

JOHN DEERE
AG & TURF DIVISION

ProGator™ Utility Vehicle
2030A

OMTCU31252 A4

OPERATOR'S MANUAL



JOHN DEERE

Export Version
Printed in U.S.A.



DCY



OMTCU31252

Introduction

Thank You for Purchasing a John Deere Product

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

Using Your Operator's Manual

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

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

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

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

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

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

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

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

Machine Use

This machine is designed solely for use in customary utility operations, park and amenity area maintenance, for appropriate agricultural operations, and for winter work. Use in any other way is considered as contrary to the intended use.

This machine is not intended for use in forestry operations, unless equipped with a Falling Objects Protection Structure (FOPS). The operator station does not provide adequate

protection to the occupants in that environment unless equipped with a FOPS.

The cab available from the manufacturer is not designed to provide adequate protection from hazardous substances. The operator must wear appropriate personal protection equipment.

The manufacturer accepts no liability for damage or injury resulting from this misuse, and these risks must be borne solely by the user. Compliance with and strict adherence to the conditions of operation, service and repair as specified by the manufacturer also constitute essential elements for the intended use.

This machine should be operated, serviced and repaired only by persons familiar with all its particular characteristics and acquainted with the relevant safety rules (accident prevention). The accident prevention regulations, all other generally recognized regulations on safety and occupational medicine and the road traffic regulations must be observed at all times.

Setting fuel delivery beyond published factory specifications or otherwise overpowering will result in loss of warranty protection for this machine.

Any arbitrary modifications carried out on this machine will relieve the manufacturer of all liability for any resulting damage or injury.

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.

Introduction

Required Emission-Related Information Service Provider

A repair shop or person of the owner's choosing may maintain, replace, or repair emission control devices and systems with original or equivalent replacement parts. However, warranty, recall, and all other services paid for by John Deere must be performed at an authorized John Deere service center.

Product Identification

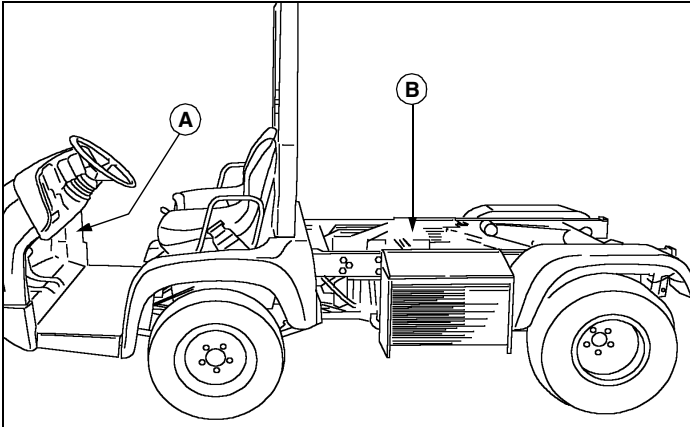
Record Identification Numbers

Utility Vehicle ProGator™

Serial No. (060001 -)

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

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



Intro

DATE OF PURCHASE:

DEALER NAME:

DEALER PHONE:

PRODUCT IDENTIFICATION NUMBER (A):

ENGINE SERIAL NUMBER (B):

Table of Contents

Safety Labels	1
Safety Labels	2
Safety	5
Operating Controls	12
Operating	14
Replacement Parts	30
Service Intervals	31
Service Lubrication	34
Service Engine	35
Service Transmission	45
Service Hydraulics	50
Service Steering & Brakes	53
Service Electrical	54
Service Miscellaneous	58
Troubleshooting	65
Storage	75
Specifications	77
Declaration of Conformity	81
Index	82

Original Instruction

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

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John Deere Ag & Turf Division

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2011

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Safety Labels

Safety Label Location



MX43078

Picture Note: Use label number listed in table below to locate complete text of safety label message following this illustration.

- | | |
|-----------------------------|--|
| A - WARNING MT3562 | E - CAUTION MT3563 |
| B - CAUTION M120056 | F - WARNING - EU Regions - MT6349 / Non-EU Regions - TCU31360 |
| C - CAUTION M142773 | G - WARNING M141954 |
| D - CAUTION TCU27739 | H - DRAWBAR M141874 |
| | I - DANGER MT6350 |

Safety Labels

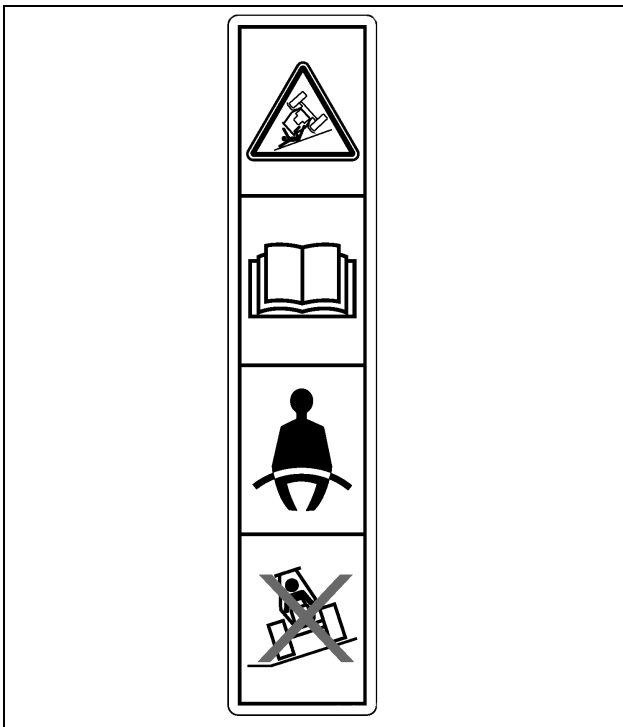


Pictorial Safety Signs

At several important places on this machine safety signs are affixed intended to signify potential danger. The hazard is identified by a pictorial in a warning triangle. An adjacent pictorial provides information how to avoid personal injury. These safety signs, their placement on the machine and a brief explanatory text are shown in this Safety section.

There can be additional safety information contained on parts and components sourced from suppliers that is not reproduced in this operator's manual.

WARNING Avoid Tipping

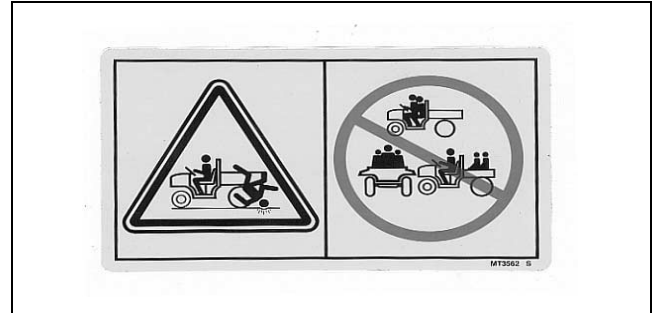


MX27620

- To avoid injury from crushing, always wear seat belt. Do not jump from machine.
- Read the Operator's Manual.
- Always use seat belt.
- Avoid tipping by identifying slopes for safe operation.

WARNING MT3562

Riders Can Fall Off And Be Killed

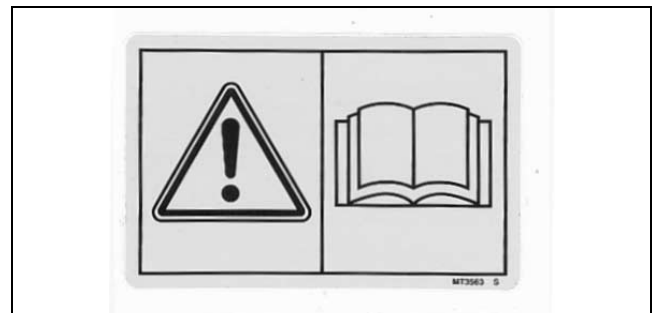


MT3562

- Maximum of one person to a seat
- No riders in box or anywhere else

CAUTION MT3563

Read Operator's Manual



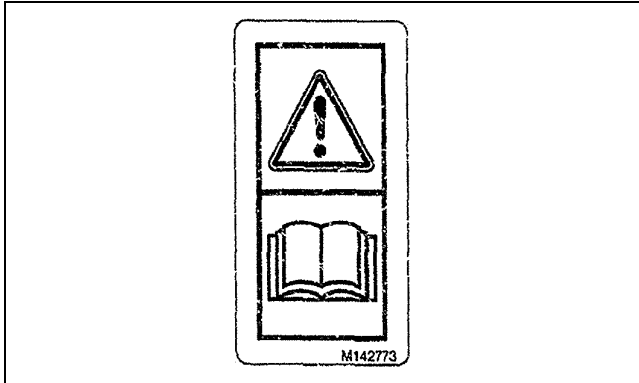
MT3563

- To avoid brake failure use brake fluid specified in the Operating Manual.
- Clean filler cap before removing. Use only DOT3 brake fluid from a sealed container.

Safety Labels

CAUTION M142773

Safe Machine Operation



M142773

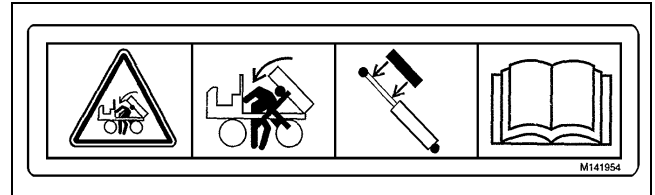
This operator's manual contains important information necessary for safe machine operation. Observe all safety rules to avoid accidents.

- Set park brake

- Remove key

WARNING M141954

Avoid Injury From Crushing

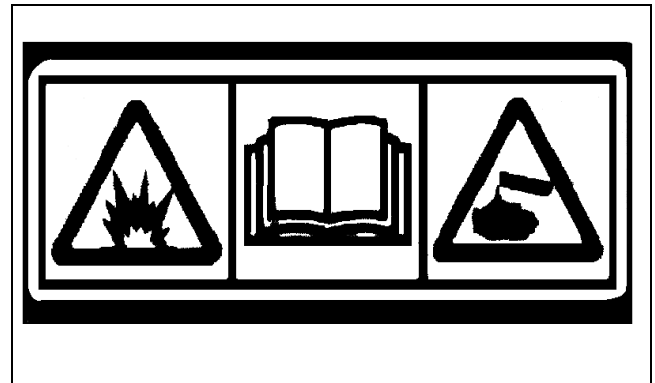


M141954

Always use safety support when working on a raised bed or attachment.

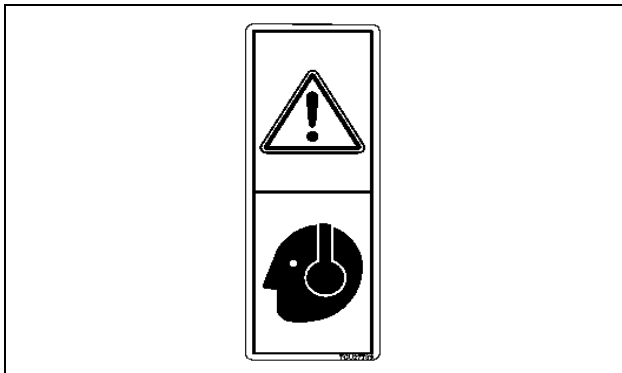
DANGER MT6350

Avoid Injury From Battery Gases and Acid



MT6350

CAUTION TCU27739

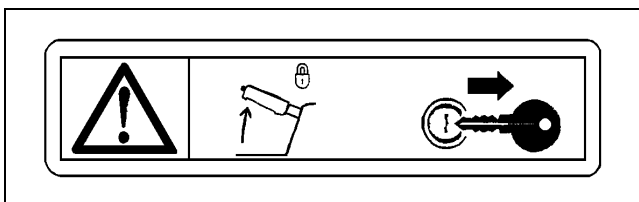


TCU27739

- Prolonged exposure to loud noises can cause impairment or loss of hearing.
- Wear suitable hearing protection.

CAUTION M120056

Before leaving vehicle:



M120056

- Stop engine

Explosive Gases

Cigarettes, flames or sparks could cause the batteries to explode. Always shield eyes and face from the batteries. Do not charge or use booster cables or adjust poor connections without proper instruction and training. Keep vent caps tight and level.

Causes Severe Burns

Contains sulfuric acid. Avoid contact with skin, eyes or clothing. In event of an accident, flush with water and call a physician immediately. Keep out of reach of children.

Safety Labels

Avoid Injury From Hot Surface TCU13554



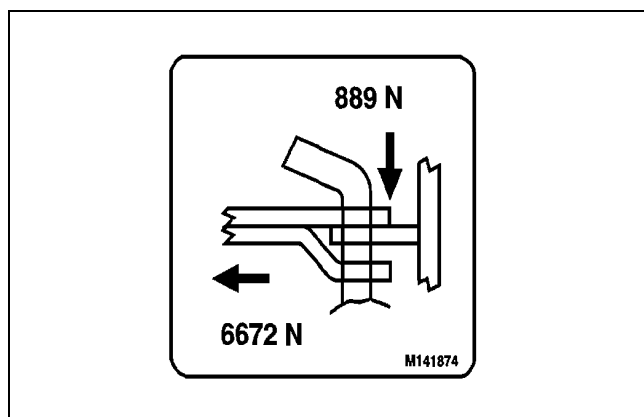
TCU13554

Picture Note: Stamped into the top of the machine muffler (diesel units only).

Do not touch the machine muffler; it may be hot.

DRAWBAR M141875

Do not exceed recommended drawbar loads stated on label.



M141875

- Horizontal 6672 N (1500 lb)
- Vertical 889 N (200 lb)

Safety

Supervisor Safety Responsibilities

- Make sure all operators of this machine are thoroughly trained and are familiar with the operator's manual and understand the machine warning labels.
- Be sure to establish any special safety procedures for existing work conditions and train operators in those procedures.
- Supervisors, operators and mechanics should be familiar with and practice the safety standards that apply to this machine.

Operator Training Required

- The owner of the machine is responsible for training the users and mechanics 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 or service of the machine by untrained adults.
- Do not let children operate the machine. Local regulations may restrict the age of the operator.
- The operator or user is responsible for accidents or hazards occurring to other people or their property.
- All drivers should seek and obtain professional and practical instruction. Such instruction should emphasize:
 - the need for care and concentration when working with ride-on machines.
 - control of a ride-on machine sliding on a slope will not be regained by the application of the brake.
- The main reasons for loss of control are:
 - insufficient wheel grip;
 - being driven too fast;
 - inadequate braking;
 - the type of machine is unsuitable for its task;
 - lack of awareness of the effect of ground conditions, especially slopes;
 - incorrect hitching and load distribution.
- Read the operator's manual and study the safety and operation sections before operating the machine.
- If the operator of the machine cannot read or understand this manual, it is the machine's owner responsibility to explain this material to the operator. This publication is available in other languages.
- Operate the 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.

Operating Safely

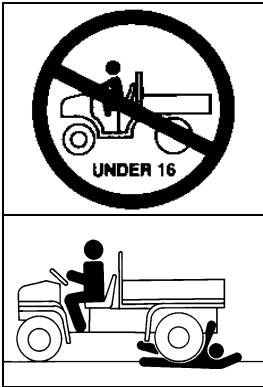
- Read, understand and follow all instructions in the operator's manual and on the machine before starting.
- Do not misuse the utility vehicle. It is a utility vehicle, not a recreation vehicle.
- The utility vehicle is not intended for use on highways or public roads. It is to be used for off-road use only.
- Slow down and be careful of traffic when operating near or crossing roadways. Use care when approaching blind corners, shrubs, trees, or other objects that may obscure vision.
- The operator should always make sure that the passenger is aware of correct safety procedures while riding in the utility vehicle.
- The passenger should always use the hand holds.
- Horseplay or recreational riding can lead to accidents, severe bodily injury or death.
- Sit on the center of the seat and keep both feet within the foot platform perimeter. Clean foot platform if dirty, and remove any debris from around foot controls.
- Check for debris in engine compartment, especially around brake linkage on each side of the transaxle.
- Always use both hands for steering.
- Know location of controls and how and what they operate.
- Never operate utility vehicle while standing.
- Never operate utility vehicle with the cargo box raised.
- Check brake action before beginning vehicle operation. Adjust or service the brakes as necessary.
- To provide adequate braking ability and traction, do not tow any attachment or loaded trailer unless the cargo box is fully loaded.
- Inspect vehicle before operating. 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 operating.
- Do not leave vehicle unattended when it is running.
- Operate during daylight or with good artificial light and if you drive at night, use the lights.
- Do not operate vehicle if under the influence of alcohol or other drugs.

Safety

- Avoid sudden starts, stops, or turns.
- Always use a level turn-around area.
- Do not wear radio or music headphones. Safe service and operation require your full attention.

Parking Safely

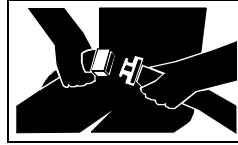
1. Stop vehicle on a level surface, not on a slope.
2. Place gearshift lever in first or reverse position.
3. Lock park brake.
4. Stop engine.
5. Remove key.
6. Before you leave the operator's seat, wait for engine and all moving parts to stop.
7. Disconnect the negative battery cable or remove the spark plug wire (for gasoline engines) before servicing the machine.



Protect Children and Prevent Accidents

- This utility vehicle should not be operated by anyone under the age of 16 years.
- Young drivers may not be physically able to control the machine or may not be mature enough to make safe driving decisions.
- Do not allow children to ride as a passenger in this vehicle. Children may not be able to sit safely in the passenger seat and use handholds properly.
- Passengers should always use the handholds while the vehicle is moving.
- The seat belt installed on utility vehicles with an Occupant Protective Structure (OPS) is not designed to restrain a child.
- Never carry passengers, especially children, in the cargo box area. Do not tow children in a cart or trailer.
- Never assume that children will remain where you last saw them. Stay alert to the presence of children.
- Before backing or turning, look behind and around the utility vehicle for children.
- Be alert at all times, drive forward and in reverse carefully. People, especially children, can move quickly into an area of operation.

- Use extra care when coming to blind corners, shrubs, trees, or other objects that may block vision.
- Misuse and recreational riding can lead to accidents, severe bodily injury or death.

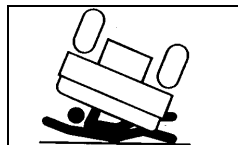


Use Seat Belt Properly

- 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.
- Never modify, disassemble or attempt to repair the seat belt.
- Replace entire seat belt if mounting hardware, buckle, belt, or retractor show signs of damage.
- Inspect seat belt and mounting hardware at least once a year. Look for signs of loose hardware or belt damage, such as cuts, fraying, extreme or unusual wear, discoloration, or abrasion. Replace only with John Deere-approved replacement parts.
- Layers of heavy clothing can interfere with proper positioning of the seat belt and can reduce the effectiveness of the seat belt.

Keep ROPS Installed Properly

- Never operate the machine without the ROPS installed.
- Make certain all parts of the ROPS are installed correctly if the ROPS structure is loosened or removed for any reason. All ROPS hardware should be tightened to the proper torque per manufacturer's recommendations.
- Any alteration of the ROPS must be approved by the manufacturer. The protection provided by the ROPS will be impaired if the ROPS is subjected to structural damage, is involved in an overturn incident, or is in any way altered by welding, bending, drilling, or cutting.
- The seat is part of the ROPS safety zone. Replace only with John Deere-approved seat.
- Never attempt to repair a damaged or altered ROPS. It must be replaced to maintain the manufacturer's certification of the structure.



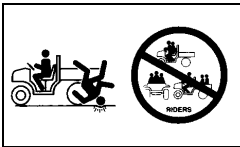
Avoid Tipping

Accidents resulting in serious injury or death can occur from tipping the utility vehicle. Observe the following

Safety

practices to help prevent accidents:

- Do not misuse the utility vehicle. The utility vehicle is not designed for recreational riding.
- Drive very slowly when turning. Sharp turns could cause the utility vehicle to tip over.
- Reduce speed and exercise extreme caution on slopes or on rough ground.
- Do not overload vehicle and avoid shifting loads. Reduce load when operating over rough or hilly terrain.
- Do not stop or start suddenly when going uphill or downhill. Be especially cautious when changing direction on slopes.
- Stay alert for holes, rocks, and other hidden hazards in the terrain.
- Keep away from drop-offs, ditches, embankments, as well as ponds and other bodies of water. The machine could suddenly roll over if a wheel goes over the edge of a cliff or ditch or if the edge caves in.
- Keep front wheels straight at crest of hill or going over bumps.
- When descending a hill, remove foot from accelerator and apply brakes to reduce speed and maintain control.
- Do not make changes or modifications to the utility vehicle.



Keep Riders Off Vehicle

- Seating is provided for operator and one adult passenger.
- Never allow riders in the cargo box

or other areas where seats are not provided.

- Riders on vehicle are subject to injury such as being struck by foreign objects or being thrown off of the vehicle and severely injured or killed.
- Riders affect the operator's ability to control the vehicle as well as its center of gravity. Also, riders could obstruct the operator's view resulting in the vehicle being operated in an unsafe manner.

Transport Loads Safely

- Be sure load is evenly distributed in cargo box.
- Do not load above load guard.
- Securely anchor all loads in cargo box.
- Reduce cargo box load when operating on rough or hilly terrain.

Towing Loads Safely With Utility Vehicle

- To provide adequate braking ability and traction, weight of towed load (trailer plus cargo) must never exceed the vehicle payload (operator plus passenger plus cargo box load).
- Do not tow a load that exceeds the maximum allowable towing load for this vehicle, as specified in this operator's manual.
- Stopping distance increases with speed and weight of towed load. Travel slowly and allow extra time and distance to stop.
- Tow load at a speed slow enough to maintain control.
- Excessive towed load can cause loss of traction and loss of control on slopes. Reduce towed weight when operating on slopes.
- Never allow children or others in or on towed equipment.
- Use only approved hitches. Tow only with a machine that has a hitch designed for towing. Do not attach towed equipment except at the approved hitch point.
- Follow the manufacturer's recommendations for weight limits for towed equipment and towing on slopes.
- If you cannot back up a slope with a towed load, the slope is too steep to operate on with the towed load. Reduce the towed load or do not operate.
- Do not turn sharply. Use additional caution when turning or operating under adverse surface conditions. Use care when reversing.
- Do not shift to neutral and coast downhill.

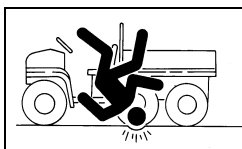
Before Driving

1. Clean foot platform if dirty, and remove any debris from around foot controls. Sit on the center of seat and keep both feet inside foot platform perimeter.
2. Inspect utility vehicle for signs of wear or damage.
3. All safety equipment must be in good condition and fastened in place:
 - Lights.
 - Shields.
 - Safety start devices.
4. Before moving, check around utility vehicle, be sure no one is near it.
5. Inspect mechanical condition of your vehicle before each use to minimize chance of injury or being stranded. Remember, you can ride farther in an hour than you can walk in a day.

Safety

Be sure to check condition of tires and wheels, wheel hardware torque, and maintain proper tire pressure.

6. Securely anchor all loads.

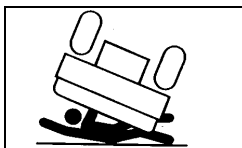


Driving On Rough Terrain

- Use existing trails. Avoid terrain such as dangerous slopes and impassable swamps. Watch carefully for bumps, holes, ruts, loose terrain,

or other obstacles.

