JOHN DEERE
WORLDWIDE COMMERCIAL & CONSUMER EQUIPMENT DIVISION

Wide Area Mower
1600
1620

OMTCU14531 L0

OPERATOR'S MANUAL

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

California Proposition 65 Warning

North American Version
Litho in U.S.A.

DCY
OMTCU14531E

INTRODUCTION

Thank You for Purchasing a John Deere Product

We appreciate your business 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.

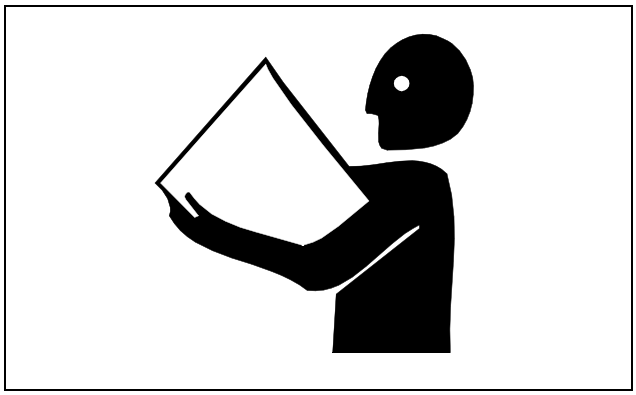
Sections in your operator's manual are placed in a specific order to help you understand all the safety messages and learn the controls so you can operate this machine safely. You can also use this manual to answer any specific operating or servicing questions. A convenient index located at the end of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

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 PIN (TC1600X010001 -)

1620 PIN (TC1620X010001 -)

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.

MX0439

DATE OF PURCHASE:

_____

DEALER NAME:

_____

DEALER PHONE:

_____

PRODUCT IDENTIFICATION NUMBER (A):

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

ENGINE SERIAL NUMBER (B):

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

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John Deere Worldwide Commercial and Consumer Equipment Division
Horicon, WI
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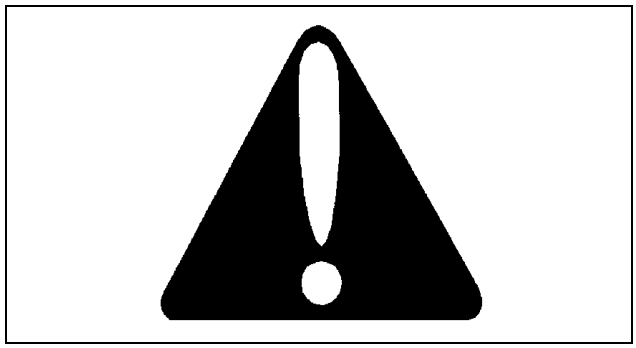
OMTCU14531 L0 - English

Understanding the Machine Safety Labels

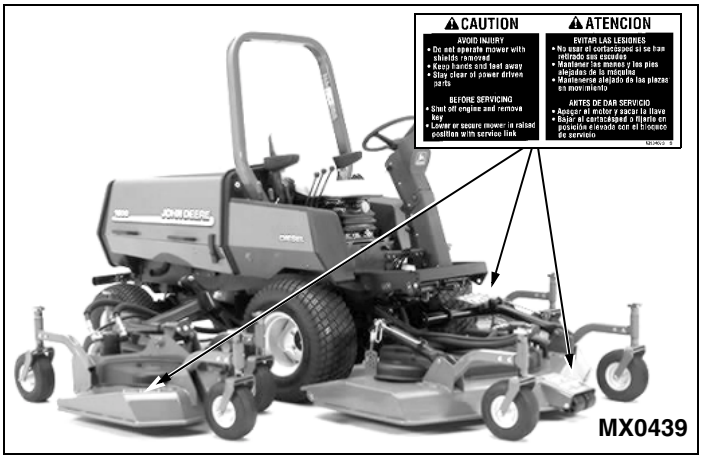


The machine safety labels shown in this section are placed in important areas on your machine to draw attention to potential safety hazards.

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



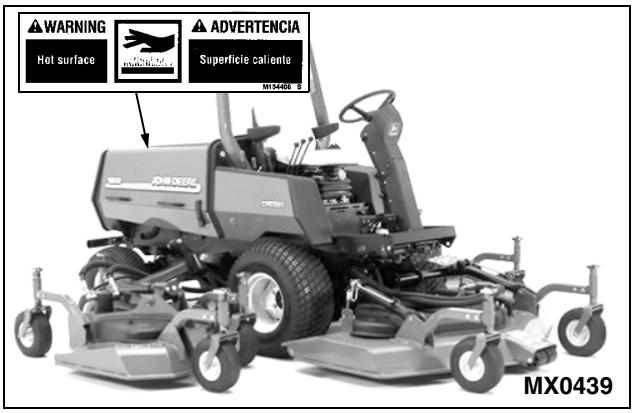
AVOID INJURY

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

BEFORE SERVICING

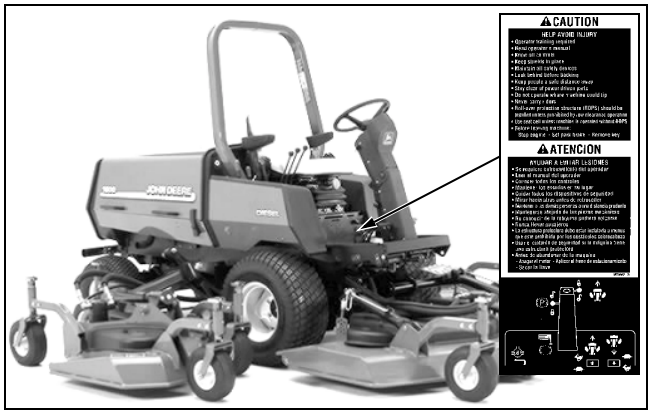
- Shut off engine and remove key
- Lower or secure mower in raised position with service link

WARNING



Hot surface

CAUTION

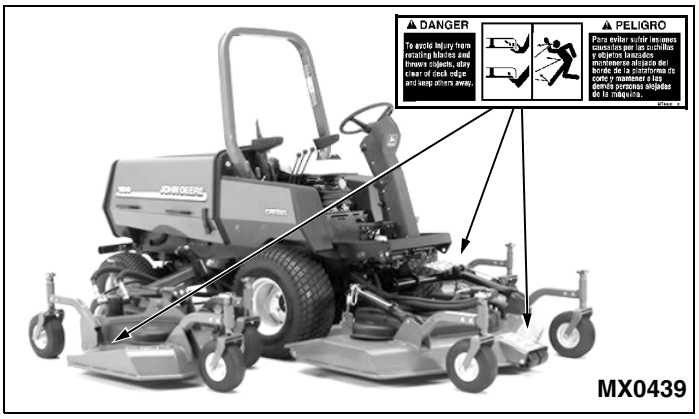


HELP AVOID INJURY

- 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
- Before leaving machine:

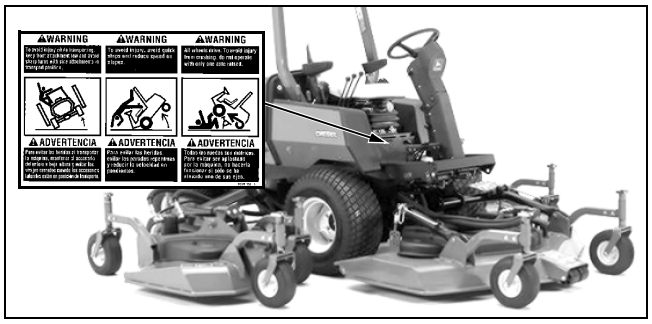
  - Stop engine - Set park brake - Remove key

DANGER



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

WARNING

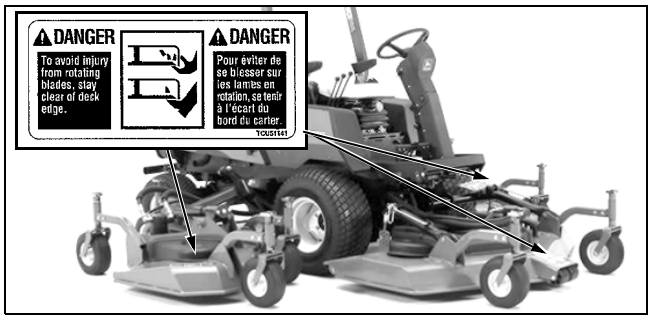


To avoid injury while transporting, keep front attachment low and avoid sharp turns with side attachments in transport position.

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



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

WARNING

USE SEAT BELT

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

ROLL-OVER PROTECTIVE STRUCTURE

To maintain operator protection and ROPS certification:

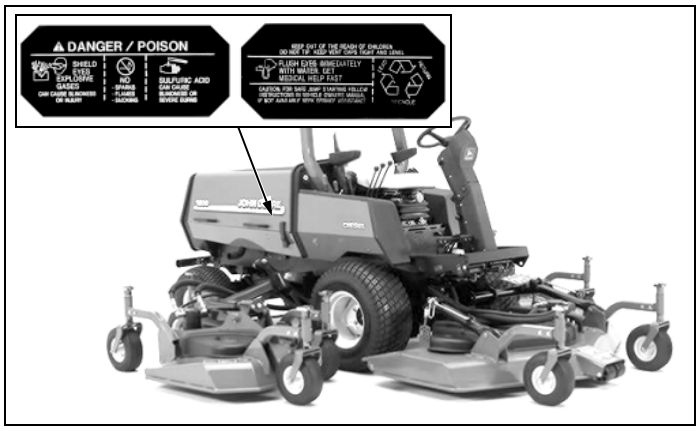
- Replace damaged ROPS, do not repair or revise.
- Any alteration of ROPS must be approved by manufacturer

CERTIFICATION

Performance certified at date of manufacture to:

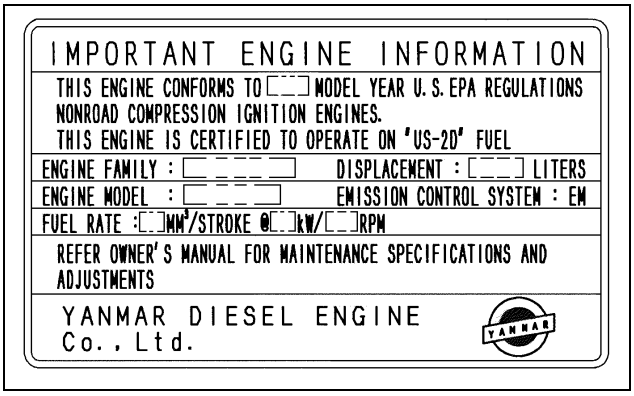
OSHA: 29 CFR, Part 1928, Subpart C, John Deere Mowers, Deere & Company, Moline, Illinois

DANGER / POISON



- 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)



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

The emissions warranty described below 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/transportable[1]) 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

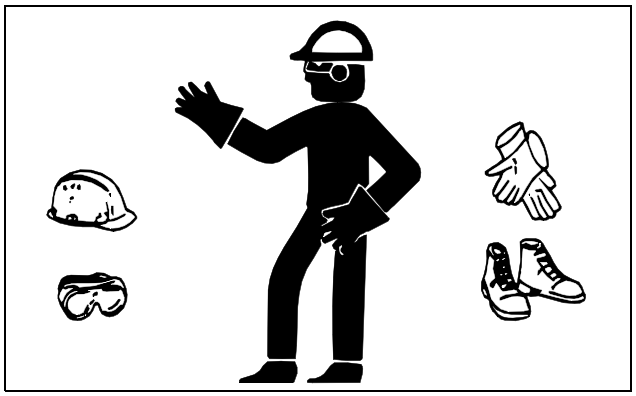
This model has been tested and evaluated by the manufacturer and conforms to American National Standard Institute B-71.4 safety specifications for commercial turf care equipment as a ride-on turf tractor.

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.
- Study the safety and operation sections of this manual before operating the machine.
- If the operator of the machine cannot read English, the machine owner's 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.

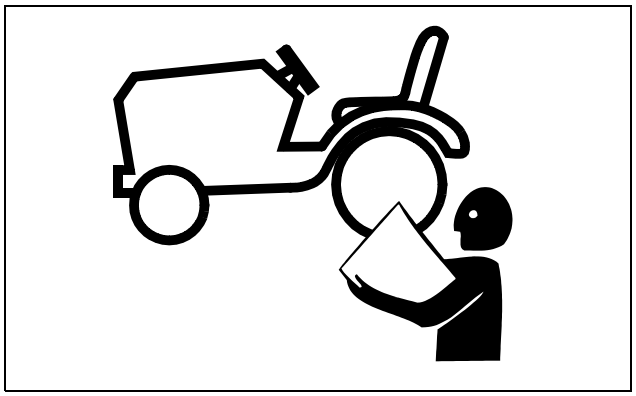
1. Equipment moved at least once every 12 months.

Wear Appropriate Clothing



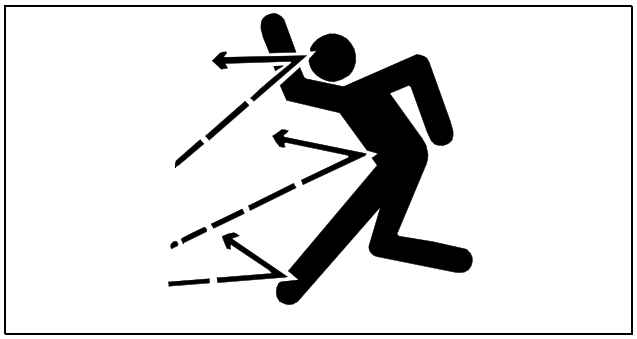
- Wear close fitting clothing and safety equipment appropriate for the job.
- Wear a suitable protective device such as earplugs. Loud noise can cause impairment or loss of hearing.
- Do not wear radio or music headphones. Safe service and operation requires your full attention.

Operating Safely



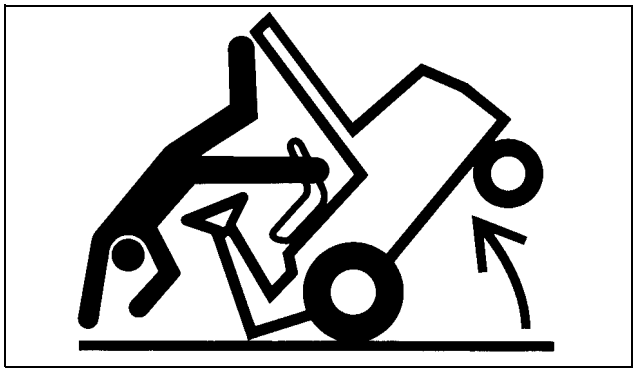
- Inspect machine before you operate. Be sure hardware is tight. Repair or replace damaged, badly worn, or missing parts. Be sure guards and shields are in good condition and fastened in place. Make any necessary adjustments before you operate.
- Check before each use that operator presence controls are functioning correctly. Test safety systems. Do not operate unless they are functioning correctly.
- Do not change the engine governor setting or overspeed the engine.
- 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 do not point it at anyone.
- Do not wear radio or music headphones while operating the machine. Safe operation requires your full attention.

Checking Mowing Area



- 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.

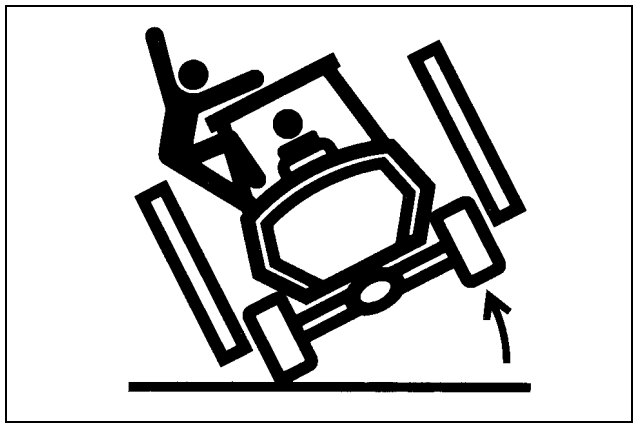
Avoid Tipping



- Do not drive where machine could slip or tip.

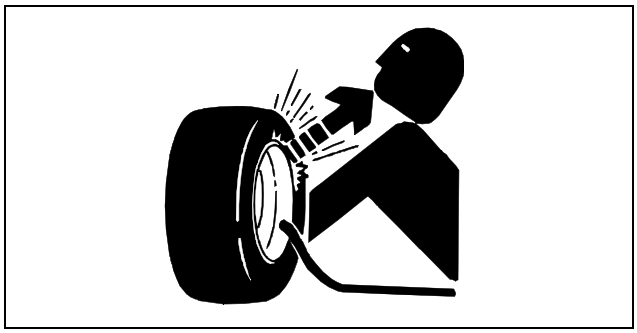
- Always wear seat belt with ROPS installed.
- Stay alert for holes and other hidden hazards in the terrain.
- Keep away from drop-offs.
- Slow down before you make a sharp turn or operate on a slope.
- Transport machine with decks lowered to improve stability.
- Drive up and down a hill - not across. Be careful when you change direction on a slope.
- 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.

Keep Riders Off



- Only allow the operator on the machine. Keep riders off.
- Riders on the machine or attachment may be struck by foreign objects or thrown off the machine causing serious injury.
- Riders obstruct the operator's view resulting in the machine being operated in an unsafe manner.

Tire Safety

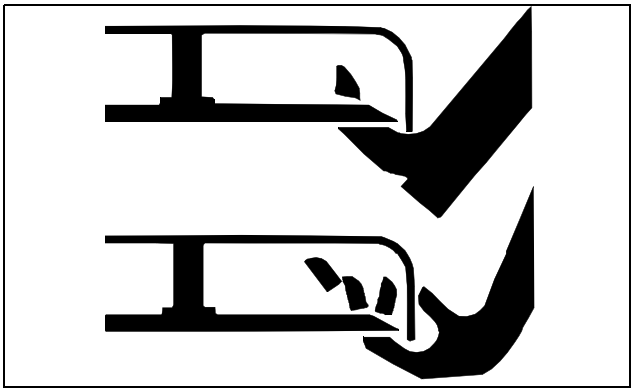


Explosive separation of a tire and rim parts can cause serious injury or death:

- Do not attempt to mount a tire without the proper equipment and experience to perform the job.
- Always maintain the correct tire pressure. Do not inflate the tires above the recommended pressure. Never weld or heat a wheel and tire assembly. The heat can cause an increase in air pressure resulting in a tire explosion. Welding can structurally weaken or deform the wheel.
- When inflating tires, use a clip-on chuck and extension hose long enough to allow you to stand to one side and NOT in front of or over the tire assembly.
- Check tires for low pressure, cuts, bubbles, damaged rims or missing lug bolts and nuts.

Rotating Blades are Dangerous

HELP PREVENT SERIOUS OR FATAL ACCIDENTS:

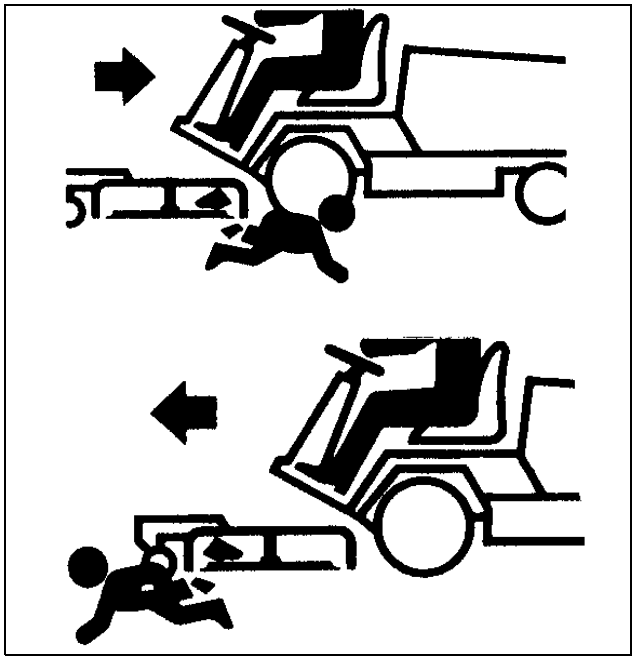


- Rotating blades can cut off arms and legs.
- Keep hands, feet and clothing away from mower deck when engine is running.
- Be alert at all times, drive forward carefully. People, especially children can move quickly into the mowing area before you know it.
- Before backing up, shut off PTO and look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

machine carefully, especially for children.

- Do not mow in reverse.
- Shut off blades when you are not mowing.
- Do not operate machine if you are under the influence of drugs or alcohol.
- Park machine safely before inspecting or unplugging mower or bagger.

PROTECT CHILDREN:



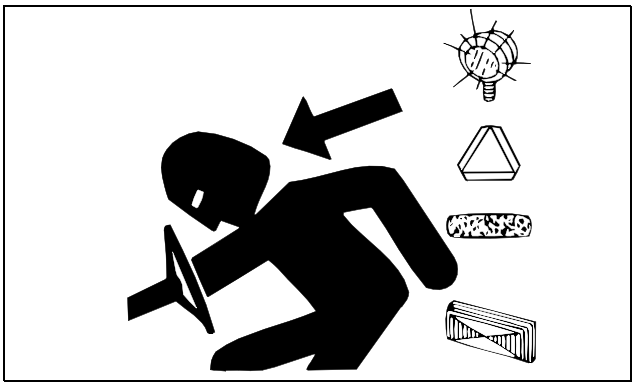
- Never assume that children will remain where you last saw them. Children are attracted to mowing activity, stay alert to the presence of children.
- Keep children out of the area when you are mowing. Turn the machine off if a child enters the mowing area.
- Use extra care when you come to blind corners, 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 machine or any attachment. 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.

Driving Safely on Public Roads

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



- Use safety lights and devices. Slow moving machines when driven on public roads are hard to see, especially at night.
- Whenever driving on public roads, use flashing warning lights and turn signals according to local regulations. Extra flashing warning lights may need to be installed.

Practice Safe Maintenance

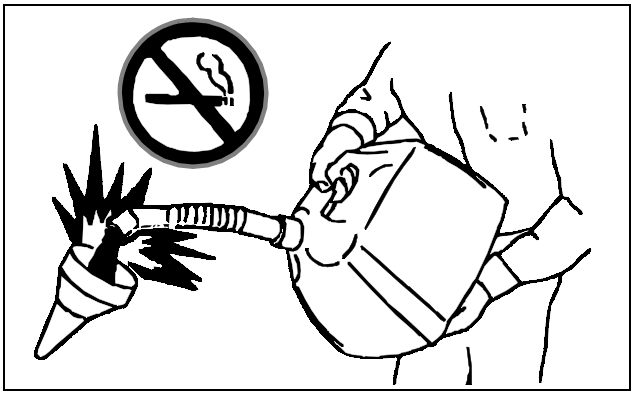
- Understand service procedure before doing work. Keep area clean and dry.
- Only trained people should service the machine.
- Never lubricate, service, or adjust machine while it is moving. Keep safety devices in place and in working condition. Keep hardware tight.
- Keep hands, feet, clothing, jewelry, and long hair away from any moving parts, to prevent them from getting

caught.

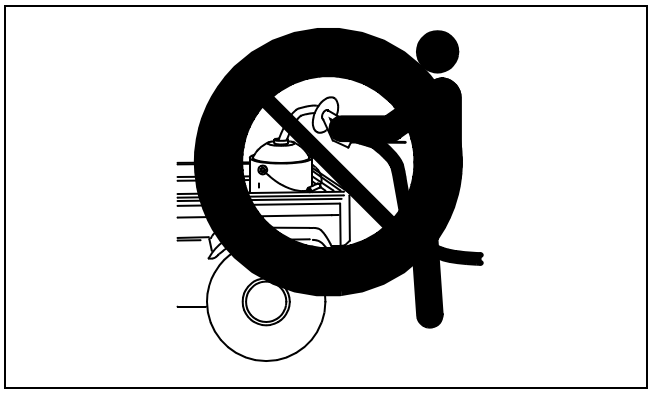
- Lower attachments to the ground before servicing machine. Disengage all power and stop the engine. Lock park brake and remove the key. Let machine cool.
- Disconnect battery or remove spark plug wire before making any repairs.
- Before servicing machine, carefully release pressure from components with stored energy such as hydraulic components.
- Securely support any machine elements that must be raised for service work. Lock transport or service locks on all decks before working on machine with raised decks.
- 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 decals.
- Help prevent fires. Remove any buildup of grease, oil, or debris from the engine compartment and cutting units.
- Disconnect battery negative (–) cable before making adjustments on electrical systems or welding on machine.
- Charge batteries in an open, well-ventilated area, away from sparks. Unplug battery charger before connecting or disconnecting from the battery. Use insulated tools.
- Do not modify machine. 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.

Handling Fuel Safely

Fuel and fuel vapors are highly flammable:

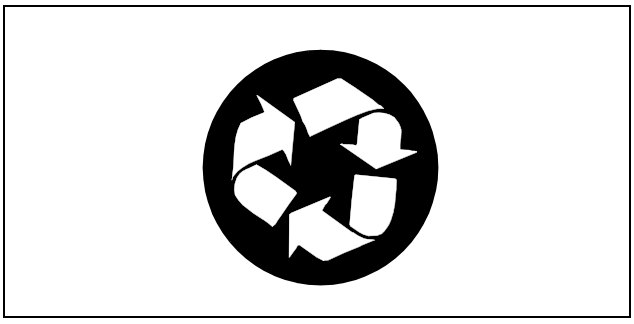


- DO NOT refuel machine while you smoke, when machine is near an open flame or sparks, or when engine is running. STOP engine before removing tank cap.
- Fill fuel tank outdoors. Never fill fuel tank or drain fuel from a machine in an enclosed area.
- Prevent fires: clean oil, grease and dirt from machine. 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.
- 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 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.

Handling Waste Product and Chemicals

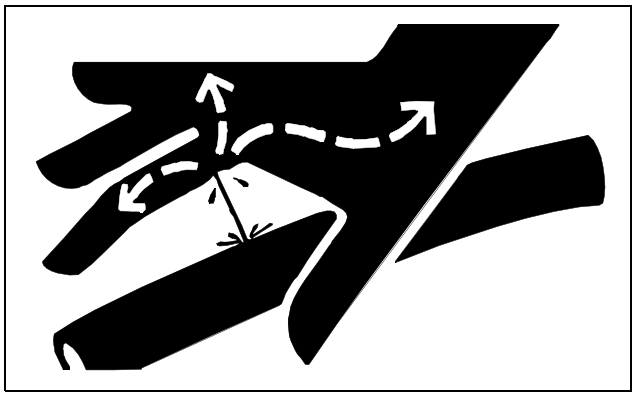


Waste products, such as, used oil, fuel, coolant, brake fluid, and batteries, can harm the environment and people:

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

Avoid High Pressure Fluids



- Hydraulic hoses and lines can fail due to physical damage, kinks, age, and exposure. Check hoses and lines regularly. Replace damaged hoses and lines.
- Hydraulic fluid connections can loosen due to physical damage and vibration. Check connections regularly. Tighten loose connections.
- Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure.
- Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.
- If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A. Information may be obtained in the United States and Canada only by calling 1-800-822-8262.

Daily Operating Checklist

❑ Test safety systems.

❑ Check tire pressure.

❑ Check fuel level.

❑ Check engine, transmission, and hydraulic oil levels.

❑ Remove grass and debris from machine.

❑ Clean air intake screen.

❑ Check area below machine for leaks.

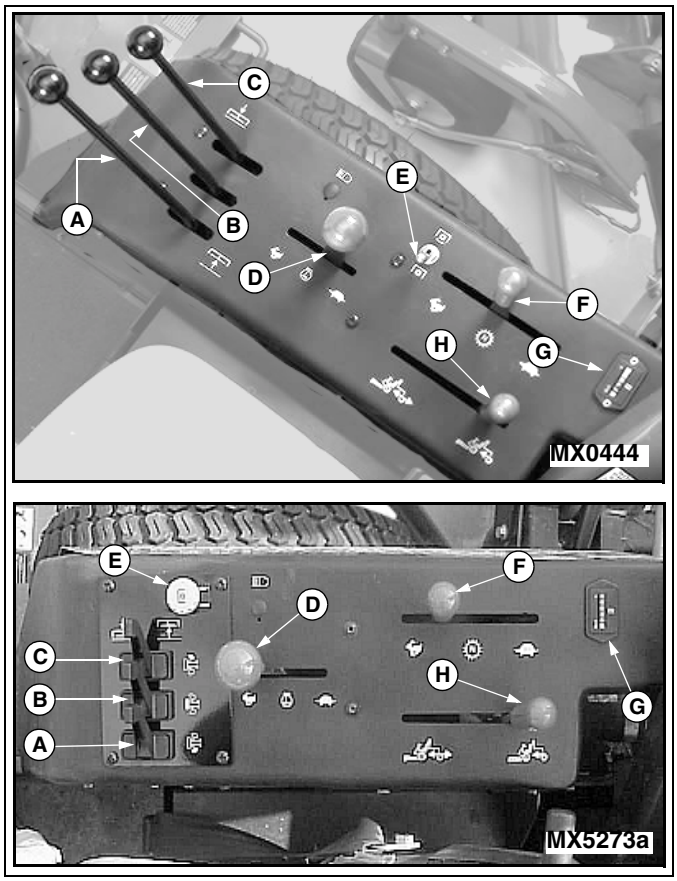
❑ Check air restriction indicator.

❑ Check engine coolant level.

