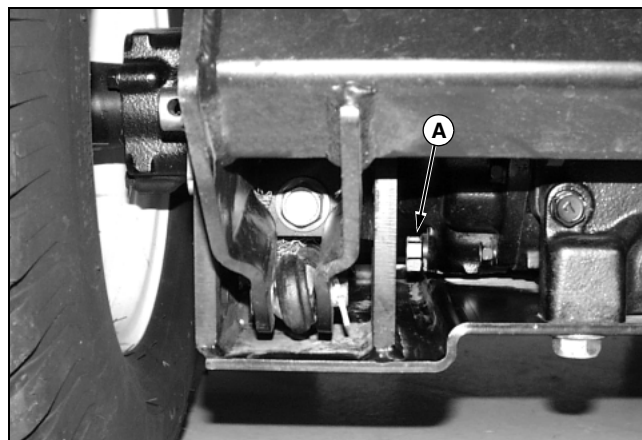
MX0472

4. Clean debris from around hydraulic oil filter base (D) on left side of machine.
5. Use a filter wrench to turn the filter (E) counter clockwise. Remove the filter and drain the remaining hydraulic oil.
6. Clean the filter base and put a film of clean transmission oil on the seal of the new filter.
7. Install the hydraulic oil filter. Turn it clockwise until it contacts the mounting surface, then 1/2 turn more.
8. Fill the hydraulic reservoir until up to FULL COLD mark on sight tube.
9. Run the engine a short time while checking for leaks. Stop the engine.
10. Check that the hydraulic oil level has remained up to the FULL COLD mark on the sight tube. Add oil if necessary.



MX0470

3. Remove the front deck from the lift arms, and move deck to the left to gain access to the right front side of the transmission.



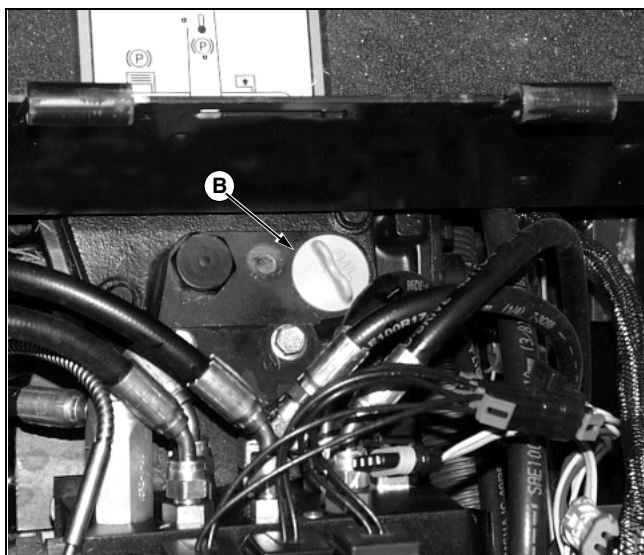
MX0471

4. Remove drain plug (A) and allow transmission to drain. Replace plug.
5. Install front mower deck.

Changing the Transmission Oil

1. Park machine safely. (See Parking Machine Safely in Safety section).
2. Lower all mower decks to ground.

SERVICE TRANSMISSION



MX0476

Picture Note: Seat platform removed for photo.

6. Raise and lock seat platform.
7. Unscrew oil filler cap and dipstick (B).
8. Fill transmission with hydraulic oil until level is up to top of XXX marks on dipstick. Transmission capacity is 13.3 L (3.5 gal) when dry, but may take less when performing oil change. Do not overfill.
9. Run machine, cycling hydrostatic pedals to purge air from transmission. Recheck transmission oil level.

Adjusting Transmission Neutral



CAUTION: Avoid injury! Do not attempt this adjustment unless you are a qualified and properly trained technician.

Adjust transmission neutral to assure that machine does not creep forward or rearward when pedals are in the neutral position.

1. Park machine on a firm, level surface. Place controls in following position:

- Park brake unlocked.
- Side decks raised and transport locks engaged.
- Engine off.
- PTO disengaged.
- Differential lock disengaged.
- Four wheel drive disengaged.
- Range shift lever not in neutral.

2. Jack up front of machine. Place hardwood blocks under

front sub frame so front tires are off of ground.

3. Jack up rear of machine. Place jack stands under rear axle so rear tires are off of ground.

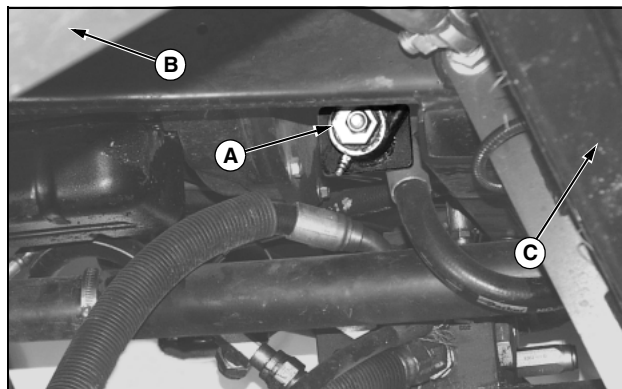


CAUTION: Avoid injury! DO NOT raise or lower decks, engage four wheel drive or differential lock, or turn PTO switch on during adjustment. Keep people clear of machine while running.

Always jack all four wheels off of ground. Four wheel drive is always engaged and will push machine off jack stands if any tires get traction.

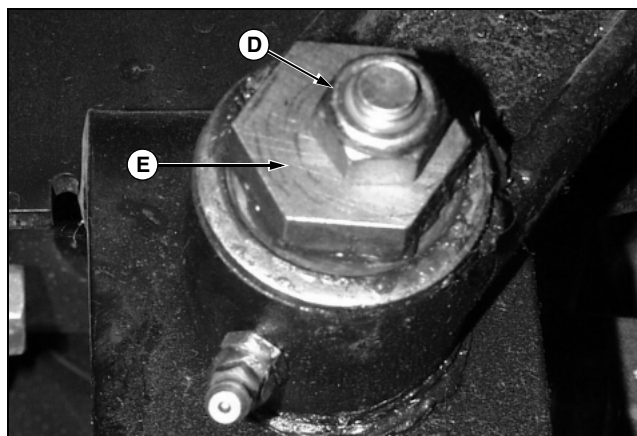
Stay away from tires while making adjustments.

4. Sit in operator's seat and start engine.
5. Watch front tires for forward or rearward rotation.
6. Cycle forward and reverse hydrostatic pedals and allow to return to centered, neutral position. Check again for tire rotation while in neutral, indicating a neutral adjustment is necessary.



MX0474

7. Locate neutral adjuster cam (A) on right side of machine, under right mower deck (B), behind deck subframe (C).



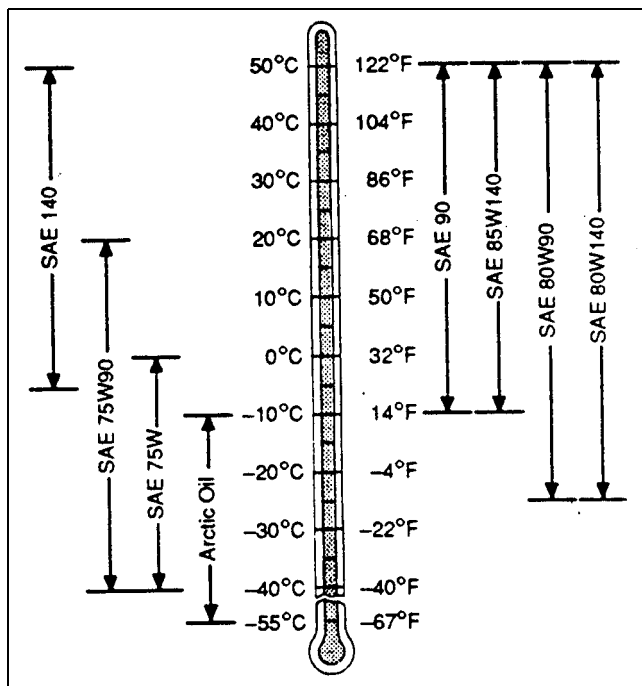
MX0478

8. Loosen lock nut (D).

SERVICE TRANSMISSION

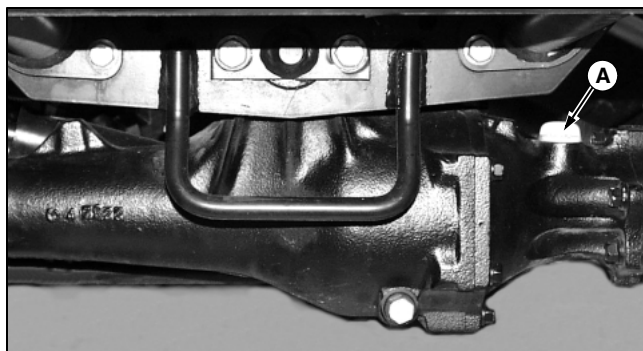
9. Rotate cam (E) until front drive wheels do not spin.
10. Tighten lock nut. Cycle hydrostatic drive pedals and allow to return to neutral. Readjust cam if necessary.

Mechanical Four Wheel Drive (MFWD) Oil



- John Deere GL-5 Gear Lubricant is recommended.
- Other oils may be used provided they meet the following specifications:
 - API Class GL-5.

Checking the Mechanical Four Wheel Drive (MFWD) Oil Level



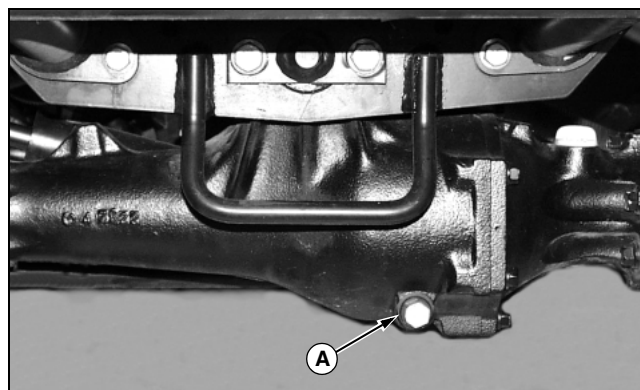
MX0491

1. Locate filler cap (A) on right rear side of rear axle.
2. Unscrew filler cap and wipe dipstick clean.

3. Install filler cap back into axle housing but do not turn threads back in.
4. Remove dipstick and check oil level on it. Oil should be in XXX area on dipstick but not above top mark.
5. Add oil if needed. Do not overfill.

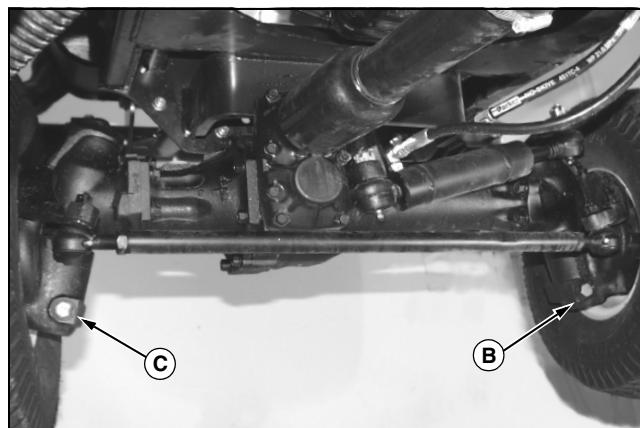
Changing the Mechanical Four Wheel Drive (MFWD) Oil Level

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



MX0491

2. Place drain pan under center of rear axle housing and remove center drain plug (A).
3. Install center drain plug.



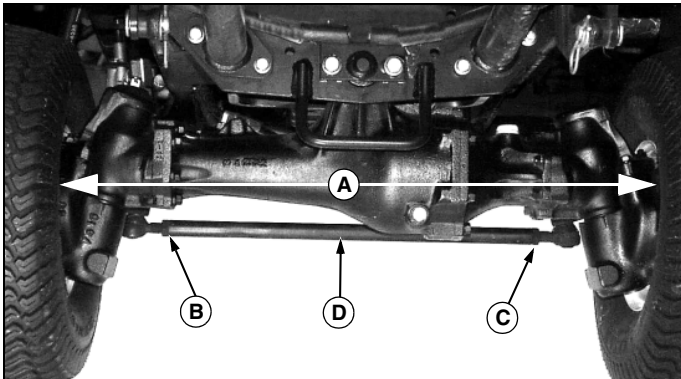
MX3746

4. Remove left side final drive housing drain plug (B), and allow to drain.
5. Install drain plug.
6. Repeat for right side housing (C).
7. Fill rear axle housing with 4.7 L (5 qt) of oil. Do not overfill.