- Look ahead at terrain. Know what is coming and be prepared to react. Be alert for hazards.
- Keep front wheels straight at crest of hill or going over bumps.
- Reduce speed according to trail, terrain, and visibility conditions.
- The passenger should always use the hand holds.

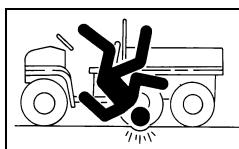


Climbing Or Descending A Hill

- Always use the brakes when going down slopes, the utility vehicle can speed up (freewheel) going down a

slope. Engine or clutch braking effect is minimal.

- Balance loads evenly and secure them. Braking could shift the load and affect vehicle stability.
- Sit on center of seat and keep both feet within foot platform.
- Never drive past the limit of visibility. Slow down near crest of hill until getting a clear view of the other side. Never go over the top of any hill at a high speed. An obstacle, sharp drop, another vehicle or person, could be on the other side of the hill.
- Keep front wheels straight at crest of hill or going over bumps.
- Do not stop or start suddenly when going uphill or downhill. Be especially cautious when changing direction on slopes.
- If vehicle stops or loses power going up a hill, lock park brake to hold vehicle on slope. Maintain direction of travel and release brake slowly. Back straight down hill slowly while maintaining control. Do not turn vehicle sideways. Vehicle is more stable in a straight forward or rearward position.
- When descending a hill, remove foot from accelerator and apply brakes to reduce speed and maintain control.



Driving Across Slopes

- Reduce speed and use caution on slopes and in sharp turns.
- Stay alert for holes, rocks and other

hidden hazards in the terrain.

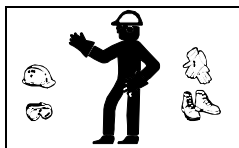
- When riding on soft terrain, turn front wheels slightly uphill to keep utility vehicle on a straight line across the hill.
- If utility vehicle begins to tip, turn front wheel downhill to gain control before proceeding.

Riding Through Water

- Avoid water whenever possible.
- Never cross any body of water where depth may be unknown to the operator. As an operational guideline, deep water is considered anything in excess of 152 mm (6 in.) in depth. Tires may float, making it difficult to maintain control.
- Choose a course within the waterway where both banks have a gradual incline. Cross at a point known to be safe.
- Proceed at a slow steady speed to avoid submerged obstacles and slippery rocks.
- Avoid water crossings where the operation of a utility vehicle may cause damage to waterway beds or erode waterway shoreline.

Checking Wheel Hardware

- A serious accident could occur causing serious injury if wheel hardware is not tight.
- Check wheel hardware tightness often during the first 100 hours of operation.
- Wheel hardware must be tightened to specified torque using the proper procedure anytime it is loosened.



Wear Appropriate Clothing

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

- Certain operating conditions may dictate that the operator and any passenger wear appropriate safety equipment while operating the vehicle. Be prepared for any existing and potential conditions before operating machine.
- Local safety or insurance regulations may require additional safety equipment such as eye protection or a hard hat.

Safety

- Always wear substantial footwear and long trousers. Do not operate the equipment when barefoot or wearing open sandals.



Stay Clear of Rotating Drivelines

Entanglement in rotating driveline can cause serious injury or death.

- Wear close fitting clothing.

- Stop the engine and be sure PTO driveline is stopped before getting near it.



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.



Practice Safe Maintenance

- Only qualified, trained adults should service this machine.
- Understand service procedure

before doing work. Keep area clean and dry.

- Never lubricate, service, or adjust machine while it is moving. Keep safety devices in place and in working condition.
- Keep hands, feet, clothing, jewelry, and long hair away

from any moving parts, to prevent them from getting caught.

- Disconnect battery(ies) or remove spark plug wire (for gasoline engines) before making any repairs.
- Keep all nuts and bolts tightened.
- Securely support any machine elements that must be raised for service work. Lock service latches before working on machine with raised attachments.
- Never run engine unless park brake is locked.
- Keep all parts in good condition and properly installed. Fix damage immediately. Replace worn or broken parts. Replace all worn or damaged safety and instruction decals.
- To prevent fires, remove any buildup of grease, oil, or debris from the machine, especially the engine.
- Do not modify machine or safety devices. Unauthorized modifications may impair its function and safety.
- Do not wear radio or music headphones while servicing the machine. Safe service requires your full attention.
- Disconnect battery ground cable(s) (-) on the machine or remove attachment from machine before welding on the machine.

Prevent Fires

- Machine fires and structure fires can occur if a machine is stored before allowing it to cool, if debris is not removed from critical areas of the machine, or if machine is stored near combustible materials.
- Remove grass and debris from engine compartment and muffler area, before and after operating machine.
- Always shut off fuel when storing or transporting machine, if the machine has a fuel shutoff.
- Do not store machine near an open flame or source of ignition, such as a water heater or furnace.
- Check fuel lines, tank, cap, and fittings frequently for cracks or leaks. Replace if necessary.

Do Not Modify Machine

Do not make any unauthorized modifications to the machine in any way.

Modifications can result in making the machine unstable, increasing the possibility of rollover causing severe bodily injury or death.

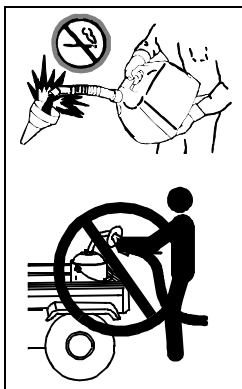
Safety



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.



Handling Fuel Safely

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

- Extinguish all cigarettes, cigars, pipes, and other sources of ignition.
- Use only approved non-metal, portable fuel containers. If using a funnel, make sure it is plastic and has

no screen or filter.

- Never remove the fuel tank cap or add fuel with the engine running. Allow engine to cool before refueling.
- Never add fuel to or drain fuel from the machine indoors. Move machine outdoors and provide adequate ventilation.
- Clean up spilled fuel immediately. If fuel is spilled on clothing, change clothing immediately. If fuel is spilled near machine, do not attempt to start the engine but move the machine away from the area of spillage. Avoid creating any source of ignition until fuel vapors have dissipated.
- Never store the machine or fuel container where there is an open flame, spark, or pilot light such as on a water heater or other appliance.
- Prevent fire and explosion caused by static electric discharge. Static electric discharge can ignite fuel vapors in an ungrounded fuel container.
- Never fill containers inside a vehicle or on a truck or trailer bed with a plastic liner. Always place containers on the ground away from your vehicle before fueling.

- Remove fuel-powered equipment from the truck or trailer and refuel it on the ground. If this is not possible, then refuel such equipment with a portable container, rather than from a fuel dispenser nozzle.
- Keep the nozzle in contact with the rim of the fuel tank or container opening at all times until the fueling is complete. Do not use a nozzle lock-open device.
- Never overfill fuel tank. Replace fuel tank cap and tighten securely.
- Replace all fuel container caps securely after use.
- For gasoline engines, do not use gas with methanol. Methanol is harmful to your health and to the environment.

Handling Waste Product and Chemicals

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

- Do not use beverage containers for waste fluids - someone may drink from them.
- See your local Recycling Center or authorized dealer to learn how to recycle or get rid of waste products.
- See your local Recycling Center or authorized dealer to learn how to put your machine out of service at the end of the machine's service life.

Using the Lift Cylinder Safety Support

To safely service vehicle always use the lift cylinder safety support.

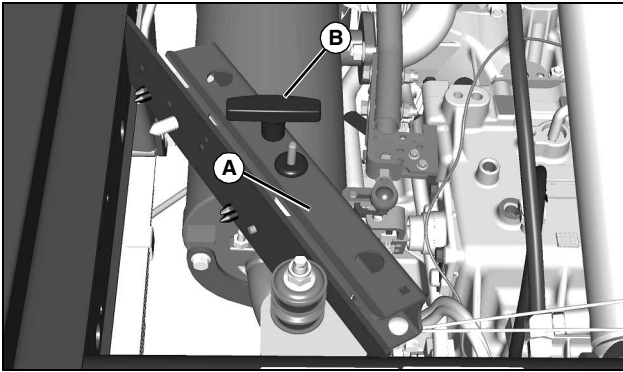


CAUTION: Avoid injury! Attachment is heavy and can crush.

- **Support any raised attachment with a mechanical lock or other safe method before servicing.**
- **Empty all material from any attachment before servicing.**

Installing:

1. Empty attachment.
2. Fully raise attachment to service position.
3. Park vehicle safely. (See Parking Safely in the Safety section.)



MX49197

4. Remove safety support (A) using handle (B) from stored position in the rear of the vehicle on the left side.



MX14982

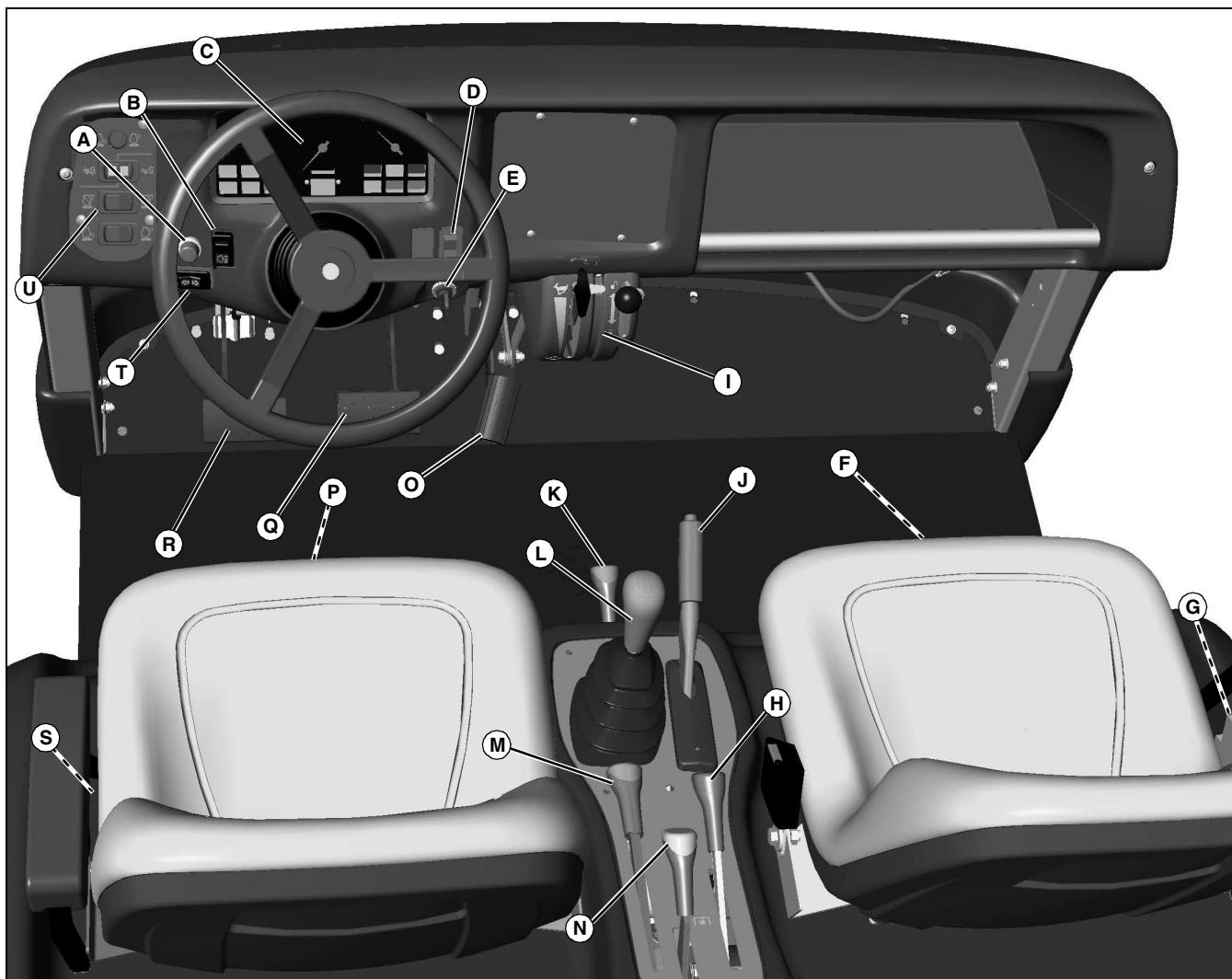
5. Install safety support onto the lift cylinder rod (B). Be sure the lift cylinder rod is seated properly between the safety support rubber grommets (C).

Removing:

1. Remove safety support from the lift cylinder rod.
2. Return safety support to the stored position.
3. Lower attachment.

Operating Controls

Operator Station Controls



MX49198

Key Description

A	Horn
B	Light Switch
C	Instrument Panel
D	Hazard Switch (Optional)
E	Key Switch
F	Passenger Seat Adjustment Lever
G	Passenger Seat Belt
H	Lift Cylinder Lever
I	Throttle Governor Control (Optional Diesel Models)
J	Park Brake Lever

Key Description

K	2WD/4WD Lever (Optional)
L	Gear Shift Lever
M	Differential Lock Lever (Traction Assist)
N	Hydraulic PTO lever (Optional)
O	Accelerator Pedal
P	Operator Seat Adjustment Lever
Q	Brake Pedal
R	Clutch Pedal
S	Driver Seat Belt
T	Turn Signal Switch (Optional)

Operating Controls

Key	Description
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Key	Description
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U	Multi-Mode Throttle Control (Optional Gas Models)
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Operating

Daily Operating Checklist

- ☐ Test safety interlock system.
- ☐ Inspect tires and check air pressure.
- ☐ Clean debris from machine.
- ☐ Check for loose, missing, or damaged parts.
- ☐ Check engine oil level, and for leaks.
- ☐ Check transaxle oil level, and for leaks.
- ☐ Check coolant level, and for leaks.
- ☐ Check and clean air intake screen and fan shroud.
- ☐ Check fuel tank level, and for leaks.
- ☐ Check area below machine for any leaks.

Avoid Damage to Plastic and Painted Surfaces

- Do not wipe plastic parts unless rinsed first. Using a dry cloth may cause scratches.
- Insect repellent spray may damage plastic and painted surfaces. Do not spray insect repellent near machine.
- Be careful not to spill fuel on machine. Fuel may damage surface. Wipe up spilled fuel immediately.
- Prolonged exposure to sunlight will damage hood surfaces.

Adjusting Seats

1. Sit on the operator or passenger seat.



MX1709

2. Pull and hold lever (A) to the left.
3. Slide seat forward or rearward to desired position.
4. Release lever.

Using Seat Belts



CAUTION: Avoid injury! Always wear a seat belt when operating machine with a Roll-Over Protective Structure (ROPS) or a cab. Do not jump from machine if machine tips.

To Connect the Seat Belt:



MX1703

- With one continuous motion pull seat belt from retractor (A) and across hips and waist.

NOTE: If seat belt stops short of being able to insert into latch, allow belt to return into the retractor and pull again.

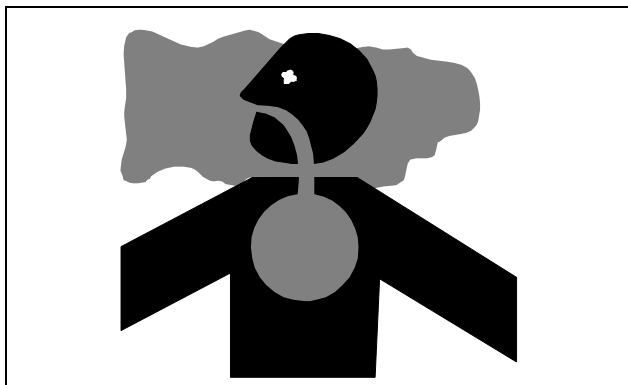
- Insert buckle into latch (B) on other side of seat. When properly inserted into the latch a click should be heard.

To Disconnect the Seat Belt:

- Press red button (C). Allow seat belt to return to retractor.

Operating

Testing Safety Systems



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

- Move the machine to an outside area before running the engine.
- Do not run an engine in an enclosed area without adequate ventilation.
- Connect a pipe extension to the engine exhaust pipe to direct the exhaust fumes out of the area.
- Allow fresh outside air into the work area to clear the exhaust fumes out.

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

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

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

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

Testing Seat and Park Brake Switches

1. Operator on seat.
2. Lock the park brake.
3. Move gearshift lever to the neutral position.
4. Start engine.
5. With engine running at slow idle, raise off seat.

6. Engine must continue to run.

7. Operator on seat.

8. Unlock park brake.

9. Raise off seat.

Result: Engine must stop within five seconds. If the engine does not stop, there is a problem with the safety interlock circuit. See your authorized dealer.

Testing Neutral Switch

1. Operator on seat.

2. Lock park brake.

3. Move the gearshift lever to the “R” (reverse) position.

4. Turn the key switch to the start position.

5. Engine must not crank.

6. Repeat starting procedure with shift lever in each gear.

7. Engine must not crank.

8. Move the gearshift lever to the neutral position.

9. Turn the key switch to the start position.

Result: Engine should crank. If the engine should start with the gearshift lever in any position other than the neutral position, there is a problem with the safety interlock circuit. See your authorized dealer.

Testing Auxiliary Hydraulic System Switch



CAUTION: Avoid injury! The PTO interlock switch is a safety feature designed to prevent engine start-up when the PTO control lever is in the on position, eliminating supply pressure to the auxiliary quick-couplers. Never operate the vehicle if the PTO interlock system is defective or disconnected. Sudden, unexpected operation of an auxiliary attachment could occur during vehicle start-up.

NOTE: Make sure no attachments are connected to the auxiliary hydraulic quick-couplers at the rear of the vehicle.

1. Operator on seat.

2. Lock park brake.

3. Move the gearshift lever to the neutral position.

4. Pull up hydraulic PTO lever to the ON position.

Operating

5. Turn the key switch to the start position.

Result: Engine must not crank. If the engine should start, there is a problem with the safety interlock circuit. See your authorized dealer.

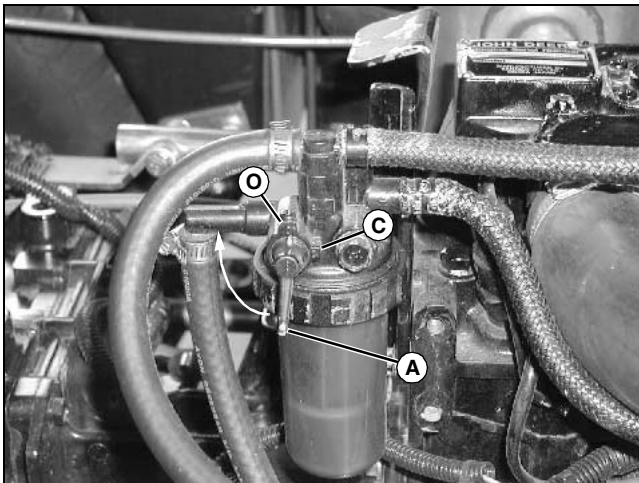
Using Light Switch

NOTE: Using headlights for extended periods of time without engine running will discharge the battery.

1. Push in on top of rocker switch to turn lights on.
2. Push in on bottom of rocker switch to turn lights off.

Using Fuel Shut-Off Valve (Diesel Models)

1. Locate fuel filter sediment bowl assembly on the right side of the engine.



MX23700

Picture Note: Fuel shut-off valve shown in the open position.

2. Rotate two-position fuel shut-off valve lever (A) to the “O” (open) position or “C” (closed) position.

“C” (Closed) Position

- When performing any type of engine service.
- When transporting.
- During periods of extended storage.

“O” (Open) Position

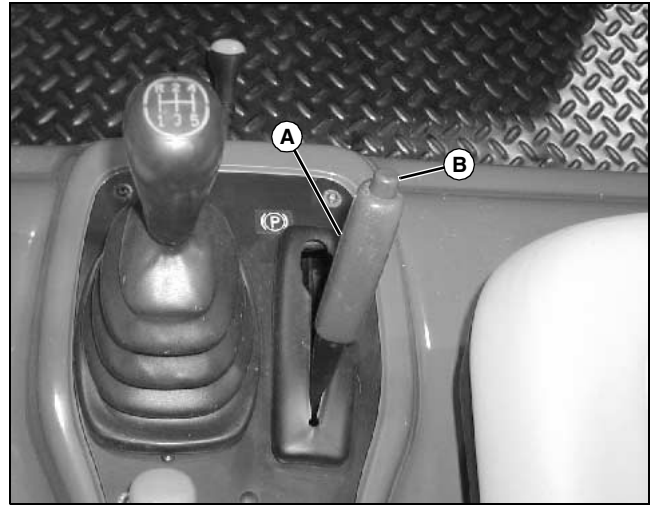
- Fuel shut-off valve must be in the full open position for proper fuel delivery to the engine.

Using the Park Brake



CAUTION: Avoid injury! Always lock the park brake when the utility vehicle is left unattended. The vehicle may begin to move without an operator present if park brake is not locked.

To Lock Park Brake



MX23702

- Pull up lever (A) and latch into position.

To Unlock Park Brake

- Pull up on lever (A).
- Depress button (B).
- Push lever (A) down completely. Instrument panel indicator light must go out.

Using the Differential Lock Lever



CAUTION: Avoid injury! Chance of tipping the vehicle is increased when the differential lock is engaged. Do not attempt to turn the vehicle on slopes and hills. Do not operate the vehicle at high speeds.

The differential lock is used to provide better traction when the rear wheels of the vehicle start to slip. Engaging the differential lock lever will lock the left and right rear axles together and cause both rear wheels to turn at equal speeds for maximum traction.

Operating

IMPORTANT: Avoid damage! To prevent damage to differential, do not engage differential lock when either rear wheel is slipping.

NOTE: Vehicle turning radius is increased when the differential lock is engaged.

To Engage Differential Lock:

- Stop vehicle.
- Pull up and hold differential lock lever in the raised position. Hold lever in the raised position as long as there is rear wheel slippage.

To Disengage Differential Lock:

- Lower differential lock lever.

Using Four Wheel Drive (4WD)

This is a manual shift 4WD system that allows the powertrain to drive the front wheels in addition to the rear wheels for improved traction on difficult ground conditions.

Only use tires listed in the SPECIFICATIONS to avoid 4WD damage.

Engaging and Disengaging 4WD

IMPORTANT: Avoid damage! Do not engage 4WD when the rear wheels are slipping, internal gears can be damaged. Machine should be stopped or traveling at a steady speed, in a straight line, to engage 4WD.

- Push down on 4WD lever to engage.
- Pull up on 4WD lever to disengage. If traveling forward, it may be necessary to lift foot from the accelerator momentarily to allow 4WD to disengage.

Tips for operating 4WD:

- Maintain recommended front and rear tire pressures to ensure optimum performance on all surface conditions.
- Disengage 4WD when driving machine on paved or hard packed surfaces to increase front tire life and reduce drive train wear.

Using the Hydraulic PTO Control Lever

Perform this operational procedure with vehicles equipped with the auxiliary hydraulic kit. Engaging the hydraulic PTO lever will provide auxiliary hydraulics for attachments requiring the capability.

Dash indicator will illuminate when PTO is engaged.

IMPORTANT: Avoid damage! Do not operate PTO control lever without an auxiliary attachment connected. Hydraulic flow is blocked and pressure will bypass through relief port of hydraulic control valve causing excessive heat buildup and possible component failure.

Check the auxiliary hydraulic oil level before each use.

To Engage the Hydraulic PTO:

- Pull up hydraulic PTO lever to the on position.