Avoid Damage to Plastic and Painted Surfaces

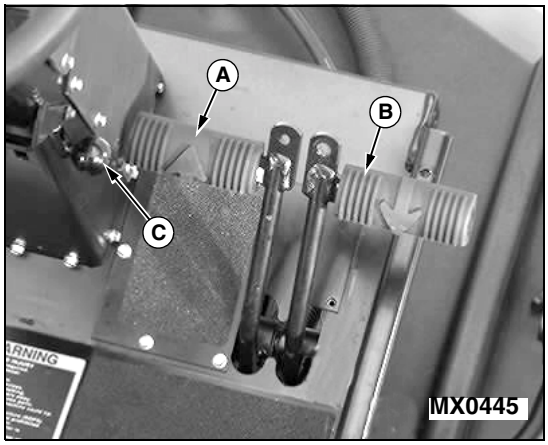
- Do not wipe plastic parts unless rinsed first.
- Insect repellent spray may damage plastic and painted surfaces. Do not spray insect repellent near machine.
- Be careful not to spill fuel on machine. Fuel may damage surface. Wipe up spilled fuel immediately.

Operator Station Controls

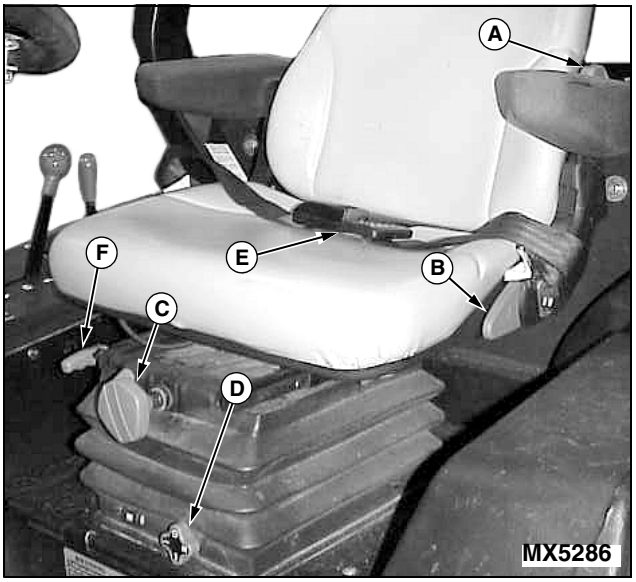


Picture Note: Machines with serial numbers TC1600X010001-020000 or TC1620X010001-020000 shown in top photo. Machines starting with serial number TC1600X020001 or TC1620X020001 shown in bottom photo.

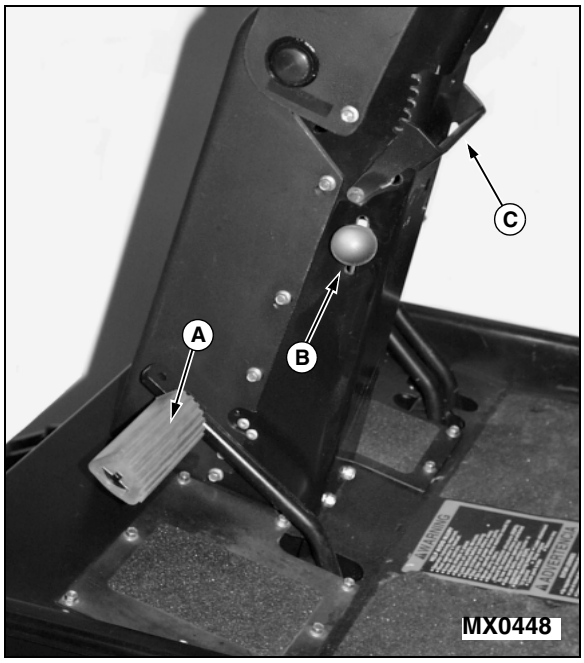
A - Left Mower Deck Lift Lever (1600 Only)
B - Front Mower Deck Lift Lever
C - Right Mower Deck Lift Lever (1600 Only)
D - Throttle Lever
E - PTO Switch
F - Speed Range Lever
G - Hour Meter
H - Four Wheel Drive Lever



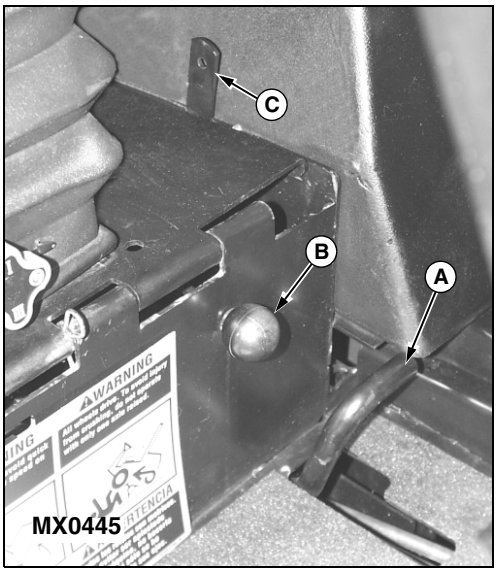
A - Forward Hydrostatic Pedal
B - Reverse Hydrostatic Pedal
C - Cruise Control Knob



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

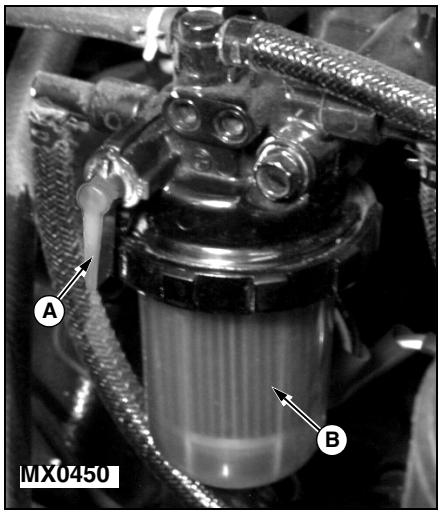


A - Brake Pedal
B - Park Brake Lock
C - Steering Column Tilt Lock



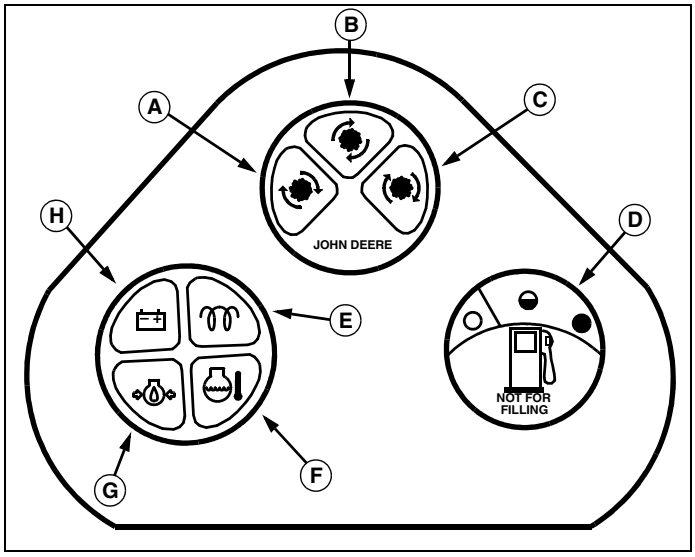
A - Differential Lock
B - Seat Platform Release Knob
C - Seat Platform Support Lever

Miscellaneous Controls



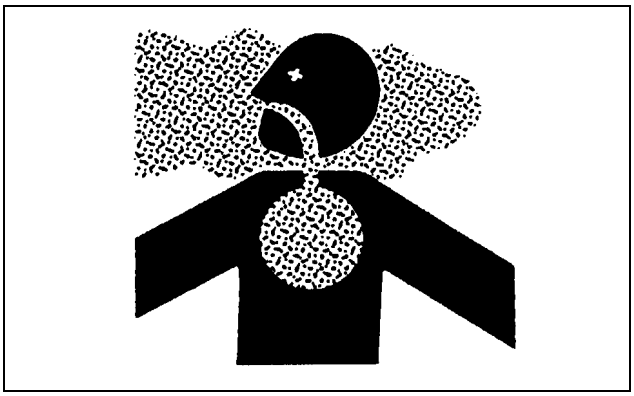
A - Fuel Shutoff Valve
B - Fuel Filter/Water Separator

Instrument Panel



A - Left Mower Deck PTO Lamp (1600 Only)
B - Front Mower Deck PTO Lamp
C - Right Mower Deck PTO Lamp (1600 Only)
D - Fuel Gauge
E - Engine Manifold Heater Lamp
F - Engine Coolant Temperature Lamp
G - Engine Oil Pressure Lamp
H - Battery Discharge Lamp

Testing Safety Systems



CAUTION: Avoid injury! Sickness or possible death can result from breathing engine exhaust fumes.

DO NOT run an engine in an enclosed area without:

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

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

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 and to the right, to the PTO engaged position.
4. Try to start 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 Seat and Park Brake Switch

1. Sit on seat.
2. Turn off PTO switch.
3. Unlock park brake.
4. Start engine.
5. Raise up off of seat, but do not get off tractor.

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

Testing Park Brake

1. Stop 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: Park brake must prevent machine from moving. If machine moves, brakes need to be adjusted. See your John Deere Distributor.

Getting On and Off of Machine

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

1. Place right foot on mower deck (A) (1600 only) 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:

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.

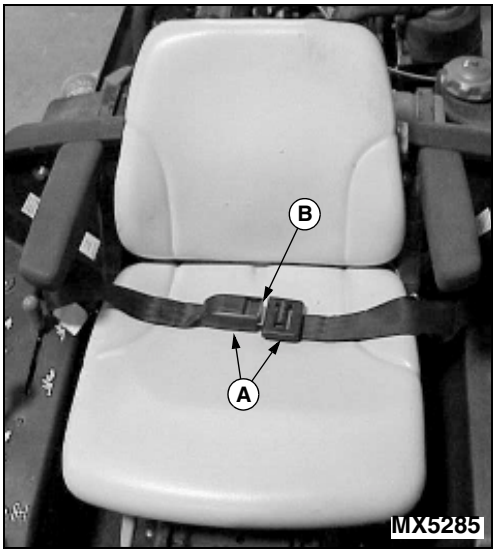
To adjust seat spring tension:

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.



Fasten Belt

• Connect both ends of the seat belt (A) until they “click” together. Loosen or tighten seat belt until operator is firmly held onto the seat.

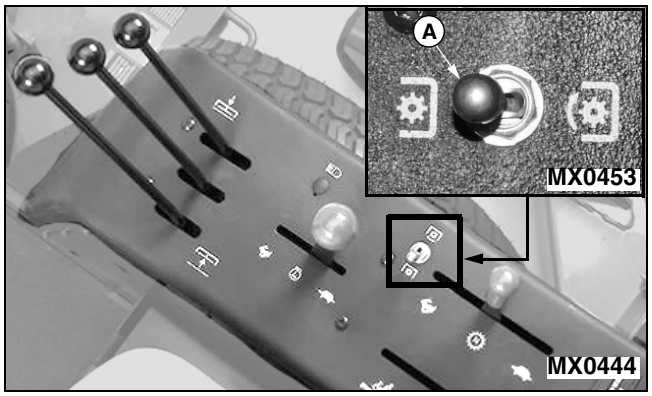
Release Belt

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

Using PTO Switch

NOTE: Starter will not crank if PTO is engaged.

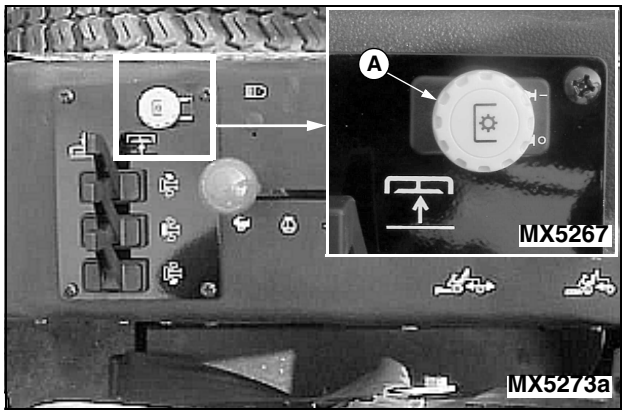
Machines With Serial Numbers TC1600X010001-020000 or TC1620X010001-020000



• Pull switch (A) up and move it to the right to engage (PTO) the PTO.

• Move switch (A) to the left to disengage (PTO) the PTO.

Machines Starting With Serial Numbers TC1600X020001 or TC1620X020001



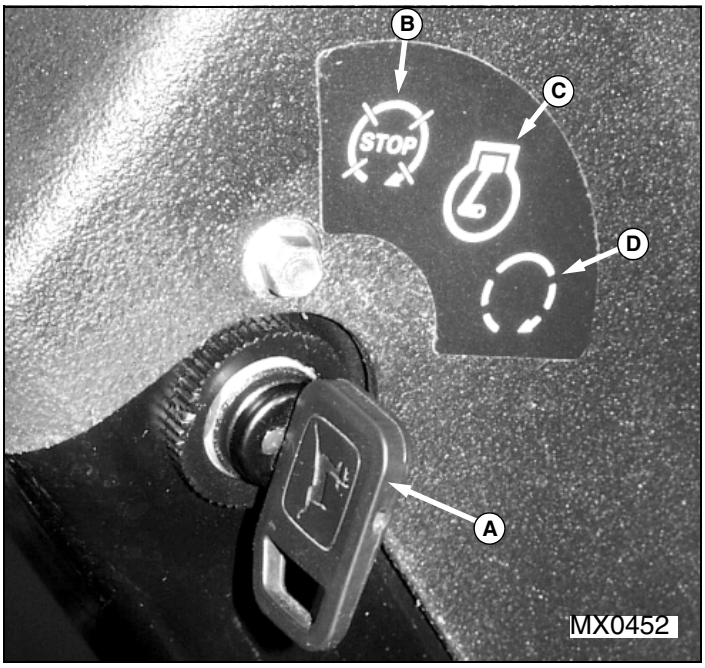
• Pull PTO knob (A) up to engage (PTO) the PTO.

• Push PTO knob (A) down to disengage (PTO) the PTO.

Using Key Switch

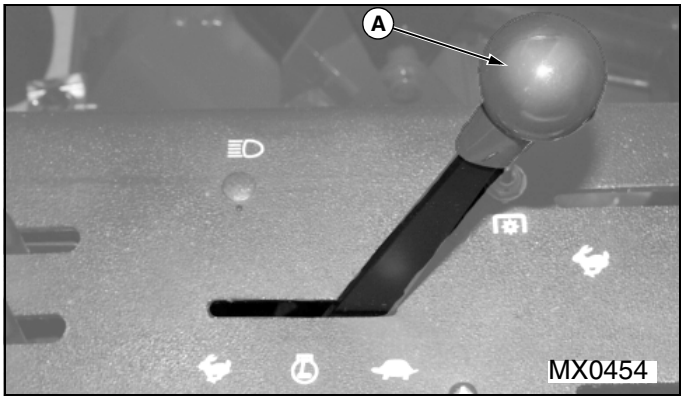
NOTE: Starter will not crank if any of the following conditions exist:

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



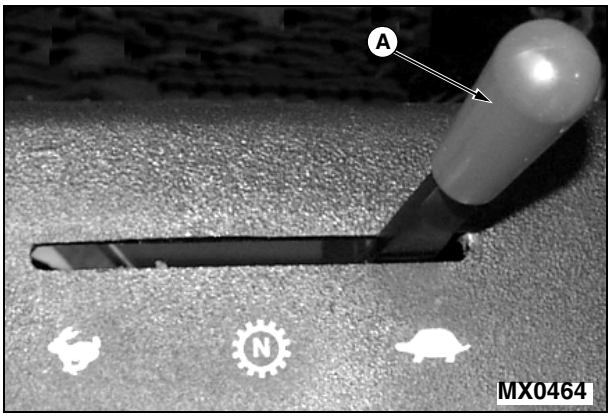
- To turn ignition off, turn the key switch (A) to the stop position (B).
- To turn ignition on, turn key switch to the run position (C). Indicator lights on instrument panel should go on, and beeper will sound.
- To start engine, wait for engine manifold heater light to turn off, turn key switch to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

Using Throttle Lever



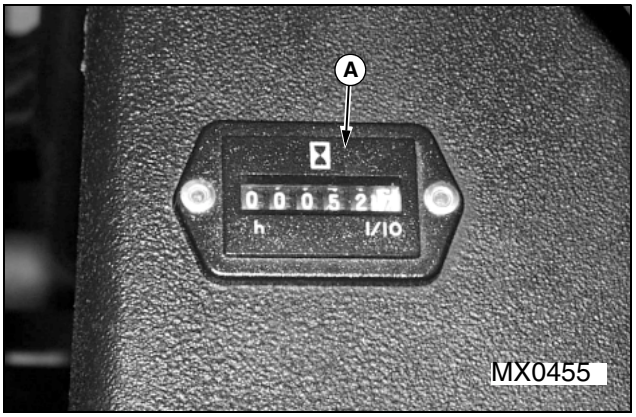
- Pull the throttle lever (A) to the rear for slow idle (🐢). Use this position to start engine and maneuver the mower in confined spaces.
- Push throttle lever fully forward to the fast idle (🐇) position for transporting and mowing.

Using Speed Range Lever



- 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.

Hour Meter

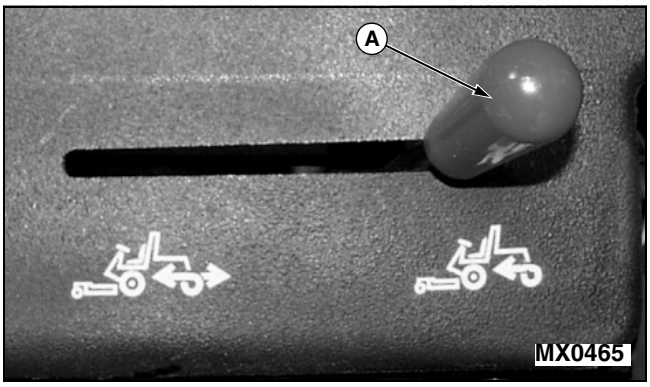


The hour meter (A) records the number of hours the engine has run.

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.

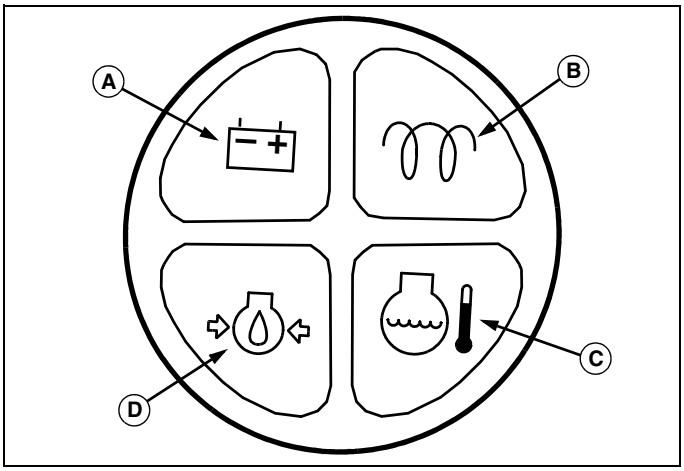


- Pull back on four wheel drive lever (A) (position shown) to use “on-demand” four wheel drive. Rear wheels will engage whenever rear wheel slip is detected, and will disengage automatically.
- Push four wheel drive lever forward to engage full time four wheel drive. Four wheel drive is locked in for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

Indicator Lights

Battery Discharge 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 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.

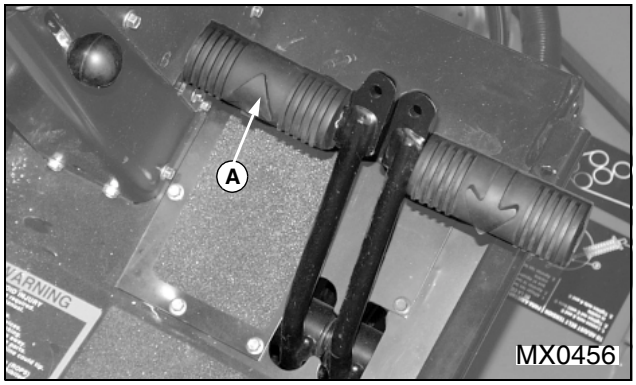
Engine Oil Pressure Light

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.

Using Hydrostatic Pedals

Using Forward Travel Pedal:

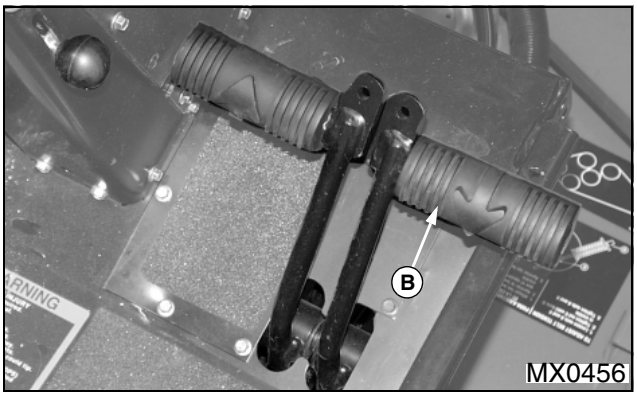


1. Push the forward travel pedal (A) down to begin driving machine. Push the pedal down more to travel faster.

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.

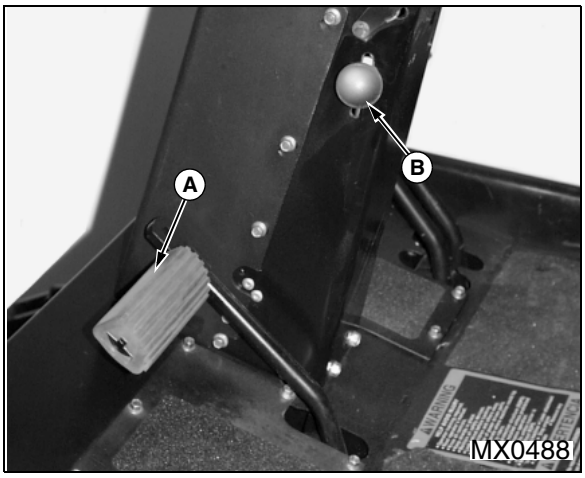


1. Push the reverse travel pedal (B) down to back the machine. Push the pedal down more to travel faster.

2. Release pedal to return to neutral and stop the machine.

Using Brakes

Using Brake Pedal



1. Push the brake pedal (A) down to hold the machine stationary, or for an emergency stop.

Using Park Brake

1. Lock park brake by depressing brake pedal (A) fully, and sliding park brake lock knob (B) upwards. Hold knob up and release brake pedal. Pedal should stay locked down.

2. Unlock park brake by depressing brake pedal until park brake knob drops, then release pedal.

Using Differential Lock Pedal

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.

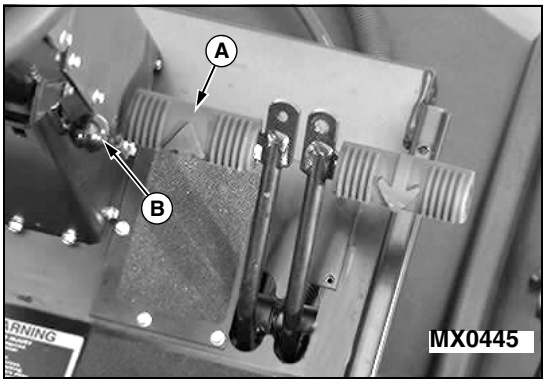
To unlock the differential:

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.

Using Cruise Control

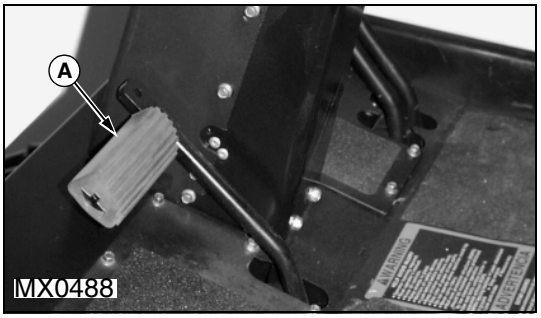
Engage Cruise Control



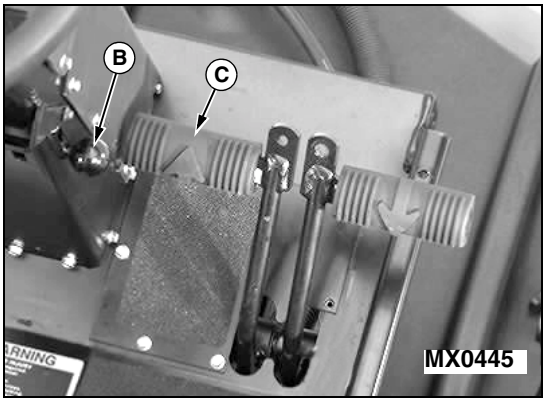
1. Push the forward travel pedal (A) at least 1/3 of the way down to desired travel speed.
2. Pull up and hold the cruise control knob (B).
3. Remove foot pressure from forward travel pedal.
4. Release cruise control knob.

Disengaging Cruise Control

Disengage the cruise control by performing any of the following operations:



- Push down brake pedal (A).

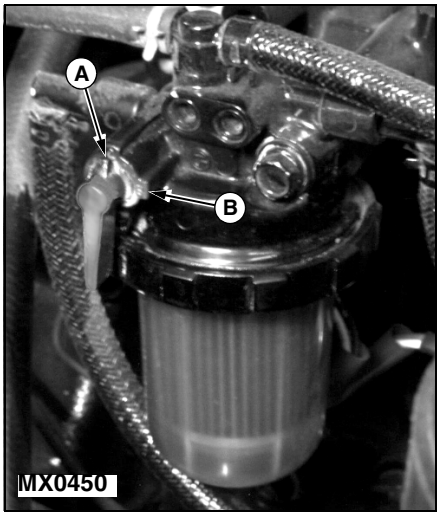


- Push down on the cruise control knob (B).
- Tap the forward travel pedal (C).

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.

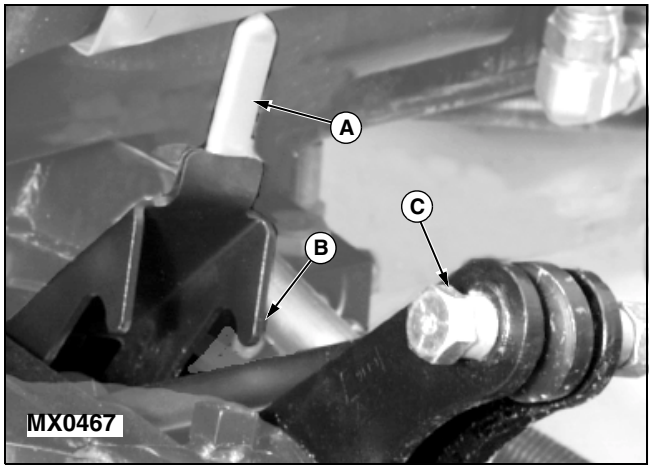


2. Rotate the fuel shutoff valve to the open or closed position as follows:

- 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 Side Mower Deck Transport Locks (1600)

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

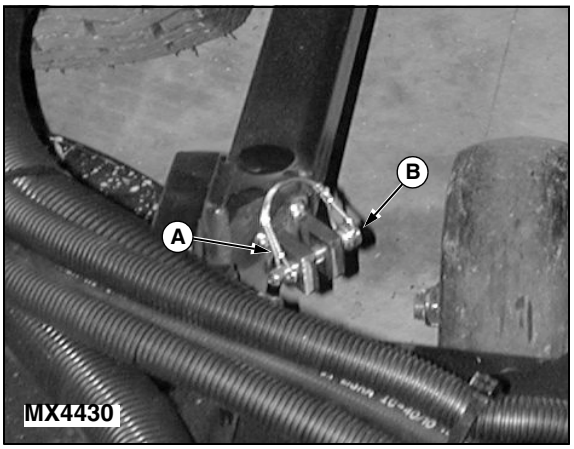


3. Push left and right side transport lock levers (A) down until hooks (B) are over pivot pins (C).
4. Lift transport lock handle to unlock. If mower deck has been lowered while lock is engaged, it will be necessary to raise deck up to unlock transport lock.

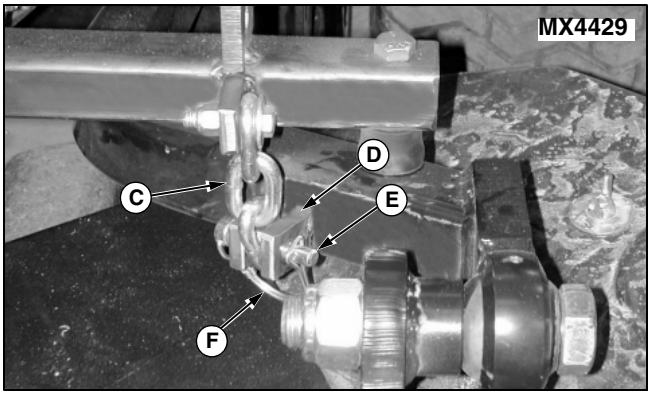
Using Front Mower Deck Service Latch (1620)

CAUTION: Avoid injury! Use service latch while working on deck in the raised position. Do not use latch when transporting machine. Lower deck to ground when driving machine.