SERVICE STEERING & BRAKES

Adjusting Toe-In

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



MX0479

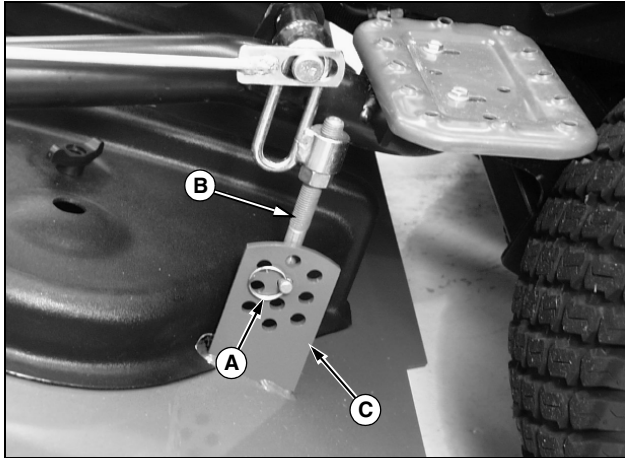
2. Measure the distance between rear tires at rear of tires (A).
3. Measure the distance between rear tires at front of tires.
4. Distance between tires (toe-in) should be 3-4 mm (0.12-0.16 in.) less in front than in rear.
5. If toe-in requires adjustment, loosen lock nuts on left and right side tie-rod ends (B and C).
6. Turn body of tie-rod (D) to adjust toe-in.
7. Measure toe-in again. If correct, tighten lock nuts.

SERVICE MOWER DECK

Rotating the Front Mower Deck

Rotate for Service

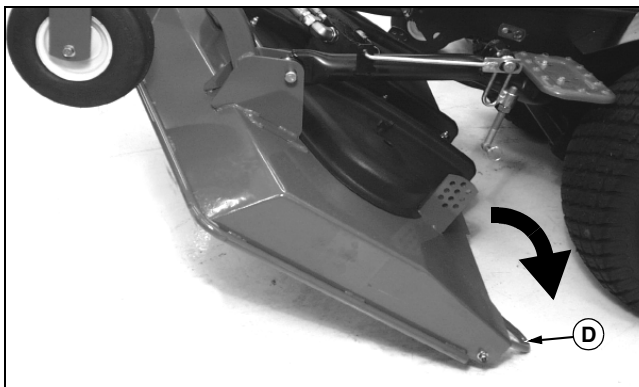
1. Stop machine on a level surface.
2. Lock park brake.
3. Raise front mower deck completely.
4. Stop engine and remove the key.



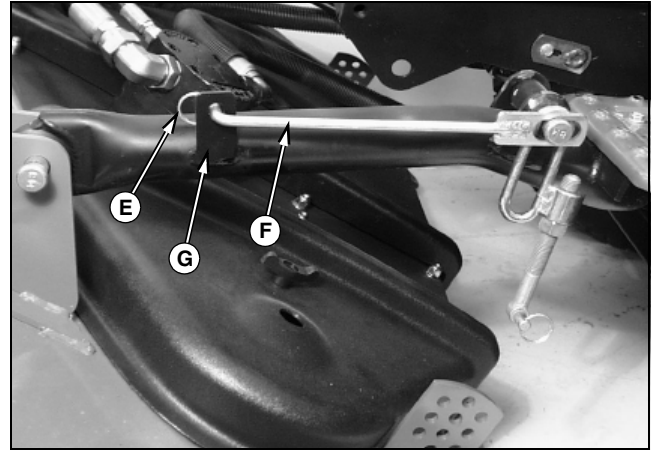
5. Remove retaining ring (A) from hanger pin (B).

NOTE: To ensure deck can be returned to its original cutting height, note hole location in the adjustment plate before removing the hanger pin.

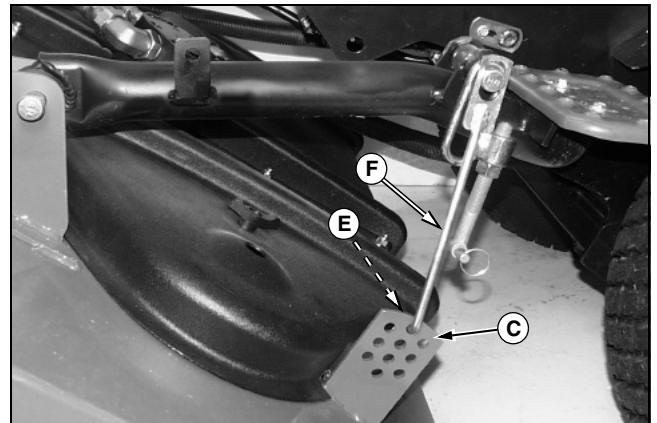
6. Remove hanger pin from hole in adjustment plate (C).
7. Install retaining ring to hanger pin for temporary storage.
8. Repeat at opposite side of mower deck.



9. Grasp deck handle (D) and rotate mower deck rearward to the ground.



10. Remove retaining ring (E) from service lockout rod (F).
11. Remove service lockout rod from mower lift arm (G).



12. Insert service lockout rod into hole in deck height adjustment bracket (C). Secure with retaining ring.
13. Repeat at opposite side of mower deck.

Rotate for Operation

1. Remove retaining ring from service lockout rod.
2. Remove service lockout rod from hole in deck height adjustment bracket.
3. Insert service lockout rod into hole in mower lift arm. Secure with retaining ring.
4. Repeat at opposite side of mower deck.
5. Remove retaining ring from hanger pin.
6. Rotate mower deck forward.
7. Insert hanger pin into original hole in adjustment plate. Secure with retaining ring.
8. Repeat at opposite side of mower deck.
9. Start engine.
10. Lower front mower deck completely.

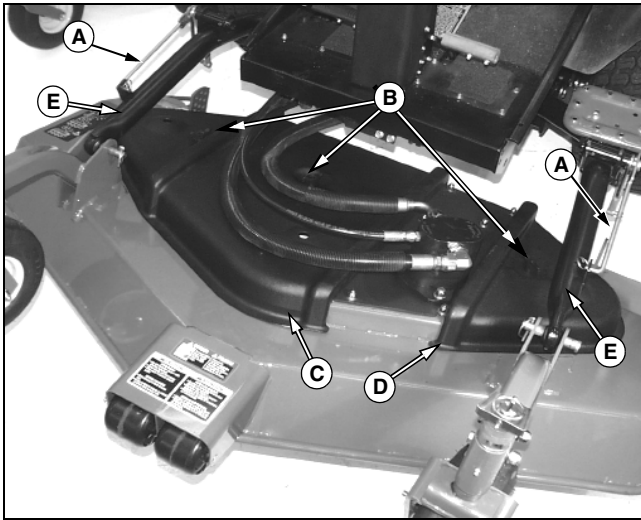
SERVICE MOWER DECK

Removing and Installing Belt Shields



CAUTION: Avoid injury! Fingers and loose clothing can get caught in rotating parts. Do not operate machine without all mower deck belt shields installed.

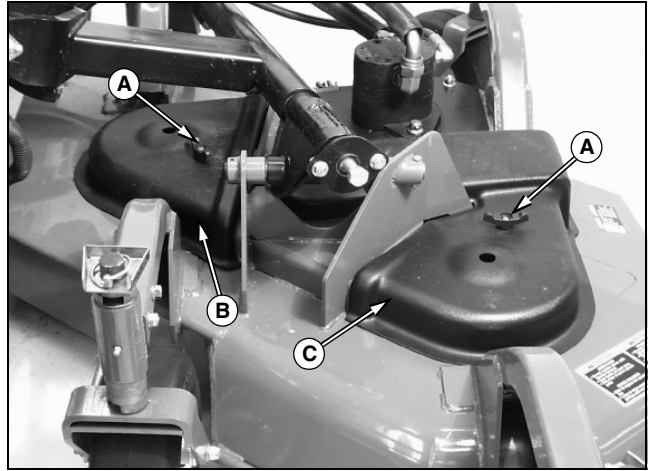
Front Deck Shields



1. Rotate front mower deck for service. Do not secure service lockout rods (A) to the adjustment plates.
2. Remove threaded knobs (B) securing belt shields (C) and (D) to mower deck.
3. Lift each belt shield up off of the attaching bolts. Slide shields out from between mower lift arms (E) and mower deck.
4. Install the threaded knobs onto the attaching bolts during servicing of the deck.
5. Installation is the reverse of removal.
6. Rotate mower deck for operation.

Side Deck Shields

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

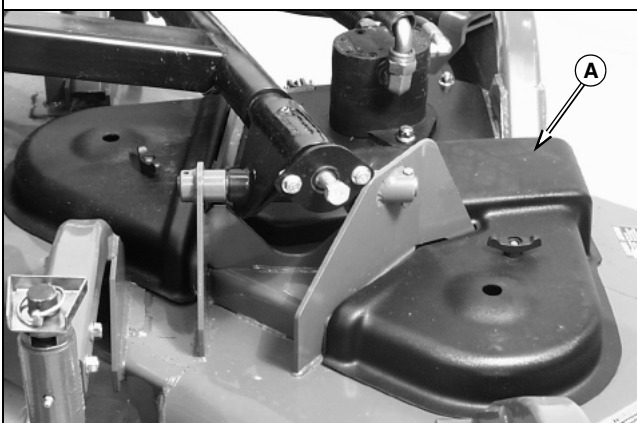
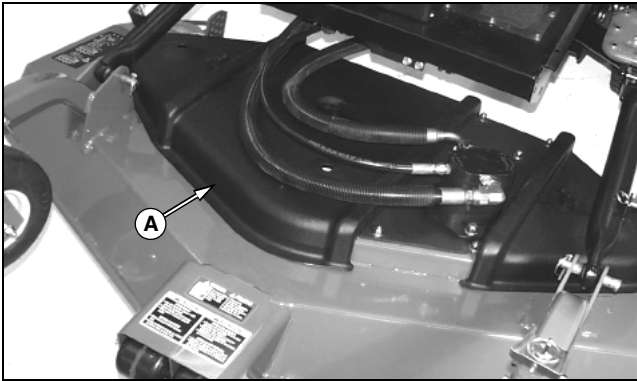


MX3721

2. Remove threaded knobs (A) securing belt shields (B) and (C).
3. Lift each belt shield up off of the attaching bolts.
4. Install the threaded knobs onto the attaching bolts during servicing of the deck.
5. Installation is the reverse of removal.

SERVICE MOWER DECK

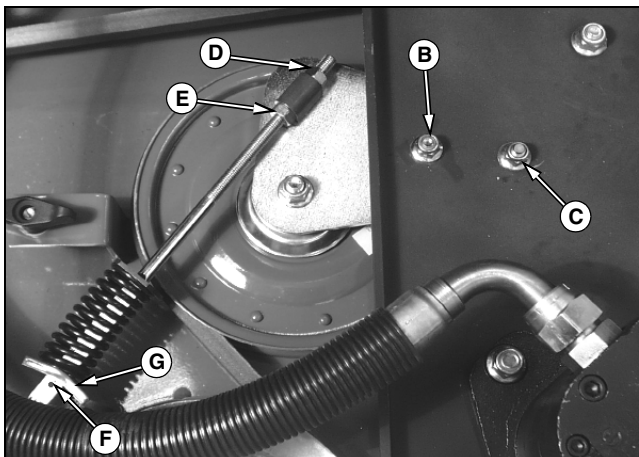
Adjusting Mower Deck Drive Belt Tension



MX3720A, MX3721A

Picture Note: Front deck shown upper, side deck shown lower.

1. Remove belt shield (A) from mower deck.
2. Lower mower deck.



MX3725

Picture Note: Front deck shown, side deck similar.

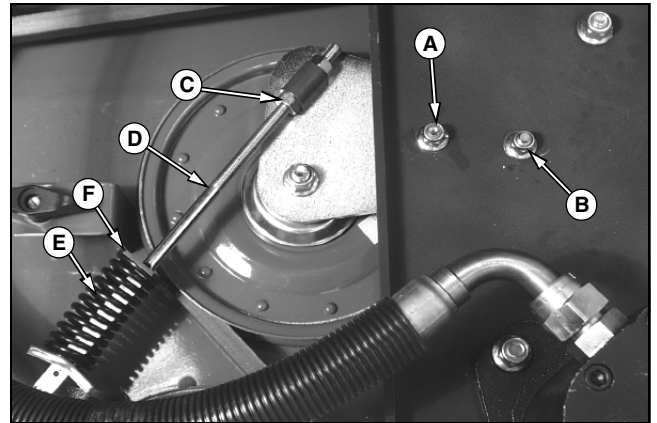
3. Loosen nuts (B) and (C).
4. Loosen lock nut (D) several turns.
5. Tighten nut (E) until tension indicator hole (F) becomes visible on the outside of retaining plate (G) as shown.