To Disengage the Hydraulic PTO:

- Push Hydraulic PTO lever down to the off position.

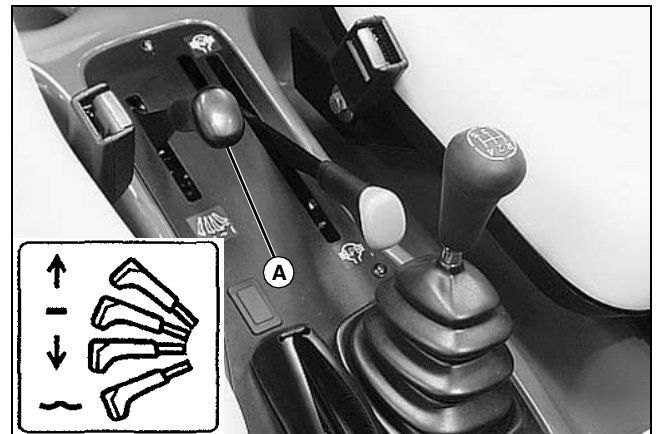
Using the Lift Cylinder Lever



CAUTION: Avoid injury! Make sure the vehicle is on a hard, level surface and the park brake is locked before raising the cargo box. If the vehicle is facing uphill with the cargo box raised, the weight of the cargo box may cause the vehicle to tip. Do not perform a service function under a raised attachment without the lift cylinder safety support properly installed.

To Raise Attachment

1. Start engine.



MX14971

2. Pull and hold back lever (A) to raise attachment.
3. Release lever. Lever will return to the neutral position, and attachment will be held in position with the lift cylinder locked in place.

Operating

To Lower Attachment

NOTE: An attachment can be lowered and the lift cylinder will retract with the engine running or the engine stopped.

1. Push and hold down lever until attachment is lowered or positioned as desired.
2. Release lever. Lever will return to the neutral position, and attachment will be held in position, with the lift cylinder locked in place.

NOTE: When operating the machine with the auxiliary hydraulic PTO engaged, it is recommended that the lift cylinder lever be held down momentarily after the attachment has been lowered. This will firmly seat the load check for the lift cylinder spool which locks the lift cylinder in position.

When operating the machine with a cargo box attachment having the tailgate release kit installed, the lift cylinder lever must be held down momentarily after the box has been lowered. This will lock the tailgate and eliminate tailgate rattle.

To Allow Attachment to Float

NOTE: Float position allows the lift cylinder to move freely for use with some ground following attachments.

Placing the lift cylinder lever in the float position will cause a raised attachment to be lowered by gravity until completely down. For best control of raised loads, it is recommended that float position not be used to lower attachments.

1. Push lever (A) down, through "lower" position, and with additional force, push lever down past detent to lock lever into float position.
2. Pull up lever to release float position.
3. Release lever. Lever will return to the neutral position, and attachment will be held in position, with the lift cylinder locked in place.

Using the 4th and / or 5th Gear Lockout

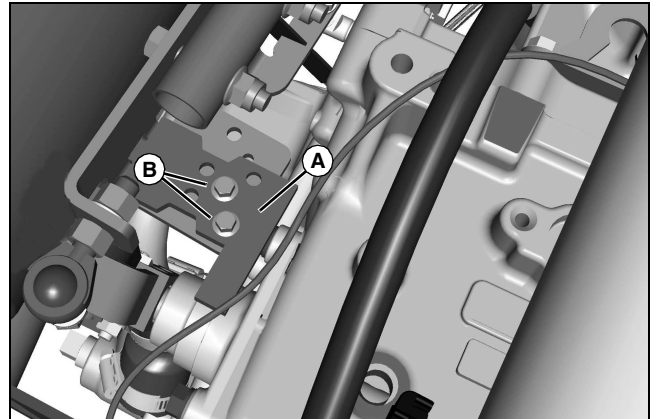


CAUTION: Avoid injury! Reduce speed before braking or turning, when hauling loads, and while operating around obstacles or on hazardous off-road conditions.

NOTE: Setting the gear lockout requires access to the transmission shift input shaft located on the left side of the transmission, above the rear axle. If an attachment is installed, empty attachment, raise to service position, park safely (see Using the Lift Cylinder Safety

Support in the Safety section) and install the safety support.

Make sure the vehicle is on a hard, level surface, the park brake is locked, the transmission is in "Neutral" and the key switch is turned to the STOP position prior to setting the fourth and/or fifth gear lockout.



MX49199

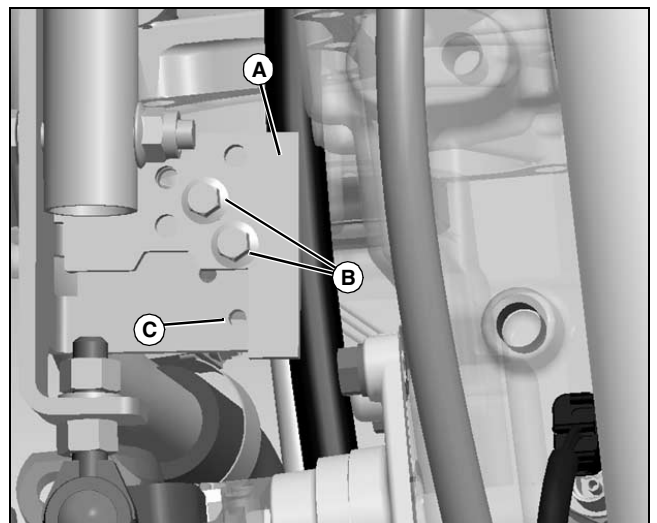
This vehicle is equipped with a lock bracket feature (A) for 4th and/or 5th gear lockout. Preventing the use of 4th or 5th gear while limiting vehicle ground speed may be advisable in certain operating conditions.

The lockout feature was set at the factory to allow the use of all gears. Use of the lockout feature requires removal of two factory screws (B) and installation of a padlock 4.8 mm (3/16 in.) diameter shackle.

NOTE: Padlock not supplied with the vehicle.

To Lock Out 5th Gear:

NOTE: Make sure the vehicle is on a hard, level surface, the park brake is locked, the transmission is in "Neutral" and the key switch is turned to the STOP position prior to setting the fourth and/or fifth gear lockout.



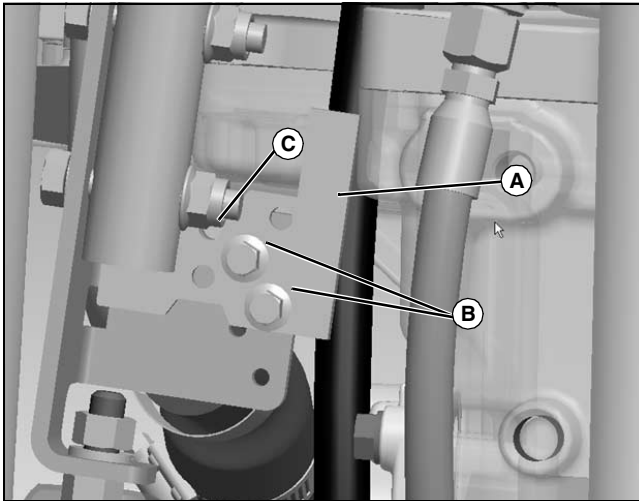
MX49213

Operating

NOTE: Lock will not operate if vehicle transmission is already in 5th gear.

1. Move gearshift lever to any position except 5th gear.
2. Unlock and remove padlock (if installed) from lock bracket (A).
3. Position lock bracket as indicated and secure with two screws (B).
4. Install padlock in lock bracket slot (C).
5. Remove safety support and lower attachment.

To Lock Out 4th and 5th Gear:



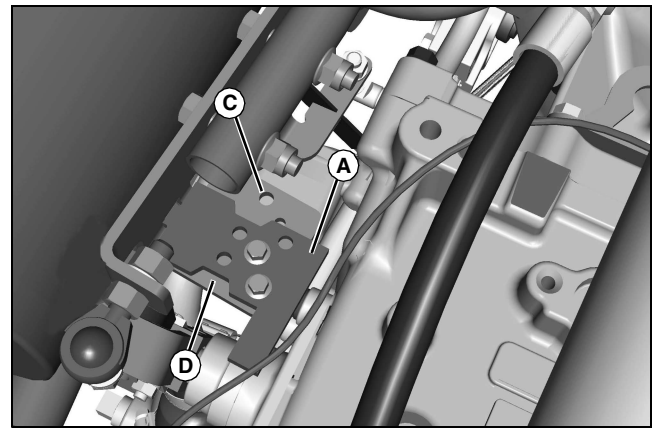
MX49200

NOTE: Lock will not operate if vehicle transmission is already in 4th or 5th gear.

1. Move gearshift lever to any position except 4th or 5th gear.
2. Unlock and remove padlock (if installed) from lock bracket (A).
3. Position lock bracket as indicated and secure with two screws (B).
4. Install padlock in lock bracket slot (C).
5. Remove safety support and lower attachment.

To Unlock 4th and/or 5th Gear:

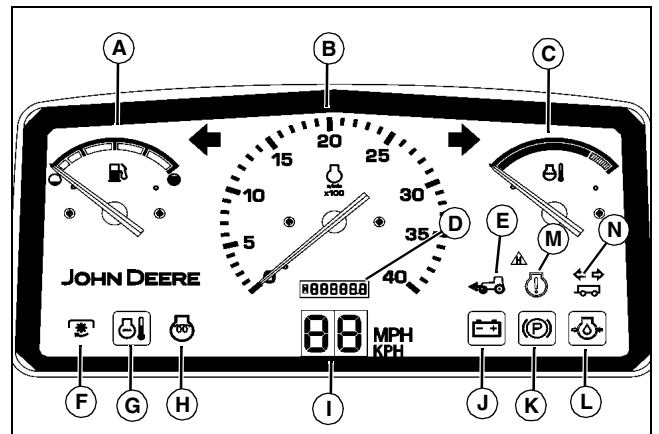
NOTE: Setting the gear lockout requires access to the transmission shift input shaft located on the left side of the transmission, above the rear axle. If an attachment is installed, empty attachment, raise to service position, park safely (see Using the Lift Cylinder Safety Support in the Safety section) and install the safety support.



MX49199

1. Unlock and remove padlock.
2. Remove screws flip and slide lock bracket (A) rearward, aligning slots with holes in shift bracket (D) as shown and secure with two screws.
3. Install padlock in shift bracket slot (C).
4. Remove safety support and lower attachment.

Instrument Panel



TCA19583

- A - Fuel Gauge
- B - Tachometer
- C - Engine Coolant Temperature Gauge
- D - Hour Meter
- E - Four Wheel Drive (4WD) Indicator (If equipped)
- F - PTO Indicator
- G - Engine Coolant Temperature Indicator
- H - Glow Plug Circuit Indicator (Diesel Model)
- I - Speedometer LED Display
- J - Battery Low Voltage Indicator
- K - Park Brake Indicator
- L - Engine Oil Pressure Indicator

Operating

M - Check Engine Indicator - Malfunction Indicator Lamp (MIL) (Gas Models)

N - Not Used

Fuel Gauge (A) shows approximately how much fuel is in the fuel tank.

Tachometer (B) is an instrument used to determine speed. Engine speed is shown in 100s. Example: If indicator is pointing at 20 (20 x 100 = 2000 rpm).

Engine Coolant Temperature Gauge (C) will indicate if engine temperature becomes excessive. If the gauge indicator needle moves all the way into the red zone, stop vehicle engine immediately and determine cause.

Gas Models Only - Engine RPM's and power will automatically be reduced when indicator needle is sustained for 10 seconds or more within the red zone.

Hour Meter (D) shows the approximate number of hours the engine has run. Use the hour meter and the Service Interval Chart to determine when the vehicle will need service.

Four Wheel Drive (4WD) Indicator (If equipped) (E) is visible only when lighted and will illuminate when the four wheel drive (4WD) is engaged.

PTO Indicator (F) is visible only when lighted and will illuminate when the hydraulic PTO lever is engaged.

Engine Coolant Temperature Indicator (G) will illuminate when the engine coolant approaches a dangerously hot temperature. Reduce engine to idle speed. Check the engine coolant level and make sure air flow to the radiator is not obstructed. Continued operation may cause higher temperatures resulting in damage.

Gas Models Only - Engine RPM's and power will automatically be reduced when light is illuminated.

Glow Plug Indicator (Diesel Model) (H) is visible only when lighted and will illuminate when the key switch is turned to the run position. The indicator light should go off approximately 3 seconds after the key switch is turned to the run position. This indicates that the engine glow plugs are on and preheating the engine combustion chamber.

Speedometer LED Display (I) will illuminate when the key switch is turned to the run position. This LED display indicates vehicle speed.

Battery Discharge Indicator (J) will illuminate when the key switch is turned to the run position. The indicator should turn off once the engine is started; if it continues to illuminate, the alternator may not be producing adequate current. Stop engine and determine cause.

Park Brake Indicator (K) will illuminate when the park brake is locked.

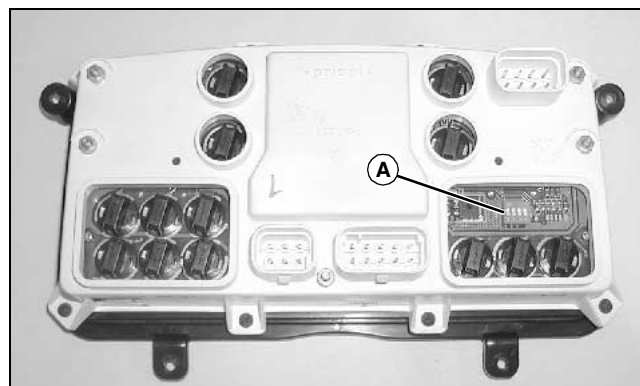
Engine Oil Pressure Indicator (L) will illuminate when

engine oil pressure is low. If lamp glows when engine is running, stop engine immediately. This is an indication that the engine may be low on oil, or major engine damage may have occurred.

Check Engine Indicator - Malfunction Indicator Lamp (MIL) (Gas Models) (M) will illuminate at startup but will go off. If lamp glows when engine is running, stop engine immediately and determine cause.

Switching Engine Speedometer

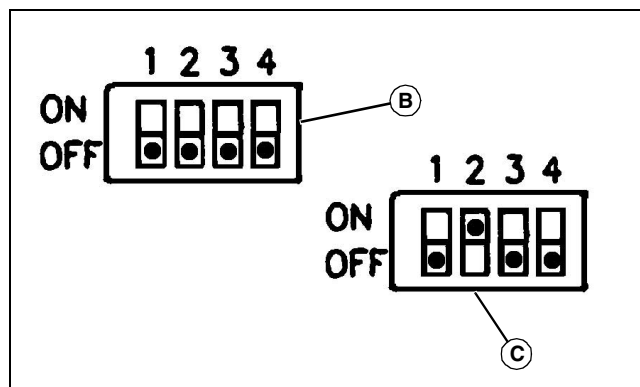
1. Disconnect the battery negative cable.
2. Remove front grille.



MX23994

3. Locate mph/kph switch (A) on the back of instrument panel on your machine.

NOTE: The switches are set on machines using standard tires.



MX7260b

4. Toggle the switches from factory configuration for mph (B) to kph (C), using a screwdriver to reach each switch.
5. Install the front grille.
6. Connect the negative battery cable.

Operating

Operating the 5-Speed Synchronized Transmission

Using the Clutch Pedal

IMPORTANT: Avoid damage! Avoid unnecessary wear; never “ride” the clutch by resting a foot on the clutch pedal while the vehicle is in operation.

It is possible to create extremely high clutch speeds when leaving the vehicle in first, second, or reverse gears and coasting down a hill with the clutch pedal depressed. Never allow the vehicle to freewheel while in gear with the clutch disengaged.

The functions of the clutch pedal are:

- Connects and disconnects engine power to the transmission.
- Operates in conjunction with the gearshift lever to shift gears.

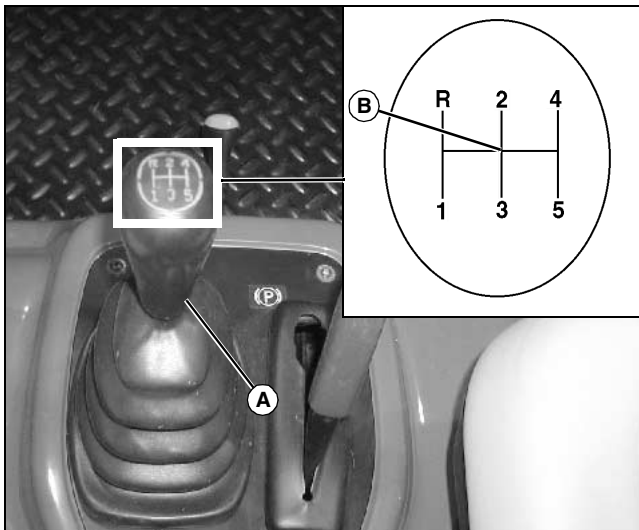
To Disengage the Clutch:

- Press the clutch pedal down completely. This will disengage the transmission from engine power.

To Engage the Clutch:

- Remove foot from clutch pedal slowly. This will engage the transmission to engine power.

Using the Gearshift Lever



MX1646a MX23702

The gearshift lever (A) is located on a console to the right of the operator seat. The gearshift lever provides five forward travel speeds and one reverse speed.

Select a gear on the gearshift lever that matches desired speed and direction. First and second gears are very low and should be used when hauling heavy loads.

Gear	Maximum Ground Speed with Standard Size Tires at 3300 RPM
1	4.5 km/h (2.8 mph)
2	7.4 km/h (4.6 mph)
3	12.7 km/h (7.9 mph)
4	24.1 km/h (15 mph)
5	30.7 km/h (19.1 mph)
R	5.8 km/h (3.6 mph)

Forward Travel

1. Lock park brake.

NOTE: The gearshift lever must be in the neutral position for the engine to start.

2. Move the gearshift lever to the neutral position (B) between gears “2” and “3”.
3. Depress clutch pedal and start engine.
4. Move gearshift lever to a desirable starting gear.
 - Vehicles with a load - first gear
 - Vehicles with no load - second or third gear
5. Unlock park brake.
6. Release clutch gradually to take up load smoothly.

IMPORTANT: Avoid damage! When downshifting this vehicle, it is very important not to skip more than one gear at a time. For example, shifting from gear five to four is preferred, shifting from gear five to three is acceptable, shifting from gear five to two is not recommended. When downshifting more than two gears at a time, it is possible to spin the clutch past its limit of 10,000 rpm. Spinning the clutch at or above 10,000 rpm will result in severe clutch damage and possible failure.

7. Shift gears while moving:
 - Depress clutch and shift to next gear.
 - Slowly release clutch.

Reverse Travel

1. Stop vehicle completely.
2. Depress clutch.
3. Move gearshift lever to reverse.
4. Slowly release clutch.

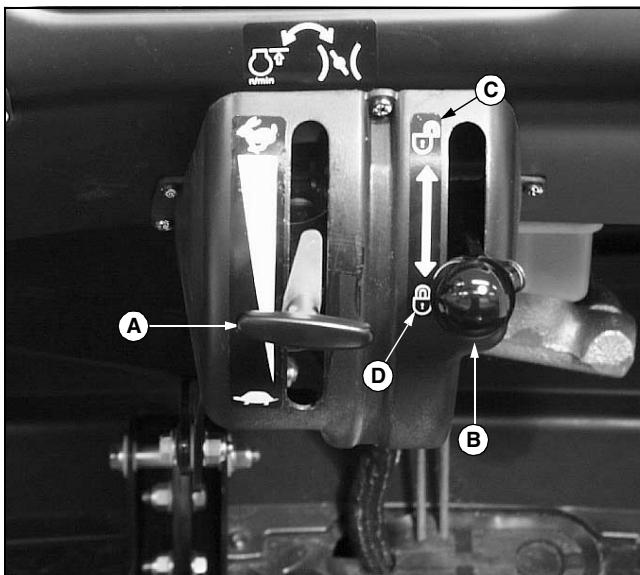
Operating

Using Optional Throttle/Governor Control (Diesel Units Only)

The throttle/governor control can be operated in three different modes.

- **DISENGAGED VERTICAL MODE:** Allows for normal vehicle operation without the throttle/governor control.
- **THROTTLE MODE:** For vehicle stationary operation only and should not be operated as a cruise control. Use only when the vehicle transmission is in the NEUTRAL position.
- **GOVERNOR MODE:** Allows the vehicle to be set at a specific RPM to control top ground speed.

Using Disengaged Vertical Mode



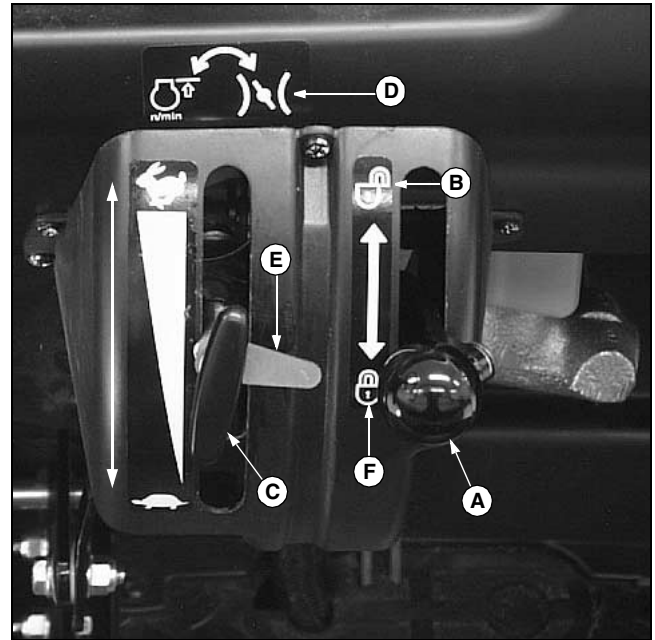
1. Pull out the throttle/governor selector T-handle (A) and rotate to DISENGAGED VERTICAL MODE (pointer up). Release T-handle.
2. Move clamp lever (B) to UNLOCKED position (C).
3. Move T-handle (A) to highest FAST position and hold.
4. Lower clamp lever (B) to LOCKED position (D).

Using Throttle Mode

NOTE: To allow for proper throttle engagement keep foot off the accelerator pedal when beginning operation in the throttle mode.

1. Lock vehicle park brake.
2. Move gear shift lever to NEUTRAL position.
3. Start vehicle engine.

Engage Throttle



1. Move clamp lever (A) to UNLOCKED position (B).
 - Throttle/governor selector T-handle (C) will drop to lowest SLOW (t) position.
2. Pull out T-handle (C) and rotate T-handle to THROTTLE MODE (D) with pointer (E) facing right. Release T-handle.

NOTE: Use the vehicle tachometer to monitor engine speed. Refer to each attachment operator's manual if a set RPM is required for attachment operation.

3. Move T-handle to increase engine RPM. Hold selector lever in position when desired engine speed is reached.
4. Lower clamp lever (A) to LOCKED position (F).
 - If the T-handle is moved to the DISENGAGED VERTICAL MODE and the clamp lever remains in the LOCKED position, the preset position of the throttle will be maintained.
 - To resume operation of the vehicle at the preset engine speed, push down the accelerator pedal to increase RPM. With the assistance of the vehicle tachometer, increase RPM until the engine speed set at earlier is surpassed. Return T-handle to THROTTLE MODE and release the accelerator.