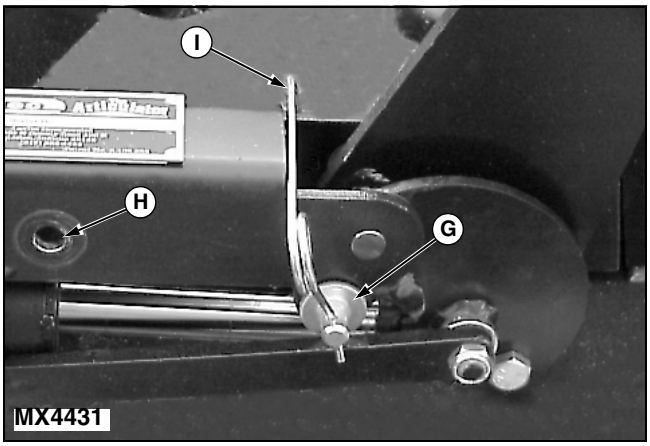
1. Bring blades and machine travel to a stop. Set park brake.
2. Raise front deck to top of travel until rubber stops begin to compress.



3. Unlock spring retainer (A) from service latch lock pin (B) on lift arm.
4. Remove service latch lock pin.



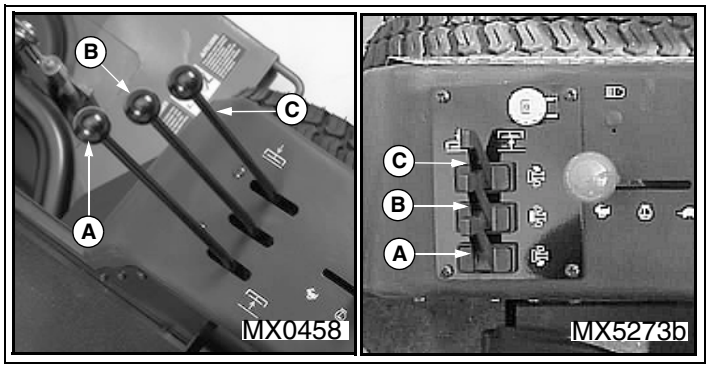
5. Place service latch lock chain (C) into lift arm bracket (D), and install service latch lock pin (E) through bracket and chain.
6. Lock spring retainer (F) over end of service latch lock pin.
7. Repeat for service latch lock on other lift arm.



8. Remove lynch pin (G) from storage position (H) and insert into lock position (shown). Lock spring latch (I) to secure lynch pin to mower deck.

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.



Picture Note: Machines with serial numbers TC1600X010001-020000 or TC1620X010001-020000 shown in left photo. Machines starting with serial number TC1600X020001 or TC1620X020001 shown in right photo.

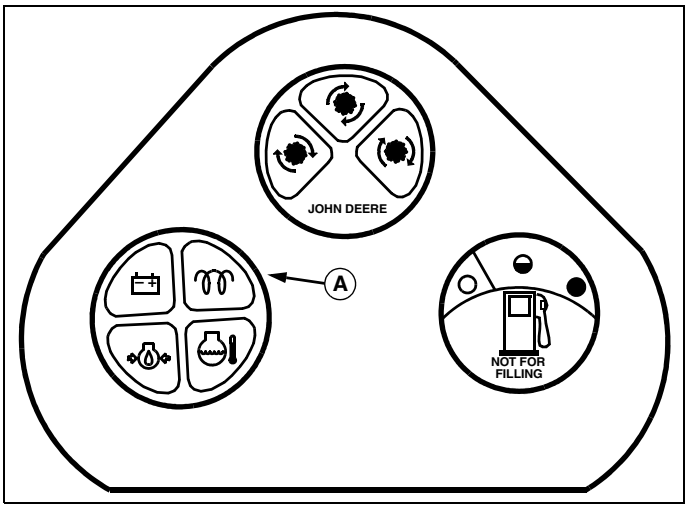
A - Left deck lever (1600 Only)
B - Front deck lever
C - Right deck lever (1600 Only)

1. To raise mower deck, increase engine speed and pull mower deck lift levers rearward. Mower deck(s) will raise up until levers are released, or attachment reaches top of travel, whichever occurs first.

2. To lower mower deck, momentarily push lever forward. Attachment will drop fully down to ground. If deck needs to be stopped before it lowers completely, momentarily pull 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 front deck and cycle PTO switch from on to off, then on again.

Using Starting Trouble Codes



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 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).
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 that 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. Let engine run at low throttle a few seconds.
3. Lock the park brake.
4. Lower mower decks to ground.
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).

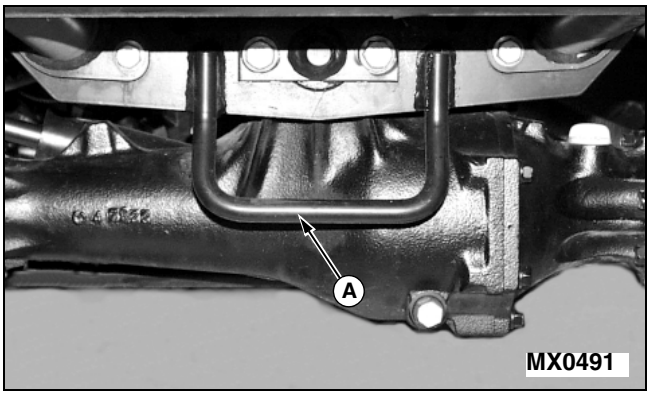
4. Move speed range lever forward to transport position.

Towing Machine

IMPORTANT: Avoid damage! Do not tow machine faster than 15 m.p.h. 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.



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 across 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.

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.

Adjusting Cutting Height

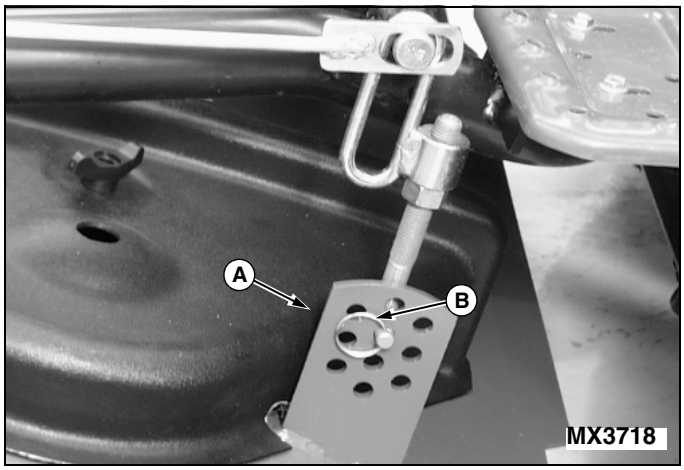
1. Stop machine on level surface, PTO off, park brake locked.

2. Raise all mower decks. Engage left and right side deck transport locks. Stop engine.

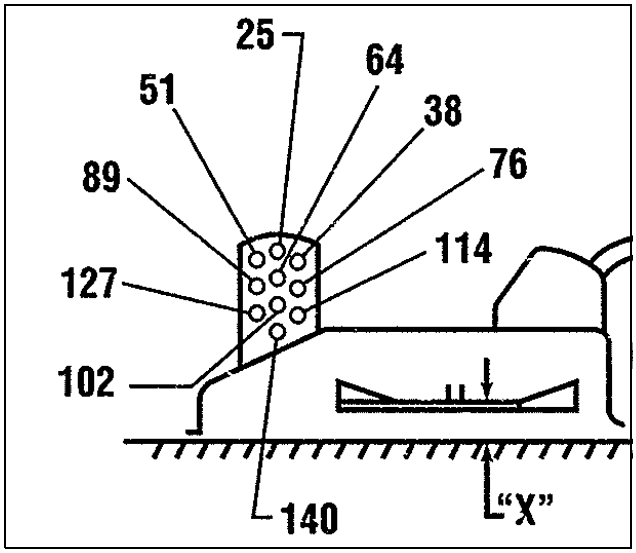
3. Check tire pressures on all machine tires, and deck caster wheels.

- 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



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



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

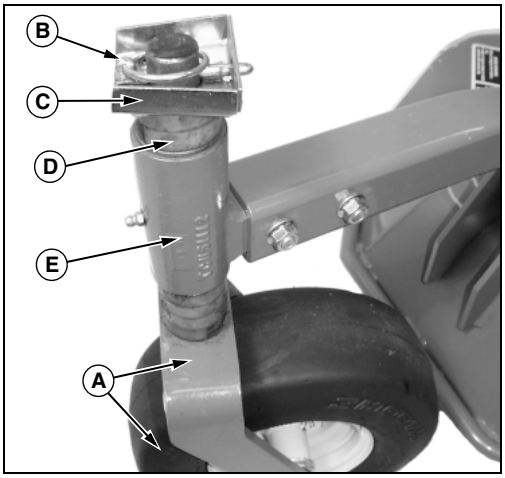
3. Install retainer rings into hanger pins.

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.

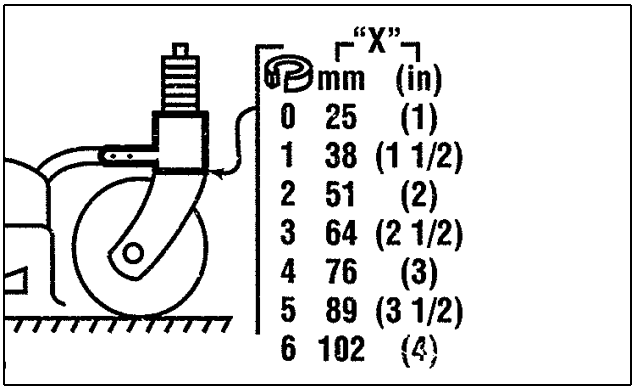
1. Raise mower decks.



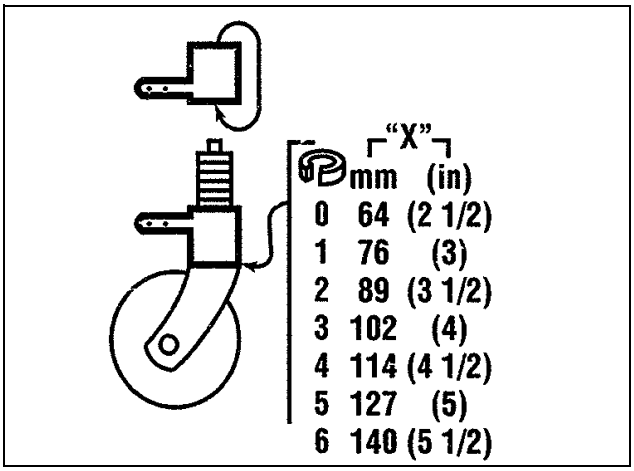
2. Support the caster wheel and bracket (A) with one hand, while removing quick-lock pin (B) and spacer guard (C).

3. Remove the spacers (D) from the top of the caster pivot shaft.

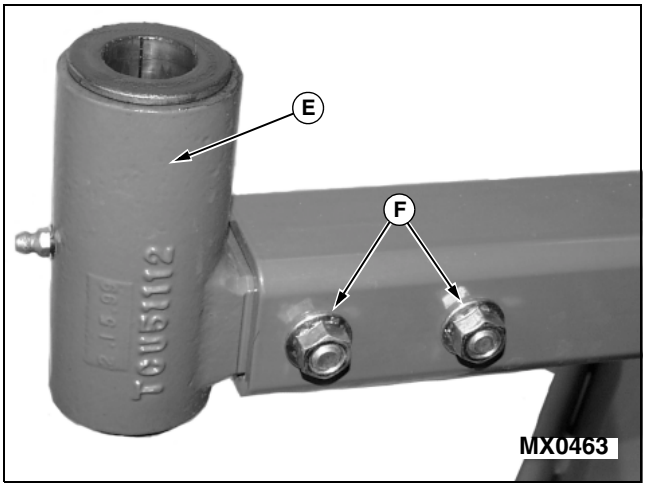
4. Lower the caster and pivot shaft out of the caster support bracket (E).



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.

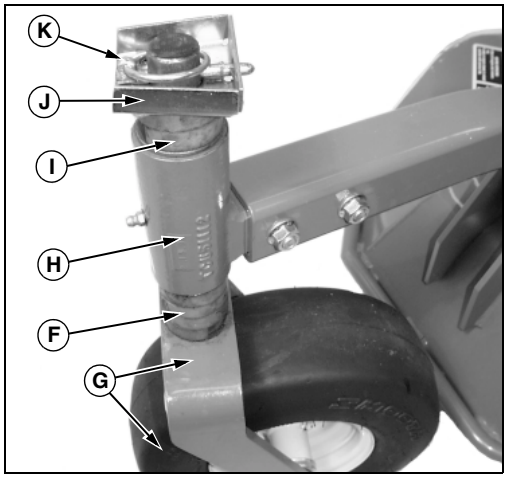


6. Flip caster support brackets over to adjust blades to higher than 102 mm (4 in.) cutting height.



- 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.



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

9. Install the caster wheel and bracket (G) up though 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:

a. Lower mower deck to ground.

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

c. Tighten caster support bracket hardware.

Checking 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)

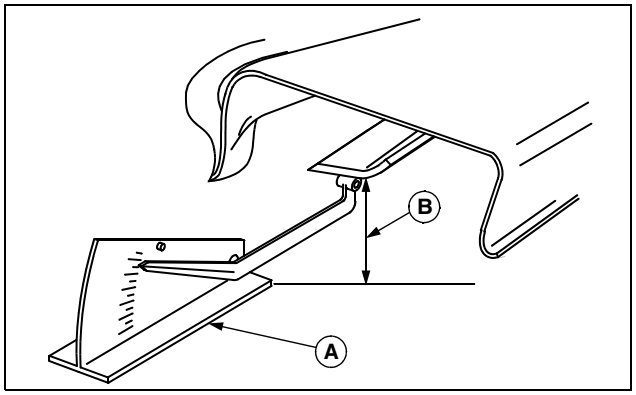
4. Set the mower decks at the desired cutting height.

5. 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.



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.

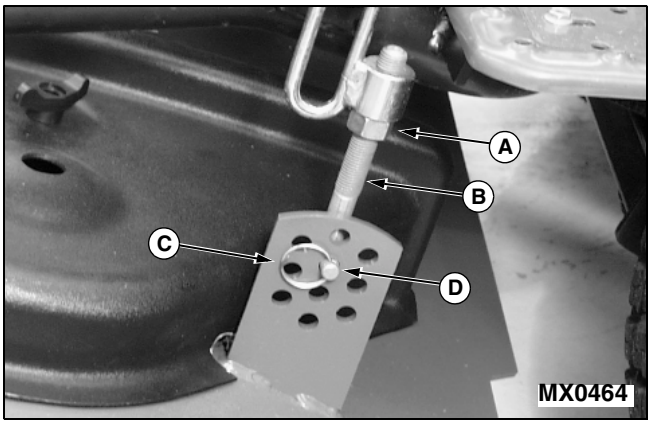
3. Check tire pressures on all machine tires, and deck caster wheels.

- 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



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 speed range lever to the low speed range position (🐢).

3. Unlock park brake.

4. Lower mower decks to ground.

5. Move throttle forward to full throttle position.

6. Pull up on PTO switch lever and move switch to the on

() position.

- Blades should start and PTO indicator lights should light up.
- If one side deck is not lowered, the indicator light for that deck will flash, and 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 when it is raised, and the PTO indicator light for that deck will flash. 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.

Service Literature

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

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

Parts

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

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

When you order parts, your John Deere dealer needs 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)	RE68048
• Secondary (Small)	RE68049
Fuel Filter / Water Separator Element:	T111383
Oil Filters:	
• Engine	M806419
• Hydraulic	AL77061
Battery	AH128039
Belts:	
• Front Deck - 1600	TCU51305
• Left Deck - 1600	TCU51430
• Right Deck - 1600	TCU51288
• Engine Alternator / Water Pump	M801821
Mower Deck Blades - 1600:	TCU51118
Fuses:	
• 15 Ampere	99M7065
• 20 Ampere	57M7691
Radiator Cap:	M113126
Indicator Light Bulbs	57M7943

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

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.

Daily

- Check engine oil and coolant levels.
- Check hydraulic oil level.
- Check transmission oil level.
- Check engine air restriction indicator and intake screen.

Every 25 Hours - 1600

- 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 (1600).
- Lubricate side mower deck lift cylinders-4 places (1600).
- Lubricate steering cylinder (2 places).
- 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 (front and side decks) (1600).
- Check and adjust mower deck drive belt tension (front and side decks) (1600).
- Clean debris from radiator fins with pressurized air.

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.

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) (1600).
- 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) (1600).
- Caster Arm Bushings (10 places) (1600).
- 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).

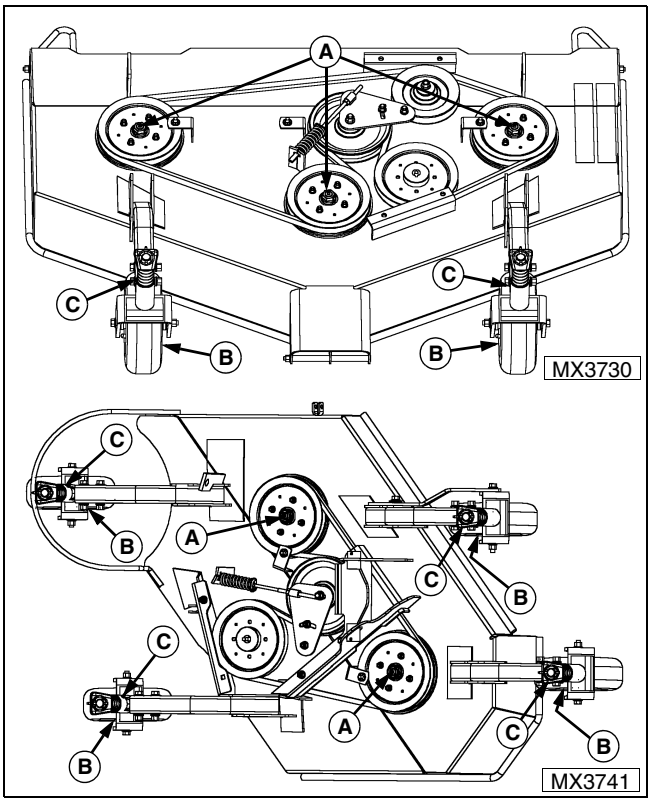
If not using any of the preferred greases, be sure to use a general purpose grease with a NLGI grade No. 2 rating. Avoid use of John Deere Moly High Temperature EP Grease on high speed applications such as mower spindles and the rear axle.

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 - 1600

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

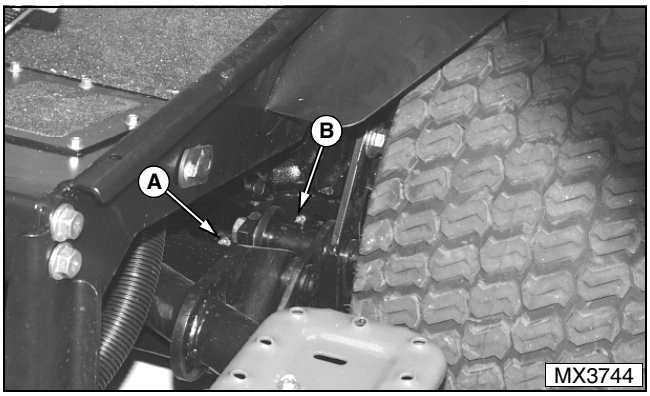


Picture Note: Front deck shown upper, side deck shown lower. Belt shields shown removed for clarity.

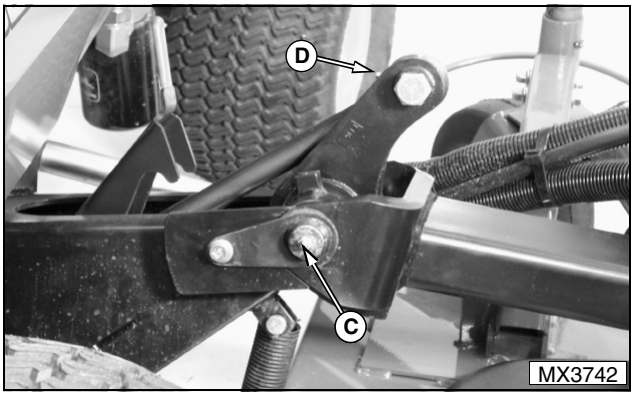
3. Lubricate mower deck grease fittings:
   - Mower blade spindles (A) with John Deere Multi-Purpose SD Polyurea grease or John Deere Multi-Purpose HD Lithium Complex Grease.
   - Caster wheels (B) and caster arm bushings (C) with John Deere Multi-Purpose HD Lithium Complex Grease or John Deere Moly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



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.

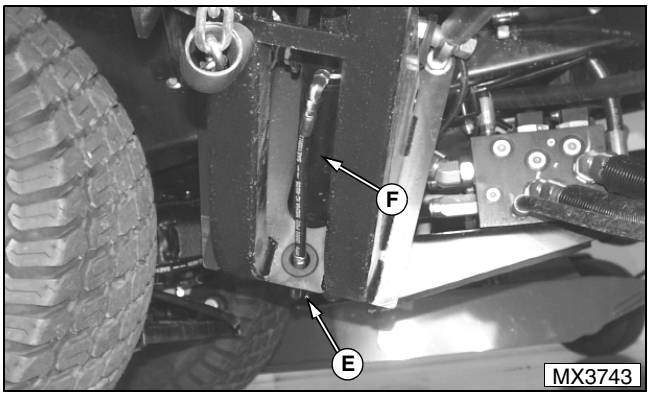


4. Lubricate the side deck lift arm pivot joint (C) and lift cylinder pivot joint (D) at both sides of machine with John Deere Multi-Purpose HD Lithium Complex Grease or John Deere Moly High Temperature EP Grease.

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.

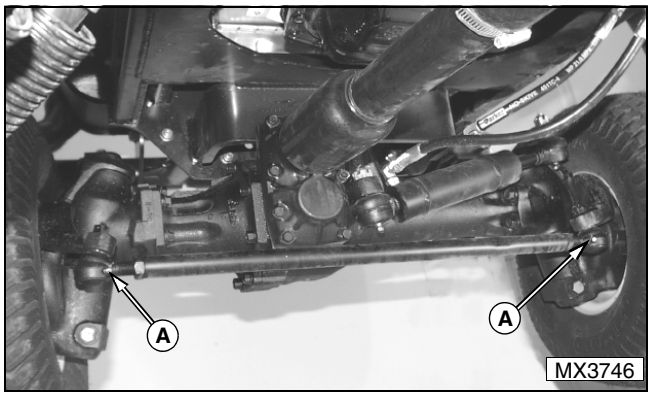
Lubricate Rear Axle Pivot Pin

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

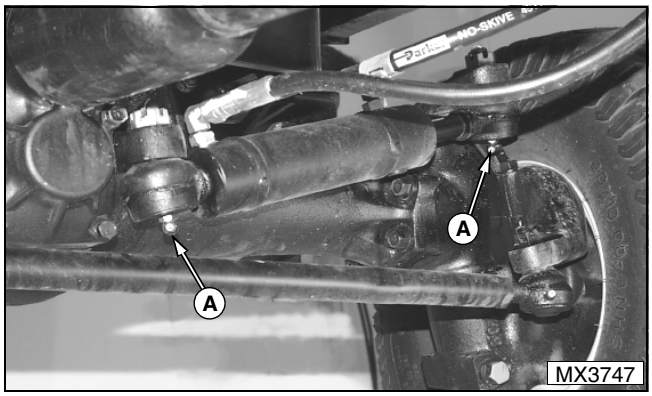
1. Park machine safely. (See Parking Safely in the Safety Section.)



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

Lubricate Hydraulic Steering Cylinder

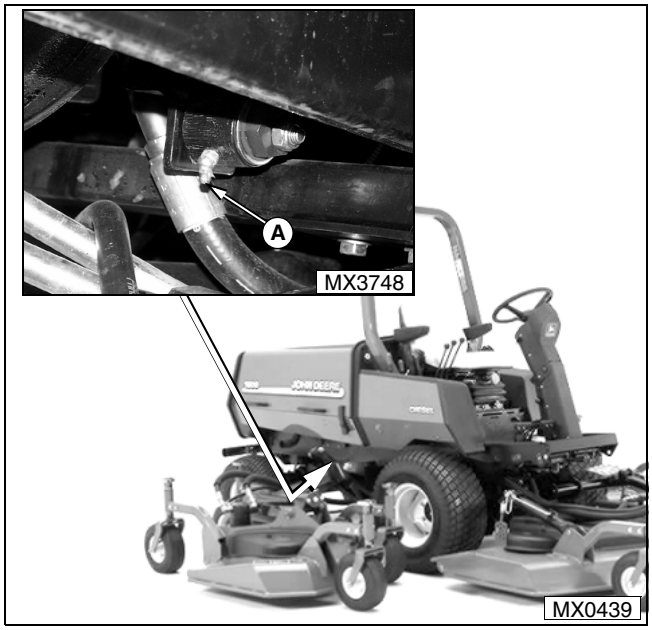
1. Park machine safely. (See Parking Safely in the Safety Section.)



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.)



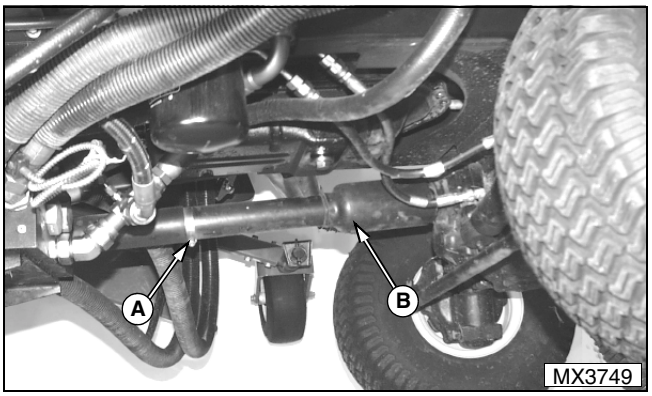
2. Lubricate hydrostatic creep adjustment eccentric (A) with John Deere Multi-Purpose HD Lithium Complex Grease or John Deere Moly High Temperature EP Grease.

Lubricate Drive Shaft

1. Raise side mower decks completely (1600 only).

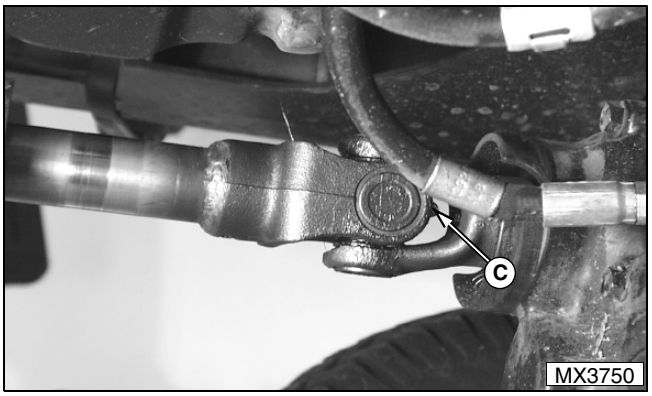
2. Engage both side deck transport locks.

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

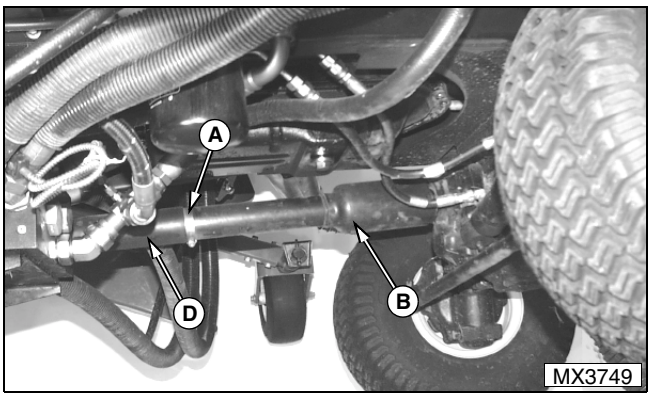


4. Loosen hose clamp (A) on drive shaft cover.

5. Slide rear drive shaft cover (B) toward front of machine to access rear universal joint.

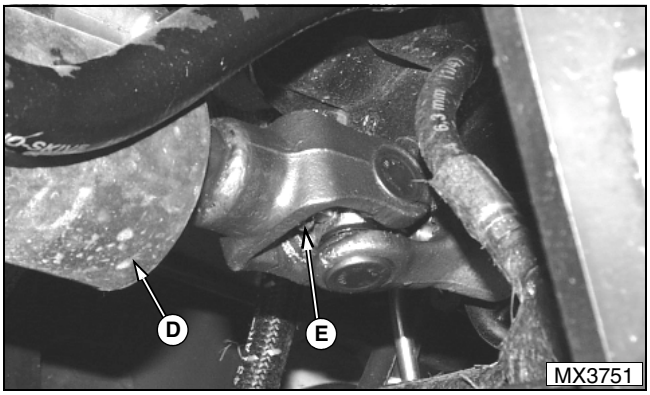


6. Lubricate rear universal joint (C) with John Deere Multi-Purpose SD Polyurea Grease or John Deere Multi-Purpose HD Lithium Complex Grease.



7. Return rear drive shaft cover (B) to its original position over rear universal joint.

8. Slide hose clamp (A) and front drive shaft cover (D) toward rear of machine to access the front universal joint.



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

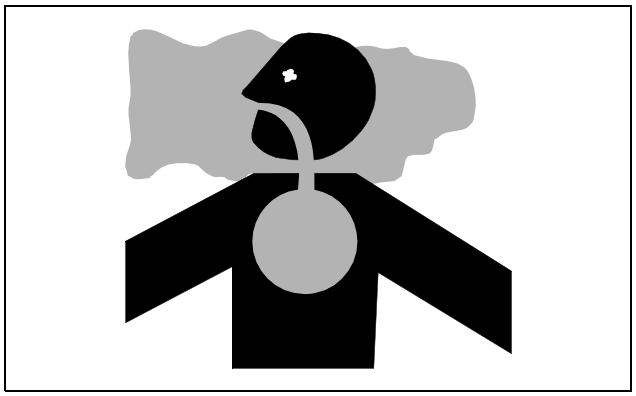
10.Return front drive shaft cover (D) over front universal joint. Ensure rear drive shaft cover is also in place.