6. Tighten lock nut (D).
7. Tighten nuts (B) and (C) to 60 N•m (81 lb-ft).

Removing and Installing Front Mower Deck Drive Belt

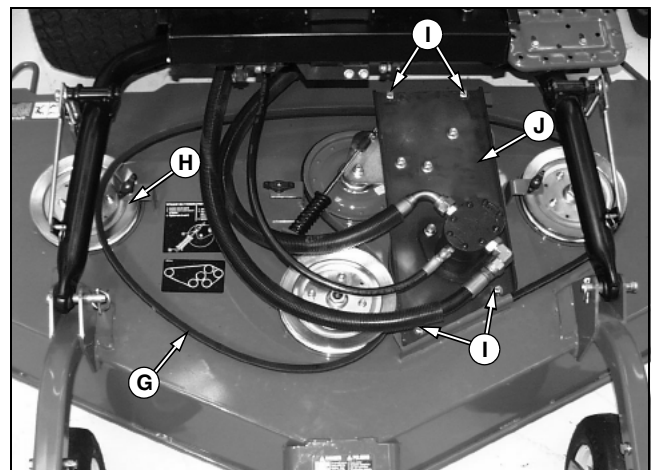
Front Belt Removal

1. Remove belt shields from mower deck.
2. Lower mower deck completely.



MX3725

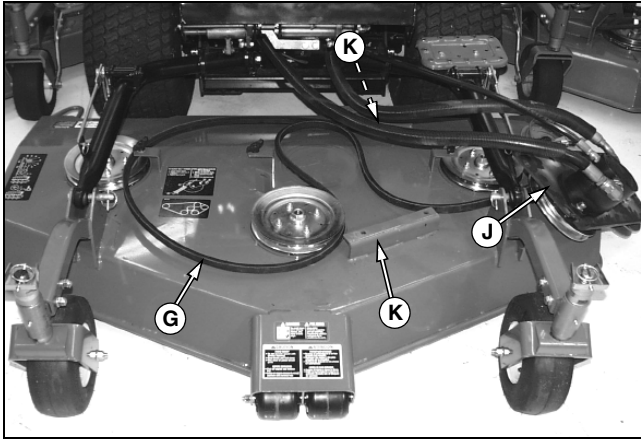
3. Loosen nuts (A) and (B).
4. Loosen nut (C) until all spring tension is removed.
5. Remove tension rod (D), spring (E), and spring retainer (F).



MX3726

6. Remove drive belt (G) from sheave (H).
7. Remove bolts (I) from motor plate (J).

SERVICE MOWER DECK

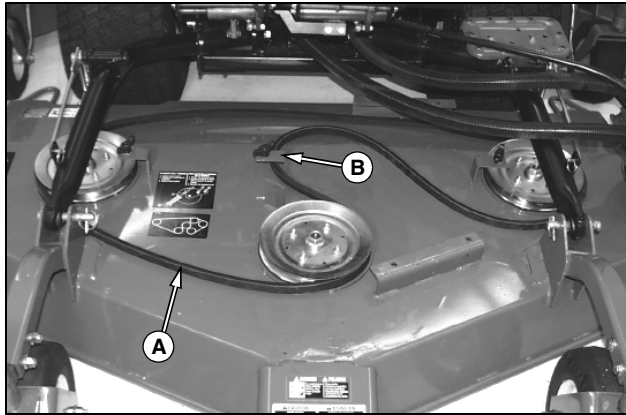


MX3727

8. Slide motor plate (J) rearward so sheaves on bottom side clear motor plate mounting brackets (K).
9. Lift motor plate off mounting brackets and set it aside.
10. Remove drive belt (G) from deck.

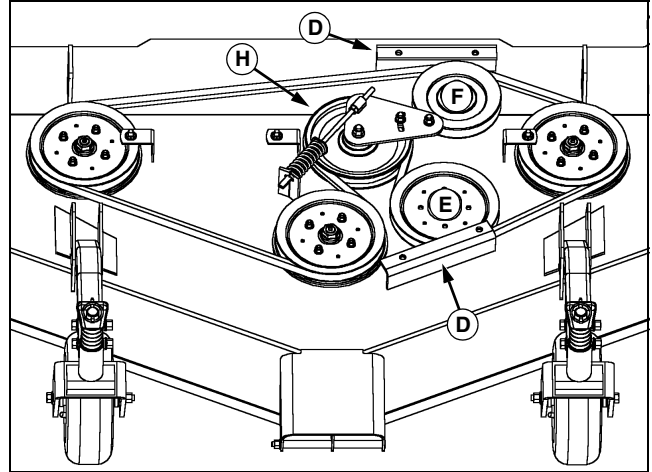
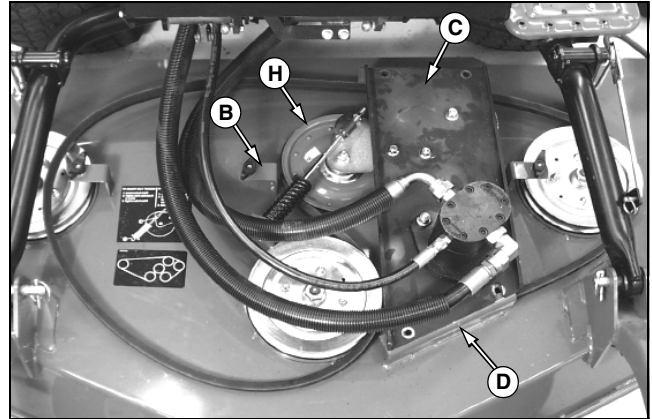
Front Belt Installation

NOTE: Belt routing diagram is affixed to mower deck.



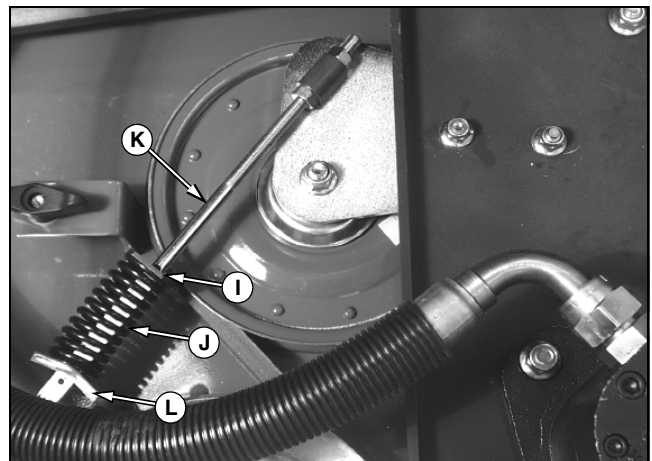
MX3728

1. Route drive belt (A) around mower deck sheaves as shown. Place belt to the outside of belt shield support bracket (B) to temporarily hold the belt in position.



MX3724, MX3730

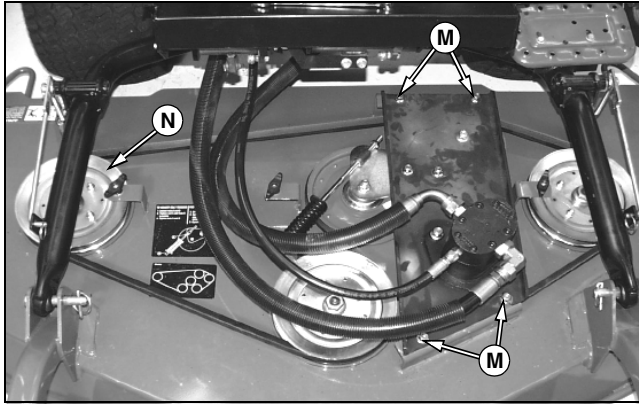
2. Position motor plate (C) onto motor plate mounting brackets (D) so drive belt is routed properly around sheaves (E) and (F).
3. Move the drive belt from outside belt shield support bracket (B), and position it around tension sheave (H).



MX3725

4. Make sure spring retainer (I) and spring (J) are installed on tension rod (K). Insert tension rod into retaining plate (L) on mower deck.

SERVICE MOWER DECK



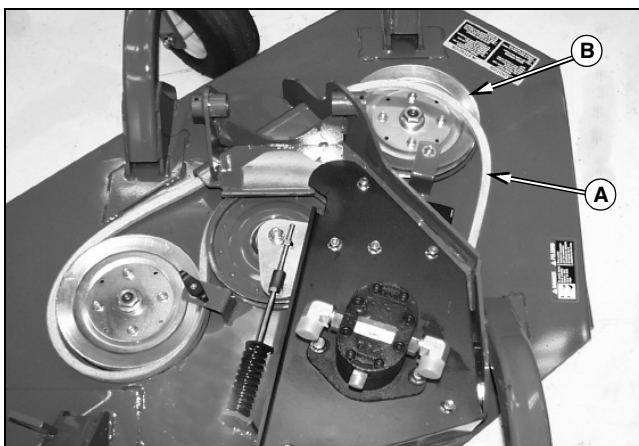
MX3731

5. Install bolts (M) to secure motor plate. Do not tighten completely.
6. Install drive belt onto sheave (N).
7. Tighten bolts (M) to 81 N•m (60 lb-ft).
8. Adjust drive belt to proper tension.
9. Move the drive belt by hand to turn the sheaves. Make sure belt motion is smooth and sheaves do not rub on deck surfaces.

Removing and Installing Side Mower Deck Drive Belt

Side Belt Removal

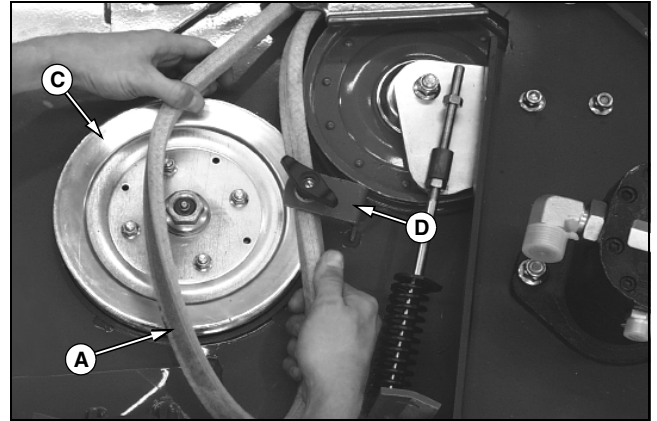
1. Lower mower deck completely.
2. Remove belt shields from mower deck.
3. Release the drive belt tension completely.



MX3732

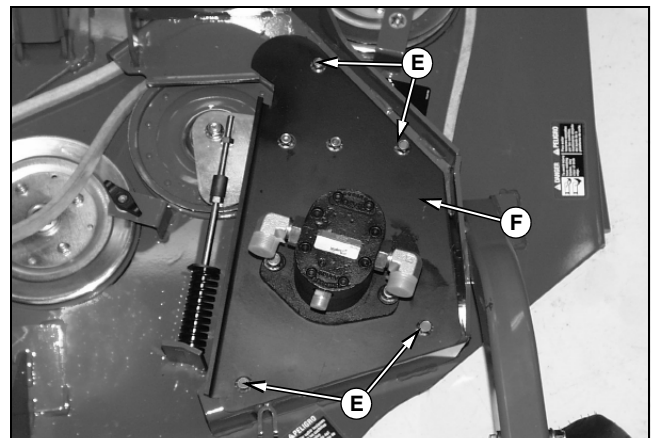
Picture Note: Mower deck shown removed for clarity.

4. Remove drive belt (A) from sheave (B).



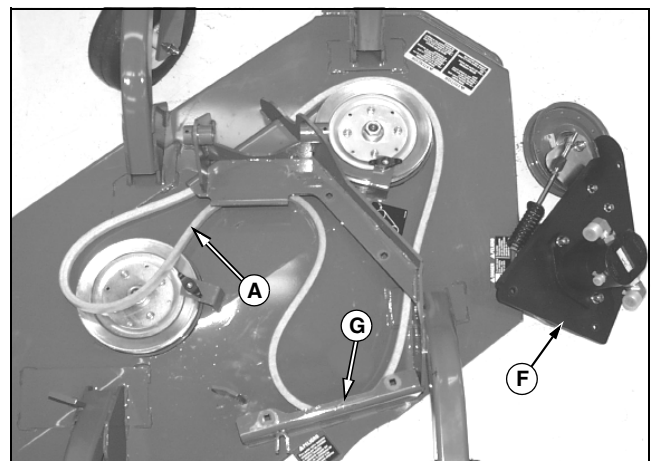
MX3733

5. Remove drive belt (A) from sheave (C) by twisting the belt and sliding it between belt shield support bracket (D) and the sheave.



MX3734

6. Remove bolts (E) from motor plate (F).



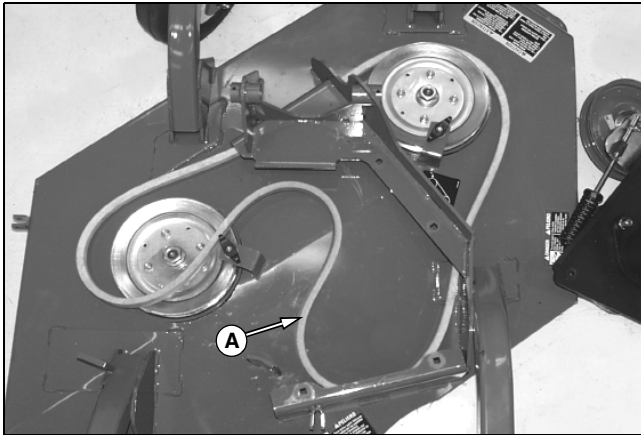
MX3735

7. Slide motor plate (F) forward so sheave on bottom side clears motor plate mounting bracket (G).
8. Lift motor plate off mounting brackets and set it aside.
9. Remove drive belt (A) from deck.