Disengage Throttle

1. Pull out the throttle/governor selector T-handle (A) and rotate T-handle to DISENGAGED VERTICAL MODE (pointer up). Release T-handle.
2. Move clamp lever to UNLOCKED position.
3. Move T-handle to highest FAST position and hold.
4. Lower clamp lever to LOCKED position.

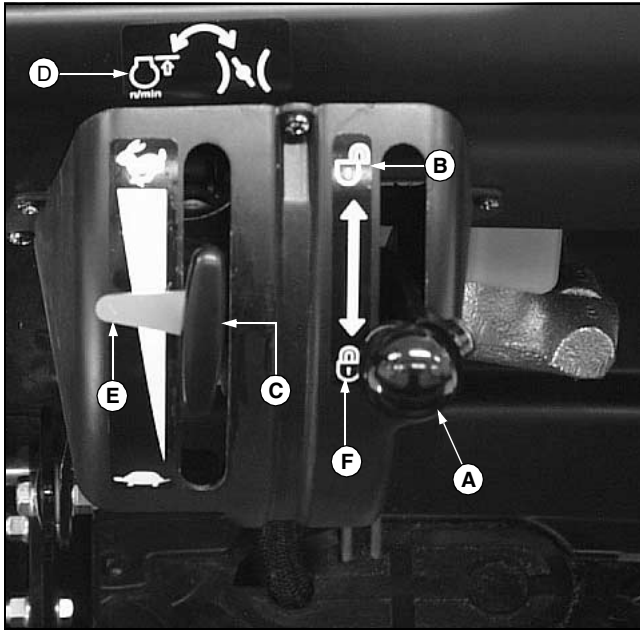
Operating

Using Governor Mode

NOTE: To allow for proper governor engagement keep foot off the accelerator pedal when beginning operation in the governor mode.

1. Lock vehicle park brake.
2. Start vehicle engine.

Engage Governor



MX3112

1. Move clamp lever (A) to UNLOCKED position (B).
 - Throttle/governor selector T-handle (C) will drop to the lowest SLOW (t) position.
2. Pull out T-handle (C) and rotate T-handle to GOVERNOR MODE (D) with the pointer (E) facing left. Release T-handle.

NOTE: Use the vehicle tachometer to monitor engine speed. Refer to each attachment operator's manual if a set RPM is required for attachment operation.

3. Push down accelerator pedal to increase engine RPM.
4. With accelerator pedal held in place at the desired RPM level, lower clamp lever (A) to LOCKED position (F).
 - If accelerator pedal is released, it will return to the raised position and engine RPM will return to idle.
 - If the accelerator pedal is depressed, the engine will be restricted to the set RPM, but will operate at any RPM below the maximum set by throttle/governor selector.
 - If T-handle is moved to the DISENGAGED VERTICAL MODE and the clamp lever remains in the LOCKED position, the preset position of the governor

will be maintained. Return T-handle to GOVERNOR MODE when operation of the vehicle at the preset RPM is desired.

- When set speed is determined, unlock park brake and begin vehicle travel.

Disengage Governor

1. Pull out the throttle/governor selector T-handle and rotate T-handle to DISENGAGED VERTICAL MODE (pointer up). Release T-handle.
2. Move clamp lever to the UNLOCKED position.
3. Move T-handle to the highest FAST position and hold.
4. Lower clamp lever to the locked position.

Starting the Engine



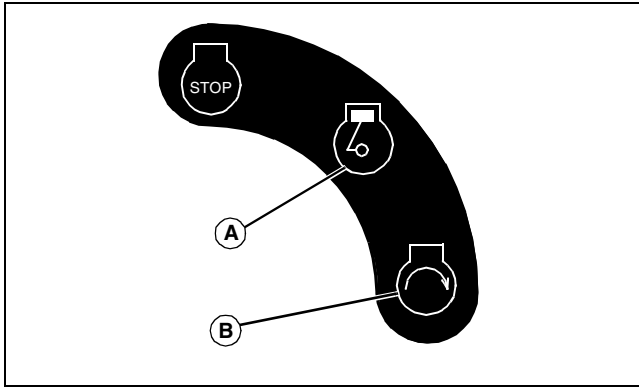
CAUTION: Avoid injury! Engine exhaust fumes contain carbon monoxide and can cause serious illness or death.

- Move the machine to an outside area before running the engine.
- Do not run an engine in an enclosed area without adequate ventilation.
- Connect a pipe extension to the engine exhaust pipe to direct the exhaust fumes out of the area.
- Allow fresh outside air into the work area to clear the exhaust fumes out.

NOTE: Diesel Models: Make sure fuel shut-off valve is open.

1. Park vehicle safely. (See Parking Safely in the Safety section.)
2. Push hydraulic PTO lever to the off position.
3. Move the gearshift lever to the neutral position.
4. **Gas Models with Manual Choke:** Pull the choke knob out to aid in starting the engine when cold. As engine warms up, push choke knob in until fully open. When starting a hot engine, choke knob should be pushed in.

Operating



5. Turn key switch to the run position (A).

6. Check indicator lights:

- Battery discharge indicator light should be on.
- Park brake indicator light should be on.
- Engine oil pressure indicator light should be on.
- **Diesel Models:** Glow plug indicator light should be on. After approximately three seconds indicator light will go off. Engine is now ready to start.

IMPORTANT: Avoid damage! Starter may be damaged if operated for more than 20 seconds at a time. Wait at least two minutes before trying again if engine does not start.

7. Turn key switch to the start position (B).

NOTE: Engine is calibrated at the factory to slow idle at 1250 rpm $\pm$ 50 when started.

8. When engine starts, release key switch to the run position.

- Battery discharge indicator light should go out.
- Engine oil pressure indicator light should go out.

9. Unlock park brake.

- Park brake indicator light should go out.

Stopping the Engine



CAUTION: Avoid injury! Always lock the park brake when the utility vehicle is left unattended. The vehicle may begin to move without an operator present if park brake is not locked. If the gearshift lever is moved to the neutral position the vehicle will free-wheel.

1. Release accelerator pedal and allow engine to slow idle.
2. Depress the clutch pedal and the foot brake.

3. Turn key switch to the stop position.
4. Place gearshift lever in first or reverse gear.
5. Lock park brake.
6. Remove key.

Operating Vehicle Engine with Operator Off the Seat



CAUTION: Avoid injury!

- Lock park brake at all times before leaving seat.
- Do not leave seat with vehicle running unless attachment function requires it.

NOTE: During normal operating conditions, the vehicle engine should stop running when the operator raises off the seat.

1. Sit in operator seat with seat belt engaged.
2. Depress clutch and foot brake pedals to stop the vehicle.
3. Move the gearshift lever to the neutral position.
4. Lock park brake.
5. Slowly release clutch and foot brake pedals.
6. Disengage seat belt and exit the vehicle.
 - Engine should continue to run with the operator off the seat.

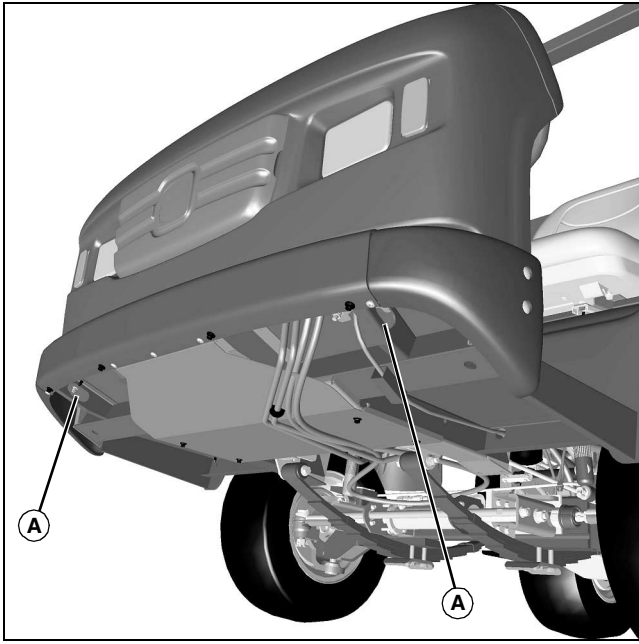
Towing Utility Vehicle



CAUTION: Avoid injury! Remove any load from the vehicle cargo box or attachment before towing. Towing a loaded vehicle could cause either vehicle to lose control.

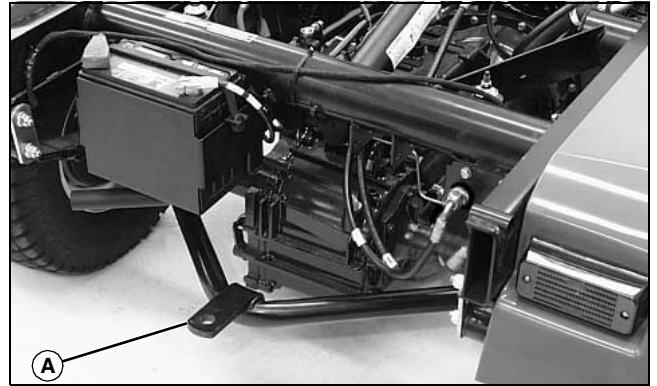
1. Move gearshift lever to the neutral position.

Operating



MX44257

- Do not exceed a tongue weight of 90.7 kg (200 lb).
- Tow load at a speed slow enough to maintain control.



MX14985

- Always use rear hitch point (A) provided on and approved for this utility vehicle. This is an approved hitch point; do not modify in any way.

2. Attach a tow line to oval slot (A) provided on either side of the main frame under the front of the vehicle.
3. Unlock park brake.



CAUTION: Avoid injury! Do not exceed 16 km/h (10 mph) when towing the vehicle. The vehicle is difficult to steer when the engine is not running.

4. Tow vehicle slowly and carefully to desired location.

Towing Loads



CAUTION: Avoid injury! Excessive towed load can cause loss of traction and loss of control on slopes. Stopping distance increases with speed and weight of towed load.

Do not tow a load that exceeds the maximum allowable towing load for this vehicle, as specified in this operator's manual.

- To provide adequate braking ability and traction, weight of towed load (trailer plus cargo) must never exceed the vehicle payload (operator plus passenger plus cargo box load).
- Do not tow a load that exceeds the maximum allowable towing load for this vehicle, as specified in this operator's manual.
- Do not tow a load with this vehicle that exceeds 680 kg (1500 lb).



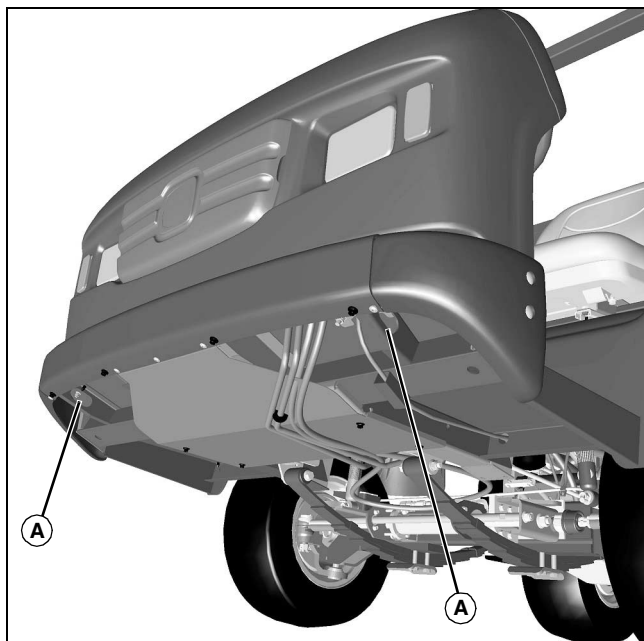
CAUTION: Avoid injury! Use caution when operating machine at transport speeds. Reduce speeds if towed load weighs more than machine. Consult towed equipment operator's manual for recommended transport speeds.

Use additional caution when transporting towed loads under adverse surface conditions, especially when turning, and on inclined surfaces.

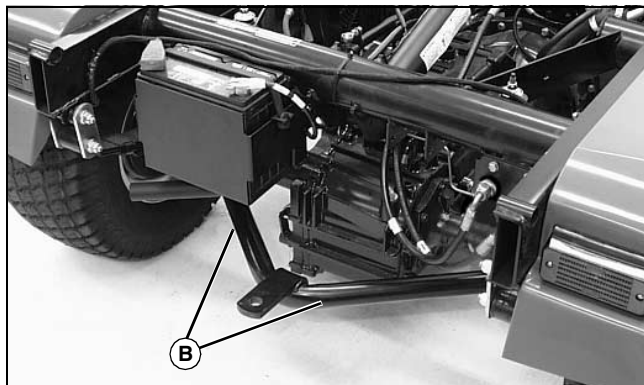
Use of warning lights and turn signals are recommended when traveling on public roads unless prohibited by state or local regulations. An implement safety lighting kit is available from your John Deere dealer.

1. Drive vehicle forward onto a trailer.
2. Park vehicle safely. (See Parking Safely in the Safety section.)
3. **Diesel Models:** Turn the fuel shut-off valve to the "OFF" position during transport.
4. Block rear wheels with chocks or wood blocks.
5. Fasten vehicle to trailer with heavy-duty straps, chains, or cables.

Operating



MX44257



MX14985

- The tie downs should be attached to oval slots (A) provided on both sides of the main frame under the front of the vehicle and both sides of the hitch assembly (B) at the rear of the vehicle.
- Both front and rear straps must be directed down and outward from the vehicle.

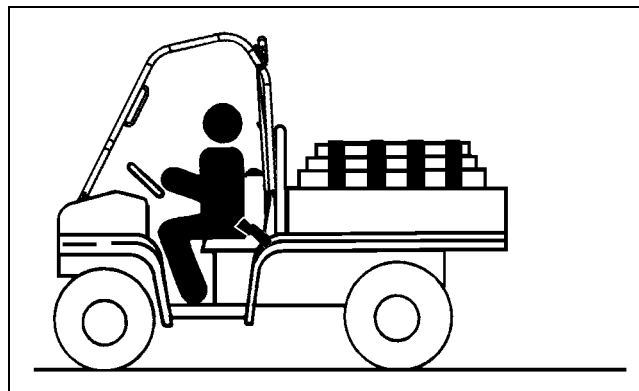
6. When transporting the utility vehicle on a road or highway, use accessory lights and devices for adequate warning to operators of other vehicles. Check local, state, provincial, or federal laws.

Loading Cargo Box



CAUTION: Avoid injury! The utility vehicle may become unstable if the cargo box is loaded incorrectly. Avoid loose and shifting loads or uneven loading of material.

- Securely anchor all loads in cargo box.
- Do not load beyond maximum capacity.

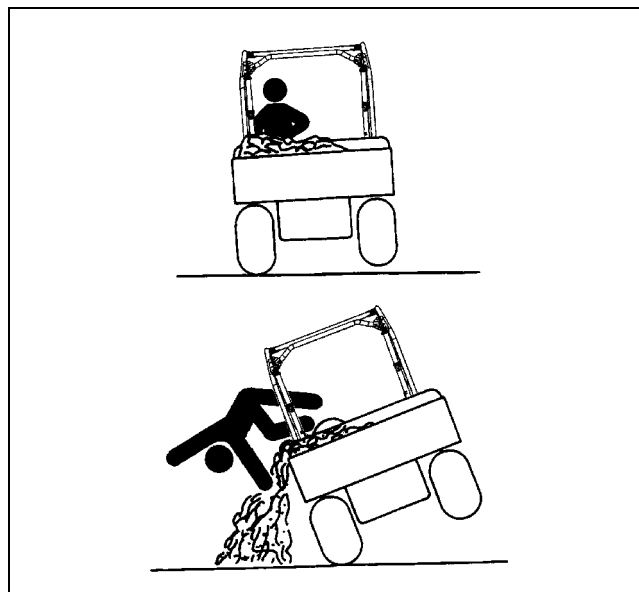


MX45833

Reduce load by half when operating over rough, hilly, or steep terrain. Do not overload vehicle. Limit loads to those that can be safely controlled.

Reduce speed and exercise extreme caution when operating over rough, hilly, or steep terrain.

Securely anchor and evenly distribute loads in cargo box, when loading objects into vehicle. Shifting loads will affect stability.



MX45834

Avoid concentrated loads at rear or side of cargo box to prevent vehicle from tipping over. Be sure load is evenly

Operating

distributed.

Because there is a big difference in weight between dry and wet sand, the only way of getting true weight of the load you are carrying is by using a scale.

Printed weight is normally on bagged and other material.

Vehicle Payload Capacity With Cargo Box

The following maximum payload capacities include a 91 kg (200 lb) operator, 91 kg (200 lb) passenger and loaded cargo box. Operator must factor in the weight of any other attachments installed on vehicle. Cargo weight must not exceed the payload capacity minus the combined weight of operator and passenger and any other installed attachments.

A vehicle with heavy duty suspension has heavy duty front and rear leaf springs, 4-post ROPS, and wide tire kit installed.

Standard Suspension Capacities

Machine Type	Weight
Gas 2WD	1446 kg (3187 lb)
Gas 4WD	1384 kg (3051 lb)
Diesel 2WD	1447 kg (3191 lb)
Diesel 4WD	1388 kg (3061 lb)

Heavy Duty Suspension Capacities

Machine Type	Weight
Gas 2WD	1782 kg (3928 lb)
Gas 4WD	1720 kg (3792 lb)
Diesel 2WD	1784 kg (3932 lb)
Diesel 4WD	1725 kg (3802 lb)

Vehicle Payload Capacity Without Cargo Box

The following maximum payload capacities include a 91 kg (200 lb) operator and a 91 kg (200 lb) passenger. Operator must factor in the weight of any other attachments installed on vehicle. Cargo weight must not exceed the payload capacity minus the combined weight of operator and passenger and any other installed attachments.

A vehicle with heavy duty suspension has heavy duty front and rear leaf springs, 4-post ROPS, and wide tire kit installed.

Standard Suspension Capacities

Machine Type	Weight
Gas 2WD	1592 kg (3510 lb)
Gas 4WD	1530 kg (3374 lb)
Diesel 2WD	1594 kg (3514 lb)
Diesel 4WD	1535 kg (3384 lb)

Heavy Duty Suspension Capacities

Machine Type	Weight
Gas 2WD	1928 kg (4251 lb)
Gas 4WD	1867 kg (4115 lb)
Diesel 2WD	1930 kg (4255 lb)
Diesel 4WD	1871 kg (4125 lb)

Raising and Lowering the Cargo Box



CAUTION: Avoid injury!

- Make sure the vehicle is on a hard, level surface and the park brake is locked before raising the cargo box. If the vehicle is facing uphill with the cargo box raised, the weight of the cargo box may cause the vehicle to tip.
- Do not perform a service function under a raised attachment without the lift cylinder safety support properly installed.
- Empty all material from the cargo box before servicing the vehicle.

1. Start engine.
2. Pull and hold back lift cylinder lever to raise cargo box.

NOTE: The lift cylinder will retract and the cargo box will lower with the engine running or the engine stopped.

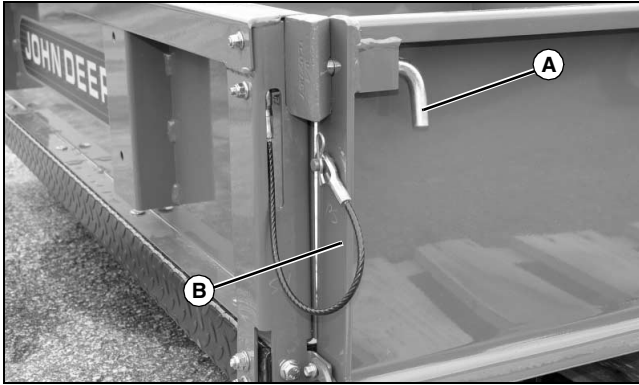
Pushing the lever down beyond the lower position into the detented float position will cause the box to drop more slowly than in the lower position, as the circuit is restricted to avoid a sudden drop.

3. Push and hold down lever to lower cargo box.
4. Stop engine.

Operating

Operating the Cargo Box Tailgate

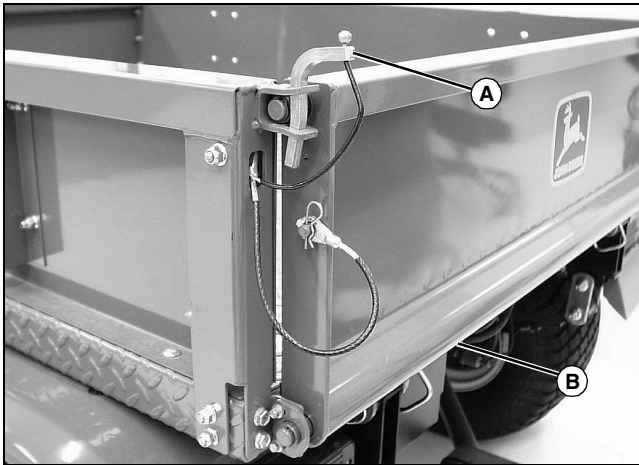
Opening Latch Pin With Spring



MX27752

1. Pull both tailgate latch pins (A) and lower tailgate (B).

Opening Latch Pin Without Spring



MX3105

1. Pull up and remove each tailgate latch pin (A).

IMPORTANT: Avoid damage! Do not exceed 181 kg (400 lb) directly on tailgate at one time.

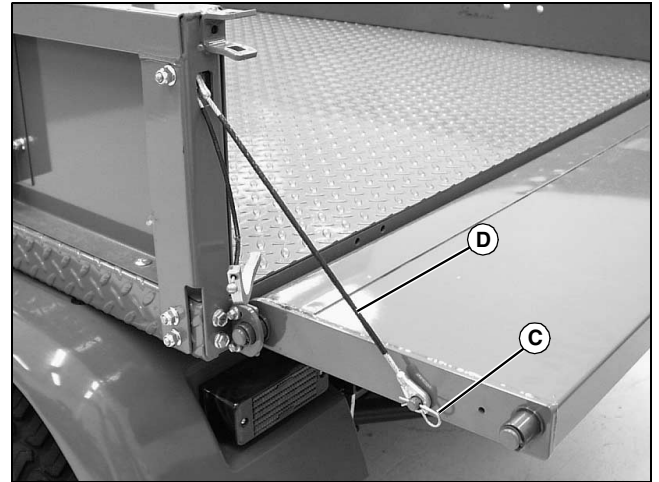
2. Lower tailgate (B).

Fully Lowering Tailgate



CAUTION: Avoid injury! Do not operate the vehicle with the tailgate fully lowered. In a fully lowered position the tailgate will obstruct vehicle taillights causing a possible rear collision.

IMPORTANT: Avoid damage! The tailgate fully lowered can contact the rear fenders and cause structural damage. Do not operate utility vehicle with the tailgate fully lowered.



MX3107

Picture Note: Cargo box with latch pin without spring shown.

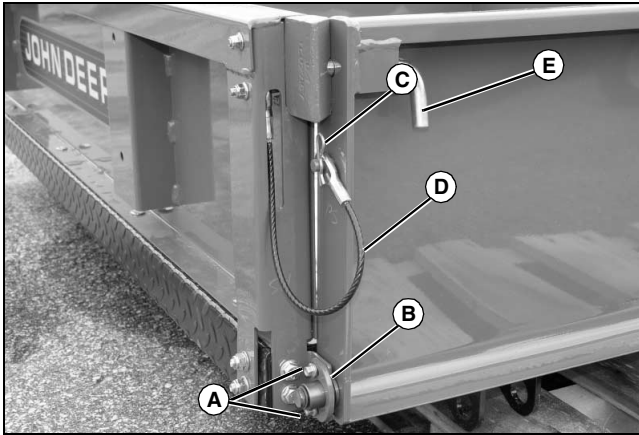
1. Remove spring locking pin (C) and cable (D) from each drilled stud to fully lower tailgate.