11.Slide the clamp behind the front drive shaft cover and tighten.

Engine Warranty Maintenance Statement

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

Avoid Fumes



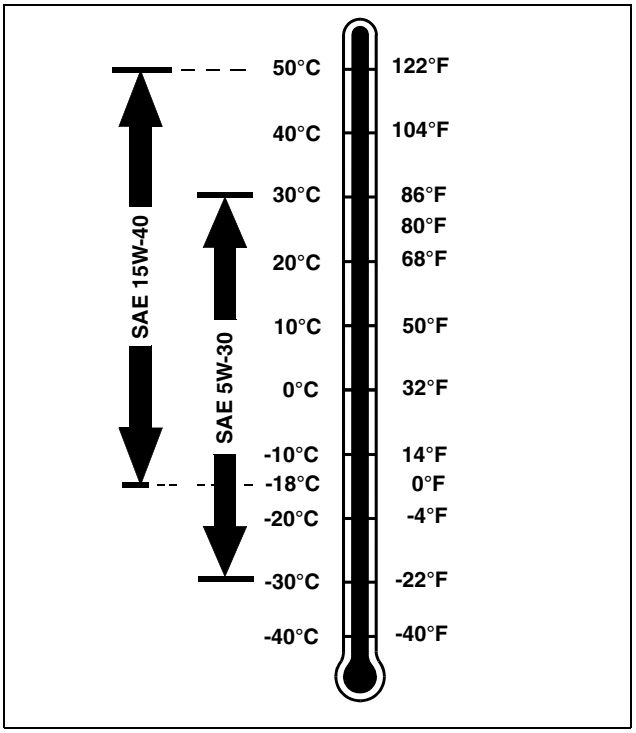
CAUTION: Avoid injury! Engine exhaust fumes can cause sickness or death:

• If it is necessary to run an engine in an enclosed area, use an exhaust pipe extension to remove the fumes.

• Always try to work in a well ventilated area.

Engine Oil

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



The following John Deere oils are PREFERRED:

- 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.

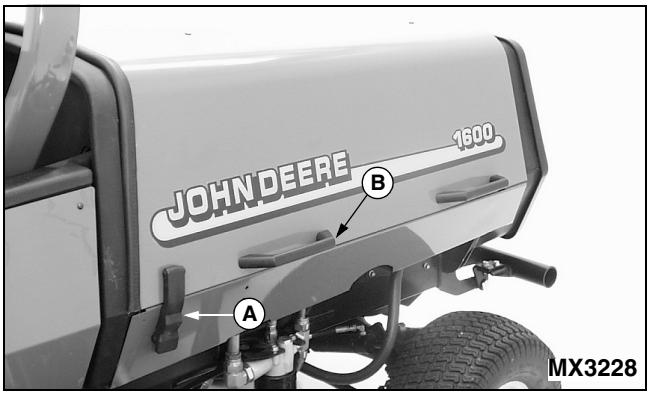
Raising and Lowering the Engine Cover

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.

Machines With Serial Numbers TC1600X010001-020000 or TC1620X010001-020000

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



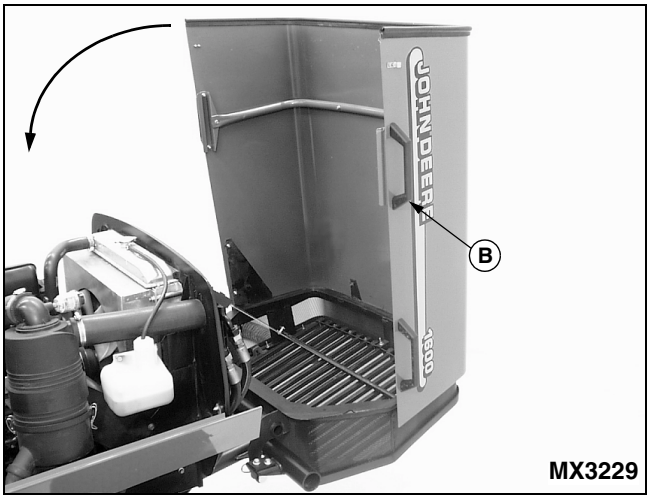
2. Unlock the engine cover latch (A) by pulling up on the bottom of the latch, and unhooking the top from the engine cover. Repeat for other side.

3. Lift the engine cover using the front handle (B) on the side of the engine cover.

4. Open the hood all the way until it comes to rest on the support cables.

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

NOTE: Before closing the engine cover, make sure the latches on each side of the engine cover are lowered.

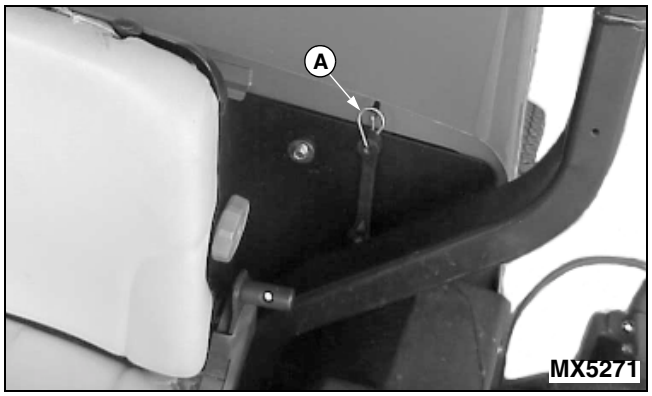


5. Lower the engine cover down using handle (B).

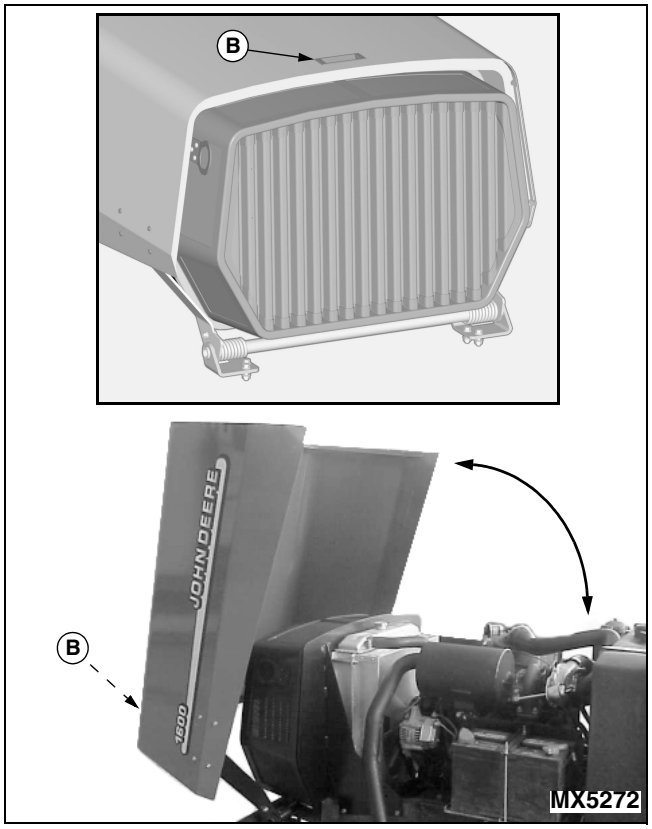
6. Hook the top of the latch over the hook on the engine cover.

7. Push the bottom of the latch down to lock the engine cover in place. Repeat for other side.

Machines Starting With Serial Numbers TC1600X020001 or TC1620X020001



1. Disconnect strap (A) securing the engine cover in the closed position.



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

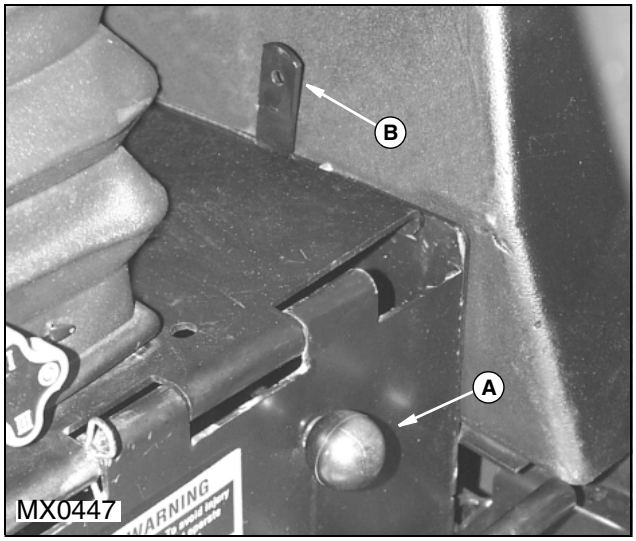
IMPORTANT: Avoid damage! Do not drop the engine cover to close it.

3. Carefully lower engine cover using handle (B).

4. Connect strap (A) to secure engine cover in the closed position.

Raising and Lowering Seat Platform

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



To raise the operator's seat platform:

1. Stand on the operator's platform facing the operator's seat.
2. Pull forward on the lift release knob (A), while pulling forward and upward on the backrest of the operator's seat.
3. Raise the seat platform until it latches in the first or second raised position.

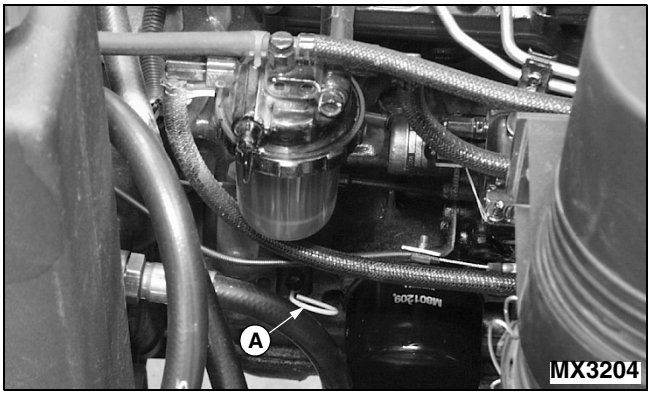
To lower the operator's seat platform:

1. Pull the operator's seat forward and upward using the seat backrest.
2. Pull and hold the release lever (B) forward while lowering the seat platform.

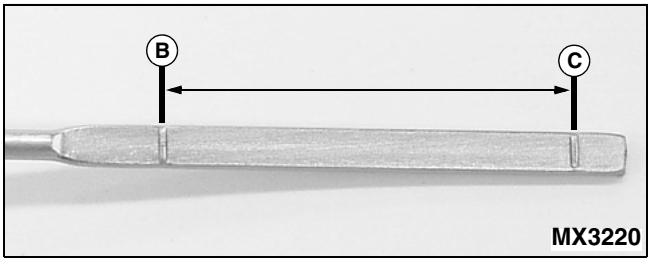
Checking Engine Oil

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.



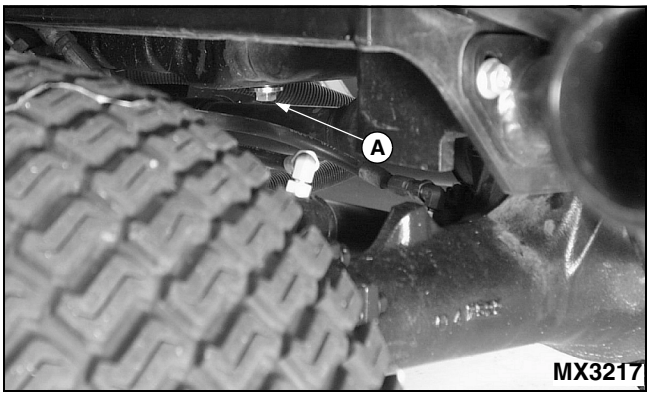
3. Remove dipstick (A) located on the LEFT side of the engine. Wipe dipstick with a clean cloth.
4. Install dipstick.



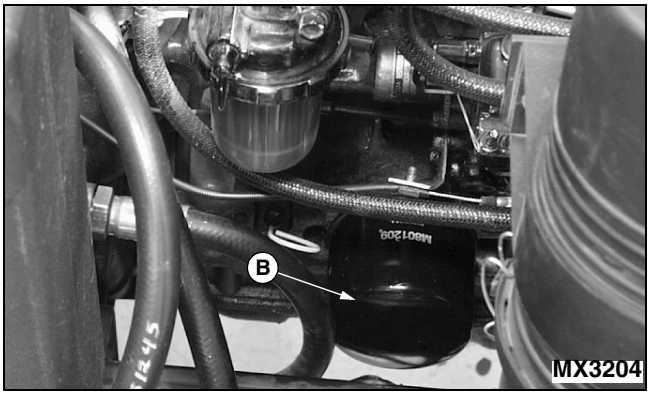
5. Remove dipstick. Check oil level. Oil should be between levels (B) and (C) on the dipstick.
   - If oil is low, add oil to bring oil level no higher than level (B) on the dipstick.
   - If oil is above level (B) on the dipstick, drain to proper level.
6. Install dipstick.
7. Lower engine cover.

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.



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



6. Remove oil filter (B) located under the LEFT side of the engine. Turn filter counterclockwise to remove.

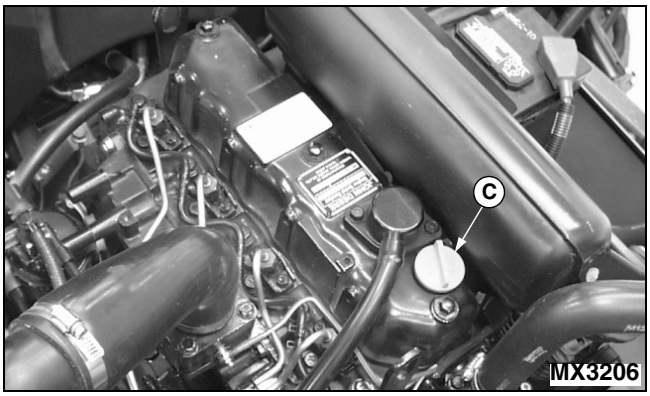
7. Clean filter mounting surface on engine with a clean cloth.

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.



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.

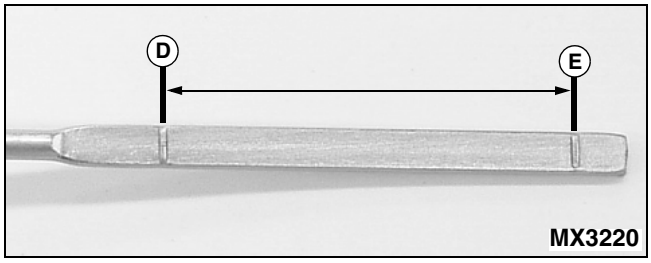
15. Stop engine.

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.



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.

Cleaning Engine Cooling Screen

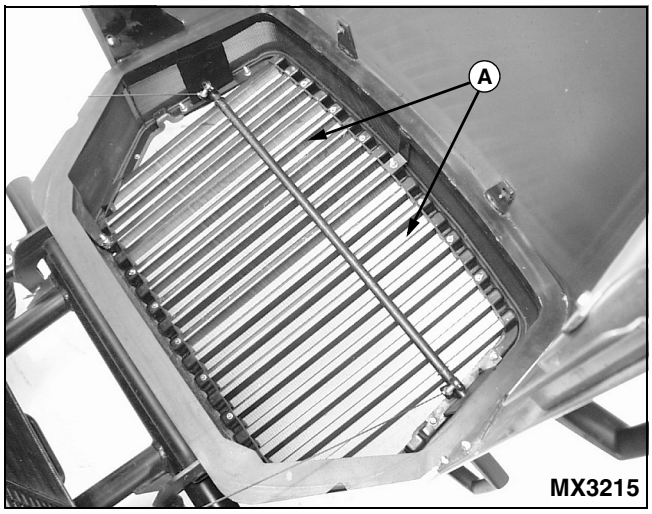
CAUTION: Avoid injury! Wear personal eye protection when using compressed air for cleaning purposes.

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

Machines With Serial Numbers TC1600X010001-020000 or TC1620X010001-020000

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

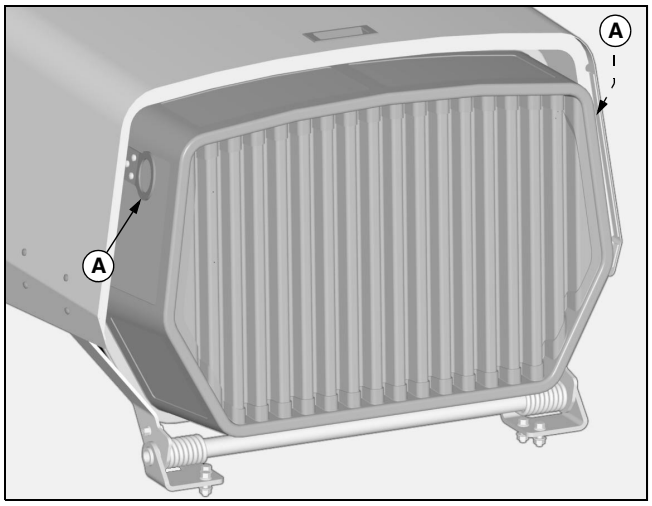
2. Raise engine cover.



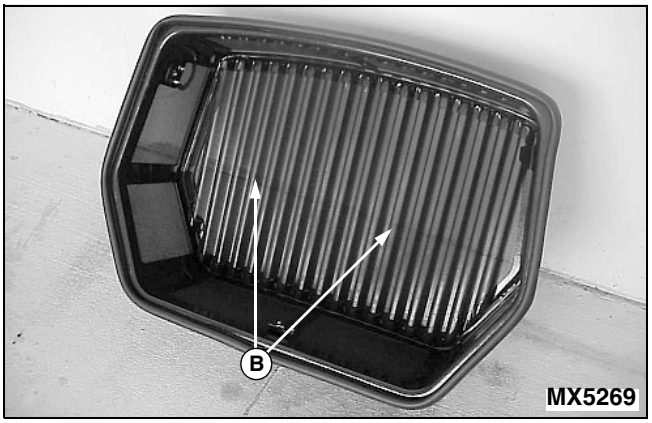
3. Clean screen (A) with a brush, compressed air or water.
4. Lower engine cover.

Machines Starting With Serial Numbers TC1600X020001 or TC1620X020001

1. Park machine safely. (See Parking Safely in the Safety section.)
2. Stand behind the machine facing the rear cooling screen.



3. Pull cooling screen directly to the rear using handles (A) to remove.



4. Clean screen (B) with a brush, compressed air or water.
5. Install cooling screen.
   - Align latching hardware on screen and radiator mounting plate.
   - Make sure screen snaps into position with all three latches fully engaged.

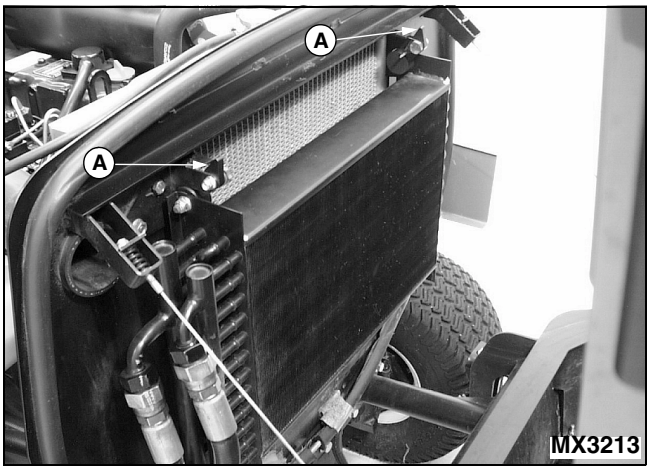
Cleaning Oil Cooler Coils and Radiator Cooling Fins

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.

Machines With Serial Numbers TC1600X010001-020000 or TC1620X010001-020000

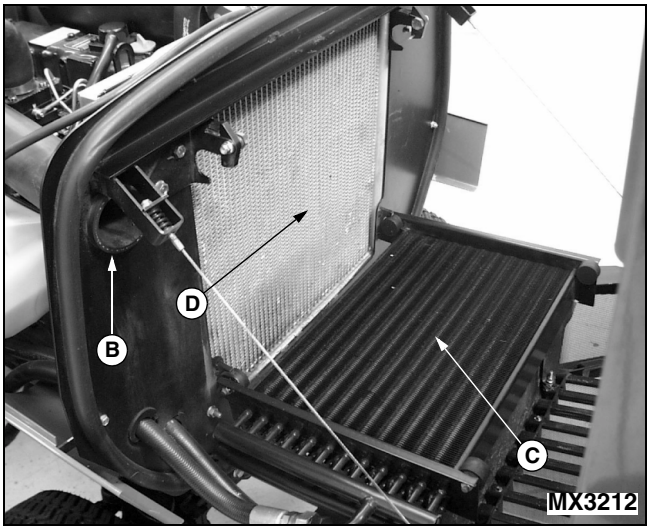
1. Park machine safely. (See Parking Safely in the Safety section.)
2. Allow engine to cool.
3. Raise engine cover.



4. Release latches (A) securing oil cooler to the radiator mounting brackets.

5. Carefully lower oil cooler down and away from the radiator.

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



6. Remove dirt and debris from oil cooler coils (C) and radiator fins (D) using compressed air or water.

7. Check oil cooler coils and radiator fins for damage.

8. Install oil cooler.

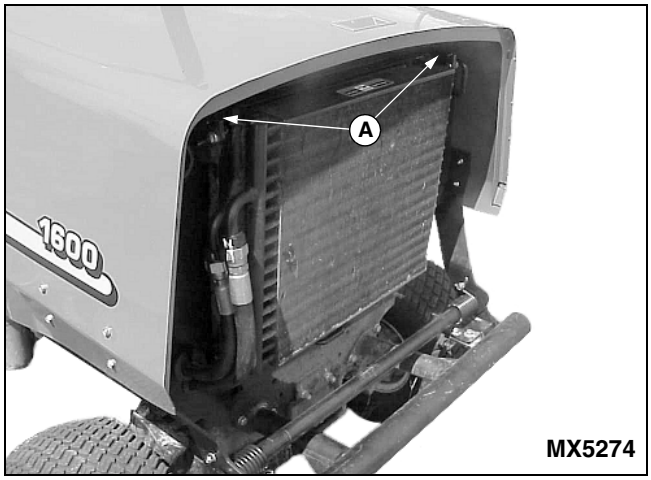
9. Lower engine cover.

Machines Starting With Serial Numbers TC1600X020001 or TC1620X020001

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

2. Allow engine to cool.

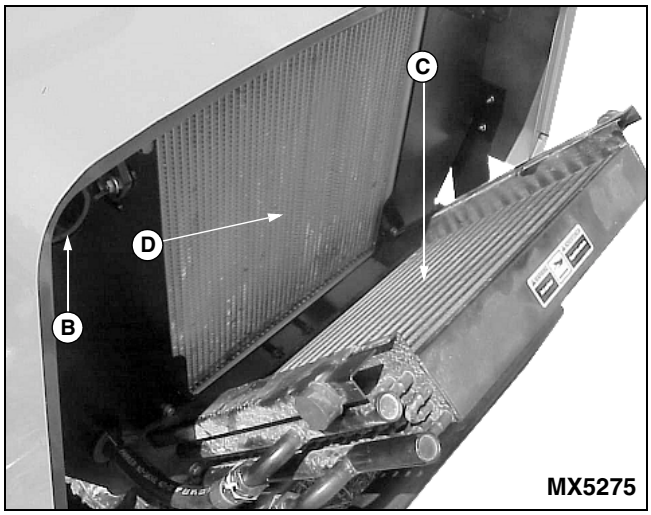
3. Remove cooling screen.



4. Release latches (A) securing oil cooler to the radiator mounting brackets.

5. Carefully lower oil cooler down and away from the radiator.

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



6. Remove dirt and debris from oil cooler coils (C) and radiator fins (D) using compressed air or water.

7. Check oil cooler coils and radiator fins for damage.

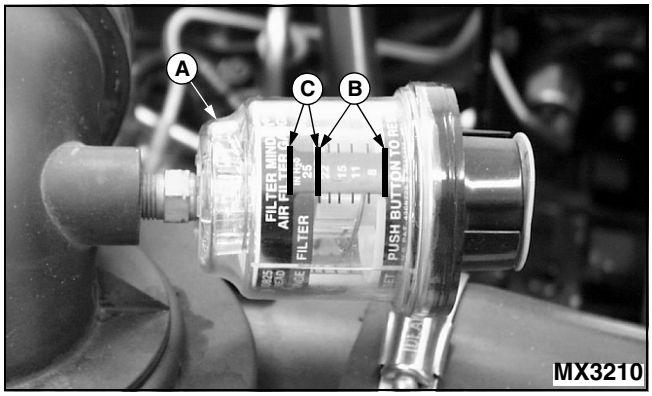
8. Install oil cooler.

9. Install cooling screen.

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.



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

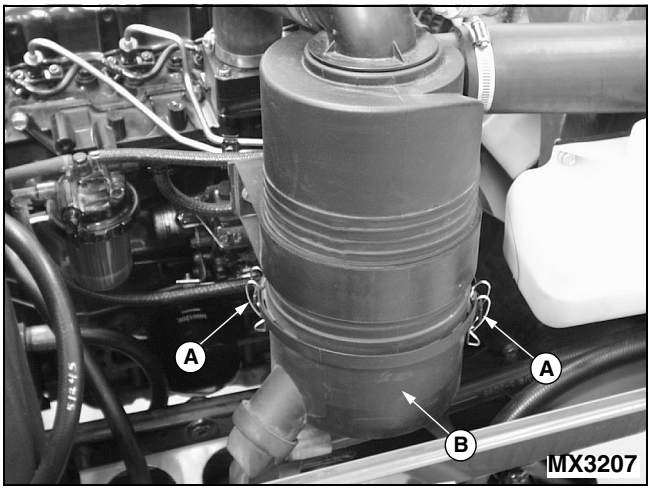
Servicing Air Cleaner Elements

IMPORTANT: Avoid damage!

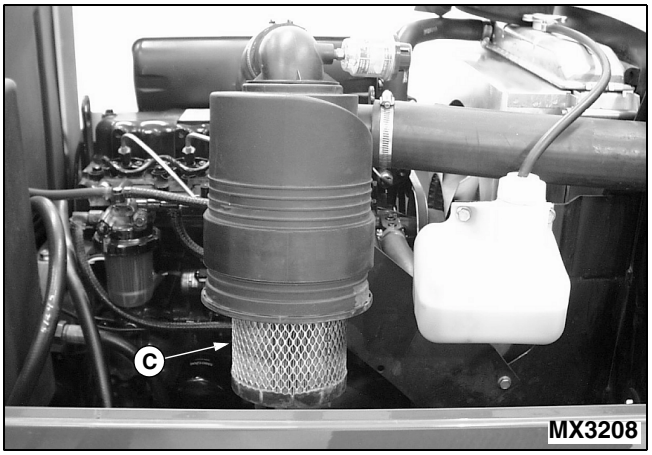
- **When operating the machine in extreme heat, dust or other severe conditions, check the air restriction indicator daily.**
- **Never run the engine without the air cleaner elements installed.**

Primary Air Filter Element

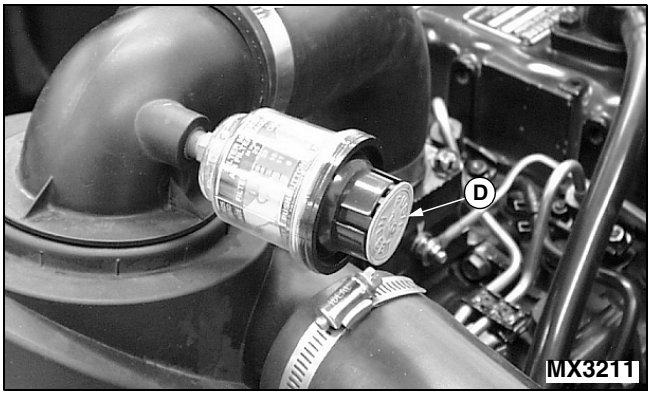
1. Park machine safely. (See Parking Safely in the Safety section.)
2. Allow engine to cool.
3. Raise engine cover.



4. Release latches (A) and remove air cleaner canister cover (B).



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



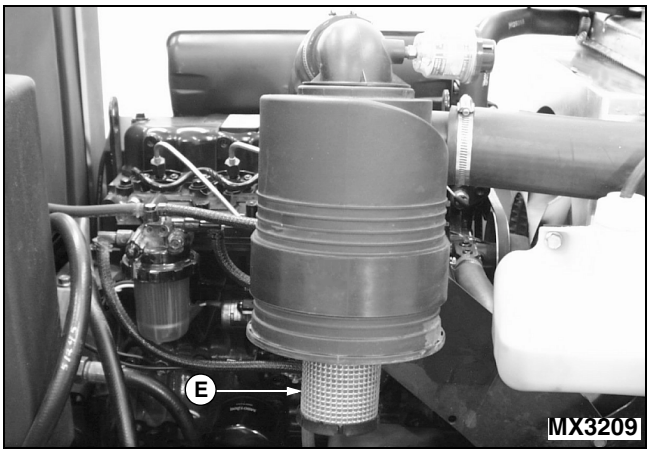
7. Push reset button (D) on the air restriction indicator.
8. Start engine. Allow engine to run approximately one minute at maximum throttle speed.
9. Stop engine.

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.