SERVICE MOWER DECK

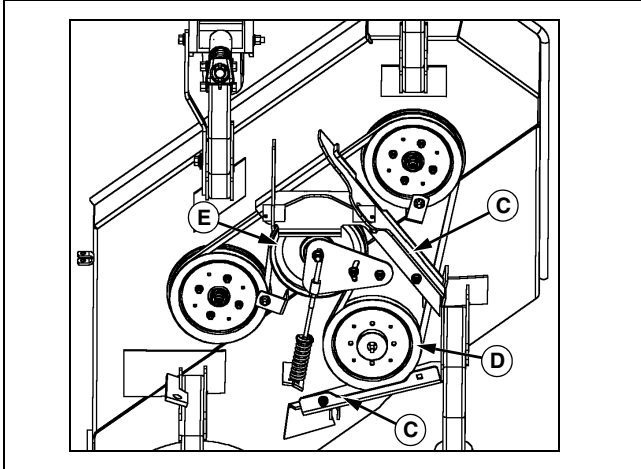
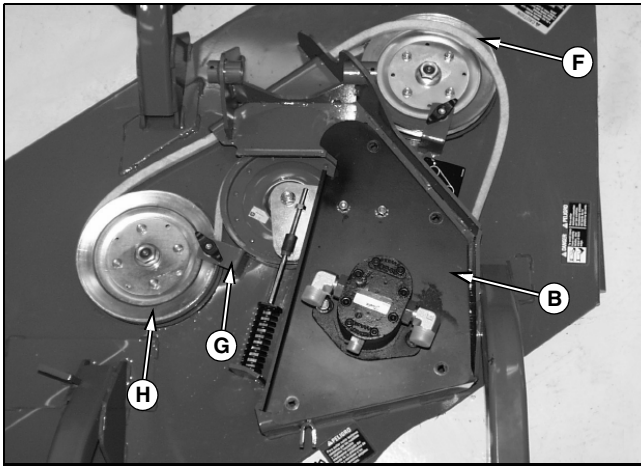
Side Belt Installation

NOTE: Belt routing diagram is affixed to mower deck.



MX3736

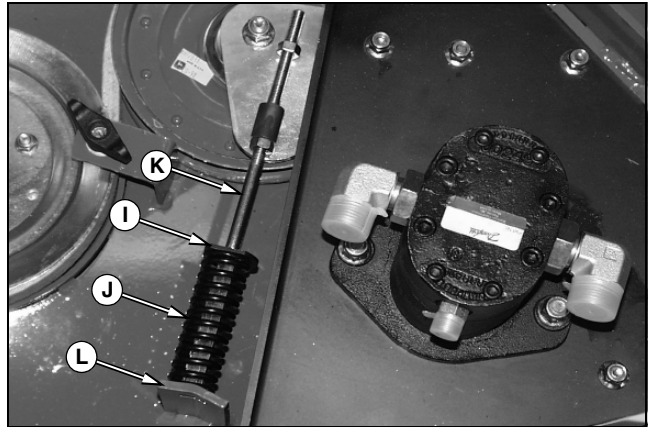
1. Route drive belt (A) as shown.



MX3737, MX3738

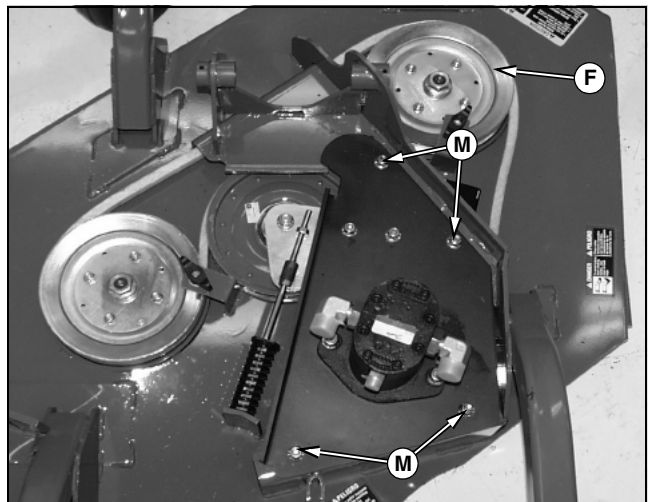
2. Position motor plate (B) onto motor plate mounting brackets (C) so drive belt is routed properly around sheaves (D) and (E).
3. Remove drive belt from sheave (F).
4. Slide drive belt between belt shield support bracket (G)

and sheave (H). Ensure proper positioning of belt in the belt grooves.



MX3739

5. Make sure spring retainer (I) and spring (J) are installed on tension rod (K). Insert tension rod into retaining plate (L) on mower deck.



MX3740

6. Install bolts (M) to secure motor plate. Do not tighten completely.
7. Install drive belt onto sheave (F).
8. Tighten bolts (M) to 81 N•m (60 lb-ft).
9. Adjust drive belt to proper tension.
10. Move the drive belt by hand to turn the sheaves. Make sure belt motion is smooth and sheaves do not rub on deck surfaces.

Removing and Installing Blades

1. Stop machine on a level surface.
2. Lock park brake.
3. Raise mower decks completely.

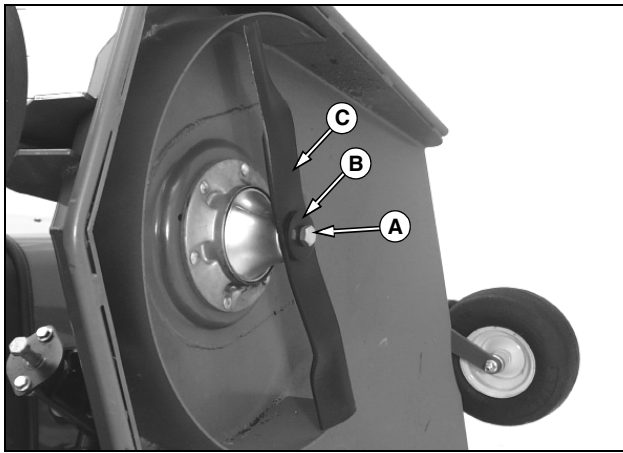
SERVICE MOWER DECK

4. Stop engine and remove the key.
5. Rotate front mower deck for service if blades on front deck will be removed.



CAUTION: Avoid injury! Mower blades may be sharp. Wear heavy gloves or wrap the blade edges with a rag to prevent injury during handling.

6. Insert wooden block between end of blade and edge of deck to prevent blade from turning while removing attaching hardware.



MX3729

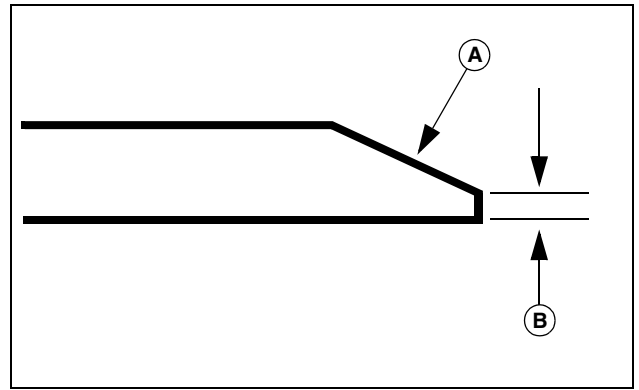
7. Remove bolt (A), washer (B), and blade (C) by turning the bolt counterclockwise until removed. Repeat for all blades requiring service.
8. Inspect the blades for damage. Replace all damaged blades.
9. Sharpen dull blades.
10. Clean blades, spindles, and hardware.
11. Balance the blades.
12. Install blade onto mower deck spindle with wings of blade facing up.
13. Install blade bolt and washer with the cupped-side of washer against the blade. Tighten blade bolt to 122 N•m (90 lb-ft). Repeat for other blades.
14. Lower mower decks completely.

Sharpening Blades



CAUTION: Avoid injury!

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



MIF

2. Keep original bevel of 30° (A) when grinding blade. Blade should have 0.40 mm (1/64 in.) cutting edge (B).
3. Balance the blade.

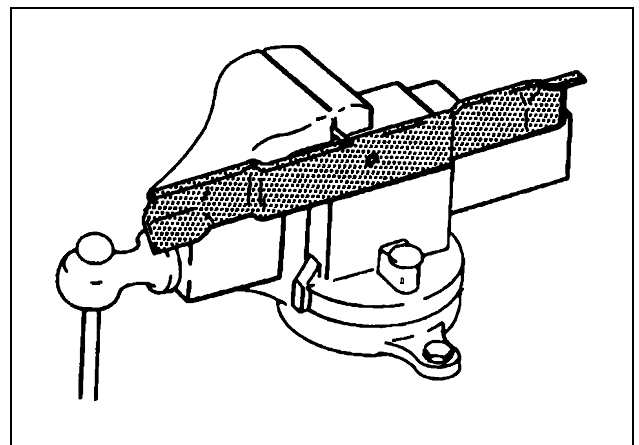
Balancing Blades



CAUTION: Avoid injury! Mower blades may be sharp. Wear heavy gloves or wrap the blade edges with a rag to prevent injury during handling.

IMPORTANT: Avoid damage! Balance the blades or mower deck may vibrate excessively.

1. Clean the blade.



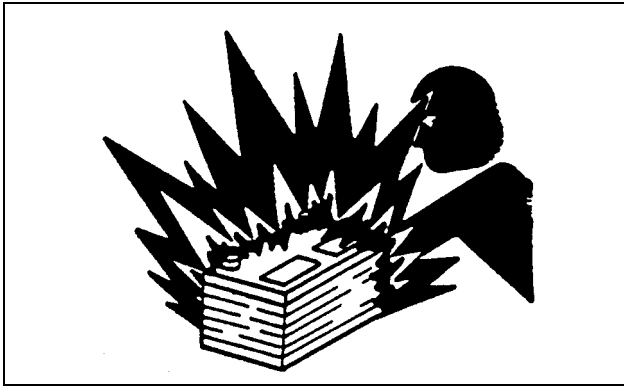
MIF

2. Put the blade on a nail secured in a vise or wall. The heavy end of the blade will drop.
3. Grind the bevel of the heavy end. Do not change the 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



TS204



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

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

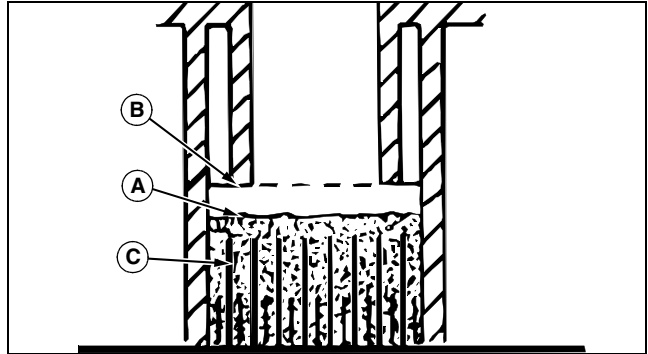
The battery produces a flammable and explosive gas. The battery may explode:

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

Checking Battery Electrolyte Level

NOTE: Add only distilled water to replace normal electrolyte loss.

1. Park the vehicle safely. (See Parking Safely in the SAFETY section.)
2. Remove battery from vehicle and set it on a level surface.
3. Remove battery cell caps. Make sure cap vents are not plugged.



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

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

5. Add only distilled water if necessary.
6. Install battery cell caps.
7. Install battery.

Removing and Installing the Battery



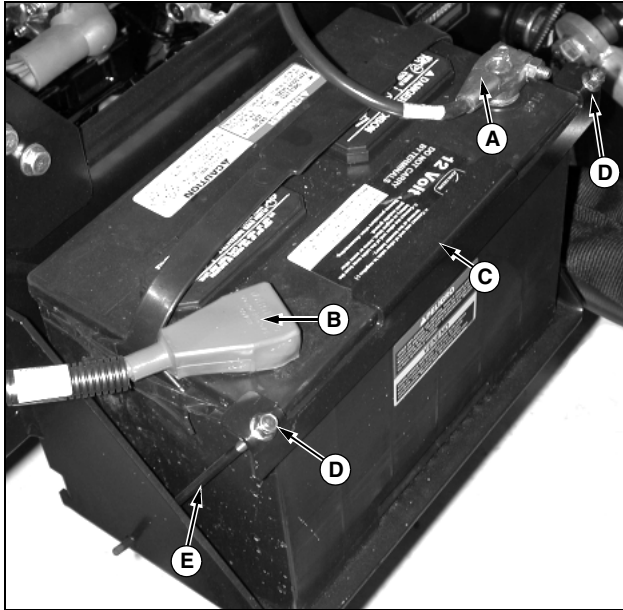
CAUTION: Avoid injury! A battery explosion can be caused by sparks when removing or installing battery:

- DO NOT smoke.
- Wear eye protection and gloves.
- DO NOT allow direct metal contact across battery posts.
- Disconnect negative cable from battery first when removing battery.
- Connect positive cable to battery first when installing battery.