Removing the Cargo Box Tailgate

Tailgate With Latch Pin With Spring

1. Close the tailgate and latch both sides.

Operating

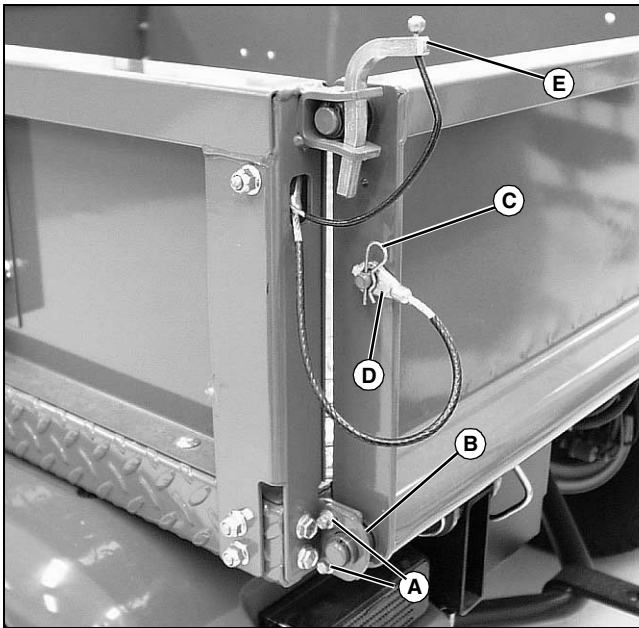


MX27752

2. Remove two screws (A) and tailgate support plates (B) from each side.
3. Remove spring locking pin (C) and cable (D) from each drilled stud.
4. Pull both tailgate latch pins (E) and remove tailgate.
5. Reverse steps to install tailgate.

Tailgate With Latch Pin Without Spring

1. Close the tailgate and latch both sides.



MX3105

2. Remove two screws (A) and tailgate support plates (B) from each side.
3. Remove spring locking pin (C) and cable (D) from each drilled stud.
4. Pull up and remove each tailgate latch pin (E).
5. Remove tailgate.
6. Reverse steps to install tailgate.

Replacement Parts

Service Literature

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

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

Parts

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

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

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

Order Service Parts Online

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

Part Numbers

Item	Part Number
Air Cleaner Assembly-All Models	
• Primary Element	M113621
• Secondary Element	M123378
Engine Oil Filter -	
• Gas Models	AM107423
• Diesel Models	M806418
Spark Plug (Gas Models)	MIU13556
Transmission Oil Strainer	M800489
Hydraulic Oil Filter	M131053
Battery	TY25876
Fuel Filter	
• Gas Models	MIU13548
• Diesel Models	M801101

Item	Part Number
Fuses	
• 10 amp	57M7121
• 25 amp	99M7069
Ignition Key	AM131841
Light Bulbs	
• Headlight	R136239
• Stoplight/Taillight	AR48041
• Indicator Light	57M7926

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

Service Intervals

Servicing Your Machine

IMPORTANT: Avoid damage! If BIO HY-GARD™ transmission and hydraulic oil is used in any application, the service intervals should be completed twice as often as the service intervals listed in operator's manual.

Operating in extreme conditions may require more frequent service intervals:

- Engine components may become dirty or plugged when operating in extreme heat, dust or other severe conditions.
- Engine oil can degrade if machine is operated constantly at slow or low engine speeds or for frequent short periods of time.

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

Break In - After First 10 Hours

- Check/tighten wheel lug nuts and wheel hub bolt torques.
- Check for loose hardware.

Break In - After First 50 Hours

- Check/tighten wheel lug nuts and wheel hub bolt torques.
- Change engine oil and filter.
- Change transaxle (if installed, auxiliary reservoir) oil, filter, and clean strainers (if installed, change auxiliary oil filter).
- Check brake fluid level, hoses and clamps.
- Check/tighten all hose clamps (air intake, cooling, hydraulic).
- Check alternator belt tension, adjust or replace as necessary.
- 4WD Models: Check (MFWD) front axle oil fluid level.
- Check and adjust park brake.
- Gas Models: Check cylinder head bolt torque and valve clearance. (See the technical manual or your John Deere dealer.)

Daily Service

Required:

- Test safety interlock system.
- Inspect tires and check air pressure.

- Clean debris from machine.
- Check for loose, missing, or damaged parts.
- Check engine oil level, and for leaks.
- Check transaxle (if installed, auxiliary reservoir) oil level, and for leaks.
- Check coolant level, and for leaks.
- Check and clean air intake screen and fan shroud.
- Check fuel tank level, and for leaks.
- Check area below machine for any leaks.

As Needed:

- Drain water and clean fuel sediment bowl - diesel engine.
- Check brake fluid level.
- Adjust clutch and accelerator cables.

Every 100 Hours

- Check/tighten wheel lug nuts and wheel hub bolt torques.
- 4WD Models: Check (MFWD) front axle oil fluid level.
- Clean battery and check battery fluid level.
- Check air cleaner elements, replace as needed.
- Ensure clutch and throttle cable ends are free. Remove dirt and debris.
- Clean out above hydraulic PTO control valve under seats. Apply hydraulic oil on both spools where they enter the valve block.
- Gas Models: Check manifold for vacuum leaks. (See the technical manual or your John Deere dealer.)

Every 200 Hours

- Change engine oil and filter.
- Check/tighten all hose clamps (air intake, cooling, hydraulic)
- Check alternator belt tension, adjust or replace as necessary.
- 4WD Models: Grease driveshaft - three fittings.
- Clean radiator and oil cooler fins.
- Drain water and clean fuel sediment bowl - diesel engine.
- Gas Models:
 - Clean PCV valve
 - Check air inductors for leaks (See the technical manual or your John Deere dealer.)

Service Intervals

- Inspect timing belt (See the technical manual or your John Deere dealer.)

Every 500 Hours

- Check and adjust park brake.
- Check toe-in, adjust as necessary. (See the technical manual or your John Deere dealer.)
- Check service brakes to ensure lining material is present.
- Change transaxle (if installed, auxiliary reservoir) oil, filter, and clean strainers (if installed, change auxiliary oil filter).
- 4WD Models: Change front axle oil.
- Replace fuel filter.
- Gas Models: Check cylinder head bolt torque and valve clearance. (See the technical manual or your John Deere dealer.)
- Check Rollover Protection System (ROPS) hardware for proper torque

Every 800 Hours

Gas Models:

- Replace and gap spark plugs.
- Replace PCV valve.

Yearly

- Inspect roll-over protection system (ROPS) hardware and tighten if necessary.
- Check coolant freeze point and clarity.
- Replace fuel filter. Diesel Model: Also, drain water and clean fuel sediment bowl.

Every 1500 Hours or Two Years

- Diesel Model:
 - Check fuel injectors. (See the technical manual or your John Deere dealer.)
 - Check valve clearance. (See the technical manual or your John Deere dealer.)

Every 2000 Hours or Two Years

- Flush brake lines and replace fluid.

- Change engine coolant, replace thermostat and hoses, if using Cool-Gard II™ CONCENTRATE ANTIFREEZE.
- Gas Models: Replace timing belt. (See the technical manual or your John Deere dealer.)

Every 3000 Hours or Three Years

- Diesel model: Check fuel injector pump. (See the technical manual or your John Deere dealer.)
- Change engine coolant, replace thermostat and hoses, if using Cool-Gard II™ PREDILUTED ANTIFREEZE.

Service Intervals After Converting to Biodiesel Fuel

IMPORTANT: Avoid damage! Only use biodiesel fuel that complies with EN14214 (European Standards) or ASTM D-7467 (USA Standards) in B6 through B20 blends.

Biodiesel fuel must be used within three months of the date of production by the fuel supplier.

NOTE: The use of John Deere Biodiesel Fuel Conditioner is recommended whenever a biodiesel blended fuel is used.

Use the service procedures below at the intervals listed for machines converted to use biodiesel B6-B20 fuel blends:

Daily

- Check and drain water separator as required.
- Check engine oil. If oil level rises, change engine oil immediately.

Engine Oil and Filter Change Interval

- Change at 50% of Service Interval listed in Operator Manuals for regular diesel fuel usage.

Fuel Filter Change Interval

- Change at 50% of Service Interval listed in Operator Manuals for regular diesel fuel usage.

Every 1000 Hours

- Clean, inspect and adjust fuel injectors.

Service Intervals After Converting to Bio Hy-Gard

Use the service procedures below at the intervals listed for

Service Intervals

machines converted to use Bio Hy-Gard:

Every 250 Hours

- Change hydraulic oil and filter.

Yearly

- Replace Bio Hy-Gard lubricant.

Service Lubrication

Grease

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

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

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

The following greases are preferred:

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

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

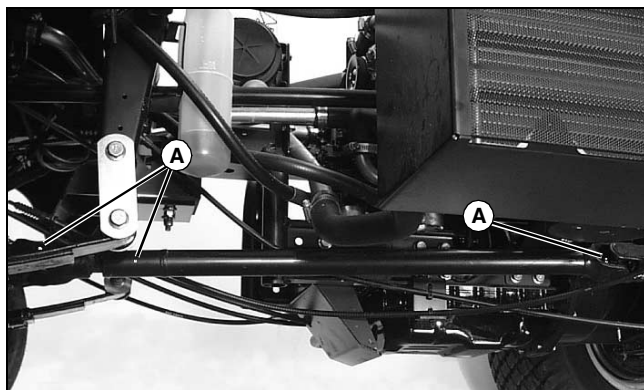
Wet or high speed conditions may require use of a special-use grease. Contact your Servicing dealer for information.

The following lubricant is preferred:

- SUPER LUBE® lubricant.¹

Lubricating the Drive Shaft (4WD Models)

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



MX1702

2. Lubricate three grease fittings (A) on the drive shaft with John Deere SD Polyurea grease or an equivalent.

1. SUPER LUBE is a registered trademark of Synco Chemical Corp.

Service Engine

Avoid Fumes



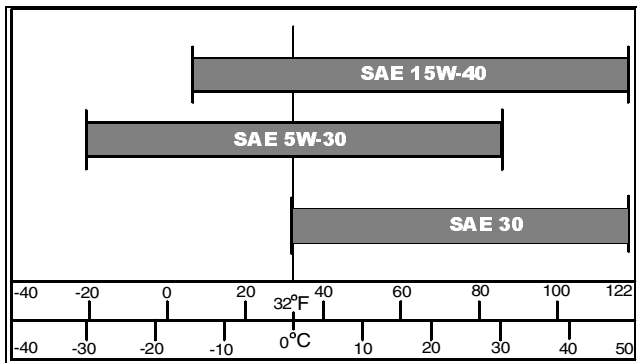
CAUTION: Avoid injury! Engine exhaust fumes contain carbon monoxide and can cause serious illness or death.

- Move the machine to an outside area before running the engine.
- Do not run an engine in an enclosed area without adequate ventilation.
- Connect a pipe extension to the engine exhaust pipe to direct the exhaust fumes out of the area.
- Allow fresh outside air into the work area to clear the exhaust fumes out.

Engine Oil (Diesel Model)

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

The following John Deere oils are preferred:



- PLUS-50™.
- TORQ-GARD SUPREME™.

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

- API Service Classification CJ or higher.

Checking Engine Oil Level

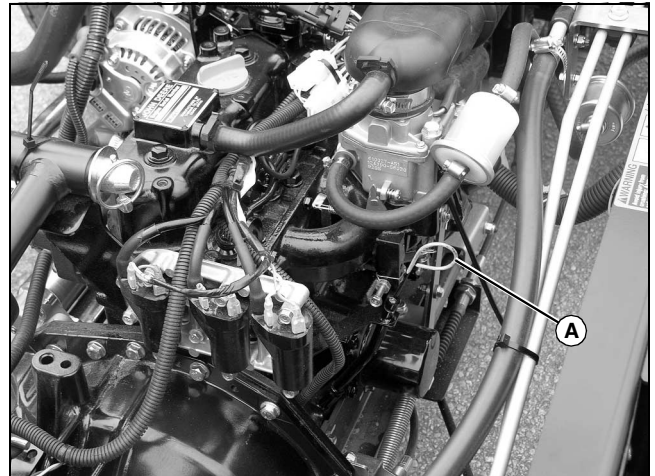
IMPORTANT: Avoid damage! Avoid dirt and other contaminants from entering the oil dipstick tube location. Clean area around dipstick before removing.

Failure to check the oil level regularly could lead to serious engine problems if oil level is low:

- Check oil level before operating.
- Check oil level when the engine is cold and not running.
- Keep level between the full and the add marks.
- Shut off engine before adding oil.
- Check oil level twice a day if you run engine over 4 hours a day.

1. Raise attachment to service position. (See Using the Lift Cylinder Safety Support in the Safety section.)

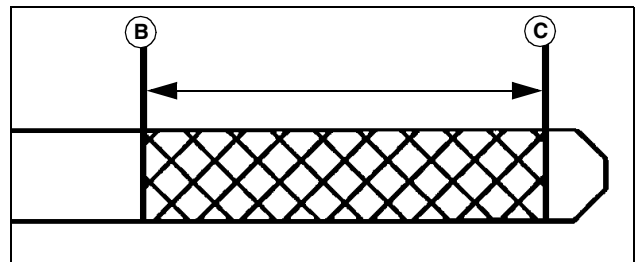
2. Park vehicle safely. (See Parking Safely in the Safety section.)



MX44140

3. Allow engine to set for 2-3 minutes. Remove dipstick (A) and wipe with a clean cloth.

4. Install dipstick.



M71680

5. Remove dipstick. Check oil level on dipstick; oil level should be between levels (B) and (C) on the dipstick.

Service Engine

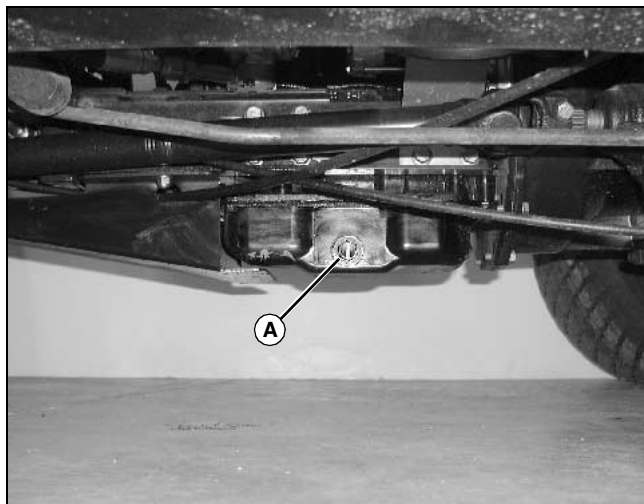
- If oil is low, add oil to bring oil level no higher than level (B) on the dipstick.
 - If oil level is above level (B) on the dipstick, drain to proper level.
6. Install dipstick.
 7. Lower attachment.

Changing Engine Oil and Filter

IMPORTANT: Avoid damage! Change the oil more often if the vehicle is used in extreme conditions:

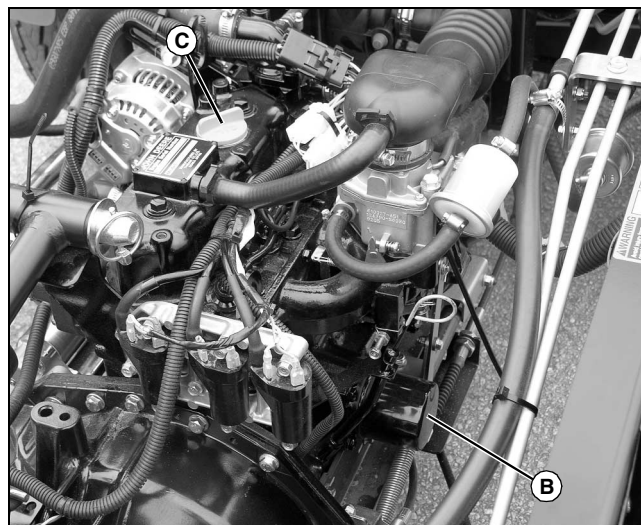
- **Extremely dusty conditions.**
- **Frequent slow or low-speed operation.**
- **Frequent short trips.**

1. Run engine to warm the oil.
2. Raise attachment to service position. (See Using the Lift Cylinder Safety Support in the Safety section.)
3. Park vehicle safely. (See Parking Safely in the Safety section.)
4. Place container under the oil drain location.



MX23703

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



MX44140

6. Remove oil filter (B).
 - Locate filter under the right side of the engine.
 - Turn filter counterclockwise to remove.
 7. Apply a film of clean engine oil on gasket of new filter.
 8. Install oil filter.
 - Turn filter clockwise until gasket makes contact with mounting surface. Tighten 1/2-3/4 turn after gasket contact.
 9. Install oil drain plug. Do not overtighten.
- NOTE: An additional oil fill cap location is located on the right side of the engine.**
10. Remove oil fill cap (C) on top of engine.
 11. Add approximately 2.1 L (2.2 qt) of oil.
 12. Install oil fill cap.
 13. Start engine and run at idle for approximately two minutes. Check for leaks. Fix any leaks before operating.
 14. Stop engine.
 15. After approximately two minutes check engine oil level. Add oil if necessary.
 16. Lower attachment.

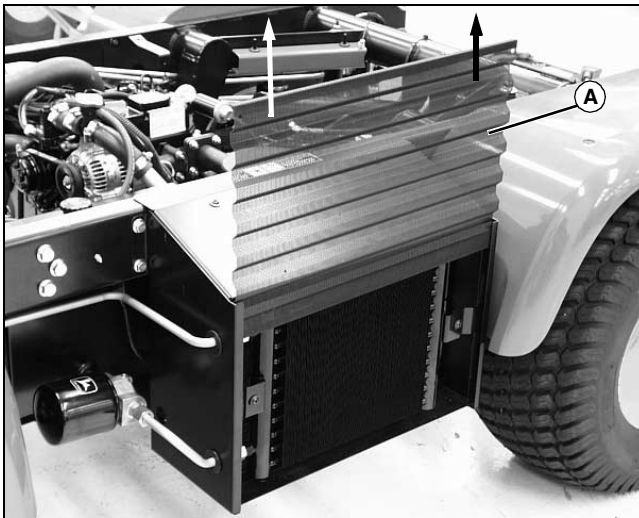
Service Engine

Cleaning Radiator Screen



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

1. Raise attachment to service position. (See Using the Lift Cylinder Safety Support in the Safety section.)
2. Park vehicle safely. (See Parking Safely in the Safety section.)



3. Lift radiator screen (A) from position in front of the engine radiator.
4. Clean screen with a brush or compressed air.
5. Install grille screen.
6. Lower attachment.

Cleaning Radiator Cooling Fins and Fan Shroud

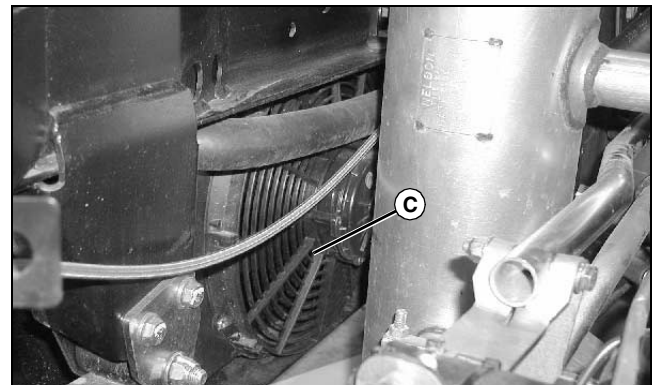
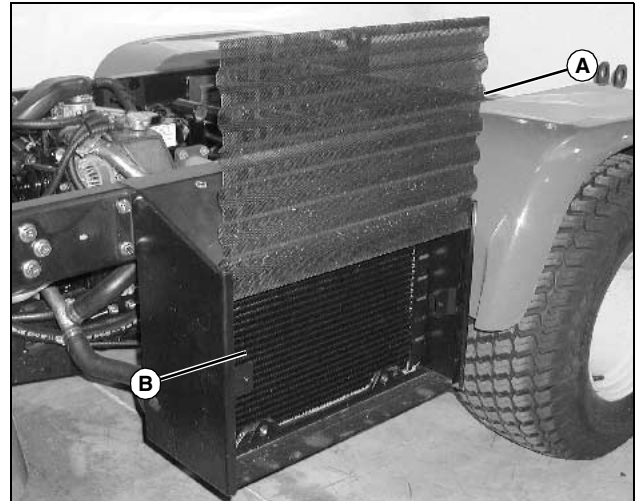


CAUTION: Avoid injury! Compressed air can cause debris to fly a long distance.

- Clear work area of bystanders.
- Wear eye protection when using compressed air for cleaning purposes.
- Reduce compressed air pressure to 210 kPa (30 psi).

IMPORTANT: Avoid damage! Dirty cooling fins and radiator screens can cause engine overheating. The radiator cooling fins and fan shroud must be clean.

1. Raise attachment to service position. (See Using the Lift Cylinder Safety Support in the Safety section.)
2. Park machine safely. (See Parking Safely in the Safety section.)



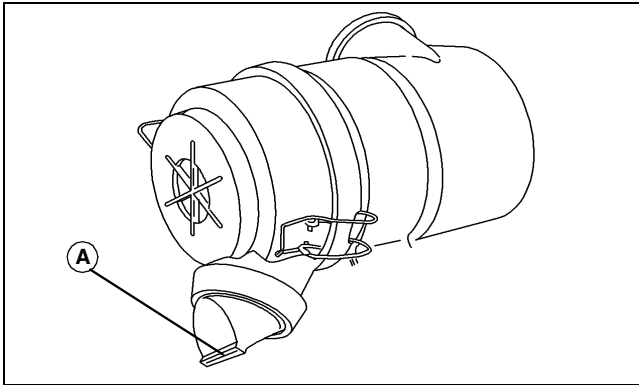
3. Remove radiator screen (A).
4. Remove dirt and debris from the auxiliary hydraulics, oil cooler, radiator cooling fins (B) and fan shroud (C) using compressed air or low pressure water.
5. Check radiator fins for damage.
6. Install radiator screen.
7. Lower attachment.

Service Engine

Cleaning Dust Unloading Valve

IMPORTANT: Avoid damage! Do not operate engine without air cleaner element and rubber dust unloading valve installed.

1. Park the vehicle safely. (See Parking Safely in the SAFETY section.)
2. Allow engine to cool.
3. Access the engine compartment.



MX22502

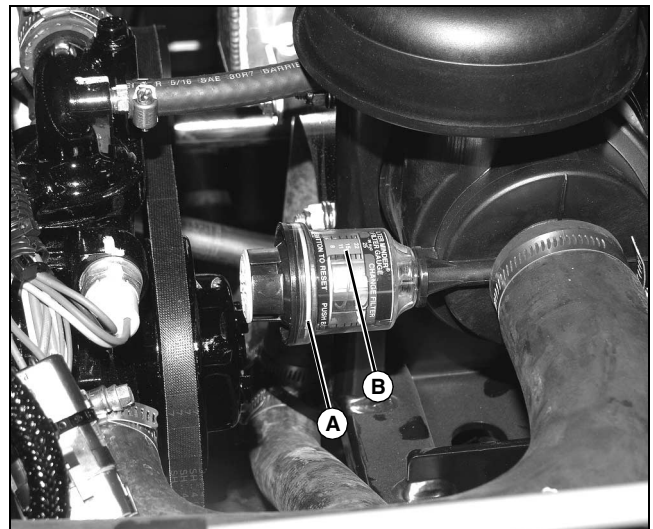
4. Squeeze dust unloading valve (A) to clean. Remove and replace if damaged.