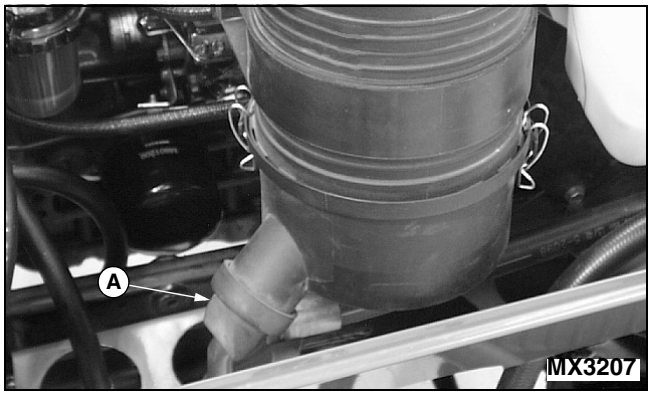


3. Remove and discard secondary air filter element (E). Replace with a new secondary air filter element.
4. Install primary air filter element.
5. Install air cleaner canister cover.
6. Lower engine cover.

Cleaning Rubber Dust Unloading Valve

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

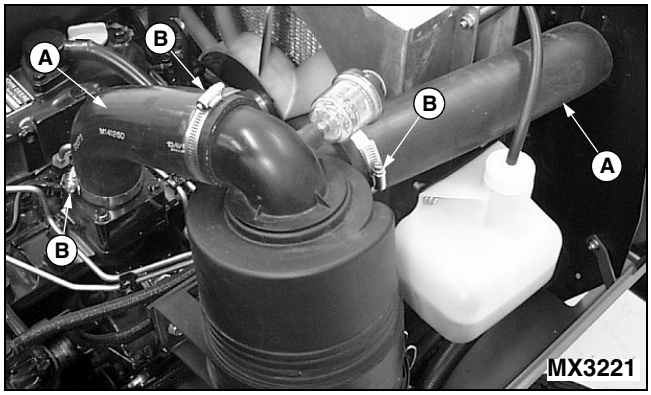
1. Park machine safely. (See Parking Safely in the Safety section.)
2. Allow engine to cool.
3. Raise engine cover.



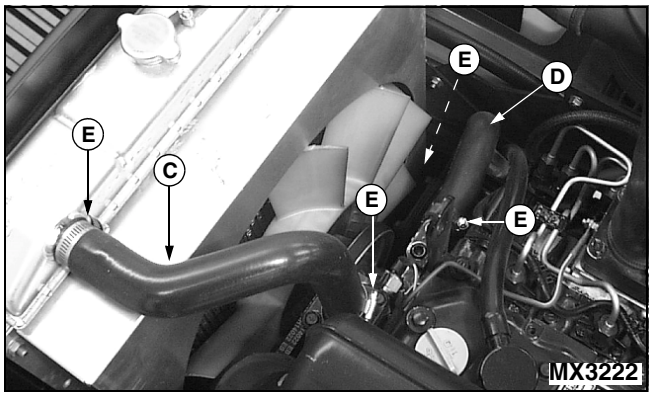
4. Remove dust unloading valve (A) and clean. Replace if damaged.
5. Install dust unloading valve.
6. Lower engine cover.

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.



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



5. Check upper radiator hose (C) and lower radiator hose (D).
   - Tighten hose clamps (E).
   - Check hoses for cracks or damage. Replace if necessary.
6. Lower engine cover.

Recommended Engine Coolant

The following John Deere coolant is preferred:

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

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

- ASTM D4985 (JDM H24A2)

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

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

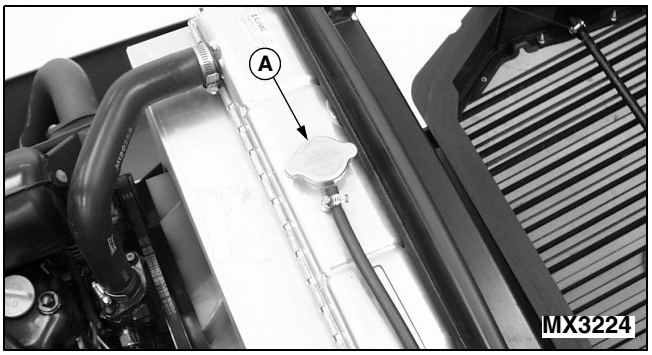
Certain geographical areas may require lower temperature protection. See the label on your antifreeze container or consult your John Deere dealer to obtain the latest information and recommendations.

Checking Coolant Level

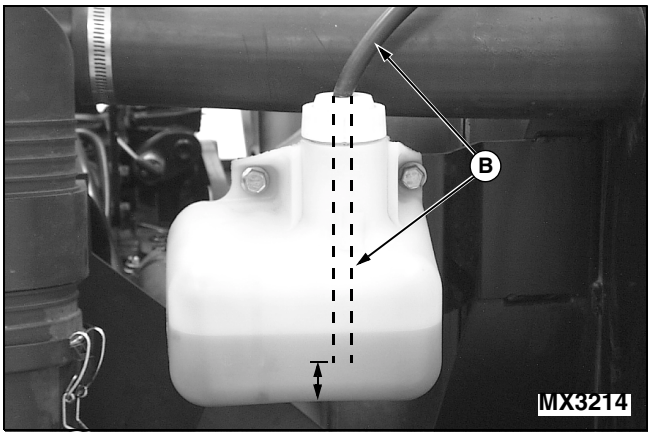
IMPORTANT: Avoid damage! Using incorrect coolant mixture can cause engine damage.

- **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.



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. Replace radiator cap.



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.

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.

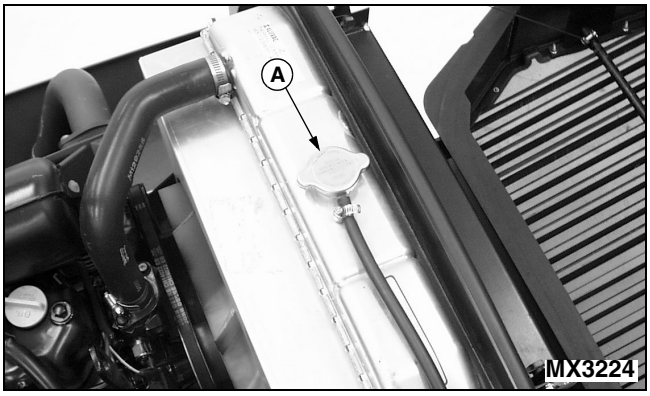
IMPORTANT: Avoid damage!

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

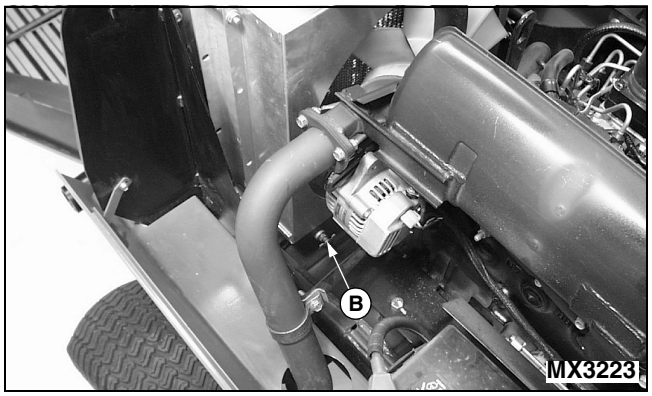
1. Park machine safely. (See Parking Safely in the Safety section.)

2. Allow engine to cool.

3. Raise engine cover.



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



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!

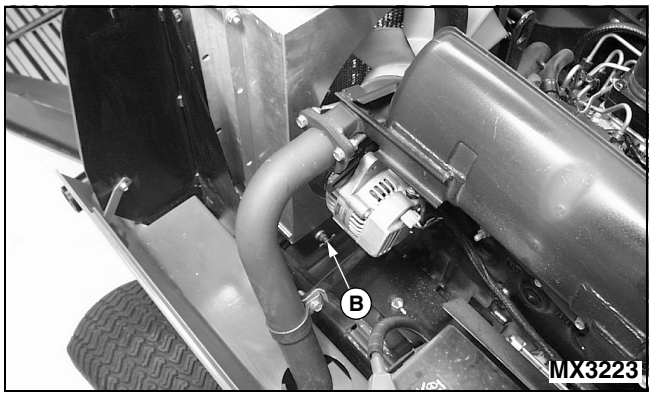
- **DO NOT flush the cooling system when the engine is hot.**
- **DO NOT operate engine without coolant.**

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 (A).

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

4. Stop engine.



5. Open radiator petcock (B).
   - 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

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.

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 6.6 L (7 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 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.

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.

Servicing Fuel Filter Sediment Bowl

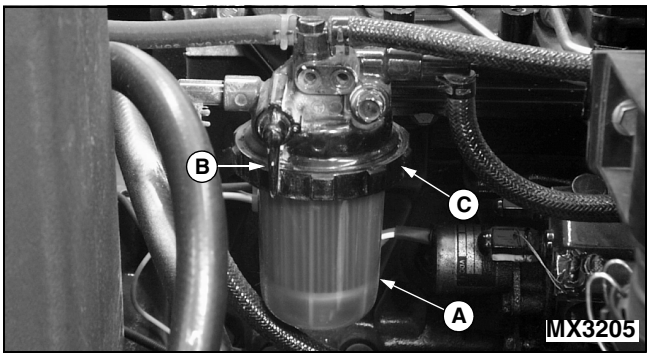
CAUTION: Avoid injury! Avoid possible death from fumes, fire or explosion when working on fuel-related parts:

- **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.



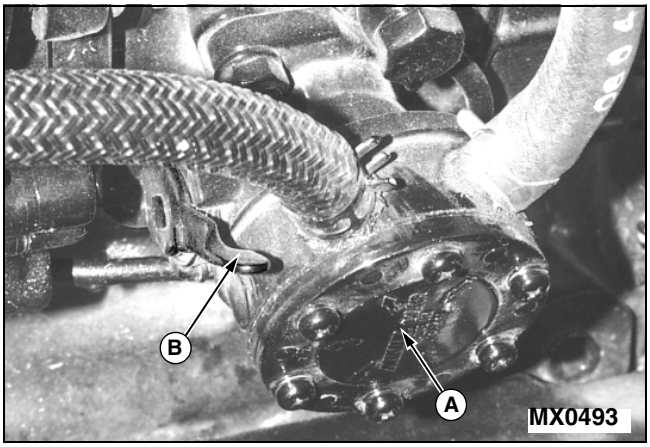
5. Look for water and deposits in the sediment bowl (A).

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.



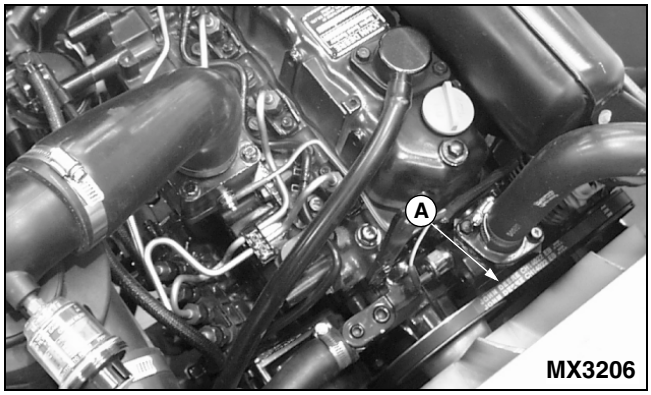
1. Locate the fuel pump (A) on left rear side of engine behind air cleaner housing.
2. Pump priming lever (B) on fuel pump until fuel fills up glass bowl of fuel filter.
3. Start engine. If engine will not start, repeat priming system.

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.

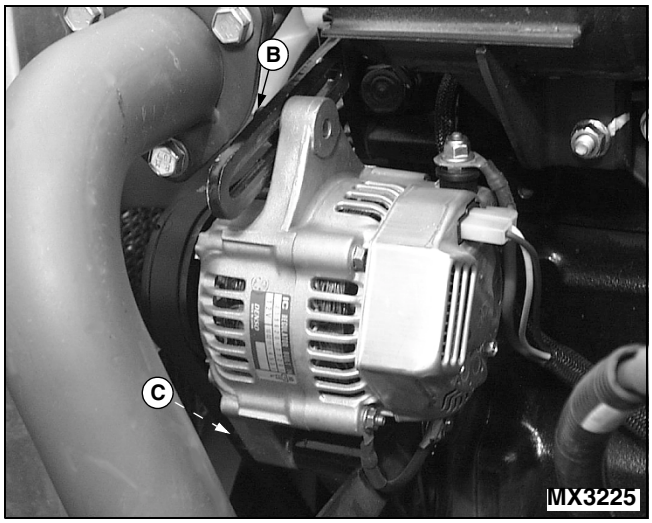
Check Belt Tension

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



4. Check alternator belt (A).
   - Inspect belt for excessive were, 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



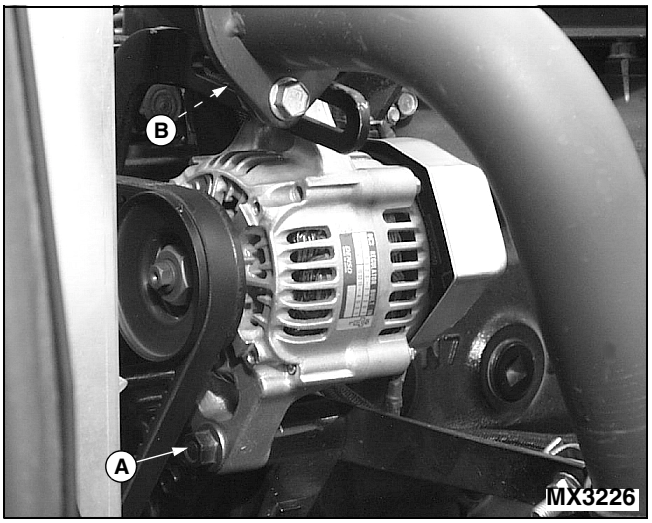
Picture Note: Alternator located on RIGHT side of engine.

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 Safely section.)
2. Allow engine to cool.
3. Raise engine cover.



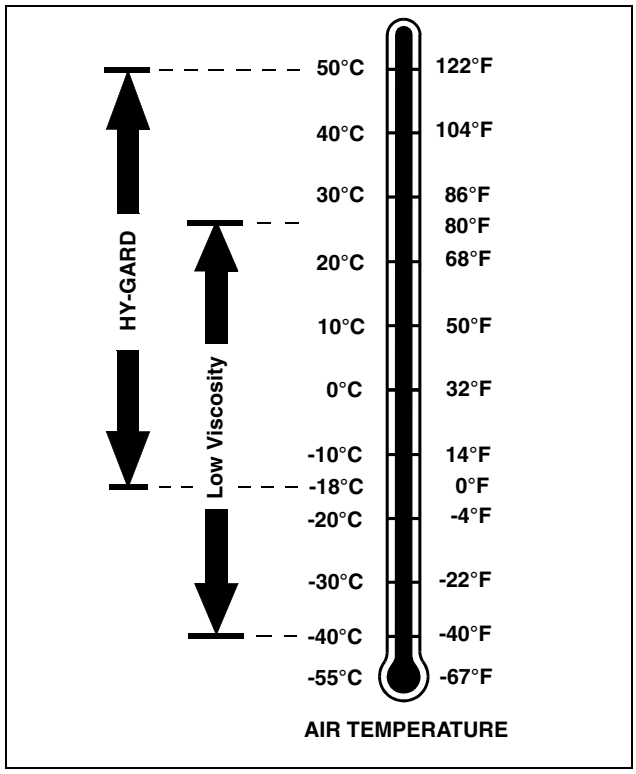
Picture Note: Alternator located on RIGHT side of engine.

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.

Transmission and Hydraulic Oil



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.

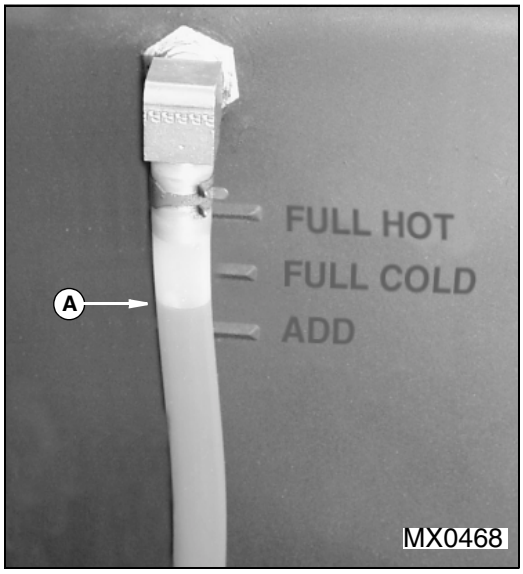
John Deere HY-GARD® (J20C) transmission oil is specially formulated to provide maximum protection against mechanical wear, corrosion, and foaming.

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.

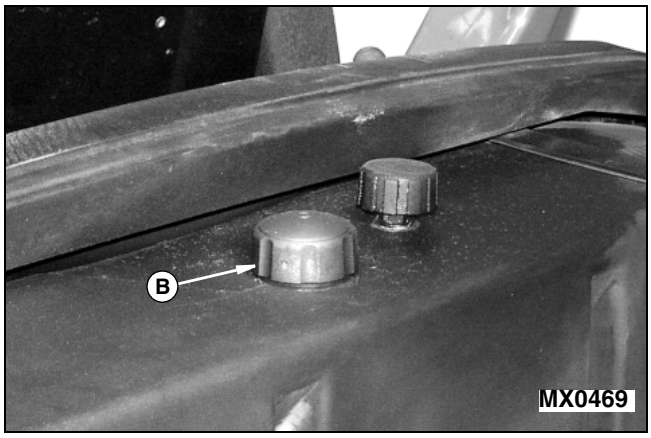
Checking the Hydraulic Oil Level

Check the oil level before you start the engine.

1. Open the engine cover.



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.

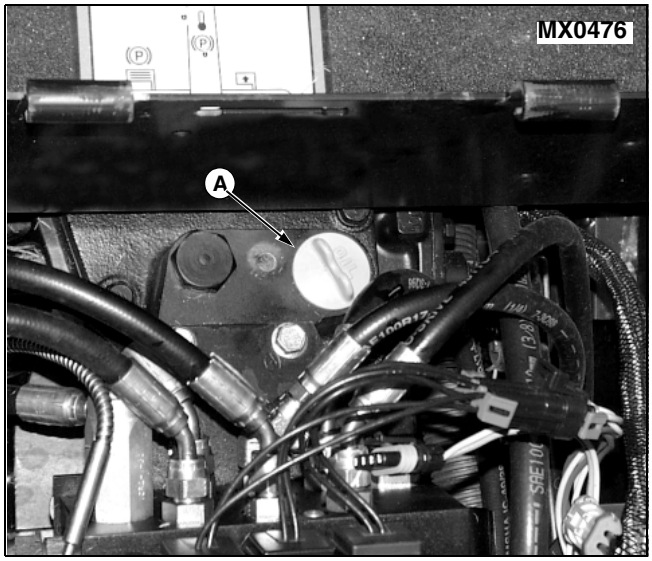


3. If oil level is below add mark, remove reservoir cap (B) and add oil until oil level is up to full mark on sight tube.

4. Install reservoir cap and close engine cover.

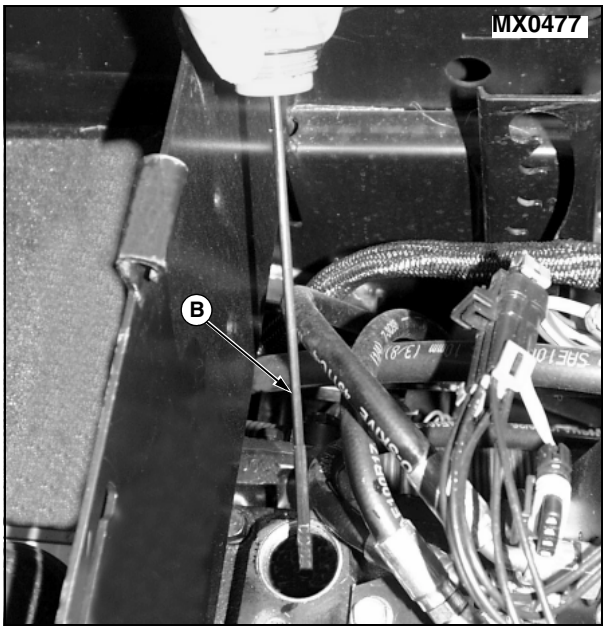
Checking the Transmission Oil Level

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.



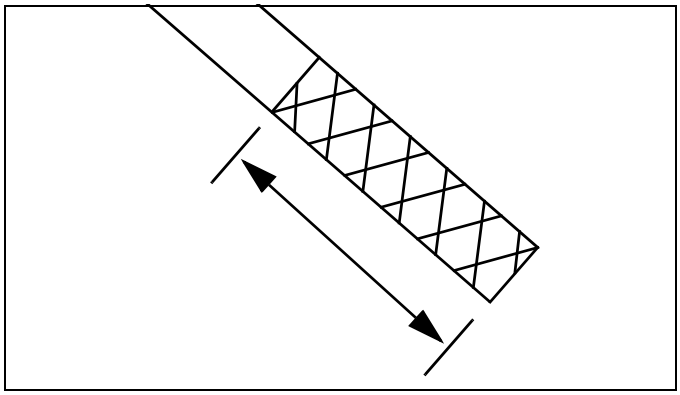
Picture Note: Seat platform removed for photo.

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



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.



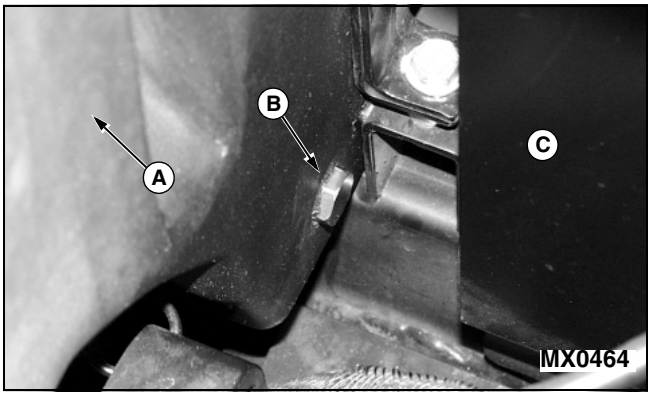
4. Oil level should be in XXX range on dipstick. Add oil to transmission if level does not show on dipstick.

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. Stop the engine. Lock the park brake. Lower front mower deck to ground. Lower side mower decks to ground or engage transport locks. Wait until the engine and the transmission are cool before beginning service.

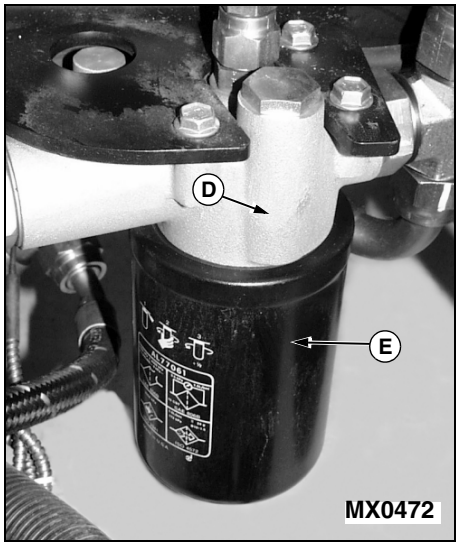


A - Hydraulic Reservoir
B - Right Side Reservoir Drain
C - Battery Heat Shield

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.



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.

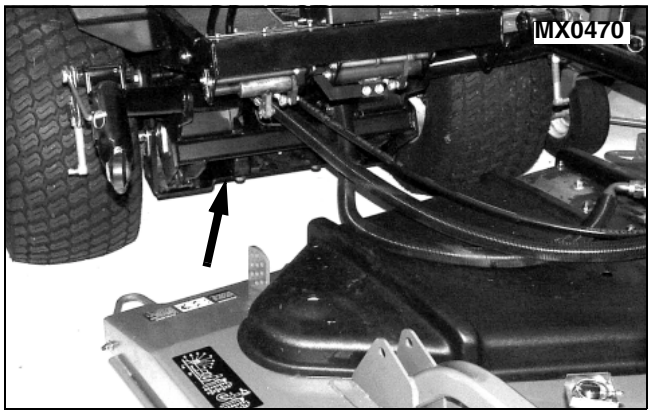
9. Run the engine a short time while checking for leaks. Stop the engine.

10.Check that the hydraulic oil level has remained up to the FULL COLD mark on the sight tube. Add oil if necessary.

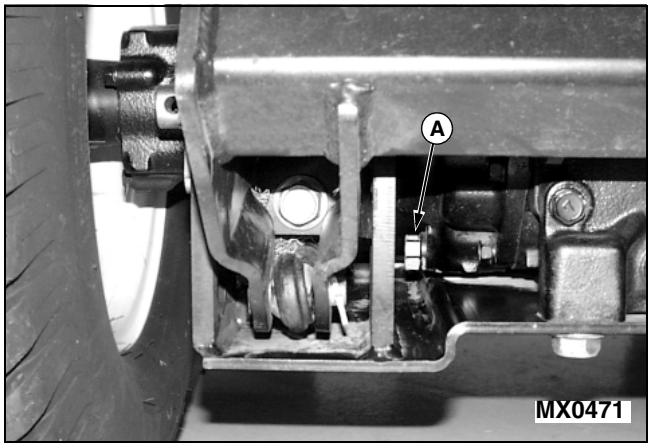
Changing the Transmission Oil

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

2. Lower all mower decks to ground.

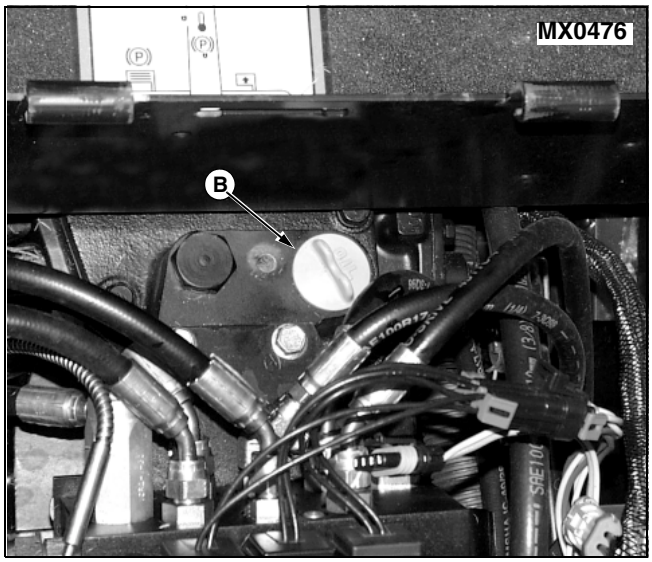


3. Remove the front deck from the lift arms, and move deck to the left to gain access to the right front side of the transmission.



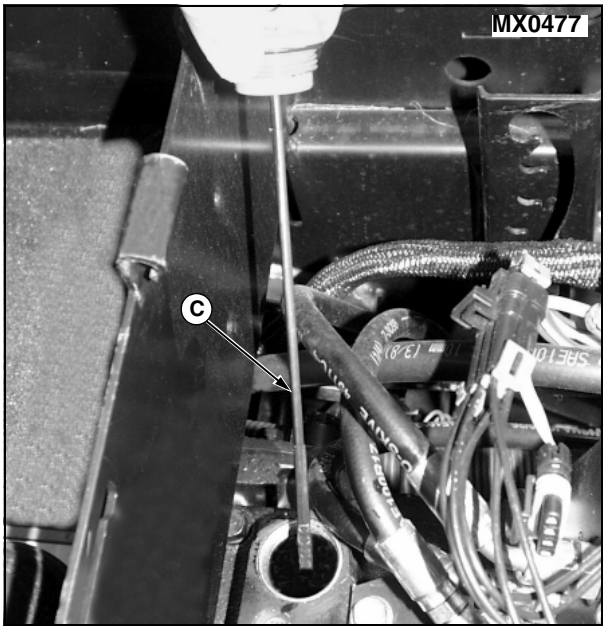
4. Remove drain plug (A) and allow transmission to drain. Replace plug.

5. Install front mower deck.



Picture Note: Seat platform removed for photo.

6. Raise and lock seat platform to gain access to transmission oil filler cap and dipstick (B).



7. Unscrew oil filler cap and dipstick (C).

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.

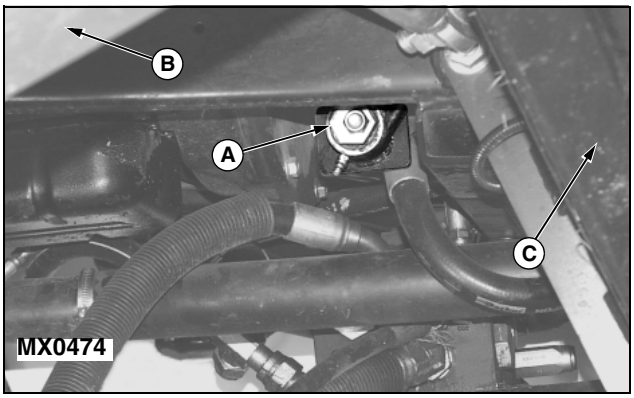
Always jack all four wheels off of ground. Four wheel drive is always engaged and will push machine off jack stands if any tires get traction.

Stay away from tires while making adjustments.