SERVICE ELECTRICAL

Removing:

1. Park machine safely. (See Parking Safely in the Safety section.)
2. Raise engine cover.



MX13904

3. Disconnect negative (–) battery cable (A).
4. Pull up red plastic cover (B) from positive (+) battery clamp and disconnect positive (+) cable clamp from battery post.
5. Remove battery hold down bracket (C) by removing lock nuts (D) from left and right side J-bolts (E).
6. Remove battery from machine.

Installing:

1. Install battery with positive post (+) towards rear of machine.
2. Install battery hold down bracket onto J-bolts and secure with lock nuts.
3. Install positive cable clamp (red cable) onto positive (+) battery post. Pull red plastic cover over positive cable clamp.
4. Install negative cable clamp (black cable) onto negative (–) battery post.

Cleaning Battery and Terminals

1. Disconnect and remove battery.
2. 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.

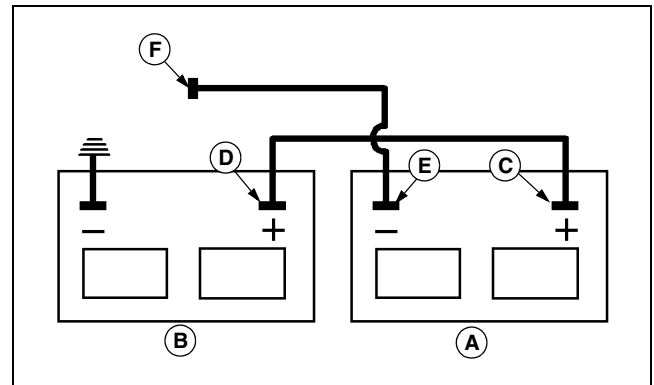
3. Rinse the battery with plain water and dry.
4. Clean terminals and battery cable ends with wire brush until bright.
5. Apply dielectric grease to terminals to prevent corrosion.
6. Install battery.

Using Booster Battery



CAUTION: Avoid injury! Do not attempt to jump start a frozen battery. Warm to 16 degrees C (60 degrees 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.



MX4663

A - Booster Battery

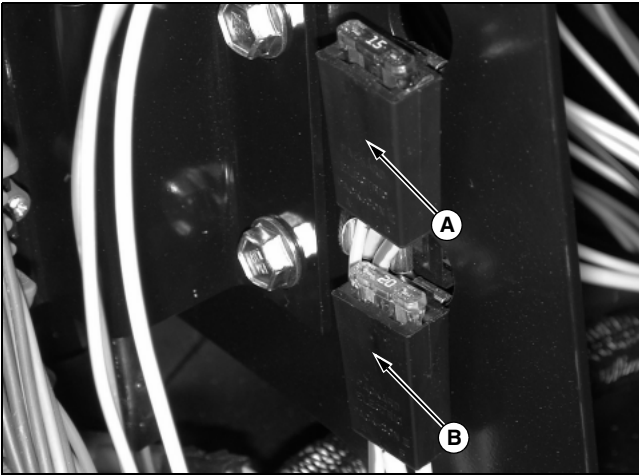
B - Disabled Vehicle Battery

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).
4. Connect the other end (F) of negative (–) booster cable to a metal part of the disabled machine frame 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.

SERVICE ELECTRICAL

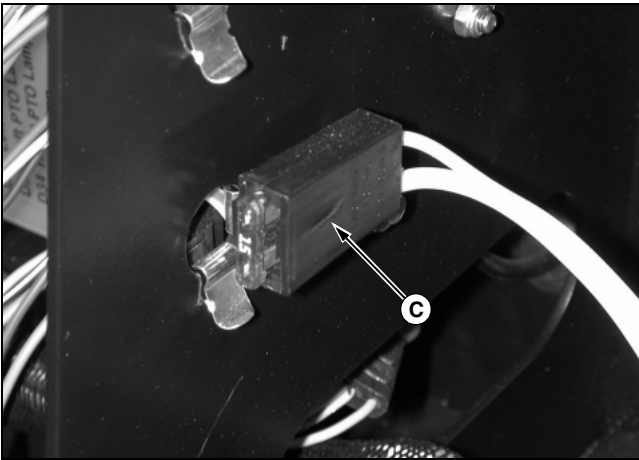
Checking and Replacing Fuses

1. Remove right side electrical service panel to access fuse holders.



MX13905

2. Fuse (A) is the 15 ampere main fuse and controls all electrical functions on the machine, including light kit.
3. Fuse (B) is the 20 ampere accessory fuse and is only used for the optional cab kit.



MX13906

4. Fuse (C) is a 15 ampere fuse.
5. Test fuses with voltmeter or test light and replace if blown.
6. Install electrical service panel on machine.

SERVICE MISCELLANEOUS

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.

Add stabilizer to fuel before using it in your machine to prevent engine damage due to stale fuel. Follow directions on stabilizer container.

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



MX13907

2. Remove any debris from area around fuel tank cap (A).
3. Remove fuel tank cap.
4. Fill tank with fresh, stabilized fuel only to bottom of filler neck.
5. Install fuel tank cap.

Cleaning and Repairing Metal Surfaces

Cleaning

Follow automotive practices to care for the painted surfaces of your machine. Use a high-quality automotive wax regularly to maintain the factory look of painted surfaces.

Repairing Minor Scratches (Surface Scratches)

1. Clean area to be repaired thoroughly.

IMPORTANT: Avoid damage! DO NOT use rubbing compound on painted surfaces.

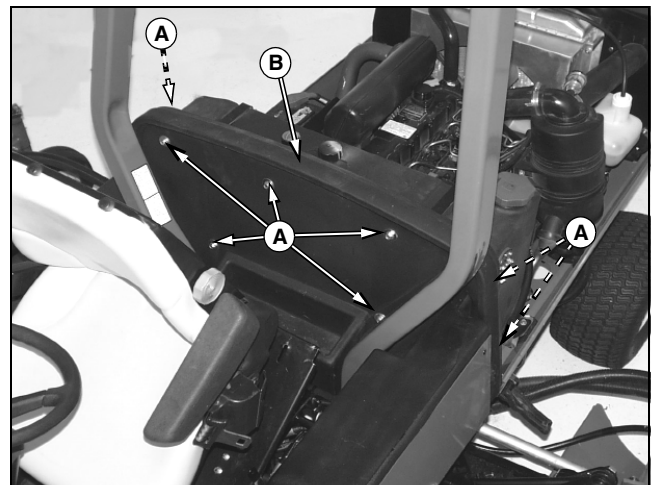
2. Use automotive polishing compound to remove surface scratches.
3. Apply wax to entire surface.

Repairing Deep Scratches (Bare Metal or Primer Showing)

1. Clean area to be painted with rubbing alcohol or mineral spirits.
2. Use paint stick with factory-matched colors available from your John Deere 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.

Tightening ROPS Hardware

1. Park machine safely. (See Park Safely in SAFETY section.)
2. Raise the seat platform and engine cover.



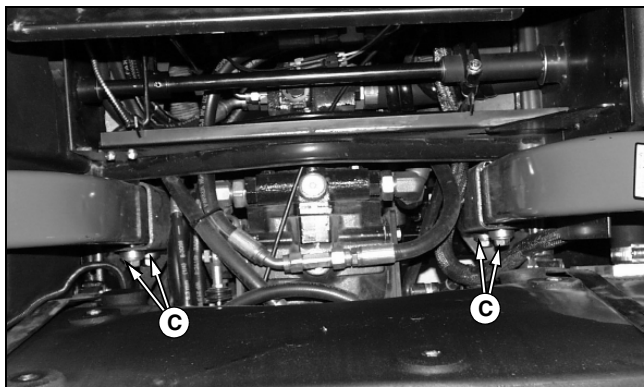
MX3753

3. Remove hardware (A) securing plastic back panel (B) to

SERVICE MISCELLANEOUS

machine. Retain all hardware.

- Carefully lift back panel from machine and set it aside.



MX3754

- Tighten the four ROPS attaching bolts (C) to 136 N•m (100 lb-ft).
- Install plastic back panel and secure with attaching hardware.
- Lower seat platform and engine cover.

IMPORTANT: Avoid damage! Use caution not to pinch or crush the side deck lift cylinder hydraulic hose with the lifting device.



MX3755

- Using a safe lifting device, jack up machine at base of lift arm bracket (A) or under the front skid plate if adequate clearance exists.

Removing and Installing Front Tires

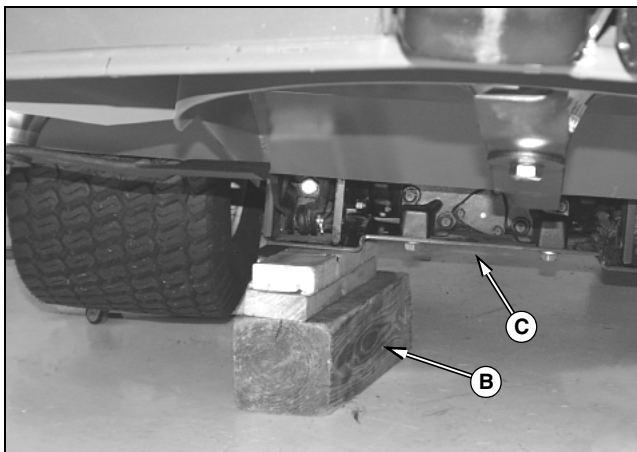


CAUTION: Avoid injury! Use only a safe lifting device for jacking machine.

- Ensure machine is stable on jack plate before lifting.
- Lower machine onto blocks before loosening wheel bolts.

Removing Front Tires

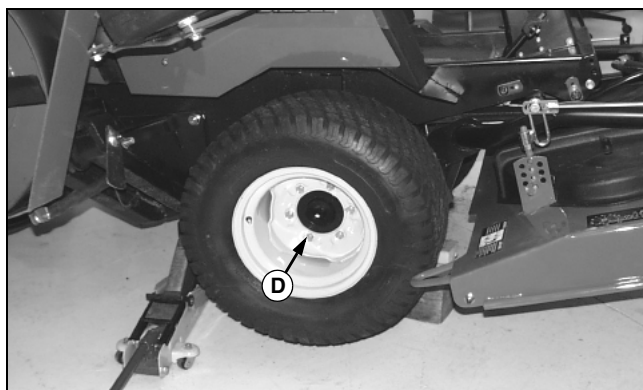
- Raise side deck completely on side of machine requiring front wheel removal. Leave other side deck lowered completely.
- Engage the side deck transport lock.
- Raise front mower deck completely.
- Park machine safely. (See Park Safely in SAFETY section.)
- Rotate front deck for service to obtain as much clearance as possible between rear of deck and ground surface.



MX3756

- Install blocking material (B) under front skid plate (C).
- Lower machine onto blocks.

SERVICE MISCELLANEOUS



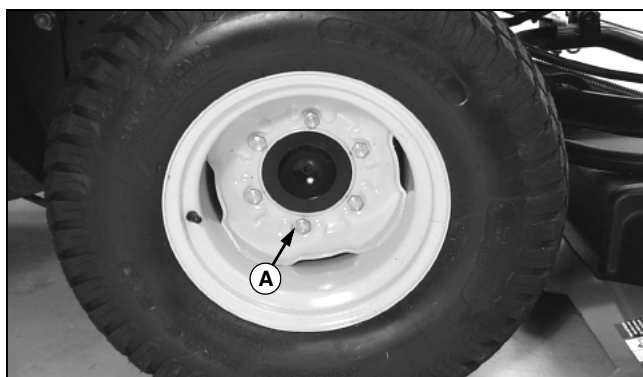
MX3757

9. Remove wheel bolts (D) and wheel.

Installing Front Tires



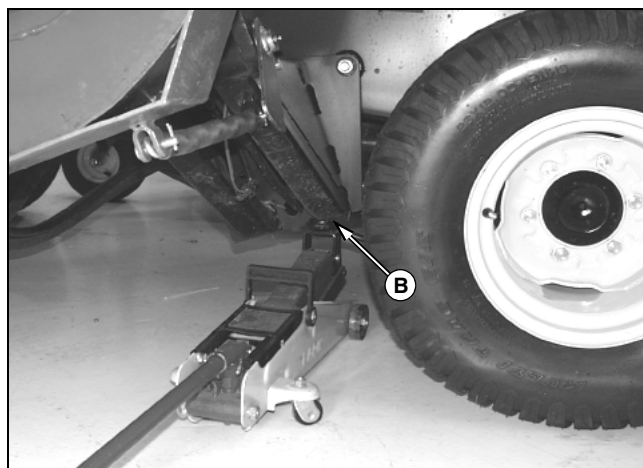
CAUTION: Avoid injury! Machine must be safely supported on blocks before installing wheel.



MX3758

1. Install wheel onto axle hub with valve stem facing outward. Secure with wheel bolts (A).
2. Tighten front wheel bolts to 136 - 163 N•m (100 - 120 lb-ft) using torque wrench.