Checking Air Restriction Indicator (Diesel Models)

IMPORTANT: Avoid damage! Never check air cleaner until restriction indicator is red or at 6.2 kPa (25 in. of H₂O) vacuum. This keeps contamination of the intake system to a minimum.

Check air restriction indicator more frequently if operating in dusty conditions.

1. Lock park brake.
2. Place transmission in neutral.
3. Start engine.



MX44264

4. Check the color at sight window (A) and vacuum reading at scale (B).
5. Stop the engine and wait for any moving parts to stop.
6. Service the air cleaner element if sight window shows red or reading is 6.2 kPa (25 in. H₂O) vacuum.

Servicing Air Cleaner Element

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

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

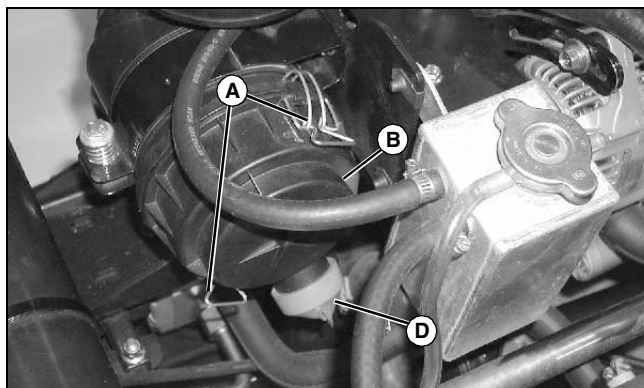
Checking Air Cleaner Element

1. Raise attachment to service position. (See Using the Lift Cylinder Safety Support in the Safety section.)
2. Park vehicle safely. (See Parking Safely in the Safety section.)

Service Engine

IMPORTANT: Avoid damage! Dirt and debris can enter engine when air cleaner canister is opened. Do not open canister unless required for scheduled service. This will keep contamination of the intake system to a minimum.

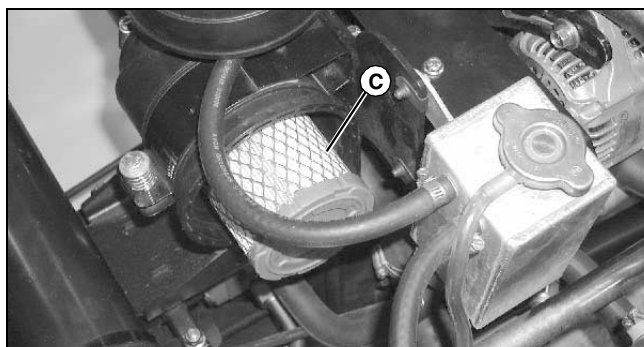
Check filter element more frequently if operating in dusty conditions.



MX24301

3. Release latches (A) and remove air cleaner canister cover (B).
4. Visually inspect each element before removing. Replace element only if damaged or very dirty.

Replacing Primary Air Filter Element

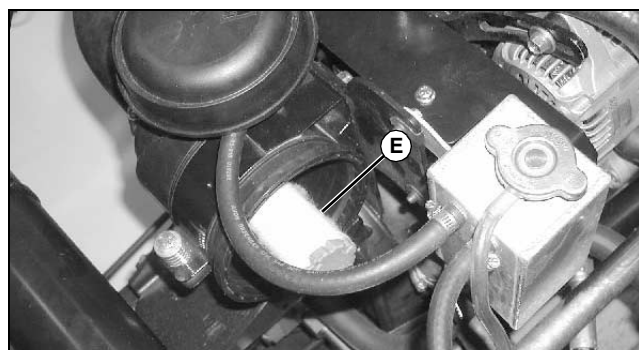


MX24306

1. Remove and discard primary element (C). Replace with a new primary filter element.
2. Install air cleaner canister cover (B).
 - Check instruction molded into canister cover for proper installation.
 - Rubber dust unloading valve (D) should be pointed downward when the cover is properly installed.
3. Engage latches (A).

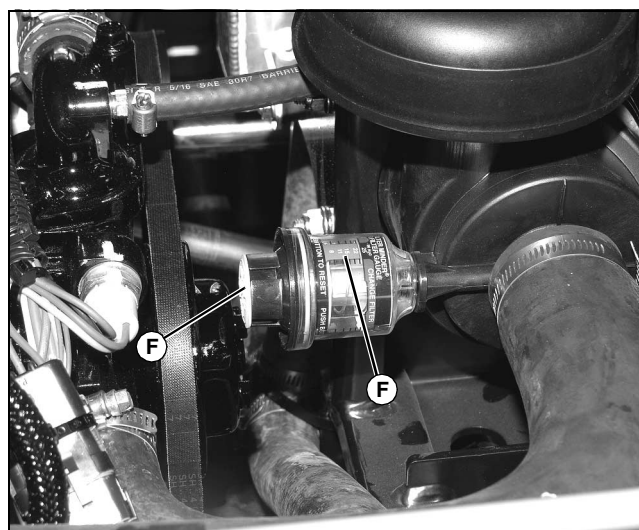
Replacing Secondary Air Filter Element

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



MX24307

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



MX44264

6. Press the reset button (F) at end of air restriction indicator.
7. Start engine and run at low idle.
8. Check reading at scale (G) on air restriction indicator with engine running.
9. Shut off engine and wait for all moving parts to stop.

IMPORTANT: Avoid damage! Do not service secondary air filter element unless air restriction indicator rises above 2.5 kPa (10 in. of H₂O) after the primary element was replaced.

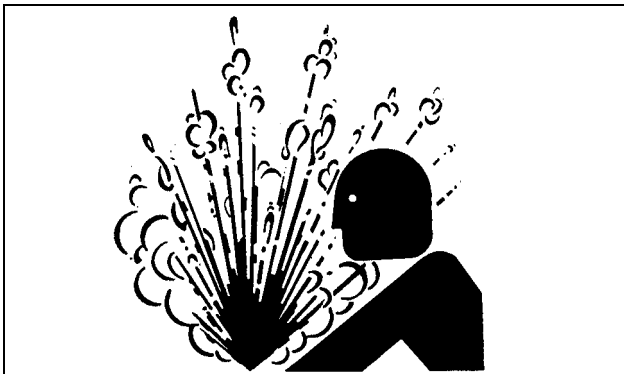
10. If air restriction indicator went above 2.5 kPa (10 in. of H₂O), change secondary air filter element.
11. Lower attachment.

Service Engine

Check Air Intake Hose, Hydraulic Hoses, Radiator Hoses and Clamps

1. Raise attachment to service position. (See Using the Lift Cylinder Safety Support in the Safety section.)
2. Park vehicle safely. (See Parking Safely in the Safety section.)
3. Check hoses for leaking or damage and adjustable clamps for tightness in the systems listed below. Replace if necessary.
 - Fuel system
 - Cooling system
 - Hydraulics system
 - Air intake system
4. Lower attachment.

Service Cooling System Safely



TS281



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

- Shut off the engine and allow to cool.
- Do not remove the cap unless the radiator and the engine are cool enough to touch with bare hands.
- Slowly loosen the cap to the first stop to release all pressure. Then remove the cap.

Recommended Engine Coolant

IMPORTANT: Avoid damage! Using incorrect coolant mixture can cause overheating and damage to the radiator and engine:

- Do not operate engine with plain water.
- Do not exceed a 50% mixture of coolant and water.
- Aluminum engine blocks and radiators require approved ethylene-glycol based coolant.

The engine cooling system is filled to provide year-round protection against corrosion and cylinder liner pitting, and winter freeze protection to -37 degrees C (-34 degrees F). If protection at lower temperatures is required, consult your John Deere dealer for recommendations.

The following coolants are preferred:

- John Deere COOL-GARD™ II Premix
- John Deere COOL-GARD™ Premix
- John Deere COOL-GARD™ PG Premix

John Deere COOL-GARD™ II Premix and John Deere COOL-GARD™ Premix are available in a concentration of 50% propylene glycol.

John Deere COOL-GARD™ PG Premix is available in a concentration of 55% propylene glycol.

Additional recommended coolants:

- John Deere COOL-GARD™ II Concentrate in a 40% to 60% mixture of concentrate with water.
- John Deere COOL-GARD™ Concentrate in a 40% to 60% mixture of concentrate with water.

If the recommended coolants are unavailable, use an ethylene glycol or propylene glycol base coolant that meets the following specification:

- ASTM D3306 prediluted (50%) coolant.
- ASTM D3306 coolant concentrate in a 40% to 60% mixture of concentrate with water.

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.

Water Quality

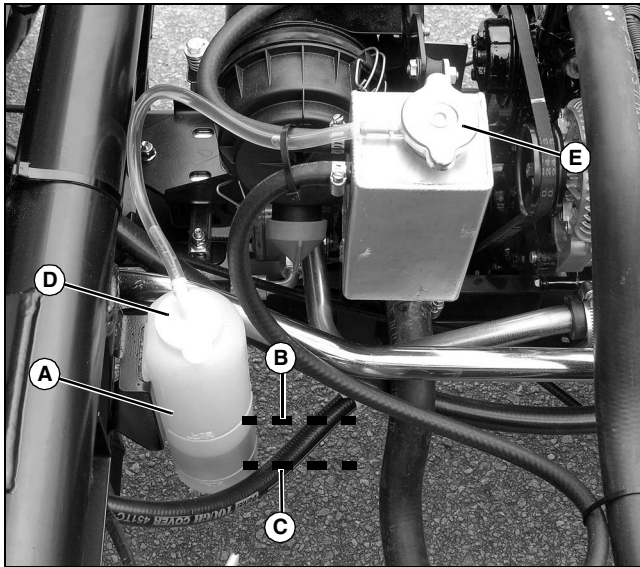
- Water quality is important to the performance of the cooling system. Distilled, deionized, or demineralized water is recommended with ethylene glycol base engine coolant concentrate.

Service Engine

Servicing Cooling System

Checking Coolant Level

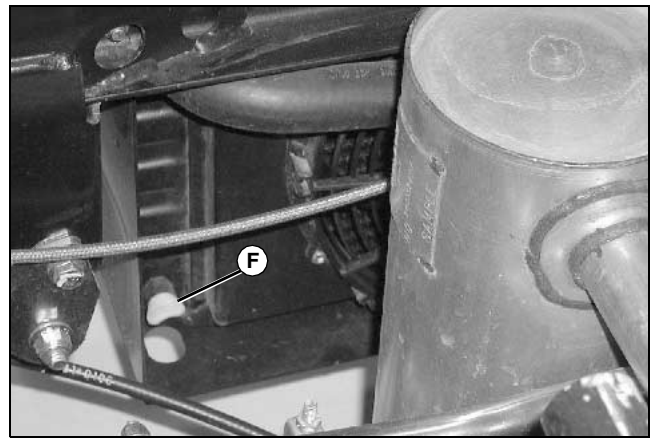
1. Raise attachment to service position. (See Using the Lift Cylinder Safety Support in the Safety section.)
2. Park machine safely. (See Parking Safely in the Safety section.)



3. Check recovery bottle (A) coolant level:
 - If engine is warm, coolant level should be between the "FULL" line (B) and the "LOW" line (C).
 - If engine is cold, coolant level should be at the "LOW" line (C) on the recovery bottle.
4. Remove recovery bottle cap (D) to add coolant.
5. If coolant is low, add specified ratio of antifreeze and water.
6. Install and tighten recovery bottle cap.
7. Clean debris from the air intake screen, fan shroud, radiator cooling fins and auxiliary oil cooler coils.
8. Check condition of coolant system hoses and clamps. Check for leaks or loose connections.

Draining Cooling System

1. Raise attachment to service position. (See Using the Lift Cylinder Safety Support in the Safety section.)
2. Park machine safely. (See Parking Safely in the Safety section.)
3. Slowly open radiator cap (E) to the first stop to release all pressure.
4. Close radiator cap tightly.



5. Open radiator petcock (F). Drain coolant into a pan.
6. When coolant drains from the recovery bottle, remove radiator cap.
7. After all coolant has drained, close radiator petcock.
8. Flush cooling system.

Flushing Cooling System

1. Fill cooling system with clean water and John Deere Cooling System Cleaner or John Deere Cooling System Quick Flush, or an equivalent. Follow directions on the can.
2. Install and tighten radiator cap.
3. Start and run engine until it reaches operating temperature.
4. Stop engine.



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

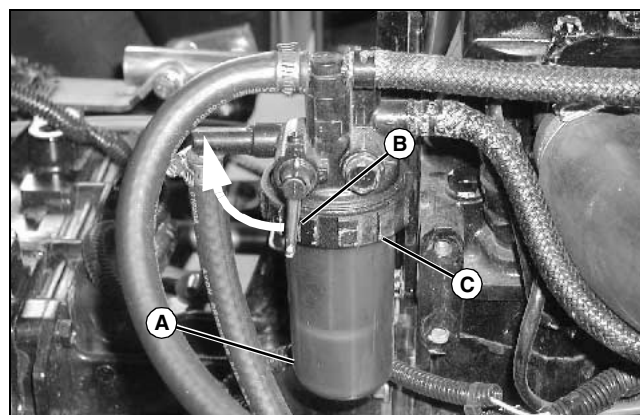
- Shut off the engine and allow to cool.
- Do not remove the cap unless the radiator and the engine are cool enough to touch with bare hands.
- Slowly loosen the cap to the first stop to release all pressure. Then remove the cap.

5. Open radiator petcock.
 - Drain cooling system immediately before rust and dirt settle.
 - Once flow from petcock slows, open radiator cap to the first stop to relieve vacuum and allow system to completely drain.
6. Close radiator petcock.
7. Fill cooling system with clean water and repeat flushing until system is clean.

Service Engine

Filling Cooling System

1. Fill cooling system with recommended coolant.
 - Certain geographical areas may require protection from lower temperatures. 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.
2. Install and tighten radiator cap.
3. Run engine until it reaches operating temperature.
4. Stop engine.
5. Check recovery bottle (A) coolant level:
 - If engine is warm, coolant level should be between the "FULL" line (B) and the "LOW" line (C).
 - If engine is cold, coolant level should be at the "LOW" line (C) on the recovery bottle.
6. Remove cap (D) from recovery bottle to add coolant if necessary.
7. Install cap if removed.
8. Check condition of coolant system hoses and clamps.
9. Lower attachment.



MX23700

3. Visually check for water and deposits in the sediment bowl (A).
4. If necessary, clean bowl and replace filter.

Cleaning and Replacing Sediment Bowl

1. Close fuel shut-off valve (B).
2. Turn collar (C) to remove bowl and filter. Discard filter.
3. Clean bowl.
4. Install new filter and bowl.
5. Tighten collar.
6. Open fuel shut-off valve.
7. Lower attachment.

Servicing Fuel Filter Sediment Bowl (Diesel Models)



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

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



CAUTION: Avoid injury! Entanglement in a belt or sheave can cause serious injury. Stop engine and wait for all moving parts to stop.

Checking and Adjusting Alternator Belt

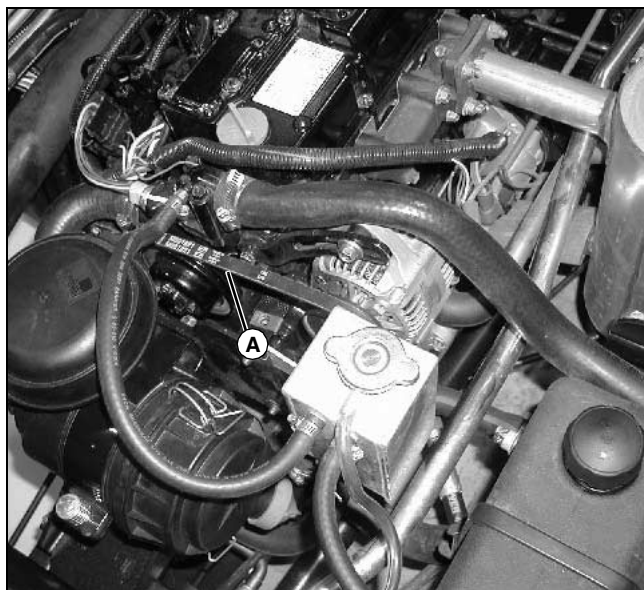
Checking Belt Tension

1. Raise attachment to service position. (See Using the Lift Cylinder Safety Support in the Safety section.)
2. Park machine safely. (See Parking Safely in the Safety section.)

Checking Sediment Bowl

1. Raise attachment to service position. (See Using the Lift Cylinder Safety Support in the Safety section.)
2. Park vehicle safely. (See Parking Safely in the Safety section.)

Service Engine

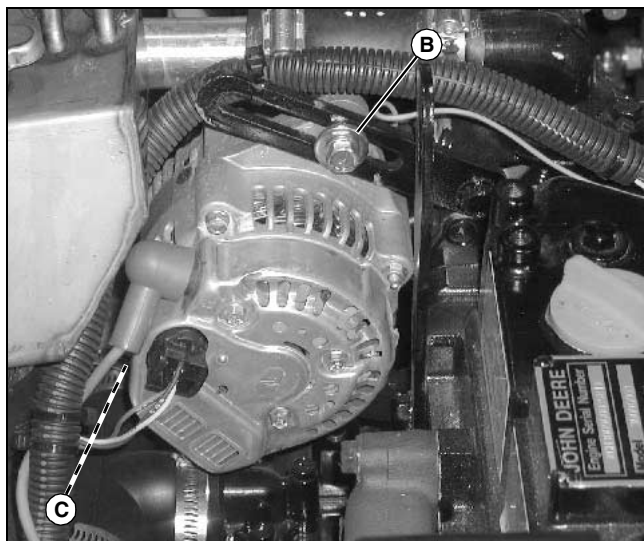


MX24302

3. Check alternator belt (A):

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

Adjusting Belt Tension



MX24009

1. Loosen alternator adjustment bolt (B).
2. Loosen alternator mounting bolt (C).
3. Apply outward pressure to the alternator housing.
4. Tighten alternator adjustment bolt and mounting bolt.
5. Check belt tension:
 - Apply thumb pressure to the belt approximately

halfway between the sheaves. Belt should deflect inward approximately 10 mm (3/8 in.).

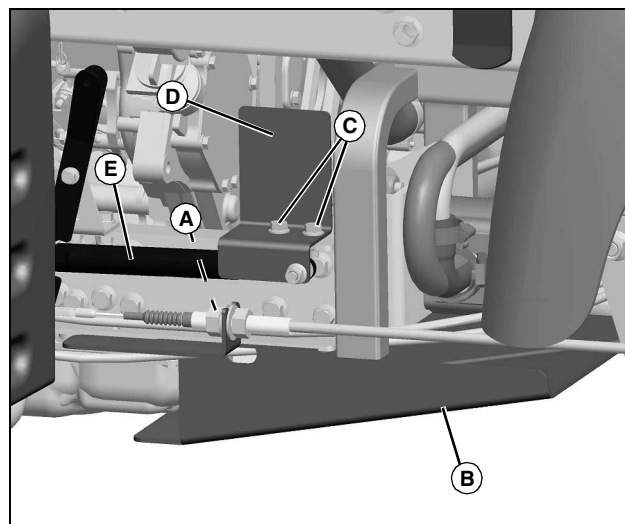
6. Lower attachment.

Replacing Alternator Belt



CAUTION: Avoid injury! Entanglement in a belt or sheave can cause serious injury. Stop engine and wait for all moving parts to stop.

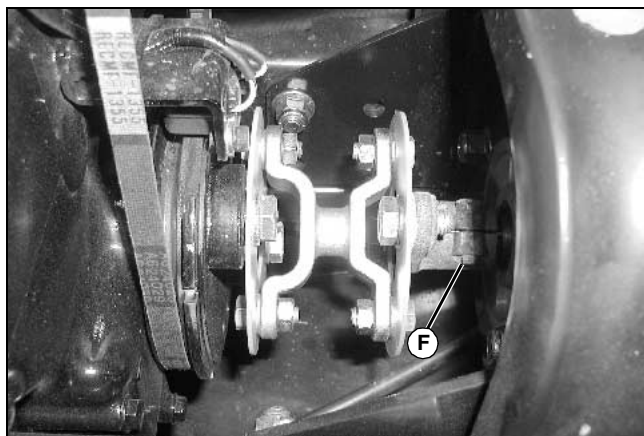
1. Raise attachment to service position. (See Using the Lift Cylinder Safety Support in the Safety section.)
2. Park machine safely. (See Parking Safely in the Safety section.)



MX44260

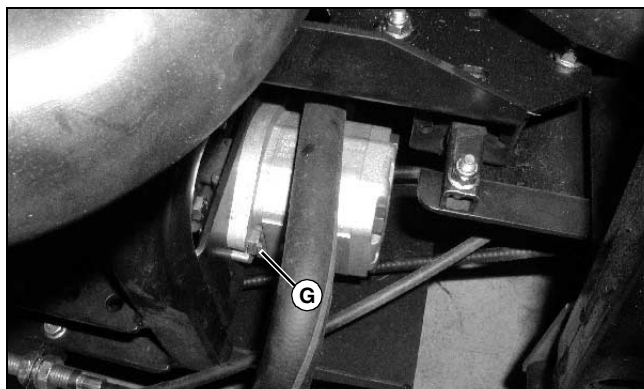
3. Remove two nuts (A) and cap screws (one on each side).
4. Remove skid plate (B).
5. Remove two cap screws (C) and lower coupler guard (D) and absorber (E) (if equipped) away from engine.

Service Engine



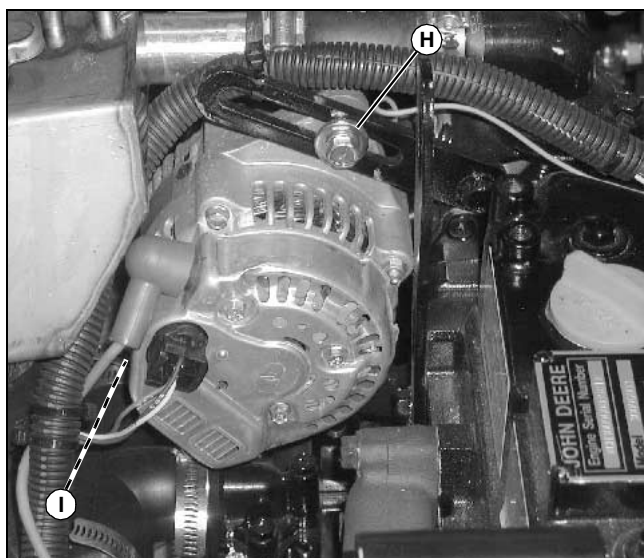
MX24013

6. Loosen screw (F) securing coupling to auxiliary pump shaft.



MX24151

7. Remove bolt (G) on each side of auxiliary pump and move pump away from coupling.



MX24009

8. Loosen alternator adjustment bolt (H) and alternator mounting bolt (I).

9. Pivot alternator inward to loosen belt tension.

10. Replace alternator belt.

11. Pivot alternator outward to tension alternator belt.

12. Tighten adjustment bolt and mounting bolt.

13. Check belt tension:

- Apply thumb pressure to the belt approximately halfway between the sheaves. Belt should deflect inward approximately 10 mm (3/8 in.).