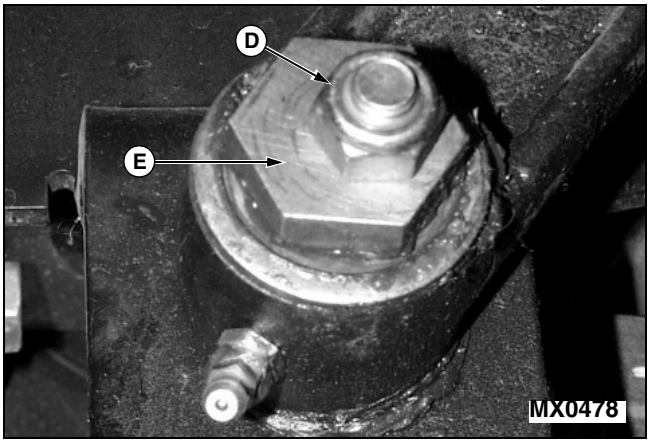
4. Sit in operator's seat and start engine.

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.



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

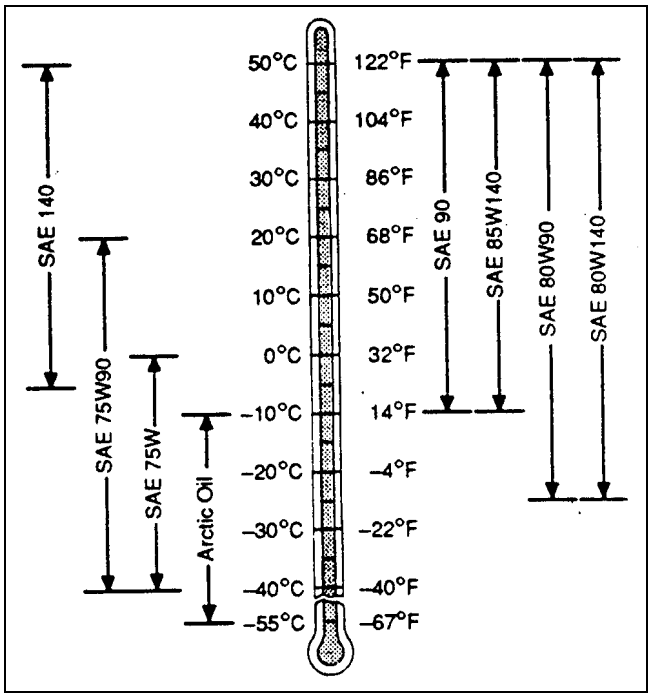


8. Loosen lock nut (D).

9. Rotate cam (E) until front drive wheels do not spin.

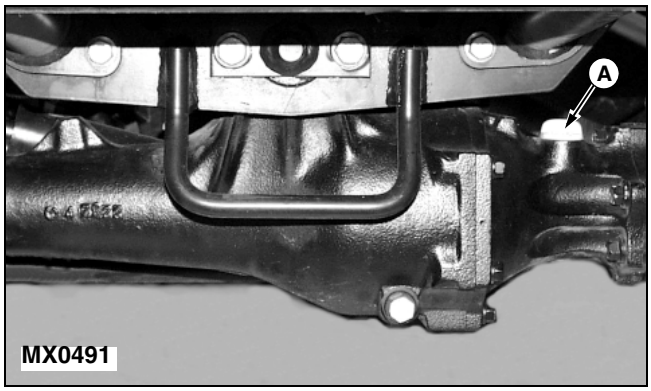
10. Tighten lock nut. Cycle hydrostatic drive pedals and allow to return to neutral. Readjust cam if necessary.

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



1. Locate filler cap (A) on right rear side of rear axle.

2. Unscrew filler cap and wipe dipstick clean.

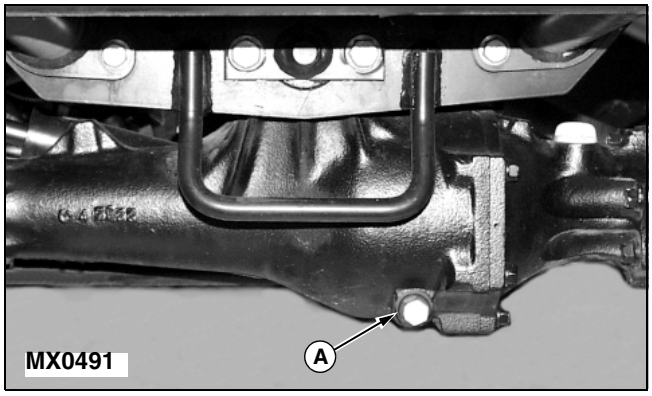
3. Install filler cap back into axle housing but do not turn threads back in.

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.

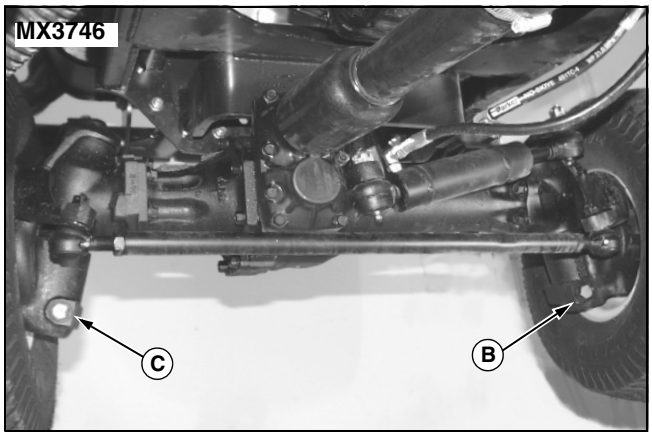
Changing the Mechanical Four Wheel Drive (MFWD) Oil Level

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



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

3. Install center drain plug.



4. Remove left side final drive housing drain plug (B), and allow to drain.

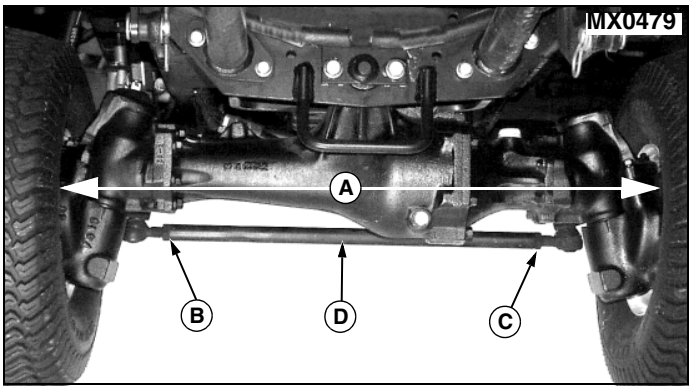
5. Install drain plug.

6. Repeat for right side housing (C).

7. Fill rear axle housing with 4.7 L (5 qt) of oil. Do not overfill.

Adjusting Toe-In

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



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).

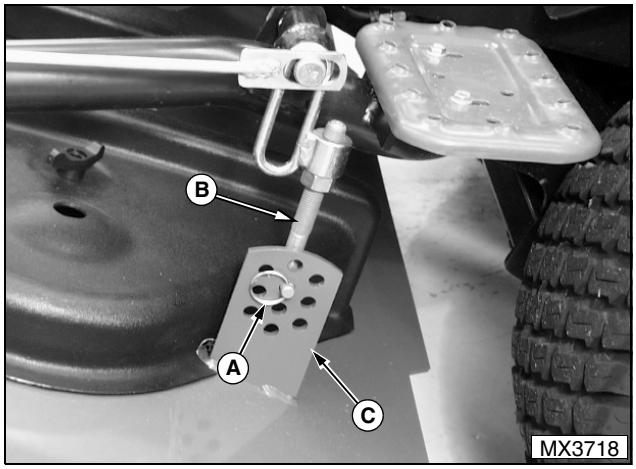
6. Turn body of tie-rod (D) to adjust toe-in.

7. Measure toe-in again. If correct, tighten lock nuts.

Rotating the Front Mower Deck

Rotate for Service

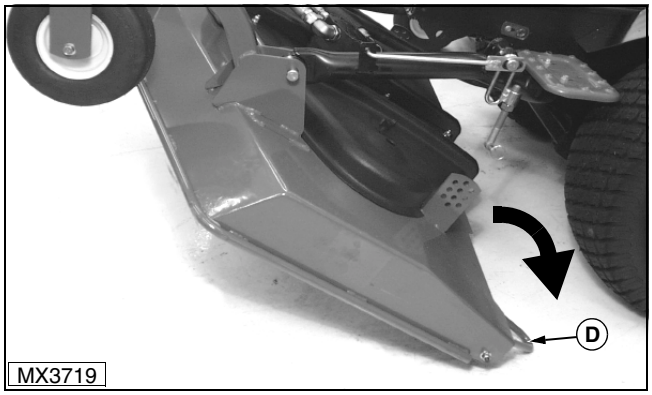
1. Stop machine on a level surface.
2. Lock park brake.
3. Raise front mower deck completely.
4. Stop engine and remove the key.



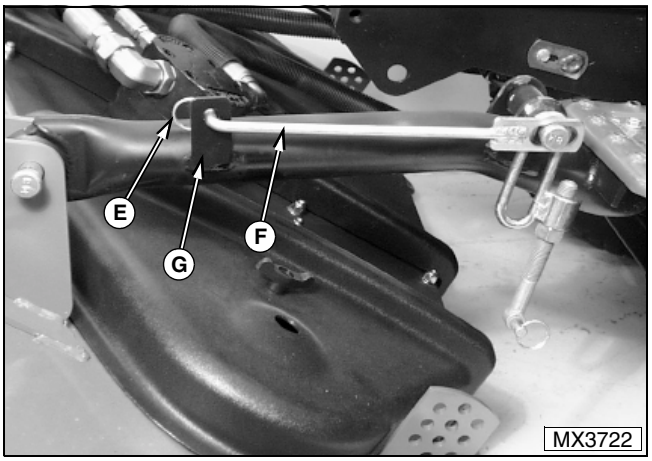
5. Remove retaining ring (A) from hanger pin (B).

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

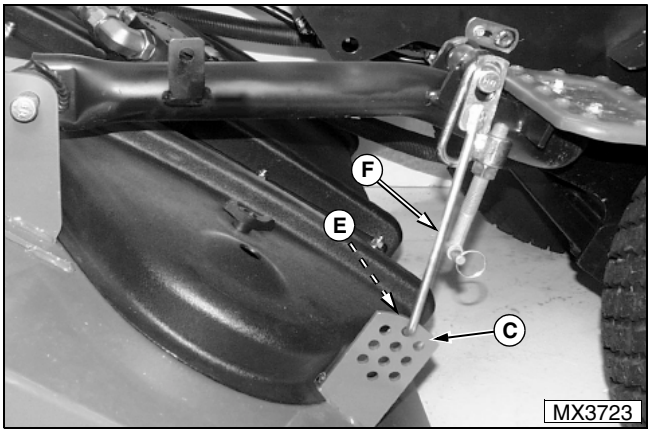
6. Remove hanger pin from hole in adjustment plate (C).
7. Install retaining ring to hanger pin for temporary storage.
8. Repeat at opposite side of mower deck.



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.

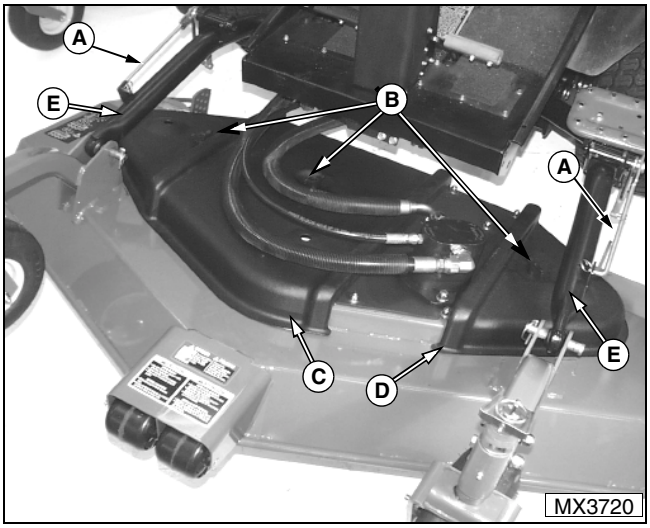
Rotate for Operation

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 pin.
8. Repeat at opposite side of mower deck.
9. Start engine.
10. Lower front mower deck completely.

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.

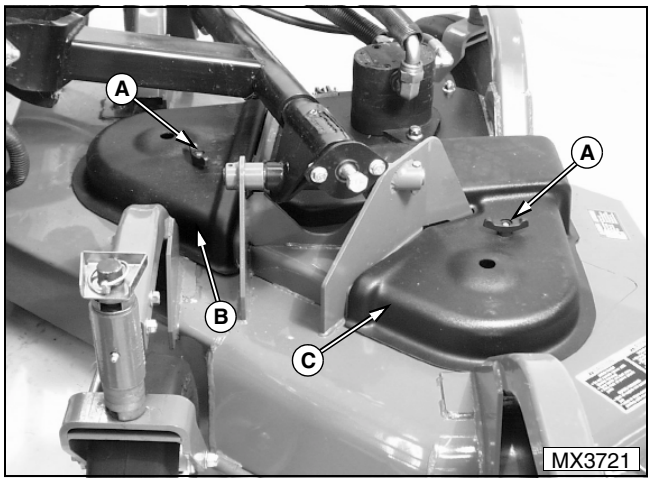
Front Deck Shields



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.

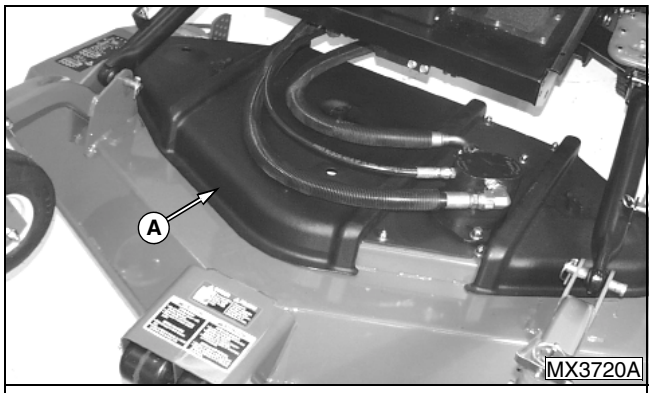
Side Deck Shields

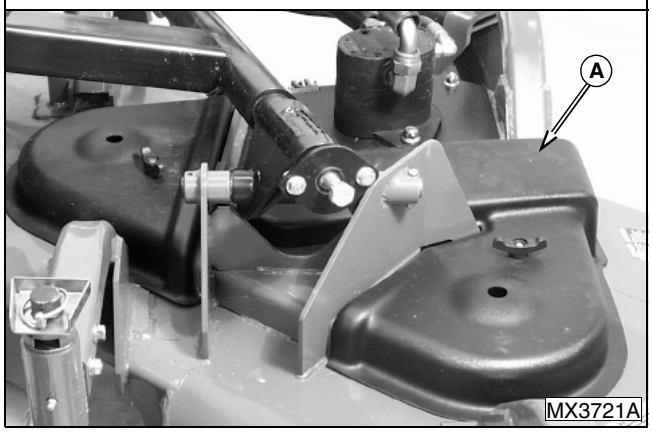
1. Park machine safely. (See Parking Safely in Safety section.)



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.

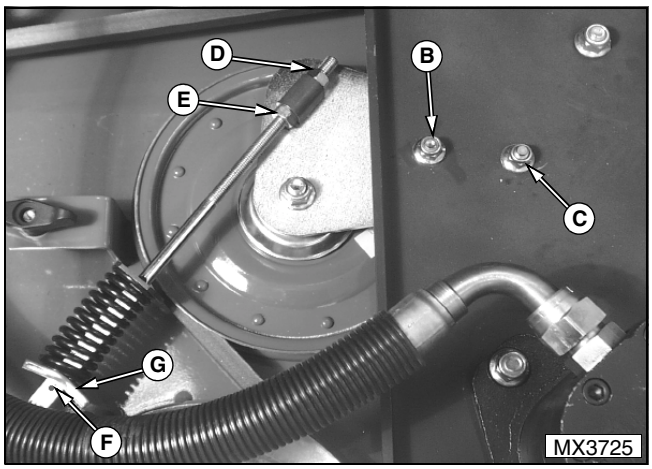
Adjusting Mower Deck Drive Belt Tension





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

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



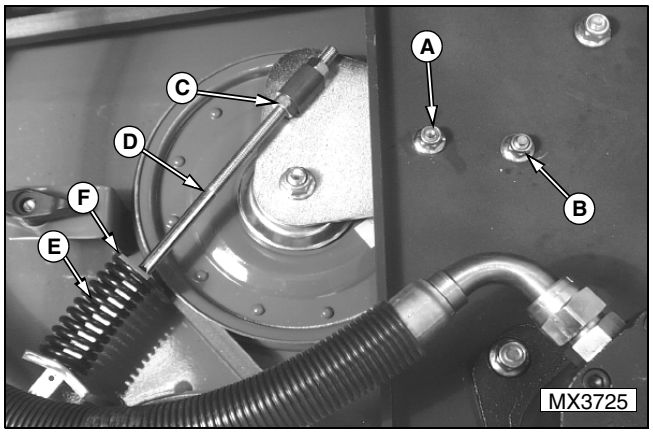
Picture Note: Front deck shown, side deck similar.

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).

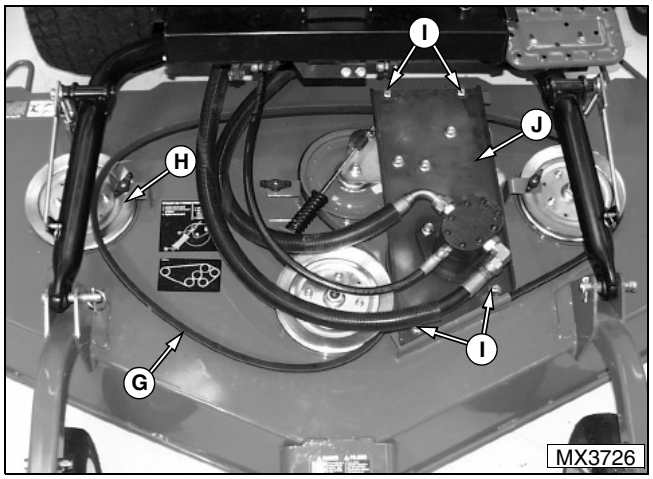
Removing and Installing Front Mower Deck Drive Belt

Front Belt Removal

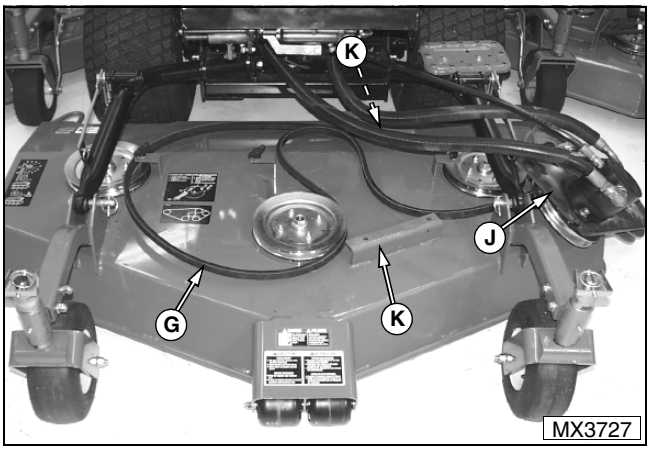
1. Remove belt shields from mower deck.
2. Lower mower deck completely.



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).



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



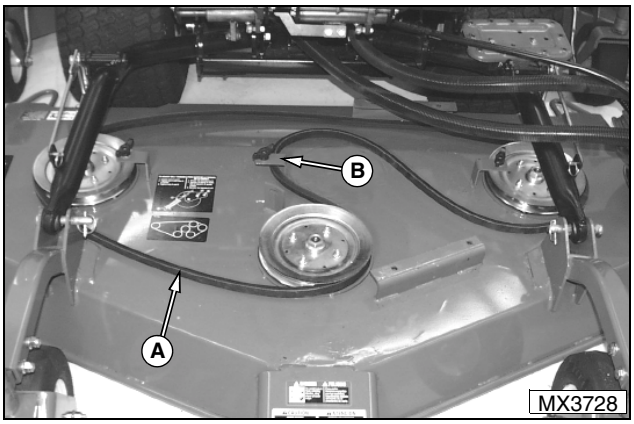
8. Slide motor plate (J) rearward so sheaves on bottom side clear motor plate mounting brackets (K).

9. Lift motor plate off mounting brackets and set it aside.

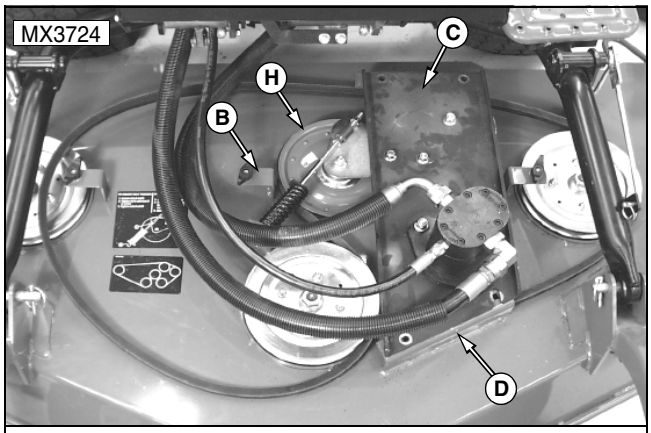
10. Remove drive belt (G) from deck.

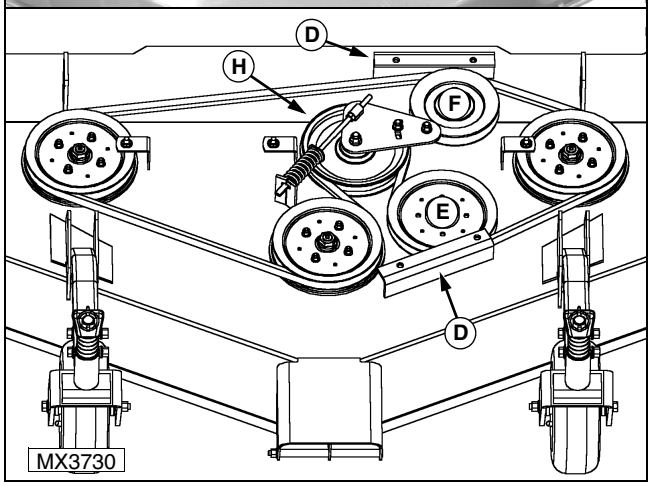
Front Belt Installation

NOTE: Belt routing diagram is affixed to mower deck.



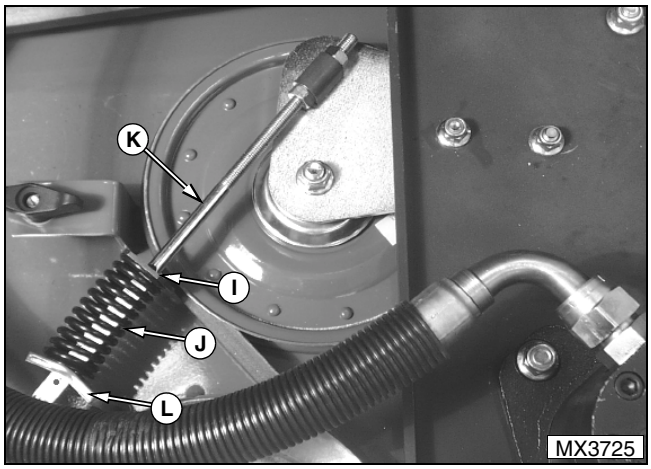
1. Route drive belt (A) around mower deck sheaves as shown. Place belt to the outside of belt shield support bracket (B) to temporarily hold the belt in position.



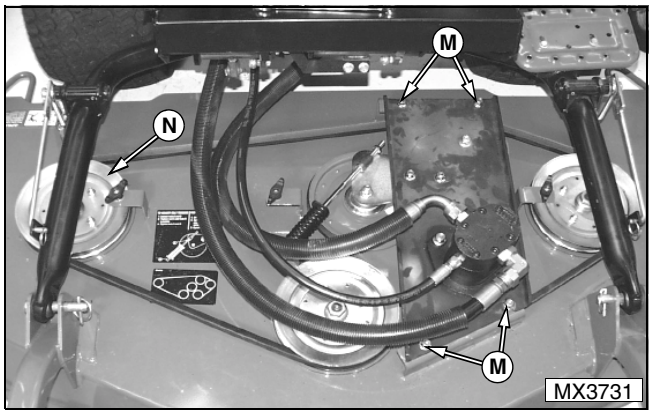


2. Position motor plate (C) onto motor plate mounting brackets (D) so drive belt is routed properly around sheaves (E) and (F).

3. Move the drive belt from outside belt shield support bracket (B), and position it around tension sheave (H).



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.



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.

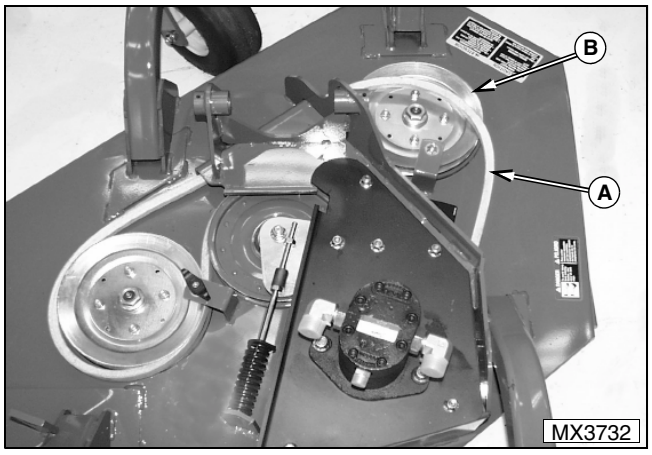
Removing and Installing Side Mower Deck Drive Belt

Side Belt Removal

1. Lower mower deck completely.

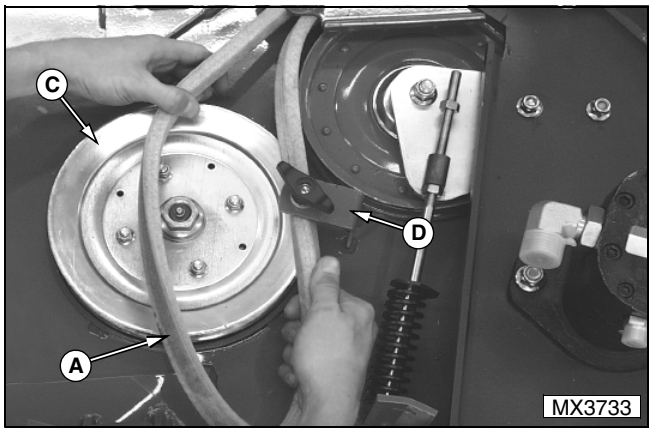
2. Remove belt shields from mower deck.

3. Release the drive belt tension completely.

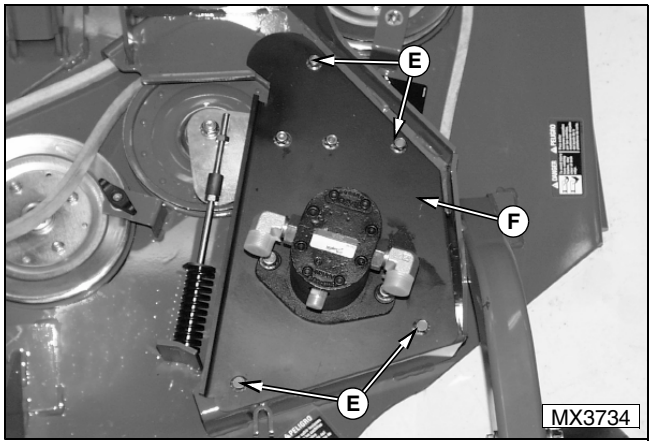


Picture Note: Mower deck shown removed for clarity.

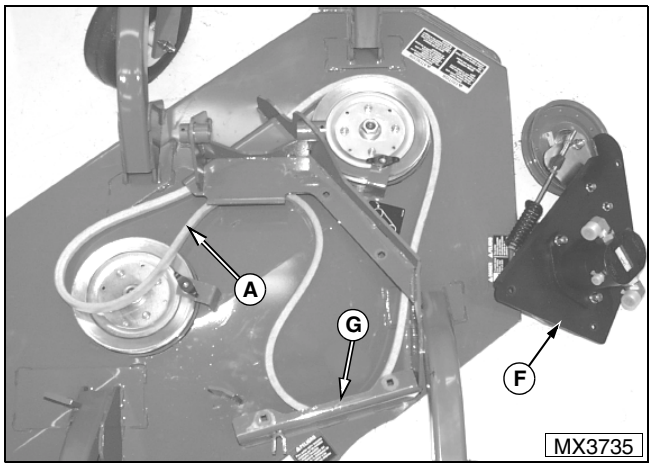
4. Remove drive belt (A) from sheave (B).



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



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



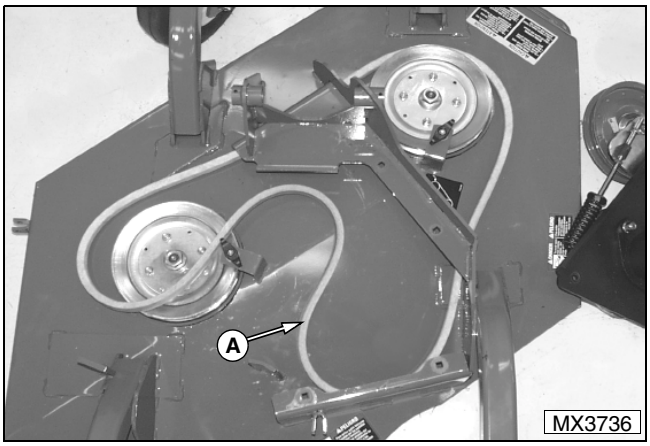
7. Slide motor plate (F) forward so sheave on bottom side clears motor plate mounting bracket (G).