IMPORTANT: Avoid damage! Use caution not to pinch or crush the side deck lift cylinder hydraulic hose with the lifting device.



MX3755

3. Using a safe lifting device, jack up machine at base of lift arm bracket (B) or under the front skid plate if adequate clearance exists.
4. Remove blocking material from under machine.
5. Lower machine to ground.
6. Remove lifting device.
7. Check wheel bolt torque:
 - After traveling 30 m (100 ft) while changing direction.
 - After 3 to 10 hours of use.

Removing and Installing Rear Tires



CAUTION: Avoid injury! Use only a safe lifting device for jacking machine.

- Ensure machine is stable on jack plate before lifting.
- Lower machine onto jack stands before loosening wheel bolts.
- Do not use rear bumper to support machine.

Removal

1. Raise side deck completely at side of machine requiring rear wheel removal. Leave other side deck lowered completely.
2. Engage the side deck transport lock.
3. Lower front deck completely.
4. Park machine safely. (See Park Safely in SAFETY)

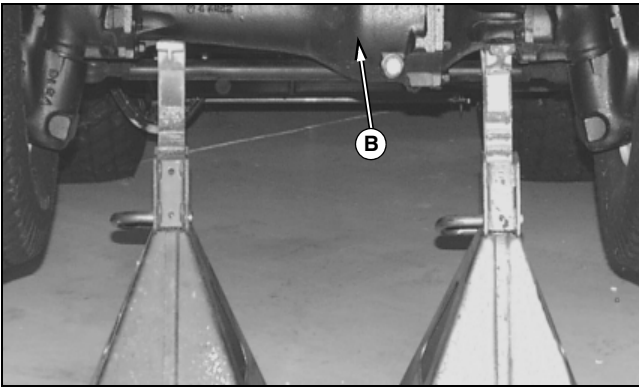
SERVICE MISCELLANEOUS

section.)



MX3759

5. Using a safe lifting device, jack up machine under rear axle (A) so both rear wheels are above the ground.



MX3760

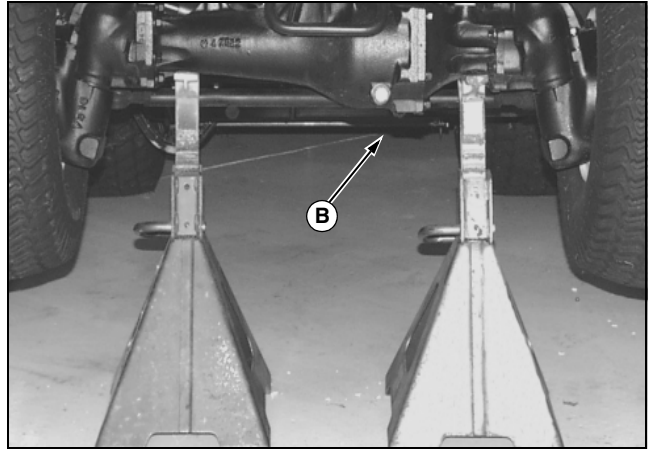
6. Install jack stands under rear axle (B).
7. Lower machine onto jack stands.
8. Remove wheel bolts and wheel from rear axle.

Installation



CAUTION: Avoid injury! Machine must be safely supported on jack stands before installing wheel. Do not use bumper to support machine.

1. Install wheel onto axle hub with valve stem facing outward. Secure with wheel bolts.
2. Tighten rear wheel bolts to 81 - 95 N•m (60 - 70 lb-ft) using torque wrench.



MX3760

3. Using a safe lifting device, jack up machine under rear axle (B).
4. Remove jack stands from under machine.
5. Lower machine to ground.
6. Remove lifting device.
7. Check wheel bolt torque:
 - After traveling 30 m (100 ft) while changing direction.
 - After 3 to 10 hours of use.

TROUBLESHOOTING

Using Troubleshooting Chart

If you are have a problem that is not listed in this chart, see your John Deere dealer for service.

After checking all the possible causes listed, and you are still experiencing the problem, see your John Deere dealer.

Engine

IF	CHECK
Poor Engine Performance	Fuel: • 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 for cold or warm climate may contribute to performance problems if used in the wrong season, especially if fuel is stored for several months or more. Obtain fresh fuel.
Engine Will Not Start (Starter Engages and Turns Engine)	Fuel shutoff valve is in off position. Out of fuel or improper fuel. Plugged fuel filter. Electrical problem - See Electrical Troubleshooting Section
Engine Is Hard To Start	Plugged fuel filter. Stale or improper fuel.
Engine Runs Unevenly	Fuel line or fuel filter plugged. Stale or dirty fuel. Fuel injector clogged. Air cleaner element plugged.
Engine Misses Under Load	Stale or dirty fuel. Plugged fuel filter.
Engine Overheats	Engine air intake screen plugged. Engine coolant level is low. Engine oil level is low or too high. Engine operated too long at a slow idle speed.
Engine Will Not Idle	Fuel level too low. Air cleaner element dirty. Operator raising off the seat without park brake locked.
Engine Knocks	Stale fuel. Engine overloaded. Low engine speed.

TROUBLESHOOTING

IF	CHECK
Engine Stops Or Misses When Operating On Hillsides	Fuel tank less than half full of fuel. Operator raising off of the seat.
Engine Backfires	Operator raising off of the seat.
Engine Loses Power	Engine overheating. Too much oil in engine. Dirty air cleaner. Travel speed is too fast for conditions. Improper fuel.
Black Exhaust Smoke	Air filter element is dirty.

Electrical

IF	CHECK
Starter Does Not Engage	Park brake is not locked and operator is not on seat. PTO switch is in on position. Hydrostatic pedals are not in centered neutral position. Battery terminals are corroded. Battery not charged. 15 main fuse is blown.
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
Vibrates Too Much or Rattles Excessively	Engine cover not latched closed. Electrical panel not latched closed.
Machine Will Not Move With Engine Running	Park brake locked. Range shift lever is in neutral position.

TROUBLESHOOTING

Mower Decks

IF	CHECK
Mower Deck Plugs With Grass	Grass too wet or too long. Engine not being run at full throttle while mowing. Rear of deck too low.
Patches Of Grass Uncut	Travel speed too fast. Engine should be at full throttle. Dull blades. Cutting height set too high.
Belt Slipping	Mower belt tension not set correctly. Debris in sheaves. Worn belt.
Mower Blades Do Not Stop	Belt routed incorrectly. Mower belt tension needs adjustment.
Too Much Vibration	Debris on mower deck or in sheaves. Damaged drive belt. Damaged sheaves or sheaves out of alignment. Blades out of balance.
Uneven Cut	Check procedures on Adjusting Mower Deck Level. Travel speed too fast. Blades are dull. Check tire pressure.
Blades Scalping Grass	Turning speed too fast. Ridges in terrain. Rough or uneven terrain. Low tire pressure. Cutting too low. Bent blade(s).
Mower Loads Down Tractor	Engine should be at full throttle. Travel speed too fast. Debris wrapped around mower spindles. Check procedure on Adjusting Mower Level Front-to-Rear. Grass conditions. Cutting height set too low.
Uneven Clipping Distribution	Cutting height set too low. Mowing too fast. Grass too wet.

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 machine with fuel in the tank inside a building where fumes may reach an open flame or spark.**
- **Never refuel or drain fuel from a machine indoors.**
- **Allow the engine to cool before storing the machine in any enclosure.**

Storing the Machine

1. Replace all worn and damaged parts. Tighten loose hardware as needed.
2. Wash the machine. Clean inside engine compartment and under mower decks.
3. Run engine and mower decks for several minutes to dry belts, pulleys, and other moving parts.
4. Apply wax to metal surfaces.
5. Repair scratched metal surfaces to prevent rust.
6. Change engine oil and filter.
7. Lubricate grease points. Wipe off excess grease.
8. Replace fuel filter.
9. Replace air intake filter.
10. Change transmission oil.
11. Change engine coolant.
12. Drive machine to storage site. Raise mower decks completely. Engage the transport locks.
13. Park machine safely. (See Park Safely in SAFETY section.)
14. Apply a light coat of oil to exposed cylinder rods, pivot and wear points to prevent rust.

IMPORTANT: Avoid damage! Stale fuel can produce varnish and plug fuel injectors and affect engine performance. Add fuel stabilizer to fresh fuel before filling tank.

15. Fill fuel tank with fresh stabilized fuel to prevent condensation build-up. Drain fuel tank completely if storing

machine indoors near potential flame or spark.

16. Remove and clean battery. Check the electrolyte level and fully charge the battery. Store in a cool dry place. Fully charge the battery periodically during storage to maintain its longevity.

17. Support machine at rear axle and front skid plate on blocks or stands to take weight off tires. Remove 1/3 air from tires.

18. Cover machine with waterproof cover if stored outside.

Removing the Machine From Storage

1. Remove waterproof cover if stored outside.
2. Inspect tires and fill to proper air pressure.
3. Remove blocks or stands from under machine.
4. Charge and install battery.
5. Check oil levels in engine, hydraulic, transmission, and mechanical four wheel drive (MFWD) reservoirs.
6. Check engine coolant level.
7. Lubricate all grease points.
8. Make sure all shields and guards are in place.
9. Check wheel bolt torques.
10. Fill fuel tank with fresh stabilized fuel if needed.
11. Run engine 2 to 3 minutes before putting it under load.
12. Check brake pedal, speed control, and neutral start switch functions.
13. Check engine air restriction indicator.
14. Wash machine if necessary.

SPECIFICATIONS

Engine

Engine Model Number	Yanmar 4TNE84T
Engine Type	4-Cycle, 4-Cylinder, In-Line Turbocharged Diesel
Cooling	Liquid Cooled
Gross Output	48 kW (64 hp)
Net Output	42 kW (56 hp)
Injection Type	Direct
Air Cleaner	Dry, Replaceable Dual Element

Capacities

Engine Oil (with Filter)	6.6 L (7 qt)
Fuel Tank	83 L (22 gal)
Coolant	7.5 L (8 qt)
Hydraulic System	58.7 L (15.5 gal)
Hydrostatic Transmission	13.3 L (3.5 gal)
Rear Axle	4.7 L (5 qt)

Travel Speeds

High Range/Transport

Forward	0–23.3 km/h (0–14.4 mph)
Reverse	0–11.6 km/h (0–7.2 mph)

Low Range/Mowing

Forward	0–13.7 km/h (0–8.6 mph)
Reverse	0–7.2 km/h (0–4.3 mph)

Tire Dimensions

Front Drive Tires	26x12.00-12
Rear Tires	20x10-8
Mower Deck Caster Tires	11x4-5

Tire Inflation Pressures

Machine Front Tires	140 kPa (20 psi)
Machine Rear Tires	140 kPa (20 psi)
Mower Deck Caster Tires	275 kPa (40 psi)

SPECIFICATIONS

Dimensions

Height	2 m (78 in.)
Width (Mower Decks Raised)	2.2 m (84.5 in.)
Width (Mower Decks Lowered)	3.3 m (131 in.)
Length (With Mower Deck)	3.4 m (133 in.)
Length (Without Mower Deck)	2.6 m (101 in.)
Wheelbase	1.6 m (61 in.)
Weight (With Mower Decks)	1814 kg (4000 lbs)
Ground Clearance	18 cm (7 in.)
Cutting Width	3.3 m (131 in.)

Mower Decks

Front Mower Deck

Cutting Width	1.6 m (62 in.)
Cutting Height	2.5–15.2 cm (1–6 in.)
Number of Blades	3

Side Mower Decks

Cutting Width	1 m (40 in.)
Cutting Height	2.5–14 cm (1–5.5 in.)
Number of Blades	2

Recommended Lubricants

Engine Oil	John Deere Plus–50 (15W-40)
.....	John Deere Torq-Gard Supreme (5W-30)
Engine Coolant	John Deere Pre-Diluted Diesel Engine Anti-Freeze/Summer Coolant™
.....	John Deere Diesel Engine Anti-Freeze/Summer Coolant Concentrate™
Hydraulic Oil	John Deere HY-GARD® J20C
Hydrostatic Oil	John Deere HY-GARD® J20C
Grease	See Service Lubrication Section

Tightening Torques

Front Wheels	136 - 163 N•m (100 - 120 lb-ft)
Rear Wheels	81 - 95 N•m (60 - 70 lb-ft)
Blade Mounting Bolts	122 N•m (90 lb-ft)

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".

Limited Warranty For New John Deere Commercial & Consumer Equipment

(U.S. Only)

A. GENERAL PROVISIONS - The warranties described below are provided by John Deere Company ("John Deere") to the original purchasers of new Commercial & Consumer Equipment from John Deere or authorized John Deere dealers. Under these warranties, John Deere will repair or replace, at its option, any covered part which is found to be defective in material or workmanship during the applicable warranty term. Warranty service must be performed by a dealer or service center authorized by John Deere to sell and/or service the type of product involved, which will use only new or remanufactured parts or components furnished by John Deere. Warranty service will be performed without charge to the purchaser for parts or labor. The purchaser will be responsible, however, for any service call and/or transportation of product to and from the dealer's or service center's place of business, for any premium charged for overtime labor requested by the purchaser, and for any service and/or maintenance not directly related to any defect covered under the warranties below.