14. Install auxiliary pump with two bolts.

15. Tighten screw retaining coupling to auxiliary pump shaft. Torque to 15 N•m (11 lb-ft.).

16. Install coupler guard with two cap screws.

17. Install skid plate with two cap screws and nuts.

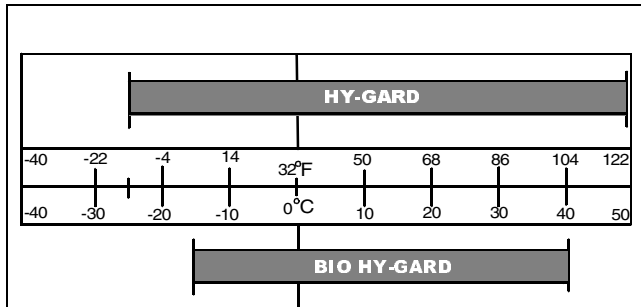
18. Lower attachment.

Service Transmission

Transmission Oil

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

The following John Deere transmission and hydraulic oils are preferred:



- HY-GARD™ (JDM J20C)
- BIO HY-GARD™

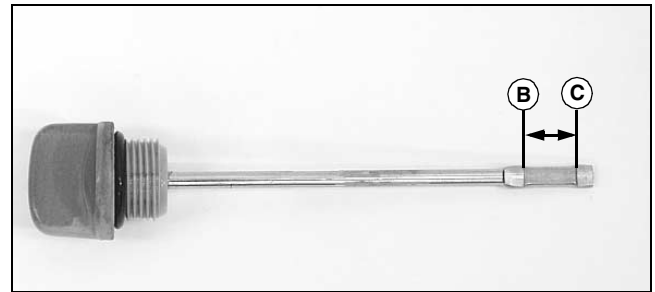
IMPORTANT: Avoid damage! Only use a quality oil in this transmission. Do not mix any other oils in this transmission. Do not use engine oil or “Type F” (Red) Automatic Transmission Fluid.

(A) at rear of machine.

3. Remove fill cap/dipstick and wipe with a clean cloth.

NOTE: DO NOT tighten dipstick. Allow threads to rest on top of transmission housing.

4. Install fill cap/dipstick.



MX1647

5. Remove fill cap/dipstick. Check oil level on dipstick. Oil level 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.

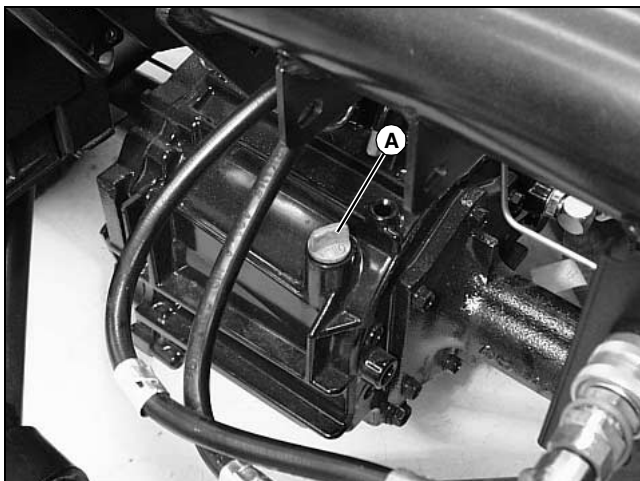
6. Install fill cap/dipstick.

Checking Transmission Oil Level

IMPORTANT: Avoid damage! Hot hydraulic oil will expand and show incorrect oil level. Check oil level:

- When oil is cold.
- With engine not running.

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



MX1675

2. Thoroughly clean area around reservoir fill cap/dipstick

Changing Transmission Oil and Filter

IMPORTANT: Avoid damage! Contamination of hydraulic fluid could cause transmission damage or failure. Do not remove cap from fill opening unless absolutely necessary.

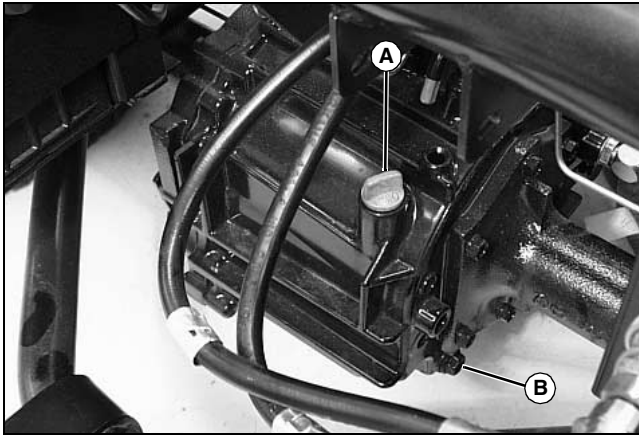
Severe or unusual conditions may require a more frequent service interval.

1. Raise attachment to service position. (See Using the Lift Cylinder Safety Support in the Safety section.)

2. Park vehicle safely. (See Parking Safely in the Safety section.)

- Allow the engine and transmission to cool.

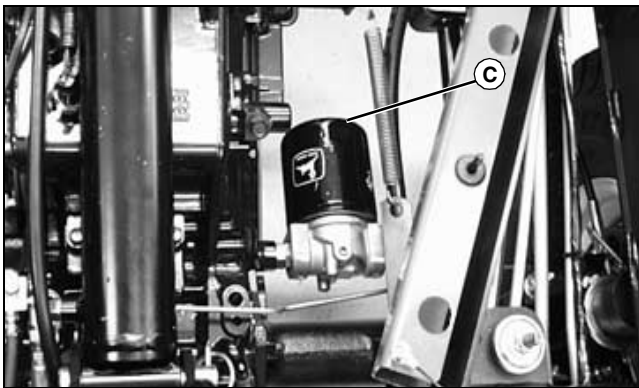
Service Transmission



MX1675

3. Thoroughly clean area around the transmission fill cap/dipstick (A). Remove fill cap/dipstick.
4. Locate drain plug (B) under right side of transmission.
5. Remove drain plug. Allow oil to drain into a drain pan with at least a 10.6 L (2.8 gal) capacity.

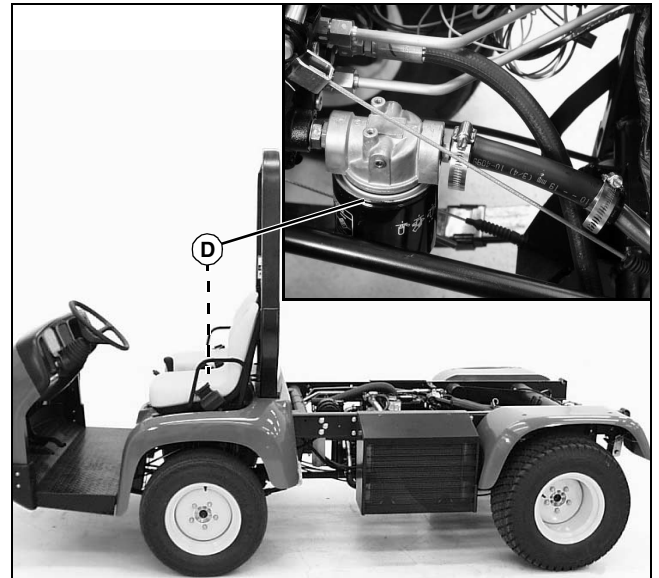
NOTE: If the vehicle is equipped with an auxiliary hydraulic kit, the transmission filter (C) is relocated to the right side of the vehicle.



MX7256

6. Locate transmission oil filter (C) on the right side of vehicle on the transaxle.

NOTE: If vehicle does not have an auxiliary hydraulic kit installed, the transmission filter (D) is located in the center of vehicle, directly behind control valve.



MX7261 MX1654

- a. Locate transmission oil filter (D) on standard machine in the center behind control valve.
7. Turn filter counterclockwise to remove. Use a drain pan to catch dripping oil.
8. Install new filter.
 - Apply a film of clean oil on gasket of new filter.
 - Turn filter clockwise until gasket makes contact with the mounting surface. Tighten 1/2 to 3/4 turn after gasket contact.
9. Clean transmission oil strainer.
10. Install and tighten drain plug, torque to 49 N•m (36 lb-ft).
11. Add approximately 8.5 L (2.25 gal) of oil into fill opening.
- NOTE: DO NOT tighten dipstick. Allow threads to rest on top of transmission housing.**
12. Install fill cap/dipstick.
13. Remove fill cap/dipstick. Check oil level; add or drain oil to correct level if required.
14. Install fill cap/dipstick.
15. Lower attachment.

Service Transmission

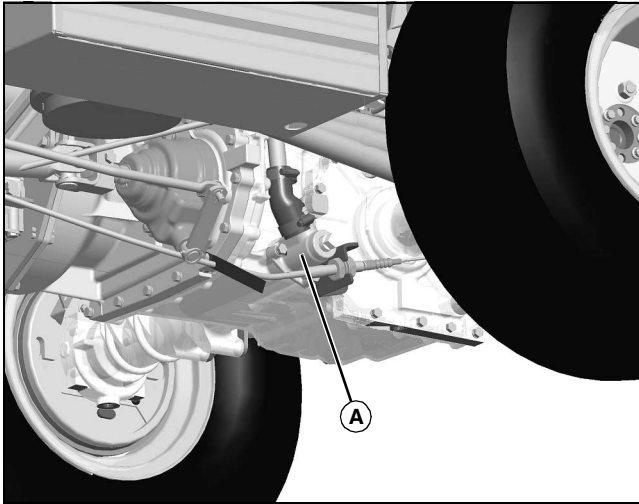
Clean Transmission Oil Strainer



CAUTION: Avoid injury! Use caution when cleaning the oil strainer. During periods of machine operation the transmission oil can get hot.

NOTE: Routinely clean strainer when changing the transmission oil and filter. Strainer should be serviced when the transmission is empty.

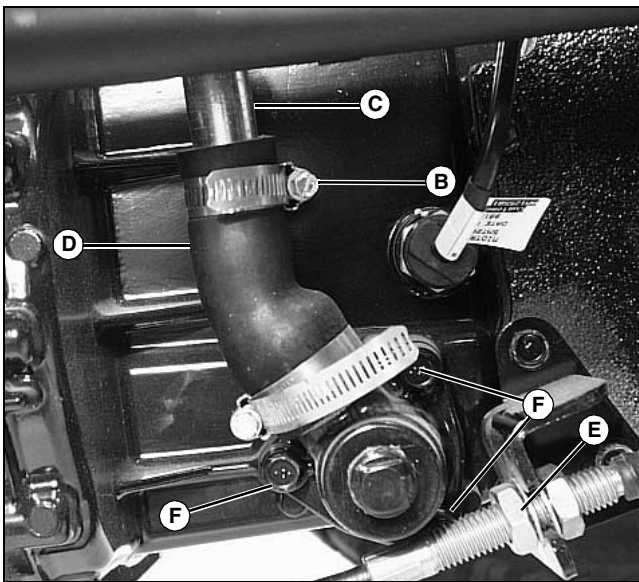
1. Change transmission oil and filter.



MX44262

2. Locate strainer housing (A) on the left side of vehicle.

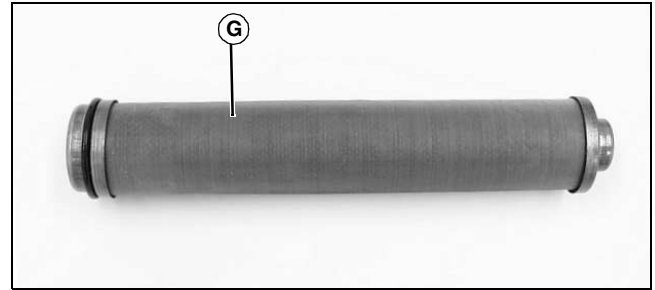
NOTE: Use drain pan to catch dripping oil.



MX1723

3. Loosen adjustable hose clamp (B).
4. Remove hydraulic line (C) from rubber hose (D).
5. Loosen jam nut (E) and remove differential cable.

6. Loosen and remove three hex bolts (F).
7. Remove strainer housing and strainer.



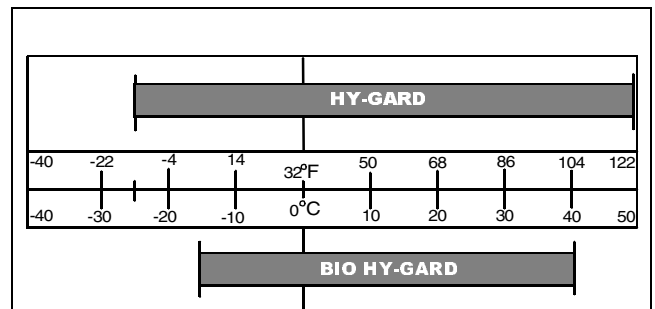
MX1718

8. Clean strainer (G) with solvent or mineral spirits and allow to dry.
9. Install strainer into the strainer housing.
10. Replace strainer housing gasket if needed.
11. Install strainer housing.
12. Install and tighten three hex bolts.
13. Install rubber hose onto hydraulic line.
14. Tighten adjustable hose clamp.
15. Install differential cable and tighten jam nut.

Front Axle Oil

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

The following John Deere hydraulic oil is preferred:



- HY-GARD™ (JDM J20C)
- BIO HY-GARD™

IMPORTANT: Avoid damage! Only use a quality oil in this gear case. Do Not mix any other oils in this gear case.

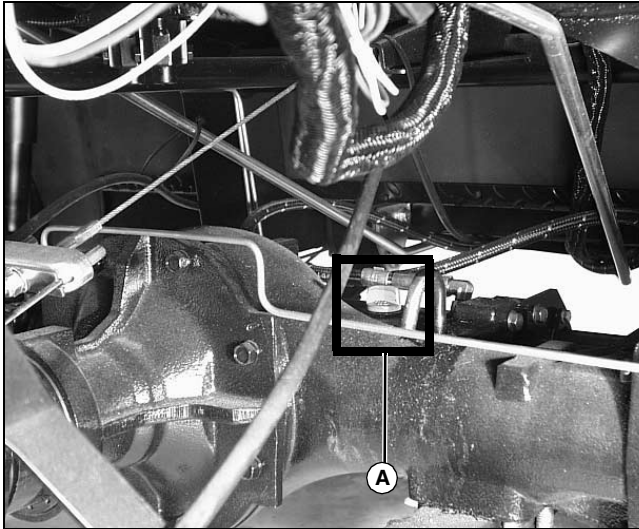
Service Transmission

Checking the Front Axle Oil Level (4WD Models)

IMPORTANT: Avoid damage! Allow front axle oil time to cool before checking level.

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

IMPORTANT: Avoid damage! Dirt and debris in oil may cause damage. Help prevent contaminants from entering the oil dipstick location. Clean area around dipstick before removing.

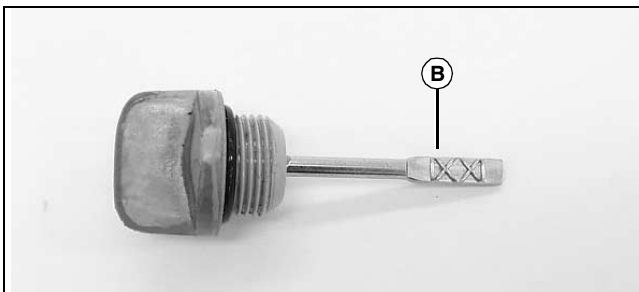


MX1694

2. Unscrew dipstick (A) and remove it from axle.
3. Wipe dipstick dry with a clean cloth.

NOTE: Do not tighten dipstick. Allow threads to rest on top of the axle housing.

4. Install dipstick into the axle housing.



MX1696

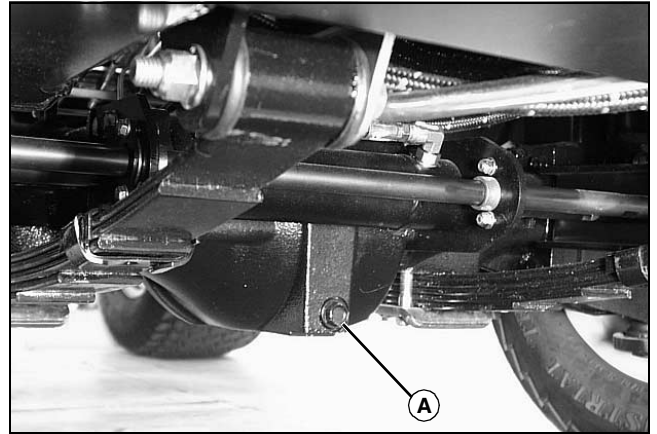
5. Remove dipstick. Oil level should be at level (B) on the dipstick.

- If oil is low, add oil. Oil level should be to the top of the XX area (B) on the dipstick.

6. Install and tighten dipstick.

Changing the Front Axle Oil (4WD Models)

1. Park vehicle safely. (See Parking Safely in the Safety section.)
2. Place container under the oil drain location.



MX1695

3. Remove differential drain plug (A) to drain oil.
4. Install and tighten drain plug.

IMPORTANT: Avoid damage! Dirt and debris in oil may cause damage. Help prevent contaminants from entering the oil dipstick location. Clean area around dipstick before removing.

5. Unscrew dipstick and remove it from the differential housing.
6. Add recommended fluid through the dipstick opening.
7. Wipe dipstick dry with a clean cloth.
- NOTE: Do not tighten dipstick. Allow threads to rest on top of the dipstick opening.**
8. Install dipstick.
9. Remove dipstick. Oil level should be to the top of the XX area on the dipstick.
 - If oil is low, add oil until oil level is to the top of the XX area on the dipstick.
10. Install and tighten dipstick.

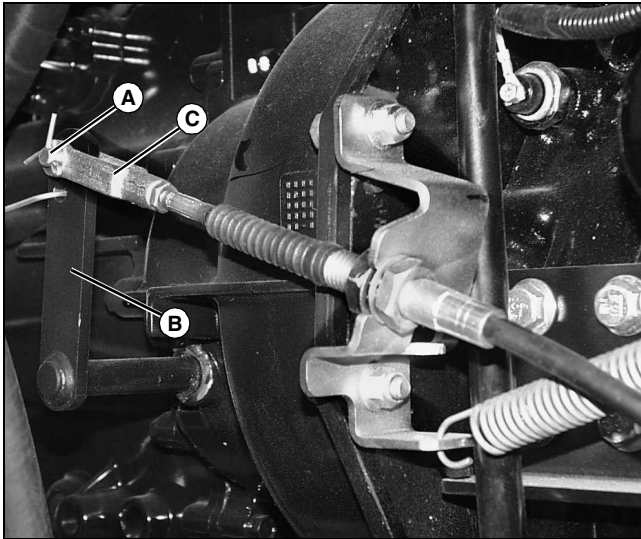
NOTE: Oil will flow very slowly through the front axle housing. Check oil level again after the first several hours of operation.

Adjusting Clutch and Accelerator Cables

Adjust Clutch Cable

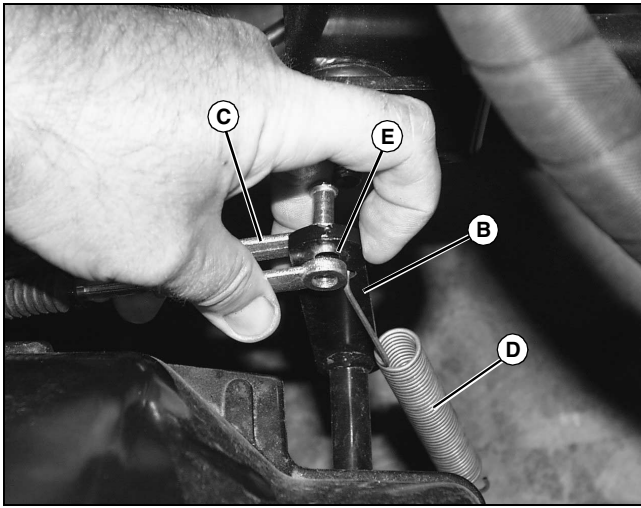
1. Park machine safely. (See Parking Safely in the SAFETY section.)

Service Transmission



MX0671

2. Remove cotter pin and pin (A) from clutch arm (B) and clevis (C).



MX0753

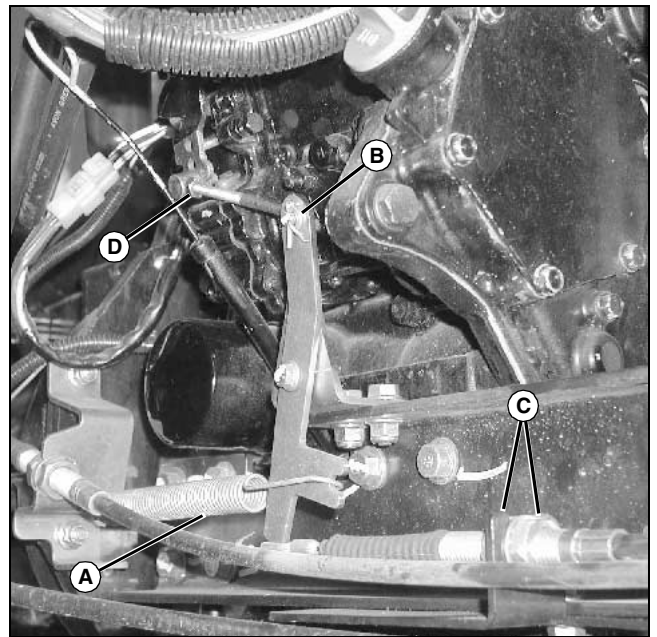
3. Disconnect spring (D), and pull clutch arm (B) and clevis (C) toward each other and check alignment of holes.

NOTE: Make sure enough force is being applied to clevis to pull clutch pedal to the top of its travel, or block clutch pedal up to the top of its travel.

4. If holes (E) do not line up, loosen locknut on clevis and adjust clevis until holes align.
5. Install pin and connect return spring.
6. Adjust clutch arm by tightening cable jam nuts until clutch arm has 1 - 2 mm of free play.
7. Be sure that clevis pin can slide freely through clevis and clutch arm.
8. Tighten jam nuts.
9. Connect spring.

Adjust Accelerator Cable (Diesel Models Only)

1. Park machine safely. (See Parking Safely in the SAFETY section.)
2. Place a small piece of reflective tape on outside edge of crankshaft pulley.
3. Start engine and run for 5 minutes or until engine is at operating temperature.
4. With engine running, depress throttle pedal all the way to the floor and check engine speed using JT05719 Digital Tachometer.
5. If fast idle is above or below 3450 ± 50 rpm, shut engine off.



MX24100

6. Disconnect spring (A).
7. Remove cotter pin and washer (B) from throttle adjustment pin, and disconnect from governor lever.
8. Push throttle pedal to the floor. If pedal will not go all the way to the floor, loosen jam nuts (C) and adjust cable.
9. With accelerator pedal on floor, hold governor throttle lever to fast idle position and check alignment of adjustment pin and hole in lever.
10. If pin does not align with hole in throttle lever, loosen locknut (D) on adjustment pin and adjust until pin aligns with hole in throttle lever.
11. Install washer and cotter pin onto throttle rod adjusting pin and tighten locknut.