8. Lift motor plate off mounting brackets and set it aside.

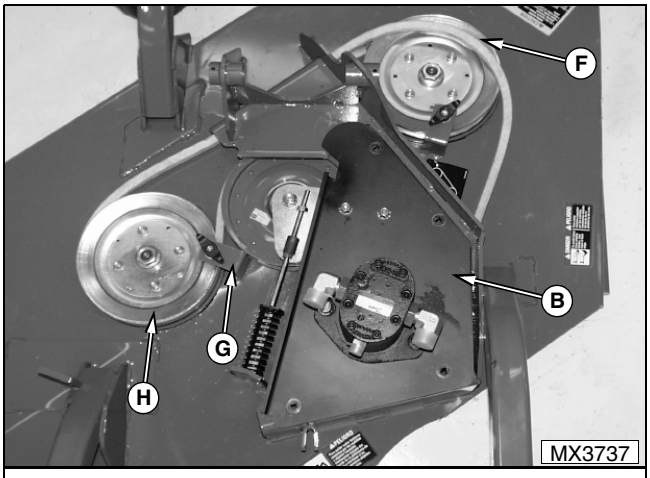
9. Remove drive belt (A) from deck.

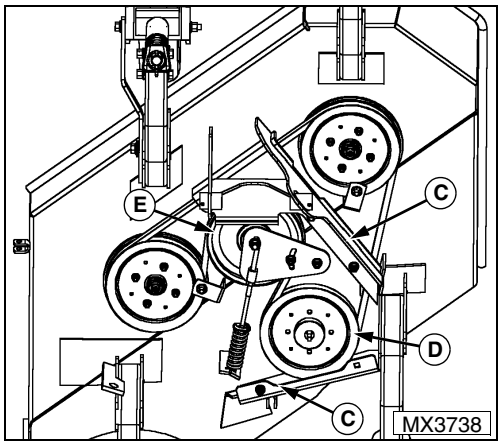
Side Belt Installation

NOTE: Belt routing diagram is affixed to mower deck.



1. Route drive belt (A) as shown.

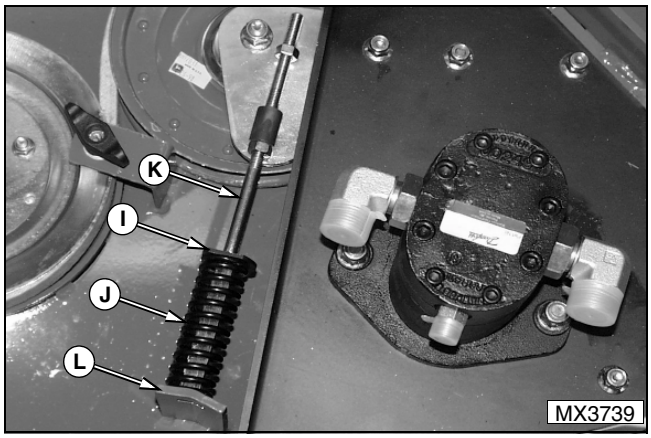




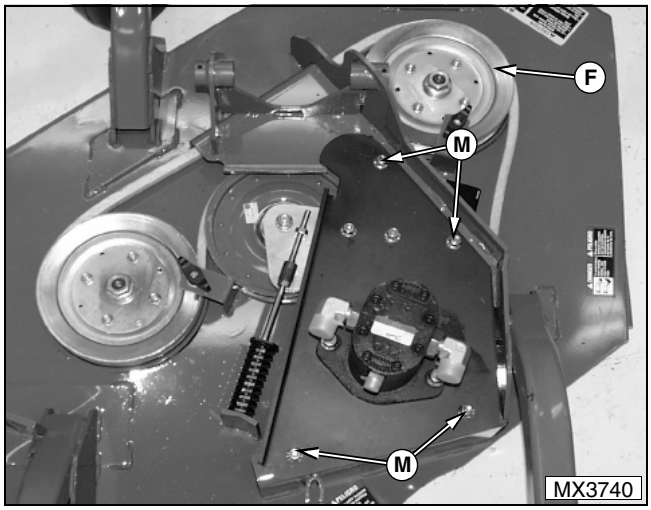
2. Position motor plate (B) onto motor plate mounting brackets (C) so drive belt is routed properly around sheaves (D) and (E).

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.



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.



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.

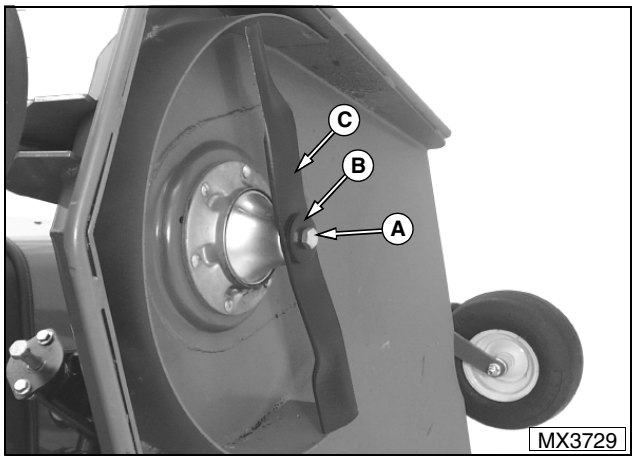
3. Raise mower decks completely.

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.



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.

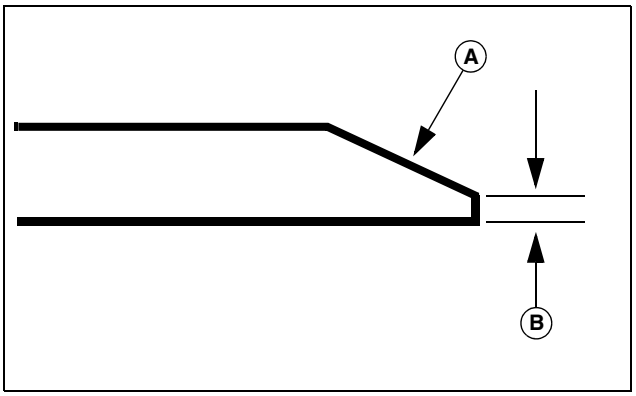
13.Install blade bolt and washer with the cupped-side of washer against the blade. Tighten blade bolt to 122 N•m (90 lb-ft). Repeat for other blades.

14. Lower mower decks completely.

Sharpening Blades

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

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



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

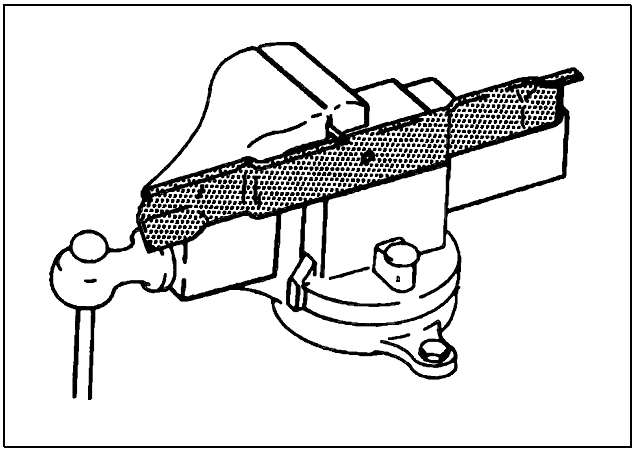
3. Balance the blade.

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.



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.

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.**

Checking Battery Electrolyte Level

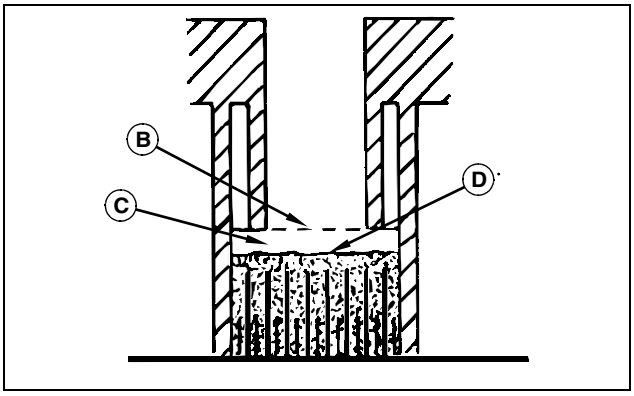
CAUTION: Avoid injury! Battery electrolyte can cause burns on contact:

- **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.**

1. Remove battery manifold caps (A).

IMPORTANT: Avoid damage! Acid can overflow as the battery is being charged.

DO NOT fill the cells to the bottom of the filler neck.



2. Check electrolyte level. Electrolyte level (C) should be 6 mm (1/4 in.) above plates (D) and below filler neck (B).

3. Add distilled water if necessary.

4. Install manifold caps.

Removing and Installing the Battery

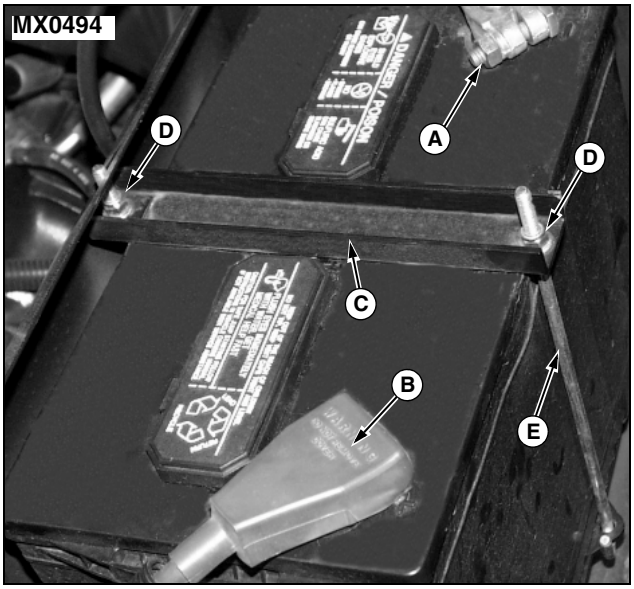
CAUTION: Avoid injury! A battery explosion can be caused by sparks when removing or installing battery:

- **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.**

Removing:

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

2. Raise engine cover.



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

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.**

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.

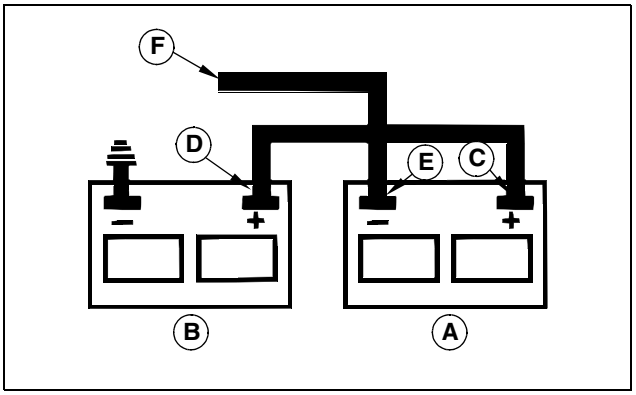
5. Apply petroleum jelly or silicone spray to terminal to prevent corrosion.

6. Install battery.

Using Booster Battery

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

- **DO NOT attempt to jump start a frozen battery. Warm to 16 degrees C (60 degrees F).**
- **DO NOT smoke near battery.**
- **Wear eye protection and gloves.**
- **Keep sparks and flames away.**
- **DO NOT connect the negative (-) booster cable to the negative (-) terminal of the discharged battery. Connect at a good ground location away from the discharged battery.**



A - Booster Battery

B - Disabled Vehicle Battery

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

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

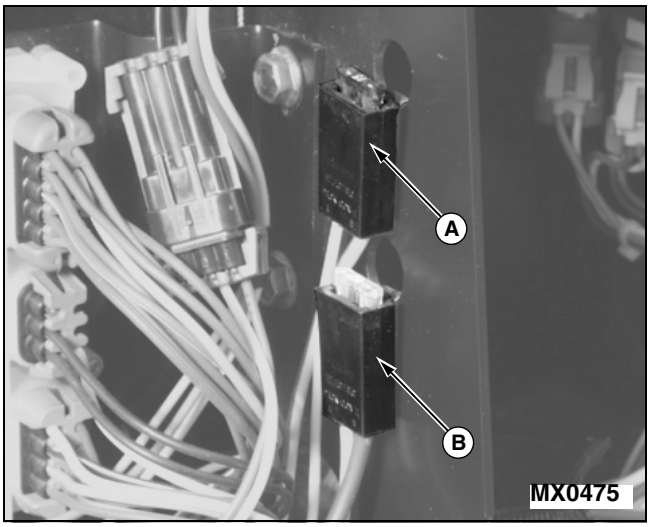
3. Connect negative (–) booster cable to booster battery negative (–) post (E).

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.

Checking and Replacing Fuses



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

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.

4. Test fuses with voltmeter or test light and replace if blown.

5. Replace service panel.

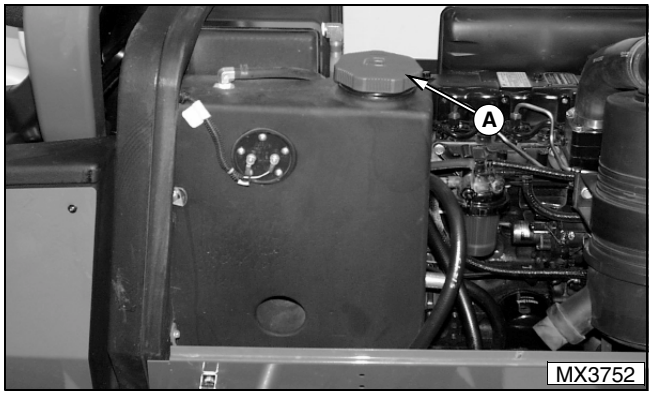
Filling Fuel Tank

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.)
2. Open engine cover.
3. Allow engine to cool several minutes.



4. Remove any debris from area around fuel tank cap (A).
5. Remove fuel tank cap.
6. Fill tank with fresh, stabilized fuel only to bottom of filler neck.
7. 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.

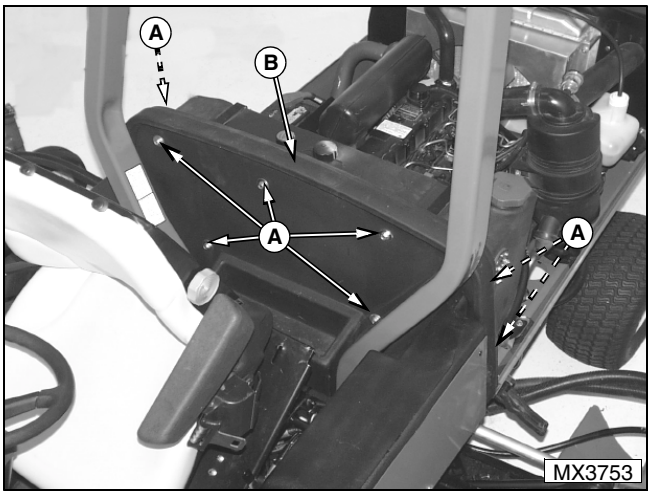
2. Use automotive polishing compound to remove surface scratches.
3. Apply wax to entire surface.

Repairing Deep Scratches (Bare Metal or Primer Showing)

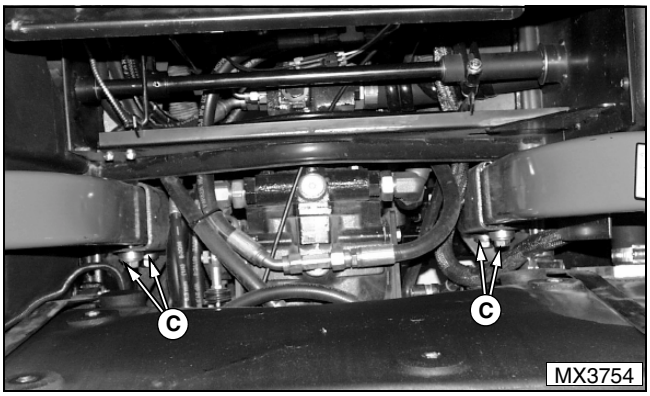
1. Clean area to be painted with rubbing alcohol or mineral spirits.
2. Use paint stick with factory-matched colors available from your John Deere dealer to fill scratches. Follow directions included on paint stick for use and for drying.
3. Smooth out surface using an automotive polishing compound. 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.



3. Remove hardware (A) securing plastic back panel (B) to machine. Retain all hardware.
4. Carefully lift back panel from machine and set it aside.



5. Tighten the four ROPS attaching bolts (C) to 136 N•m (100 lb-ft).

6. Install plastic back panel and secure with attaching hardware.

7. Lower seat platform and engine cover.

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 loosing wheel bolts.**

Removing Front Tires

1. Raise side deck completely on side of machine requiring front wheel removal. Leave other side deck lowered completely.

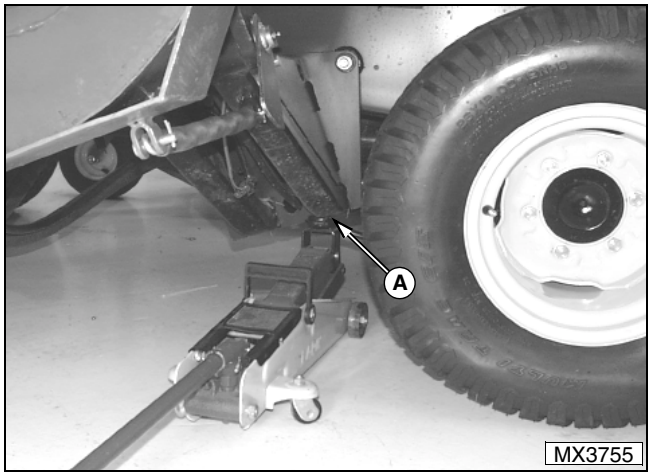
2. Engage the side deck transport lock.

3. Raise front mower deck completely.

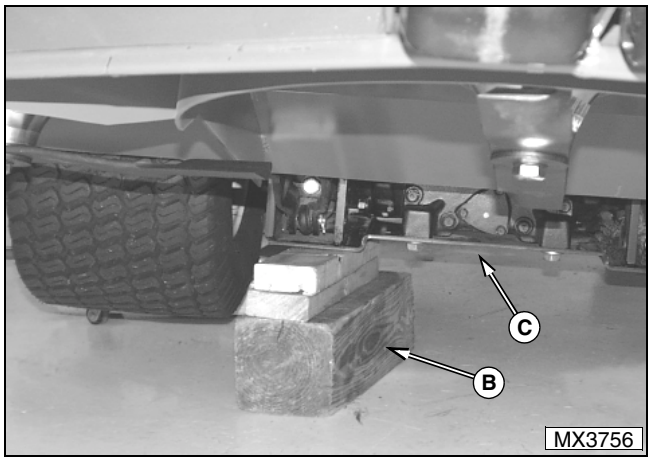
4. Park machine safely. (See Park Safely in SAFETY section.)

5. Rotate front deck for service to obtain as much clearance as possible between rear of deck and ground surface.

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

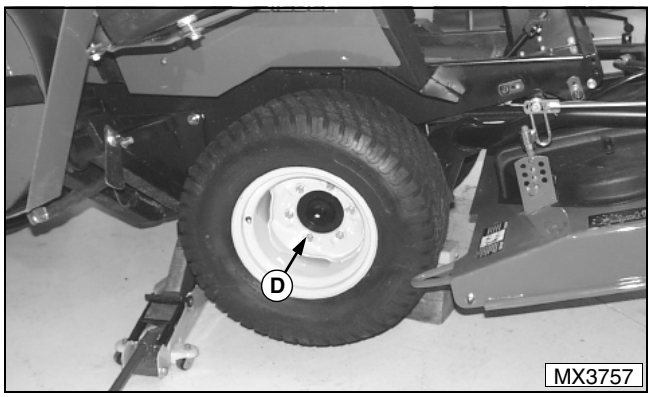


6. Using a safe lifting device, jack up machine at base of lift arm bracket (A) or under the front skid plate if adequate clearance exists.



7. Install blocking material (B) under front skid plate (C).

8. Lower machine onto blocks.



9. Remove wheel bolts (D) and wheel.

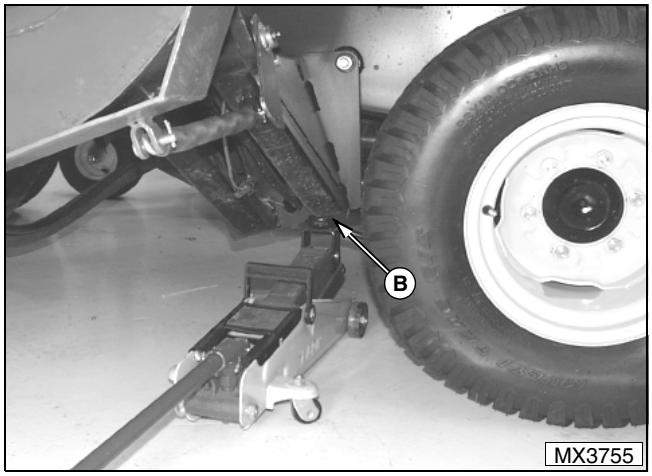
Installing Front Tires

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

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.



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 loosing wheel bolts.**
- **Do not use rear bumper to support machine.**

Removal

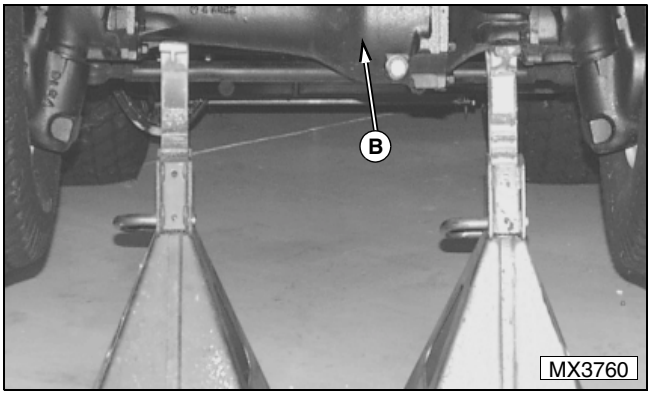
1. Raise side deck completely at side of machine requiring rear wheel removal. Leave other side deck lowered completely.

2. Engage the side deck transport lock.

3. Lower front deck completely.

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

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



6. Install jack stands under rear axle (B).

7. Lower machine onto jack stands.

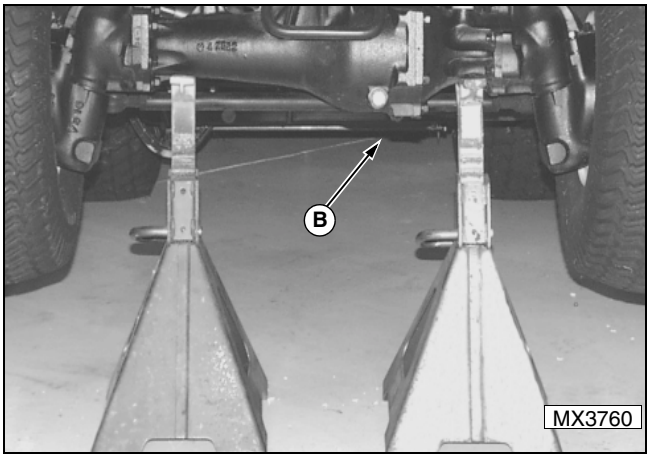
8. Remove wheel bolts and wheel from rear axle.

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.



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.

Using Troubleshooting Chart

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

When you have checked 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.

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.

Mower Decks - 1600

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.

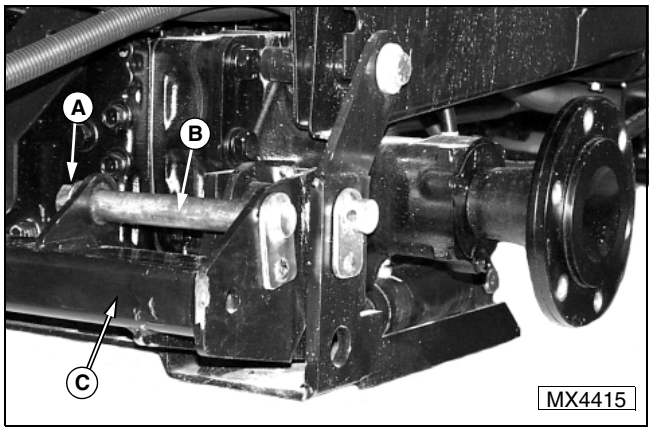
12. Check brake pedal, speed control, and neutral start switch functions.

13. Check engine air restriction indicator.

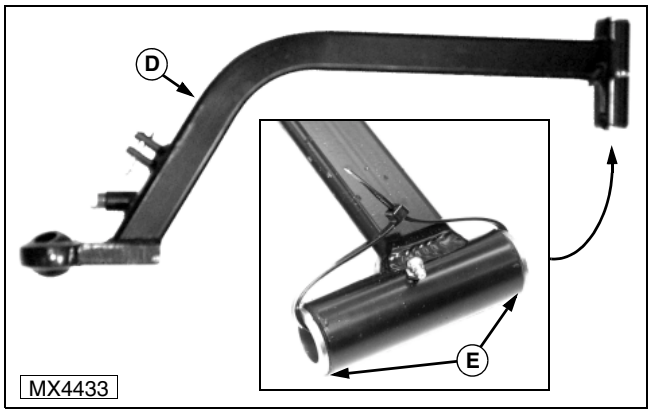
14. Wash machine if necessary.

Installing Lift Arms

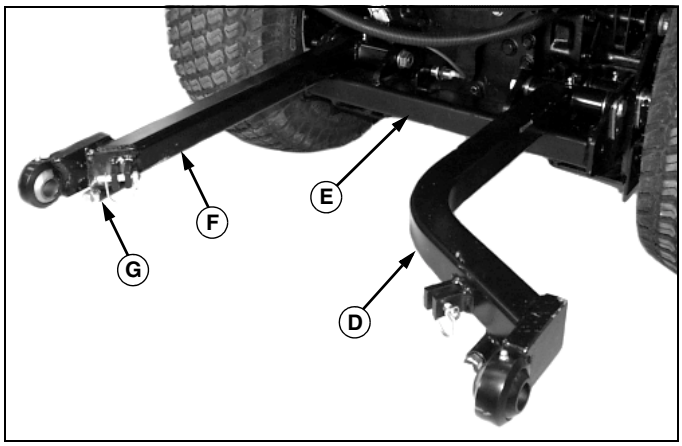
1. Park machine safely. (See Safety Section.)
2. Block rear wheels.
3. Jack front of machine up until front tires are off of ground. Place hardwood blocks under frame, and lower machine off of jack.
4. Remove front wheels from machine.



5. Remove M20 flange head hex nut (A).
6. Remove lift arm pivot pin (B) from rockshaft (C).

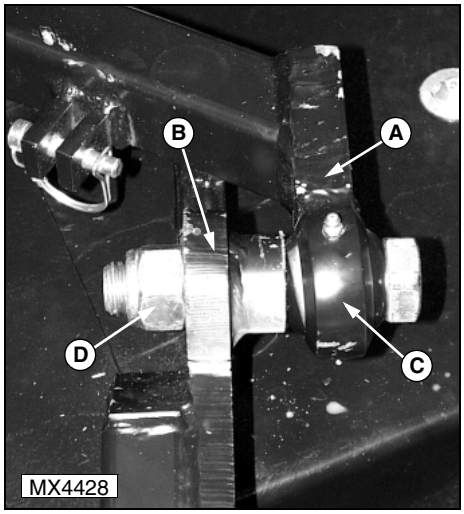


7. Locate left lift arm (D). Check that bushings (E) are installed on left and right side.
8. Remove tie strap from lift arm bushings.



9. Install left lift arm (D) onto rockshaft (E), making sure bushings remain in place.
10. Install lift arm pivot pin through rockshaft and lift arm, and secure with M20 flange head hex nut.
11. Repeat procedure for right side lift arm (F). Be sure stop bolt (G) is on bottom of lift arm before installing.
12. Install front wheels and lower machine off of blocks.

Installing Mower Deck



Picture Note: Left side lift arm is shown, right side lift arm is similar.

1. Align lift arms (A) with lift points (B) on mower deck frame.
2. Install one 1 x 5 in. hex head cap screw (C) through left side lift arm and mower deck. Secure with one 1 in. nylock hex nut (D).
3. Repeat for right side lift arm, using one 1 x 3-3/4 in. hex head cap screw, and 1 in. hex nut.
4. Grease lift arms at front and rear grease fittings.

Installing the Weight Transfer System

NOTE: The use of an overhead hoist is necessary to install weight transfer system on machine.

Mower deck upstop must be removed from machine before installing weight transfer system.