B. WHAT IS WARRANTED - All parts of any new John Deere product, except tires, radios, and batteries, are warranted for the number of months or operating hours specified below. John Deere Hand Held-Portable products are covered by a separate warranty. Warranty statements required by law covering engine emission-related parts and components are found in the Operator's Manual delivered with the machine.

COMMERCIAL & CONSUMER EQUIPMENT	WARRANTY TERM
1) In Residential (Private Homeowner) Application	24 Months
2) In Any Other Application	12 Months (Sabre by John Deere products - 90 days)
3) Regardless of Application:	
a) COMPACT UTILITY TRACTORS, WIDE AREA MOWERS, FRONT MOWER TRACTION UNITS (With diesel or 20 HP and above engines), ZTRAK MOWERS (except F620), COMMERCIAL WALK BEHIND MOWERS (30" or larger), and 7-IRON MOWER DECKS,	24 Months
b) Other mower decks, implements, and attachments for the equipment listed in 3a above, and 3d below.	12 Months or 1000 Hours Whichever Comes First
c) SKID STEERS and approved John Deere Skid Steer attachments	12 Months

COMMERCIAL & CONSUMER EQUIPMENT	WARRANTY TERM
d) UTILITY VEHICLES AND F620 ZTRAK MOWERS	12 Months or 1000 Hours Whichever Comes First

Each warranty term begins on the date of product delivery to the purchaser.

C. WHAT IS NOT WARRANTED - JOHN DEERE IS NOT RESPONSIBLE FOR THE FOLLOWING: (1) Used Products; (2) Any product that has been altered or modified in ways not approved by John Deere, including, but not limited to, setting injection pump fuel delivery above John Deere specifications; (3) Depreciation or damage caused by normal wear, lack of reasonable and proper maintenance, failure to follow operating instructions, misuse, lack of proper protection during storage, or accident; (4) Normal maintenance parts and service.

D. SECURING WARRANTY SERVICE - To secure warranty service, the purchaser must (1) report the product defect to an authorized dealer and request repair within the applicable warranty term, (2) present evidence of the warranty start date, and (3) make the product available to the dealer or service center within a reasonable period of time.

E. LIMITATION OF IMPLIED WARRANTIES AND OTHER REMEDIES - COMMERCIAL & CONSUMER EQUIPMENT - 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 Commercial & Consumer Equipment 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 PERIOD OF WARRANTY SET FORTH ON THIS PAGE. THE PURCHASER'S ONLY REMEDIES IN CONNECTION WITH THE BREACH OR PERFORMANCE OF ANY WARRANTY ON THE JOHN DEERE COMMERCIAL & CONSUMER EQUIPMENT ARE THOSE SET FORTH ON THIS PAGE. 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 the above limitations and exclusions may not apply to you.) This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

F. 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.

G. If further information is desired, contact your selling dealer.

Limited Warranty For New John Deere Commercial & Consumer Equipment

(Canada Only)

A. GENERAL PROVISIONS - The warranties described below are provided by John Deere Limited, 295 Hunter Road, P.O. Box 1000, Grimsby, Ontario, L3M 4H5 ("John Deere") to the original purchasers of new Commercial & Consumer Equipment ("Equipment") purchased from John Deere or authorized John Deere dealers. Under these warranties, John Deere will, unless otherwise required by law, repair or replace, at its option, any part covered under these warranties which is found to be defective in material or workmanship during the applicable warranty term. Warranty service must be performed by a dealer or sales service centre authorized by John Deere to sell and/or service the Equipment involved

WARRANTY

(the "authorized dealer"). The authorized dealer will use only new or remanufactured parts or components furnished or approved by John Deere. Warranty service will be performed without charge to the purchaser for parts or labour. However the purchaser will be responsible for any service call and/or transportation of Equipment to and from the authorized dealer's place of business, except where prohibited by law, and for any premium charged for overtime labour requested by the purchaser, and for any service and/or maintenance not directly related to any defect covered under these warranties. These warranties are transferable, provided the purchaser trades the Equipment to an authorized dealer and John Deere approves the warranty transfer.

B. WHAT IS WARRANTED - Subject to paragraph C, all parts of any new John Deere Equipment, except tires, radios, and batteries (which are warranted under separate warranty documents provided with each product), are warranted for the number of months or operating hours specified below. John Deere Hand Held-Portable products are covered by a separate warranty. Warranty statements covering engine emission-related parts and components are found in the Operator's Manual delivered with the Equipment.

COMMERCIAL & CONSUMER EQUIPMENT	WARRANTY TERM
1) IN RESIDENTIAL (Private Homeowner) APPLICATION	24 Months
2) IN ANY OTHER APPLICATION	12 Months
3) Regardless of Application: COMPACT UTILITY TRACTORS, WIDE AREA MOWERS, FRONT MOWER TRACTION UNITS (With diesel or 20 HP and above engines), ZTRAK MOWERS (except F620), COMMERCIAL WALK BEHIND MOWERS (30" or larger), and 7-IRON MOWER DECKS.	24 Months
4) Regardless of Application: SKID STEERS AND APPROVED JOHN DEERE SKID STEER ATTACHMENTS	12 Months
5) Regardless of Application: UTILITY VEHICLES AND F620 ZTRAK MOWERS, other mower decks, implements, and attachments for the equipment listed in 3) and 5).	12 Months or 1,000 Hours Whichever Comes First
6) SABRE by JOHN DEERE PRODUCTS	Residential (Private Homeowner) application - 24 months. In any other application - 90 Days

Each warranty term begins on the date of delivery of the Equipment to the Purchaser.

C. WHAT IS NOT WARRANTED - Pursuant to the terms of these warranties, JOHN DEERE IS NOT RESPONSIBLE FOR THE FOLLOWING: (1) Used Equipment (unless it is specifically covered by separate warranty documents); (2) Any Equipment that has been altered or modified in ways not approved by John Deere, including, but not limited to, setting injection pump fuel delivery above John Deere specifications; (3) Depreciation or damage caused by normal wear, lack of reasonable and proper maintenance, failure to follow operating instructions, misuse, lack of proper protection during storage, vandalism, the elements or collision or accident; (4) Normal maintenance parts or service; (5) Batteries, radios and tires.

D. SECURING WARRANTY SERVICE - To secure warranty service the purchaser must, (1) report the Equipment defect to an authorized dealer and request repair or replacement within the applicable warranty term; (2) present evidence of the warranty start date; and, (3) make the Equipment available to the authorized dealer within a reasonable period of time.

E. REPRESENTATION, CONDITION AND IMPLIED WARRANTY EXCLUSION - THERE ARE NO REPRESENTATIONS, CONDITIONS OR WARRANTIES OTHER THAN THOSE LISTED ABOVE. THIS EXCLUSION INCLUDES FUNDAMENTAL TERMS, REPRESENTATIONS, CONDITIONS AND WARRANTIES WHICH MAY BE EXPRESSED OR IMPLIED, VERBAL OR OTHERWISE, INCLUDING IMPLIED OR STATUTORY CONDITIONS OR WARRANTIES OF MERCHANTABILITY AND FITNESS, WHETHER PURSUANT TO THE SALE OF GOODS ACT OR ANY OTHER STATUTE OF ANY PROVINCE OR OTHERWISE, EXCEPT WHERE SUCH IMPLIED OR STATUTORY CONDITIONS OR WARRANTIES MAY NOT BE EXCLUDED BY LAW.

F. REMEDIES EXCLUSIVE - THE ONLY REMEDIES THE PURCHASER HAS IN CONNECTION WITH THE BREACH OR PERFORMANCE OF ANY WARRANTY ON THE EQUIPMENT ARE THOSE SET FORTH IN THIS WARRANTY, EXCEPT FOR THOSE REMEDIES PROVIDED BY LAW WHICH MAY NOT BE EXCLUDED. IN NO EVENT WILL AN AUTHORIZED DEALER, JOHN DEERE OR ANY COMPANY AFFILIATED WITH JOHN DEERE, BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES OR INJURIES, INCLUDING BUT NOT LIMITED TO, LOSS OF PROFITS, RENTAL OF SUBSTITUTE EQUIPMENT, OTHER COMMERCIAL LOSS, OR BE LIABLE FOR DAMAGES SUFFERED BY THE PURCHASER AS A RESULT OF FUNDAMENTAL BREACHES OF CONTRACT OR BREACHES OF FUNDAMENTAL TERMS. THE LIMITATION OF LIABILITY CONTAINED IN THIS PARAGRAPH SHALL ONLY BE EFFECTIVE TO THE EXTENT PERMITTED BY LAW.

G. PURCHASE ORDER REQUIRED - John Deere shall have no obligation under these warranties unless a Purchase Order has been signed by both the purchaser and an authorized dealer. In addition, a Product Warranty Registration must be on file at John Deere and include:

1. the purchaser's complete name and address;
2. a full description of the Equipment, including the complete product identification number; and,
3. date of delivery of the Equipment to the purchaser.

H. NO DEALER WARRANTY - Except for conditions or warranties which may not be excluded by law, the selling Dealer makes no warranty of its own on any item warranted by John Deere, and makes no warranty on other items unless it delivers to the purchaser a separate written warranty document specifically warranting the item. THE SELLING 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.

John Deere, Federal And California Emission Control System Warranty (Non-Road Diesel)

Your Warranty Rights and Obligations

The United States Environmental Protection Agency (EPA), the California Air Resources Board (CARB) and John Deere are pleased to explain the emission control system warranty on your 1995 and later non-road diesel equipment engine. In California, 1995 and later non-road diesel equipment engines 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 non-road diesel engines. John Deere must warrant the emission control system on your non-road diesel

WARRANTY

equipment engine for the periods of time listed below provided there has been no abuse, neglect or improper maintenance of your non-road diesel equipment engine.

Your emission control system may include parts such as the fuel-injection system and the air induction system. Also included may be connectors and other emission related assemblies.

Where a warrantable condition exists, John Deere will repair your non-road diesel equipment engine at no cost to you including diagnosis, parts and labor.

John Deere Emission Control System Warranty Coverage

In California, 1995 and later non-road diesel equipment engine emissions control-related parts are warranted by John Deere for five years or 3000 hours of operation, whichever occurs first. In other states, 1997 and later non-road diesel equipment engine emissions control-related parts are warranted by John Deere for five years or 3000 hours of operation, whichever occurs first. If any emission related part on your engine is defective, the part will be repaired or replaced by John Deere.

Owner's Warranty Responsibilities

As the non-road diesel equipment engine 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 non-road diesel equipment engine, 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 non-road diesel equipment engine owner, you should however be aware that John Deere may deny you warranty coverage if your non-road diesel equipment engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.

You are responsible for presenting your non-road diesel equipment engine 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 Communications Center, 1-800-537-8233.

Length of Warranty Coverage

John Deere warrants to the initial owner and each subsequent purchaser that the non-road diesel equipment engine is:

- Designed, built and equipped so as to conform with all applicable regulations adopted by the California Air Resources Board (CARB) for 1995 and later equipment engines, 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 emission warranted part for a period of five years or 3000 hours of operation, whichever occurs first, after the engine 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 emission related part on your engine 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 emission control system parts) to the extent these parts were present on the engine purchased.

Fuel Metering System:

- Fuel injection system.

Air Induction System:

- Air Cleaner
- Turbocharger system.
- Intake manifold.

Catalyst System:

- Exhaust manifold.

Miscellaneous Items Used in Above Systems:

- Hoses, belts, connectors and assemblies.

Since emission related parts may vary slightly from model to model, certain models may not contain all of these parts and certain models may contain functionally equivalent parts.

Warranty Service and Charges

Warranty service shall be provided during customary business hours at any authorized John Deere Commercial and Consumer Equipment Retailer. Repair or replacement of any warranted part will be performed at no charge to the owner, including diagnostic labor which leads to the determination that a warranted part is defective, if the diagnostic work is performed at an authorized John Deere Commercial and Consumer Equipment Retailer. Any parts replaced under this warranty shall become the property of John Deere.

Maintenance Warranty Coverage

a) Any warranted part which is not scheduled for replacement as required maintenance shall be warranted as to defects for the warranty period. Any such part repaired or replaced under the warranty shall be warranted for the remaining warranty period.

b) Any warranted part which is scheduled only for regular inspection to the effect of "repair or replace as necessary" shall be warranted as to defects for the warranty period. Any such part repaired or replaced under the warranty shall be warranted for the remaining warranty period.

c) Any warranted part which is scheduled for replacement as required maintenance shall be 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 shall be warranted for the remainder of the period prior to the first scheduled replacement point for that part.

d) Normal maintenance, replacement or repair of emission control devices and systems, which are being done at the customers 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 Emission 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

WARRANTY

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 Emission 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 non-road diesel equipment engine or transportation of the engine 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 NON-ROAD DIESEL ENGINE FOR ANY OTHER PURPOSE.

b) NO EXPRESS EMISSION CONTROL SYSTEM WARRANTY IS GIVEN BY JOHN DEERE WITH RESPECT TO THE ENGINE EXCEPT AS SPECIFICALLY SET FORTH IN THIS DOCUMENT. ANY EMISSION CONTROL SYSTEM WARRANTY IMPLIED BY LAW, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, IS EXPRESSLY LIMITED TO THE EMISSION CONTROL SYSTEM WARRANTY TERMS SET FORTH IN THIS DOCUMENT.

c) No dealer is authorized to modify this Federal, California and John Deere Emission Control System Warranty.