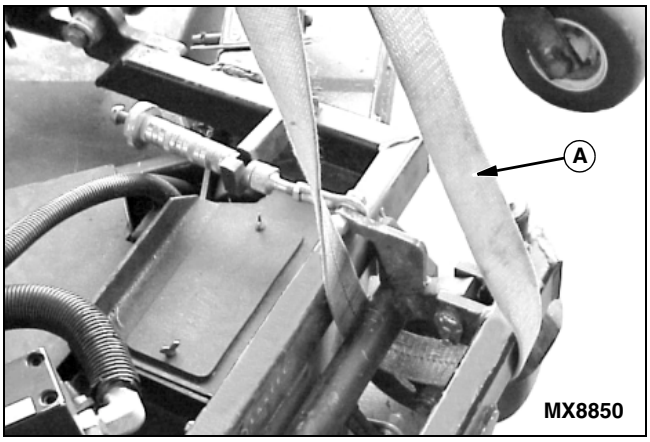
Mower deck must be installed on machine prior to installing weight transfer system.

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

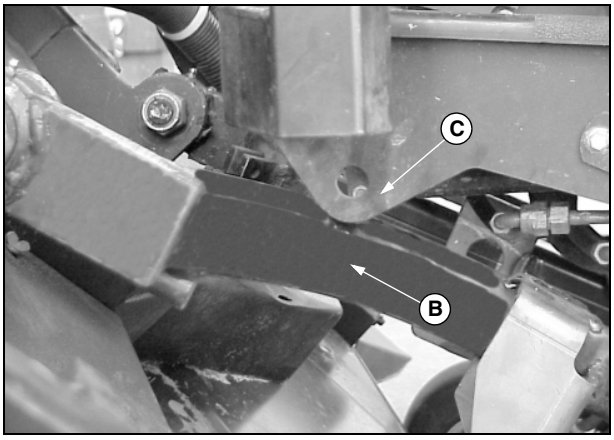
2. Lower the mower deck to the ground, then continue to hold the lever until the rockshaft reaches its lowest point, and stops moving.

3. Lock the park brake, stop the engine, and remove the key.

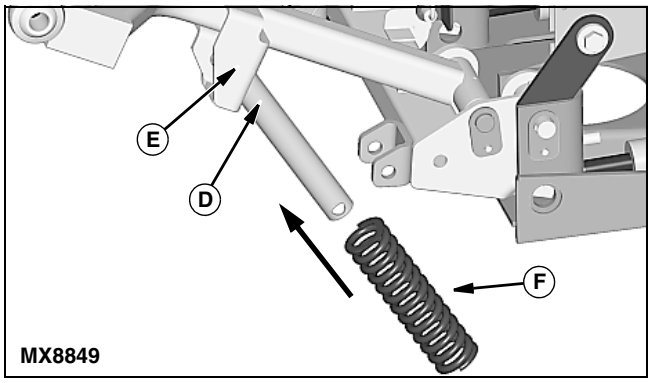
4. Remove the mower deck upstop, if installed.



5. Position a strap (A) as shown. Make sure strap is rated at or above 454 kg (1000 lbs).

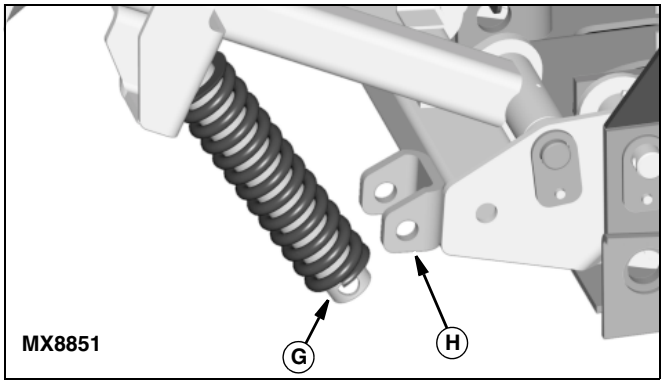


6. Lift the mower deck up with an overhead hoist until left lift arm (B) makes contact with the bottom of the operators platform (C).



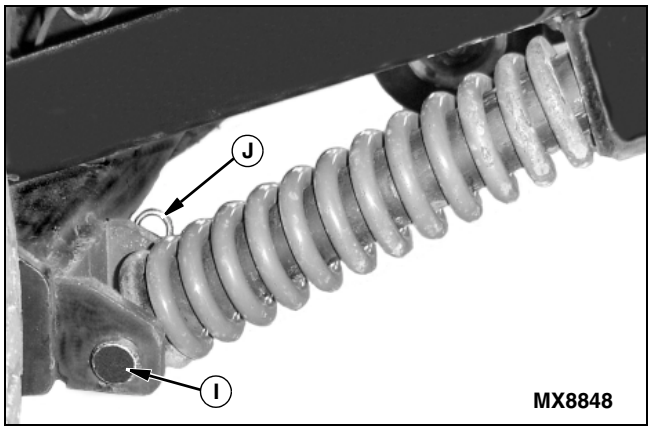
7. Install the undrilled end of the weight transfer tube (D) into the hole on the lift arm bracket (E).

8. Slide the spring (F) up the tube until it makes contact with the lift arm bracket.



9. Holding the spring up against the lift arm bracket, pull the tube back out of the spring until the drilled hole (G) on the bottom end of the tube is below the bottom of the spring.

10.Place the bottom end of the tube into the bracket (H) on the rockshaft. LIne up the holes in the tube with the holes in the rockshaft.



11.Install the drilled pin (I) through the rockshaft and tube, and secure with a spring pin (J). Rotate the spring so the flat spots on the bottom of the spring are centered on the pin.

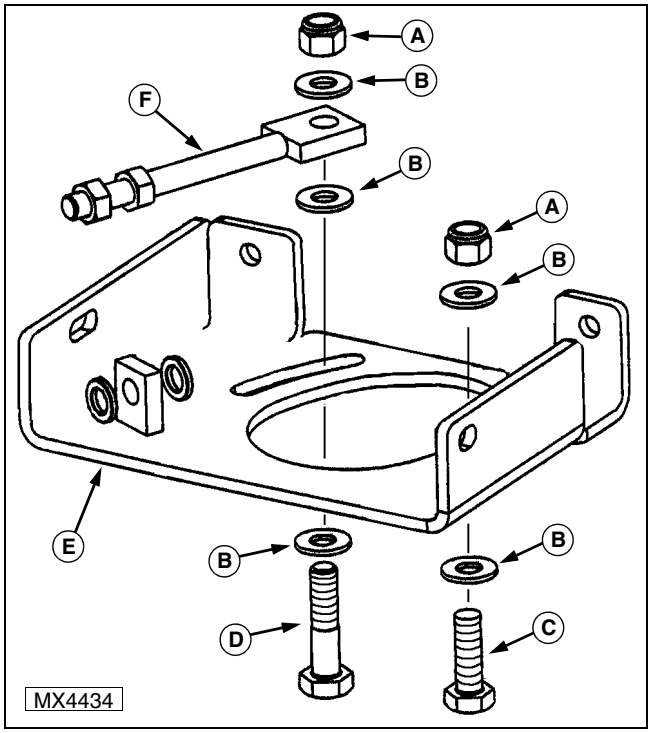
12.Repeat steps six through ten for lift arm on other side of machine.

13.Lower hoist and mower deck to the ground. Remove strap.

14.Install mower deck upstop.

Installing Hydraulic Motor

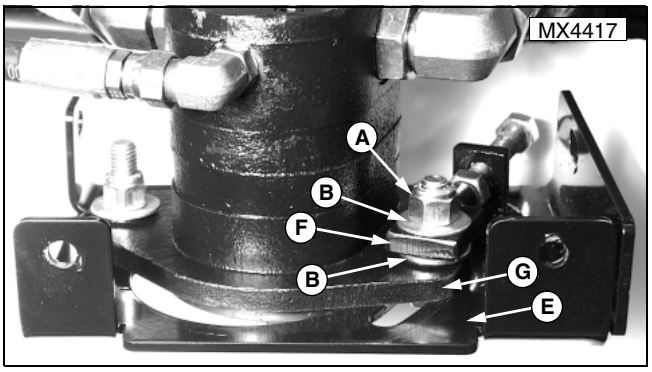
Installing Motor to Motor Plate



Picture Note: Parts are shown from rear view.

A - Hex Head Nylock Nut - 1/2 in.
B - Flat Washer -1/2 in.
C - Cap Screw - 1/2 x 1-1/2 in.
D - Cap Screw - 1/2 x 2-1/4 in.
E - Motor Mounting Plate
F - Tensioner Bolt

1. Install one 1/2 in. flat washer (B) on each of the 1/2 in. cap screws (C & D).



2. Fit motor mounting plate (E) up to hydraulic motor as shown, with left side motor mount tab (G) positioned between motor mounting plate and tensioner bolt (F).

3. Place one 1/2 in. flat washer (B) between left side motor mount tab, and tensioner bolt (F).

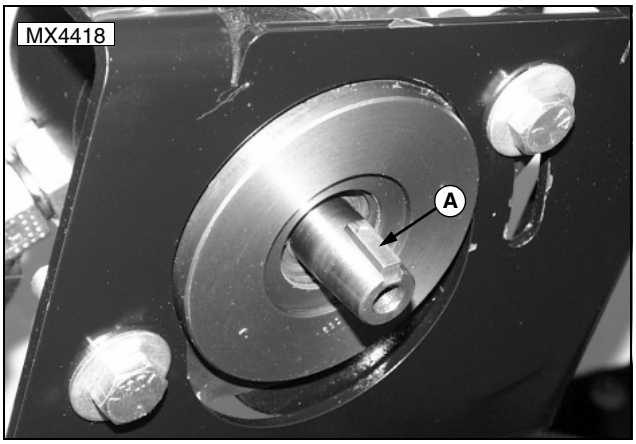
4. Install one 1/2 x 2-1/4 in. cap screw (D) (with washer installed from step one), up through motor mounting plate, left side motor mount tab, flat washer, and tensioner bolt.

5. Install one 1/2 in. flat washer (B), and 1/2 in. nylock hex nut (A) onto cap screw. Do not fully tighten at this time.

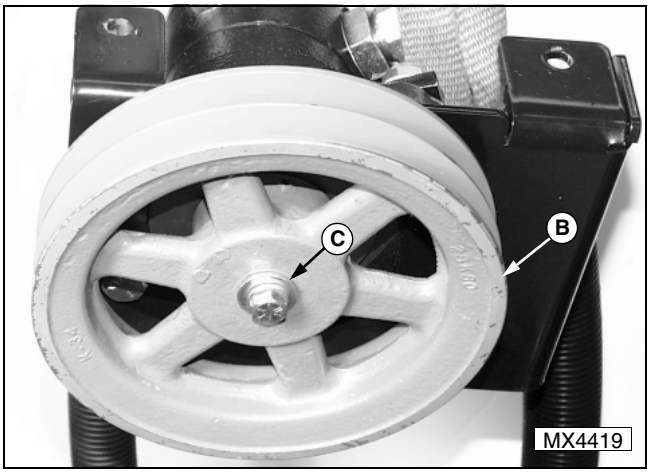
6. Install one 1/2 x 1-1/2 in. cap screw (C) (with washer installed from step one), up through motor mounting plate and right side motor mounting tab.

7. Install one 1/2 in. flat washer (B), and one 1/2 in. nylock hex nut onto cap screw. Do not fully tighten at this time.

Installing Motor Pulley



1. Install key (A) into keyway on hydraulic motor shaft.



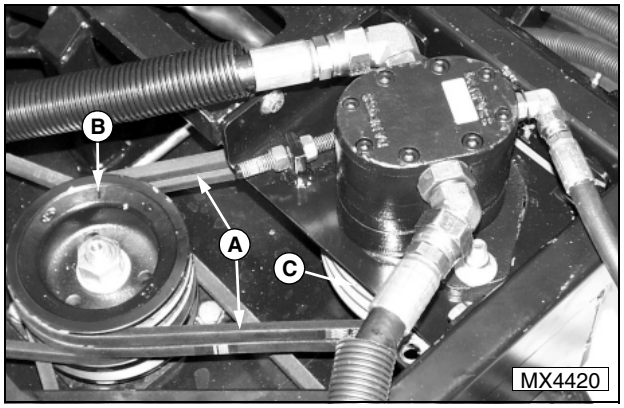
2. Install motor pulley (B) onto motor shaft, aligning key in shaft with keyway on pulley.

3. Secure pulley with one 3/8 in. flat washer, 3/8 in. lock washer, and 3/8 x 1-1/2 in. hex head cap screw (C).

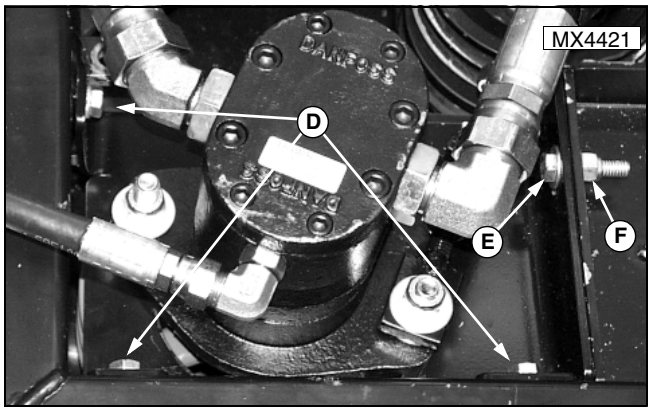
4. Tighten cap screw to 63 N•m (46 lb-ft).

5. Tighten set screw on pulley hub to hold shaft key in place.

Installing Mower Deck Belts



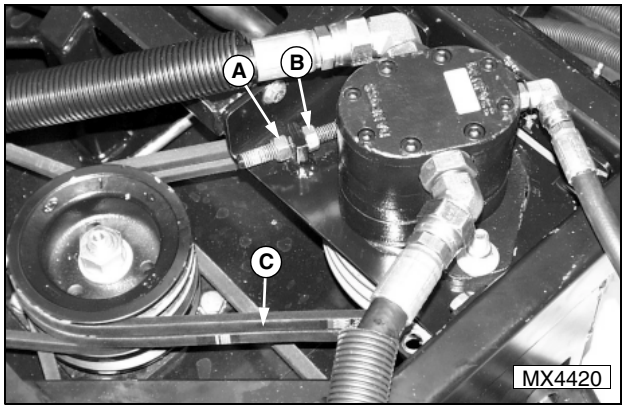
1. Install two drive belts (A) onto deck pulley (B) and motor pulley (C).



2. Lower motor plate down into mower deck frame and install three 3/8 in. cap screws (D) and one 1-1/4 in. cap screw (E) and flat washers to secure in place.

3. Secure left cap screw with one 3/8 in. flat washer and hex nut (F).

Tensioning Mower Deck Belt

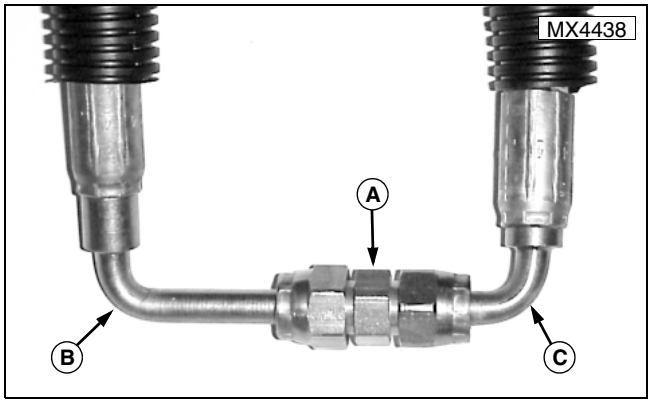


1. Tighten belts by loosening jamb nut (A) and tightening tension nut (B) until mower belt tension at center of belt (C) is 4.8 mm (3/16 in.) of deflection with 31 N (7 lbs) force.

2. Tighten jamb nut.

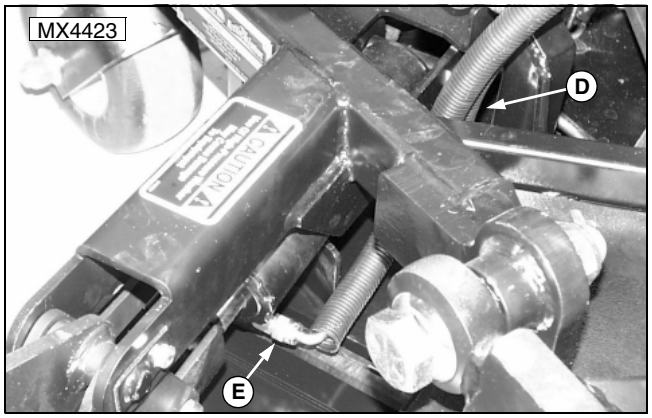
3. Tighten motor mount bolts.

Installing and Removing Hydraulic Hoses to Mower Deck Lift Cylinder

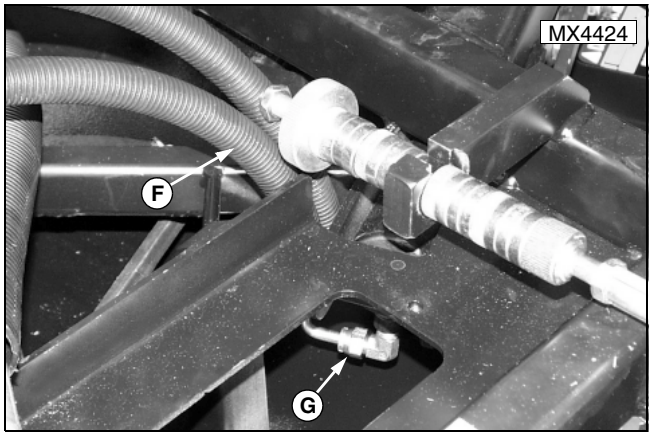


1. Locate hydraulic lift cylinder hoses from under machine. Remove hoses from shipping coupler (A).

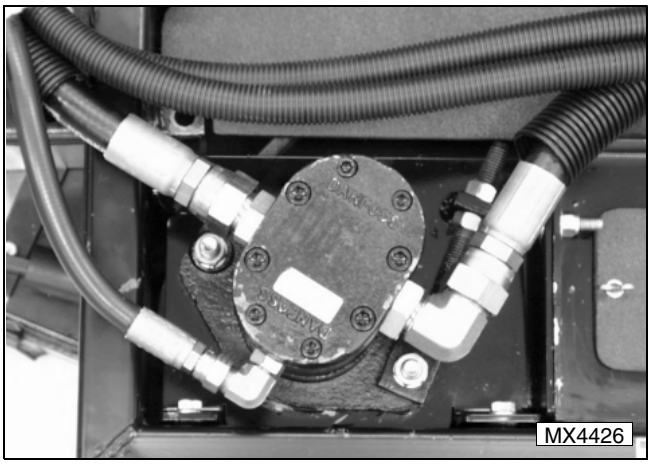
NOTE: The head end hose has a large bend elbow (B) on the end of the hose. The rod end hose has a small bend elbow (C).



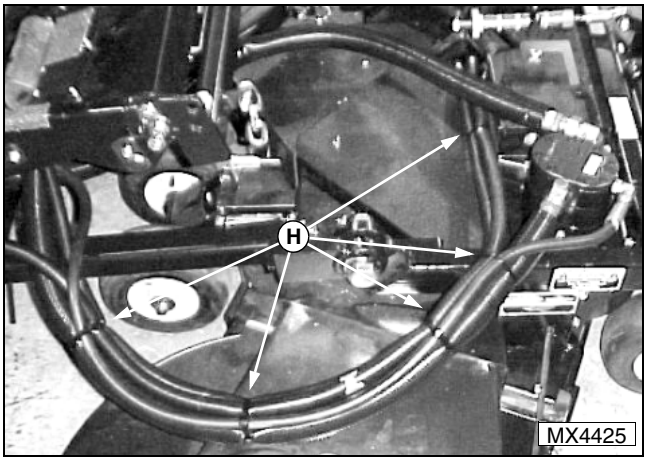
2. Route the rod end hose (small bend elbow) through the small triangular frame section (D) and connect to the rod end fitting (E) of the mower deck lift cylinder. Rotate hose fitting before tightening to avoid hose rubbing on frame.



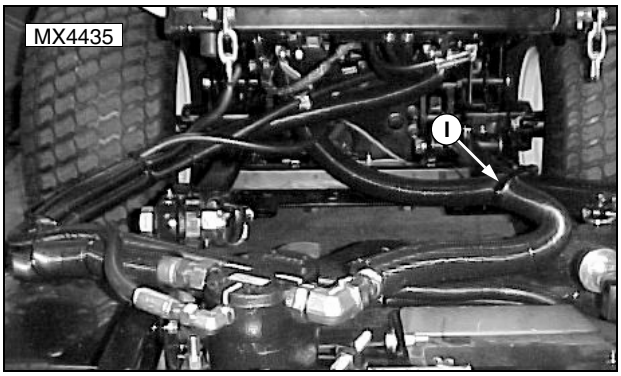
3. Route the head end hose (large bend elbow) through the triangular frame section (F) and connect to the head end fitting (G) of the mower deck lift cylinder.



4. Turn hose fittings on hydraulic motor until routed as shown above.



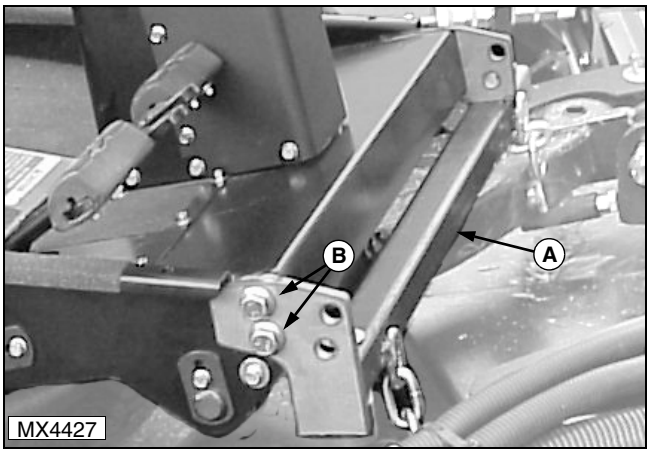
5. Install five tie-straps (H) around hydraulic hoses in positions shown.



6. Attach left side hydraulic hose to left lift arm at (I) using one tie strap.

7. Removal is in reverse of installation. Lower deck to ground and stop engine before removing deck. Install caps on hose ends to prevent loss of fluid.

Installing Mower Deck Upstop



1. Install mower deck upstop (A) onto operator's platform as shown using four M12x30 flange head cap screws (B).

Removing Mower Deck

The weight transfer system must be disabled prior to removing the mower deck.

The use of an overhead hoist is necessary to remove the weight transfer system from machine.

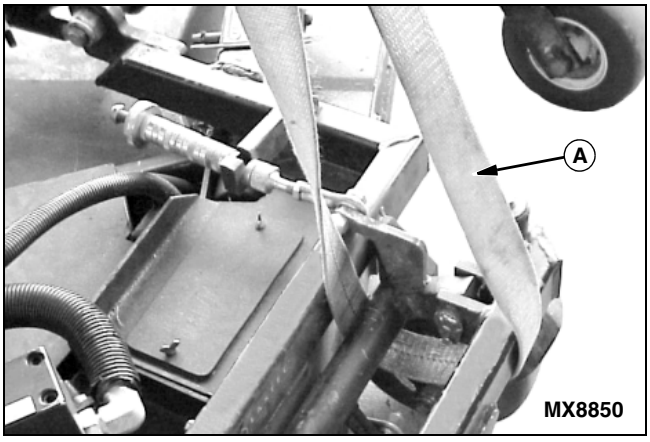
The mower deck upstop must be removed from the machine before removing the weight transfer system.

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

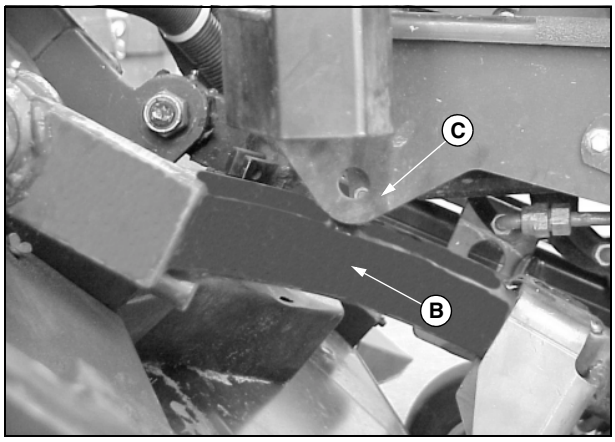
2. Lower the mower deck to the ground, then continue to hold the lever until the rockshaft reaches its lowest point, and stops moving.

3. Lock the park brake, stop the engine, and remove the key.

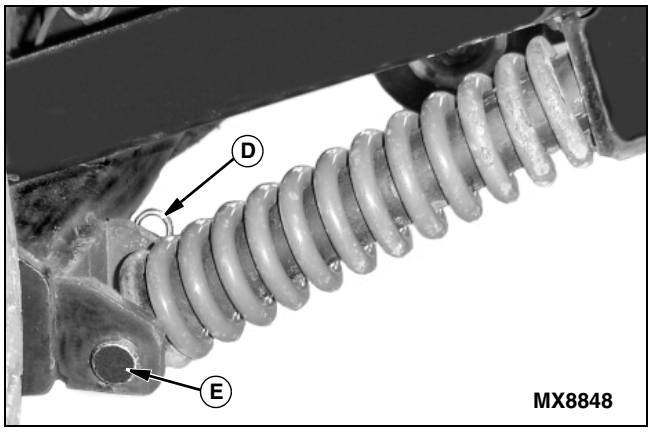
4. Remove the mower deck upstop.



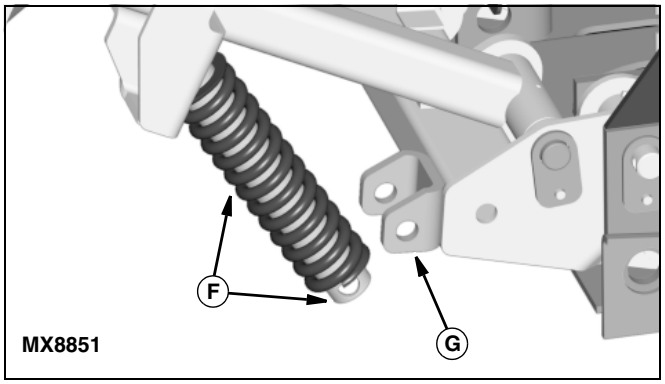
5. Position a strap (A) as shown. Make sure strap is rated at or above 454 kg (1000 lbs).



6. Lift the mower deck up with an overhead hoist until left lift arm (B) makes contact with the bottom of the operators platform (C). All tension should be off of weight transfer springs.



7. Remove the spring pin (D) and drilled pin (E) from the rockshaft.



8. Pull the spring and tube (F) out of the rockshaft bracket (G), and remove the spring and tube from machine.

9. Repeat steps seven and eight for other side of machine.

10. Lower hoist until mower deck to the ground. Remove strap.

11. Remove hydraulic hoses to mower deck lift cylinder.

Cap hoses to prevent fluid loss.

12.Loosen hydraulic motor mounting bolts, and loosen belt tensioner.

13.Remove drive belt from motor pulley.

14.Remove hydraulic motor mounting plate, and pull hydraulic motor and hoses back from mower deck.

15.Remove two 1 in. hex head cap screws holding mower deck to lift arms. Pull deck from machine.

SPECIFICATIONS

Engine

Engine Model Number	**Yanmar 4TNE88**
Engine Type	**4-Cycle, 4-Cylinder, In-Line Diesel**
Cooling	**Liquid Cooled**
Gross Output	**38 kW (51 hp)**
Net Output	**37 kW (49 hp)**
Injection Type	**Direct**
Air Cleaner	**Dry, Replaceable Dual Element**

Capacities

Engine Oil (with Filter)	**6.6 L (7 qt)**
Fuel Tank	**57 L (15 gal)**
Coolant	**6.6 L (7 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-1600	**26x12.00-12**
Front Drive Tires-1620	**26.5x14.00-12**
Rear Tires	**20x10-8**
Mower Deck Caster Tires-1600	**11x4-5**

Tire Inflation Pressures

Machine Front Tires-1600	**140 kPa (20 psi)**
Machine Rear Tires-1600	**140 kPa (20 psi)**
Mower Deck Caster Tires-1600	**275 kPa (40 psi)**
Machine Rear Tires-1620	**83-104 kPa (12-15 psi)**

Machine Front Tires-1620 . . . . . 83-104 kPa (12-15 psi)

Dimensions - 1600

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). . . . . 1678 kg (3700 lbs)
Ground Clearance . . . . . 18 cm (7 in.)
Cutting Width . . . . . 3.3 m (131 in.)

Mower Decks - 1600

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 - 1600 . . . . . 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 TRACTOR 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
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

(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 TRACTOR 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

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 located within the United States of America. 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 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 it's own and the dealer has no authority to make any representation or promise on behalf of John Deere, or to modify the terms or limitations of this warranty in any way.

PRO RATA MONTHS OF ADJUSTMENT

NOTE: If your battery is not labeled with a warranty code, it is a warranty code "B".

Warranty Code	Warranty Period
A	40 Months
B	36 Months
C	24 Months

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NOTES

JOHN DEERE QUALITY STATEMENT

John Deere Quality

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

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

Step 1

Refer to your operator's manual

A. It has many illustrations and detailed information on the safe and proper operation of your equipment.

B. It gives troubleshooting procedures, and specification information.

C. It gives ordering information for parts catalogs, service and technical manuals.

D. If your questions are not answered in the operator's manual, then go to Step 2.

Step 2

Contact your dealer (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.

SERVICE RECORD

Record Service Dates

Engine Oil Change	Hydraulic Oil Change	Lubricate Machine & Mower Decks	Air Cleaner Element Clean/Replace	Fuel Filter Change