Tire Warranty

John Deere warranty applies for tires available through the John Deere parts system. For tires not available through the John Deere parts system, the tire manufacturer's warranty applicable to your machine may not apply outside the U.S. (See your John Deere dealer for specific information.)

Limited Battery Warranty

NOTE: Applicable in North America only. For complete machine warranty, reference a copy of the John Deere warranty statement. Contact your John Deere dealer to obtain a copy.

TO SECURE WARRANTY SERVICE

The purchaser must request warranty service from a John Deere dealer authorized to sell John Deere batteries, and present the battery to the dealer with the top cover plate codes intact.

FREE REPLACEMENT

Any new battery which becomes unserviceable (not merely discharged) due to defects in material or workmanship within 90 days of purchase will be replaced free of charge. Installation costs will be covered by warranty if (1) the unserviceable battery was installed by a John Deere factory or dealer, (2) failure occurs within 90 days of purchase, and (3) the replacement battery is installed by a John Deere dealer.

PRO RATA ADJUSTMENT

Any new battery which becomes unserviceable (not merely discharged) due to defects in material or workmanship more than 90 days after purchase, but before the expiration of the applicable adjustment period, will be replaced upon payment of the battery's current list price less a pro rata credit for unused months of service. The applicable adjustment period is determined from the Warranty Code printed at the top of the battery and chart below. Installation costs are not covered by warranty after 90 days from the date of purchase.

THIS WARRANTY DOES NOT COVER

A. Breakage of the container, cover, or terminals.

B. Depreciation or damage caused by lack of reasonable and necessary maintenance or by improper maintenance.

C. Transportation, mailing, or service call charges for warranty service.

LIMITATION OF IMPLIED WARRANTIES AND PURCHASER'S REMEDIES

To the extent permitted by law, neither John Deere nor any company affiliated with it makes any warranties, representations, or promises as to the quality, performance or freedom from defect of the products covered by this warranty. IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, TO THE EXTENT APPLICABLE, SHALL BE LIMITED IN DURATION TO THE APPLICABLE ADJUSTMENT PERIOD SET FORTH HERE. THE PURCHASER'S ONLY REMEDIES IN CONNECTION WITH THE BREACH OR PERFORMANCE OF ANY WARRANTY ON JOHN DEERE BATTERIES ARE THOSE SET FORTH HERE. IN NO EVENT WILL THE DEALER, JOHN DEERE OR ANY COMPANY AFFILIATED WITH JOHN DEERE BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES. (Note: Some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages. So these limitations and exclusions may not apply to you.) This warranty gives you specific legal rights, and you may also have some rights which vary from state to state.

NO DEALER WARRANTY

The selling dealer makes no warranty of 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		Electrolyte Level, Checking Battery	56
Air Cleaner Elements, Servicing	37	Engine Coolant Level, Checking	39
Air Filter Restriction Indicator, Checking	36	Engine Coolant, Recommended	39
Air Intake Hoses and Clamps, Check Radiator Hoses ...	38	Engine Cooling System, Filling	40
Alternator Belt, Checking and Adjusting	41	Engine Cooling System, Flushing	40
Alternator Belt, Replacing	42	Engine Cover Screen, Cleaning	36
Axle Pivot Pin, Lubricate	29	Engine Cover, Raising and Lowering	33
B		Engine Fumes, Avoid	32
Balancing Blades	55	Engine Oil and Filter, Changing	34
Battery Electrolyte Level, Checking	56	Engine Oil, Checking	34
Battery and Terminals, Cleaning	57	Engine Oil, Recommended	32
Battery, Removing and Installing	56	Engine Specifications	67
Battery, Using Booster	57	Engine Troubleshooting	63
Belt Shields, Removing and Installing	50	Engine Warranty Maintenance Statement	32
Belt Tension, Adjusting Mower Deck Drive	51	Engine, Starting	19
Belt, Checking and Adjusting Alternator	41	Engine, Stopping	20
Belt, Remove & Install Front Mower Deck	51	Exhaust Fumes, Avoid	32
Belt, Remove & Install Side Deck	53	F	
Belt, Replacing Alternator	42	Filter Restriction Indicator, Checking Air	36
Blade PTO, Engaging	24	Filter Sediment Bowl, Servicing Fuel	41
Blade Removal and Installation	54	Filter, Changing Engine Oil and	34
Blades, Sharpening	55	Filter, Changing Hydraulic Oil	44
Brake, Testing Park	12	Fluid Capacities	67
Brakes, Using	17	Four Wheel Drive Lever, Using	16
Break-In Service Intervals	27	Front Mower Deck, Rotating	49
C		Fuel Filter Sediment Bowl, Servicing	41
Capacity Specifications	67	Fuel Safety	7
Caster Wheel Lubrication	28	Fuel Shutoff Valve, Using	18
Checklist, Daily Operating	10	Fuel System, Priming	41
Cleaning Radiator	36	Fuel Tank, Filling	59
Cleaning and Repairing Metal Surfaces	59	Fuses, Checking and Replacing	58
Codes, Starting Trouble	19	G	
Controls, Miscellaneous	11	Grease	28
Controls, Operator Station	10	H	
Coolant Level, Checking	39	Height of Cut, Adjusting	22
Coolant, Recommended Engine	39	High Speed Range Lever, Using	15
Cooling System, Draining	40	Hoses and Clamps, Check Radiator and Air Intake	38
Cooling System, Filling	40	Hour Meter	16
Cooling System, Flushing	40	Hydraulic Lift Cylinders, Lubricate	28
Cruise Control, Using	18	Hydraulic Oil Level, Checking	43
Customer Service	74	Hydraulic Oil and Filter, Changing	44
Cutting Height, Adjusting	22	Hydraulic Steering Cylinder, Lubricate	30
D		Hydraulic and Transmission Oil, Recommended	43
Daily Operating Checklist	10	Hydrostatic Control Arm, Lubricate	30
Differential Lock Pedal, Using	17	Hydrostatic Pedals, Using	16
Dimensions, Machine	68	I	
Dimensions, Mower Deck	68	Indicator Lights	15
Dust Unloading Valve, Clean Rubber	38	Instrument Panel	12
E		K	
Electrical Troubleshooting	64	Key Switch, Using	14
		L	

INDEX

Level, Adjusting Mower Deck	24
Level, Checking Mower Deck	23
Lift Arms, Lubricate	28
Lift Cylinders, Lubricate	28
Lights, Indicator	15
Locks, Deck Transport	18
Lubricant Specifications	68
Lubricants	28
Lubricate Drive Shaft	30
Lubricate Steering Cylinder	30

M

MFWD Oil	47
MFWD, Changing Oil	47
MFWD, Checking Oil Level	47
Meter, Hour	16
Mower Blade Removal and Installation	54
Mower Blades, Balancing	55
Mower Blades, Sharpening	55
Mower Deck Belt Remove & Install	53
Mower Deck Belt, Remove & Install Front	51
Mower Deck Cutting Height, Adjusting	22
Mower Deck Drive Belt Tension, Adjusting	51
Mower Deck Level, Adjusting	24
Mower Deck Level, Checking	23
Mower Deck Specifications	68
Mower Deck Transport Locks	18
Mower Deck Troubleshooting	65
Mower Deck, Rotating	49
Mower Decks, Raising and Lowering	19
Mower Lift Arms, Lubricate	28
Mower Spindle Lubrication	28
Mowing Tips	21

N

Neutral, Adjusting Transmission	46
---------------------------------------	----

O

Oil Level, Checking Hydraulic	43
Oil Level, Checking the Transaxle	44
Oil and Filter, Changing Engine	34
Oil and Filter, Changing Hydraulic	44
Oil, Changing Rear Axle	47
Oil, Changing the Transaxle	45
Oil, Checking Engine	34
Oil, Checking Rear Axle	47
Oil, Rear Axle	47
Oil, Recommended Engine	32
Oil, Recommended Transmission and Hydraulic	43
Operating Safety	4
Operator Station, Mounting and Dismounting the	13

P

PTO Switch, Testing	12
PTO Switch, Using	14
PTO, Engaging Blade	24
Painted Surfaces, Avoid Damage to Plastic and	10

Park Brake and Seat Switch, Testing	12
Park Brake, Testing	12
Parts, Replacement	26
Pedal, Using Differential Lock	17
Pedals, Using Hydrostatic	16
Plastic and Painted Surfaces, Avoid Damage	10
Priming Fuel System	41

R

ROPS Hardware, Tightening	59
Radiator Hoses, Air Intake Hoses and Clamps, Check	38
Radiator, Cleaning	36
Rear Axle Oil	47
Rear Axle Oil, Changing	47
Rear Axle Oil, Checking Level	47
Rockshaft, Lubricate	28
Rotating the Front Mower Deck	49

S

Safety Labels	1
Safety Systems, Testing	12
Safety, Getting On and Off Machine	13
Safety, Operating	4
Safety, Service Cooling System	39
Safety, Tire	9
Screen, Cleaning Engine Cover	36
Seat Belt, Using	13
Seat Platform, Raising and Lowering	33
Seat and Park Brake Switch, Testing	12
Seat, Adjusting	13
Service Literature	26
Service Record	75
Sharpening Blades	55
Shields, Removing and Installing Belt	50
Shutoff Valve, Using Fuel	18
Speed Range Lever, Using High	15
Spindle Lubrication	28
Steering Cylinder, Lubricate	30
Storage, Removing Machine From	66
Storing Machine	66
Storing Safety	66
Switch, Testing Seat and Park Brake	12
Switch, Using Key	14
Switch, Using PTO	14

T

Tank, Filling Fuel	59
Tension, Adjusting Mower Deck Drive Belt	51
Testing PTO Switch	12
Testing Park Brake	12
Testing Safety Systems	12
Testing Seat and Park Brake Switch	12
Throttle Lever, Using	14
Tie Rod Toe-In Adjustment	48
Tie Rod, Lubricate Rear	29
Tire Dimensions	67

INDEX

Tire Inflation Pressures	67
Toe-In, Adjusting	48
Torque Specifications	68
Torque, ROPS Hardware	59
Towing Machine	20
Trailer the Machine	20
Transaxle Oil Level, Checking the	44
Transaxle Oil, Changing the	45
Transmission Neutral, Adjusting	46
Transmission and Hydraulic Oil, Recommended	43
Transport Locks, Mower Deck	18
Transporting Machine	20
Transporting Machine on Trailer	20
Travel Speed Specifications	67
Trouble Codes (Starting), Using	19
Troubleshooting Chart, Using	63

V

Valve, Clean Rubber Dust Unloading	38
Valve, Using Fuel Shutoff Valve	18

W

Warranty Maintenance Statement, Engine	32
Warranty, Emission System	3
Warranty, Product	69
Wheel Removal and Installation, Front	60
Wheel Removal and Installation, Rear	61

NOTES

NOTES

NOTES

JOHN DEERE QUALITY STATEMENT

John Deere Quality



John Deere equipment is more than just a purchase, it's an investment in quality. That quality goes beyond our equipment to your John Deere dealer's parts and service support. This support is needed to keep you a satisfied customer.

That's why John Deere has initiated a process to handle your questions or problems, should they arise. The following three steps will help guide you through the process.

Step 1

Refer to your operator's manual

- A. It has many illustrations and detailed information on the safe and proper operation of your equipment.
- B. It gives troubleshooting procedures, and specification information.
- C. It gives ordering information for parts catalogs, service and technical manuals.
- D. If your questions are not answered in the operator's manual, then go to Step 2.

Step 2

Contact your dealer (Call 1-800-537-8233 to locate your nearest John Deere dealer)

- A. Your John Deere dealer has the responsibility, authority, and ability to answer questions, resolve problems, and fulfill your parts and service needs.
- B. First, discuss your questions or problems with your dealer's trained parts and service staff.
- C. If the parts and service people are unable to resolve your problem, see the dealership manager or owner.
- D. If your questions or problems are not resolved by the dealer, then go to Step 3.

Step 3

Call the John Deere Customer Communications 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 Communications Center.
- B. For prompt, effective service, please have the following ready before you call:
 - The name of the dealer with whom you've been working.
 - Your equipment model number.
 - Number of hours on machine (if applicable).
 - Your 13-digit serial number which you recorded on the inside front cover of this manual.
 - If the problem is with an attachment, your attachment identification number.
- C. Then call 1-800-537-8233 and our advisor will work with your dealer to investigate your concern.