Service Hydraulics

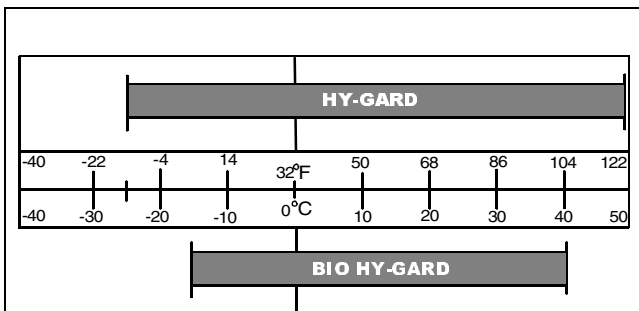
Auxiliary Hydraulic Oil

IMPORTANT: Avoid damage! If BIO HY-GARD™ transmission and hydraulic oil is used in any application, the service intervals should be completed twice as often as the service intervals listed in operator's manual.

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

The following John Deere transmission and hydraulic oil is preferred:

- HY-GARD™ (JDM J20C)
- BIO HY-GARD™



IMPORTANT: Avoid damage! Only use a quality oil in this auxiliary oil cooler reservoir. Do not mix any other oils in this oil reservoir. Do not use engine oil or "Type F" (Red) Automatic Transmission Fluid in this reservoir.

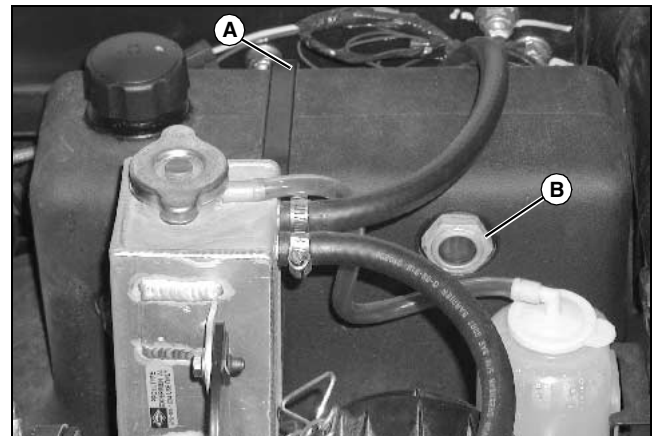
Checking Optional Auxiliary Hydraulic Oil Level

IMPORTANT: Avoid damage! Hot hydraulic oil will expand and show incorrect oil level. Check oil level:

- When oil is cold.
- With engine not running.

NOTE: Do not overfill oil reservoir tank. Oil will expand during operation and could overflow.

1. Raise attachment to service position. (See Using the Lift Cylinder Safety Support in the Safety section.)
2. Park machine safely. (See Parking Safely in the Safety section.)



MX24014

3. Locate auxiliary oil reservoir (A) on left side of machine.
4. Visually check level of oil in sight glass (B).
5. Add oil, if necessary.
6. Lower attachment.

Servicing Optional Auxiliary Hydraulics



CAUTION: Avoid injury! 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.

Use caution when filling and draining hydraulic oil. During periods of machine operation the hydraulic oil reservoir can get hot. Allow engine and oil reservoir to cool before servicing.

IMPORTANT: Avoid damage! Contamination of hydraulic fluid could cause transmission damage or failure. Do not open oil reservoir cap unless absolutely necessary.

Severe or unusual conditions may require a more frequent service interval.

NOTE: This service procedure only applies to vehicles equipped with the auxiliary hydraulic kit.

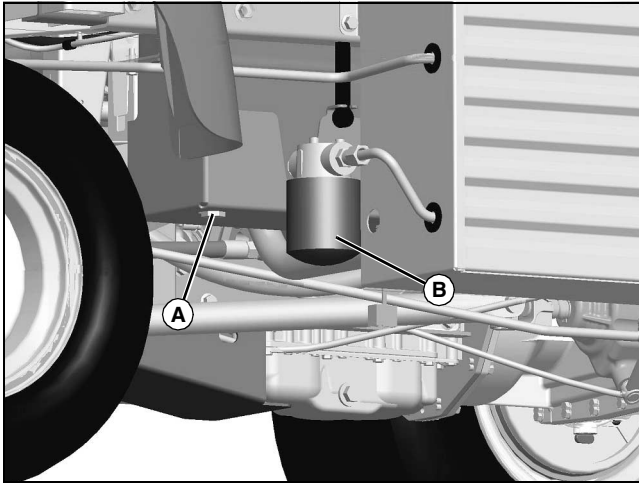
Drain Fluid and Change Filter

1. Raise attachment to service position. (See Using the Lift Cylinder Safety Support in the Safety section.)
2. Park vehicle safely. (See Parking Safely in the Safety section.)

Service Hydraulics

section.)

3. Allow the engine and the oil reservoir to cool.



4. Locate drain plug (A) under the oil reservoir on the left side of the vehicle.

5. Place container under the oil drain location.

6. Remove drain plug and allow oil to drain.

7. Remove hydraulic oil filter (B) located on left side of vehicle when hydraulic kit is installed.

8. Turn filter counterclockwise to remove. Use a drain pan to catch dripping oil.

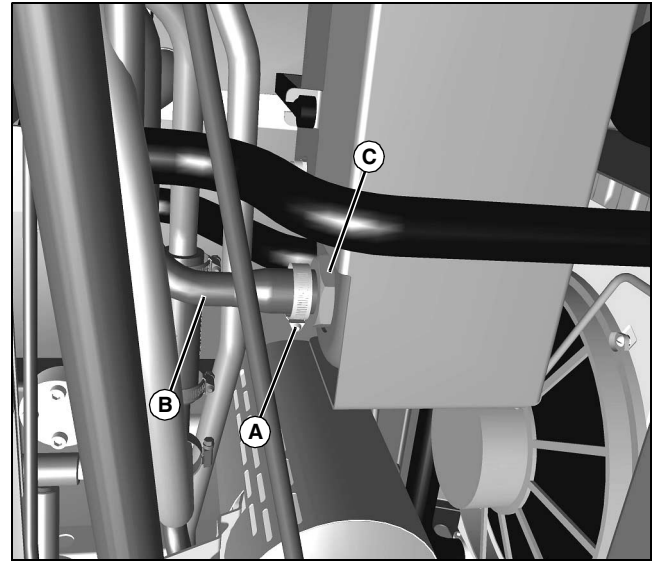
9. Apply a film of clean oil on gasket of new filter.

10. Turn filter clockwise until gasket makes contact with the mounting surface. Tighten 1/2 to 3/4 turn after gasket contact.

11. Install drain plug. Do not overtighten.

Clean Hydraulic Oil Strainer

NOTE: Routinely clean strainer when changing the hydraulic oil and filter. Strainer should be serviced when the hydraulic oil tank is empty.



Picture Note: View from under machine shown.

1. Loosen adjustable hose clamp (A).

2. Remove rubber hose (B) from strainer (C).

3. Remove strainer from the hydraulic oil tank.

4. Clean strainer with solvent or mineral spirits and allow to dry.

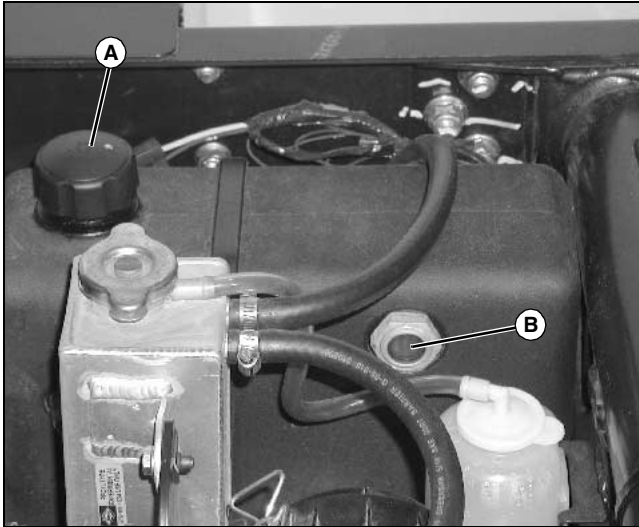
5. Install strainer into the hydraulic oil tank.

6. Install rubber hose onto strainer.

7. Tighten adjustable hose clamp.

Service Hydraulics

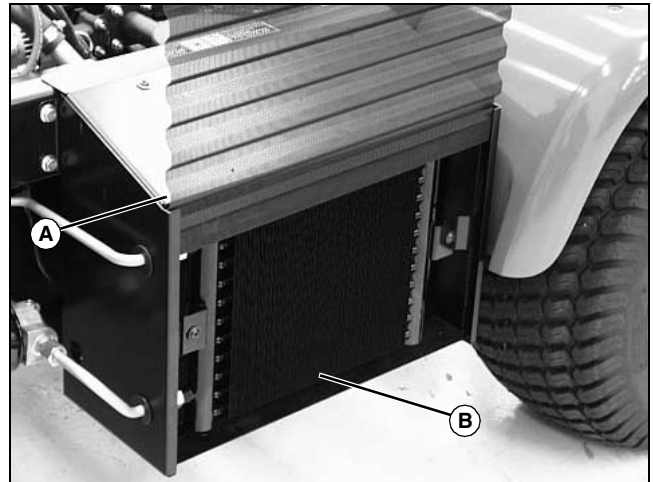
Fill Reservoir



MX24014

1. Thoroughly clean area around cap (A).
2. Remove cap from the oil reservoir tank.
3. Fill oil reservoir with recommended fluid.
4. Start engine.
5. Cycle the hydraulic PTO lever for approximately three seconds. Check for leaks.
6. Stop engine.
7. Check oil level. Adjust oil level as necessary so that oil level can be seen in sight glass (B).
8. Lower attachment or cargo box.

2. Park vehicle safely. (See Parking Safely in the Safety section.)



MX1726

3. Lift air intake screen (A) from position in front of the engine radiator.
4. Remove dirt and debris from the oil cooling coils (B) using compressed air or water. Check coils for damage.
5. Install air intake screen.
6. Lower attachment.

Cleaning Oil Cooler



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

- Clear work area of bystanders.
- Wear eye protection when using compressed air for cleaning purposes.
- Reduce compressed air pressure to 210 kPa (30 psi).

IMPORTANT: Avoid damage! Cooling fins must be clean to prevent engine from overheating and to allow adequate air intake.

NOTE: This service procedure should be performed on vehicles equipped with auxiliary hydraulic kit.

1. Raise attachment to service position. (See Using the Lift Cylinder Safety Support in the Safety section.)

Service Steering & Brakes

Brake Fluid

The following heavy duty brake fluid is **PREFERRED** for all drum and disc brakes:

- Brake Fluid - DOT3

Other brake fluids may be used if they provide the following:

- Conforms to Motor Vehicle Safety Standard No. 116.
- Minimum wet boiling point 140°C (284°F).
- Minimum dry boiling point 232°C (450°F) to prevent vapor lock.

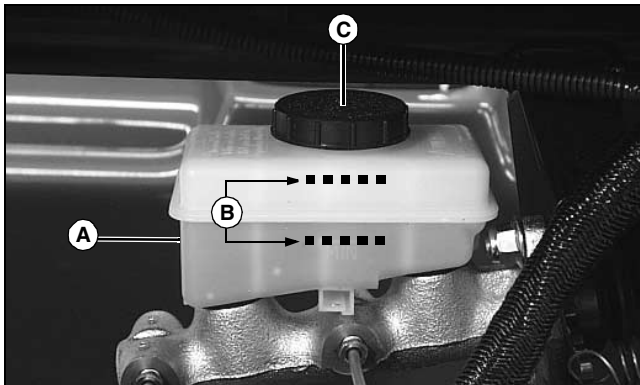
Check Brake Fluid Level

IMPORTANT: Avoid damage! Avoid contamination of the brake fluid. Thoroughly clean area around the filler cap before removing. Do not open the brake fluid reservoir cap unless absolutely necessary.

Use extreme care when filling the reservoir. Fluid spilled on painted surfaces can cause damage.

Use only brake fluid from a sealed container.

1. Park vehicle safely. (See Parking Safely in the Safety section.)
2. Pull front grill straight out and remove.



MX1682

3. Visually check the see-through reservoir (A) for the appropriate amount of fluid.
 - Fluid levels must be maintained between the "MAX" maximum and "MIN" minimum fill lines (B).
 - If the fluid level is above the "MIN" minimum fill line, Do not open the cap.
4. If fluid is low:
 - Carefully clean area around reservoir cap (C). Unscrew cap.
 - Add fluid until level is midway between the reservoir fill lines.

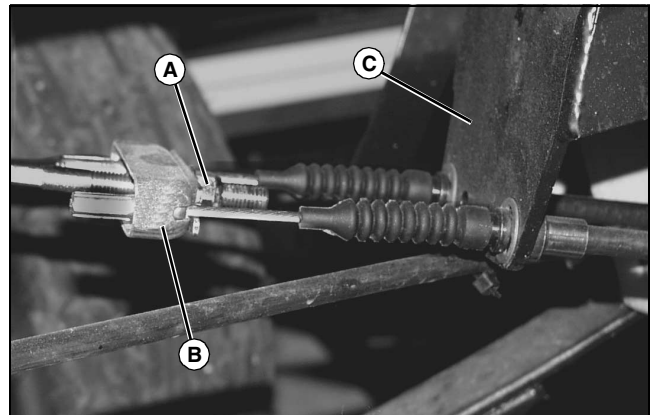
5. Install reservoir cap; wipe up any spills.
6. Install front grille.

Adjusting Park Brake

NOTE: The rear brakes must be adjusted correctly before adjusting the park brake cable

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

IMPORTANT: Avoid damage! Do not overtighten the cable, or the brakes will be preloaded.

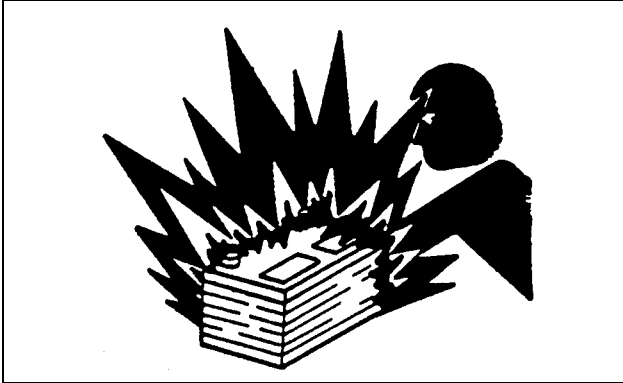


MX0948

2. Adjust the nut (A) on the brake lever cable at the equalizer (B) until the slack in the control cable slide rod and clevis (C) has been removed.
3. Check each parking brake cable to ensure the return spring is not fully compressed, if it is, the parking brake linings will need to be replaced.

Service Electrical

Service the Battery Safely



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

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

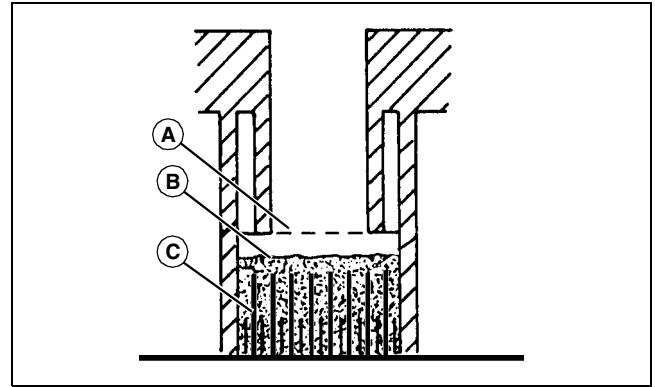
The battery produces a flammable and explosive gas. The battery may explode:

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

Checking Battery Electrolyte Level

NOTE: Add only distilled water to replace battery electrolyte.

1. Park the machine safely. (See Parking Safely in the SAFETY section.)
2. Remove battery cell caps. Make sure cap vents are not plugged.



M39772

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

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

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

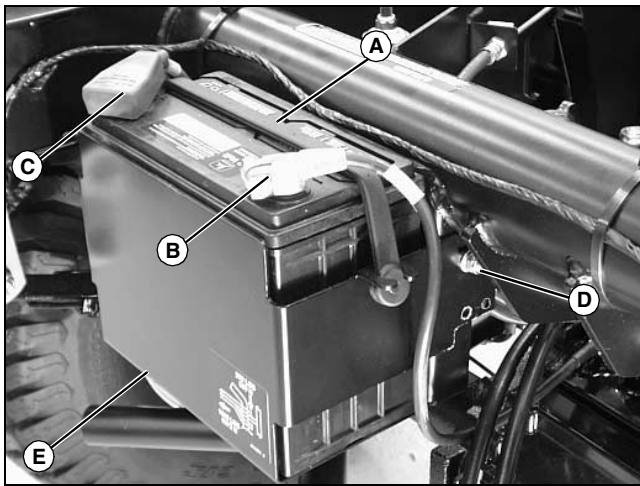
Cleaning Battery and Terminals

1. Park machine safely. (See Parking Safely in the SAFETY section.)
2. Disconnect and remove battery.
3. Wash battery with solution of four tablespoons of baking soda to one gallon of water. Be careful not to get the soda solution into the cells.
4. Rinse the battery with plain water and dry.
5. Clean terminals and battery cable ends with wire brush until bright.
6. Install battery.
7. Attach cables to battery terminals, beginning with the positive cable, using washers and nuts.
8. Apply spray lubricant to terminal to prevent corrosion.

Removing and Installing Battery

Removing Battery

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



MX7254

2. Remove strap (A) securing battery.
3. Disconnect negative (-) battery cable (B).
4. Push red cover away from positive (+) battery cable (C) and disconnect cable from battery.
5. Remove battery.

Installing Battery

NOTE: The service battery is slightly deeper and may need to have the battery bracket moved out. The battery bracket has two sets of mounting holes.

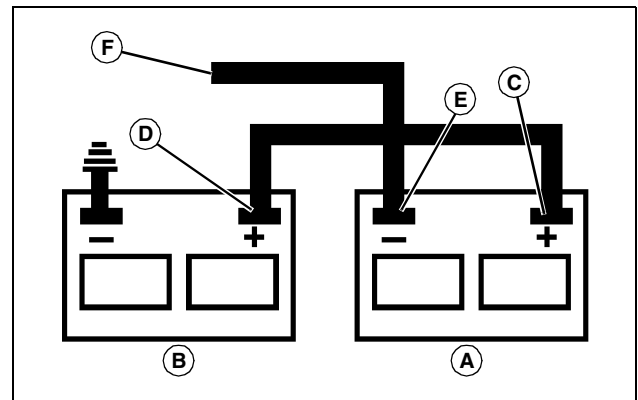
1. If replacement battery is larger than removed battery:
 - a. Remove hardware (D) from both sides and bottom of bracket.
 - b. Slide bracket (E) out to the other hole in bracket to allow the deeper service battery to fit.
 - c. Install hardware.
2. Install battery.
3. Connect positive (+) cable to battery positive (+) terminal first, then negative (-) cable to battery negative (-) terminal.
4. Apply spray lubricant on battery terminals to help prevent corrosion.
5. Install strap to secure battery.

Using Booster Battery



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

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



M71044

A - Booster Battery

B - Disabled Vehicle Battery

1. Connect positive (+) booster cable to booster battery (A) positive (+) post (C).
2. Connect the other end of positive (+) booster cable to the disabled vehicle battery (B) positive (+) post (D).
3. Connect negative (-) booster cable to booster battery negative (-) post (E).

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

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

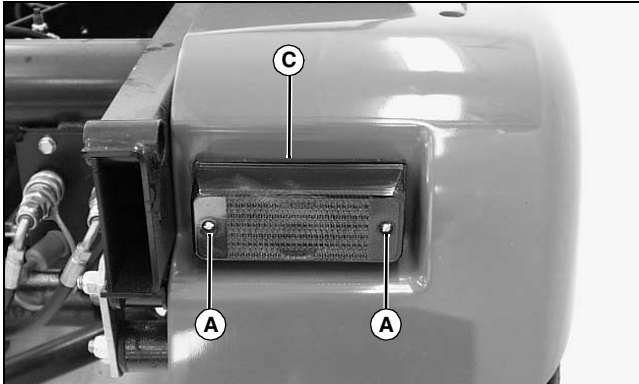
4. Connect the other end (F) of negative (-) booster cable to a metal part of the disabled machine engine block away from battery.
5. Start the engine of the disabled machine and run machine for several minutes.

Service Electrical

6. Carefully disconnect the booster cables in the exact reverse order: negative cable first and then the positive cable.

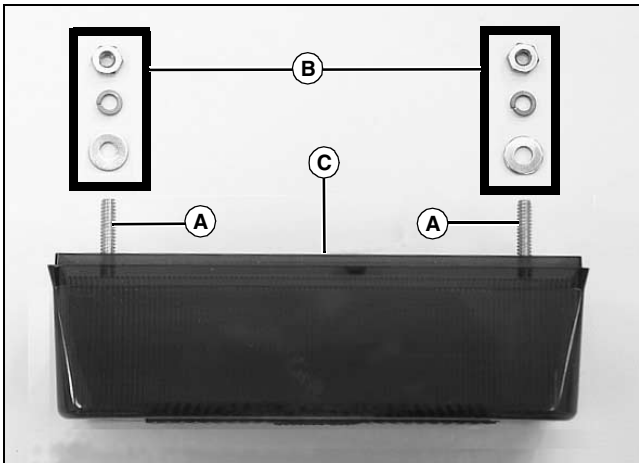
Replacing Stoplight/Taillight Bulb

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



MX1664

2. Remove two screws (A).



MX1666

3. Remove attaching hardware (B) and lens (C) from the combination stoplight/taillight assembly.

4. Remove defective bulb.

- Rotate bulb counterclockwise approximately 1/3 turn and remove from the socket.

5. Install new bulb into the socket.

- Push down top of bulb and rotate clockwise into a locked position.

6. Check operation of lights.

7. Install lens.

Replacing Indicator Light Bulb

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

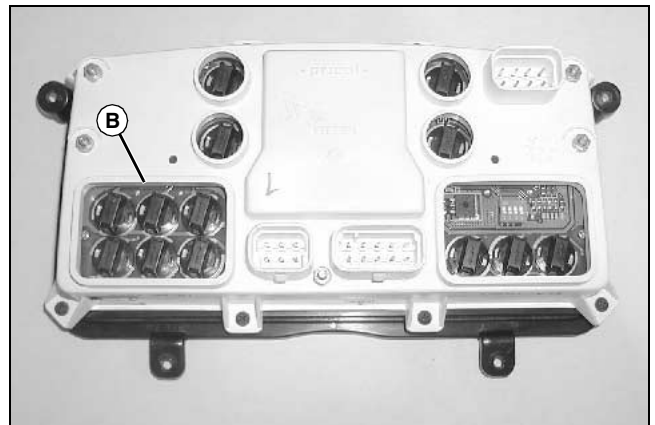
2. Remove front grille.

NOTE: Instrument panel housing removed for photo clarity.



MX1680

3. Locate rear of instrument panel housing (A).



MX23994

4. Remove rubber plugs to locate indicator light bulb assemblies.

5. Remove defective bulb assembly (B) from the instrument panel housing.

- Rotate bulb assembly counterclockwise approximately 1/3 turn and remove from the housing socket.

6. Install new bulb assembly into housing socket and rotate clockwise into locked position.

7. Check operation of lights.

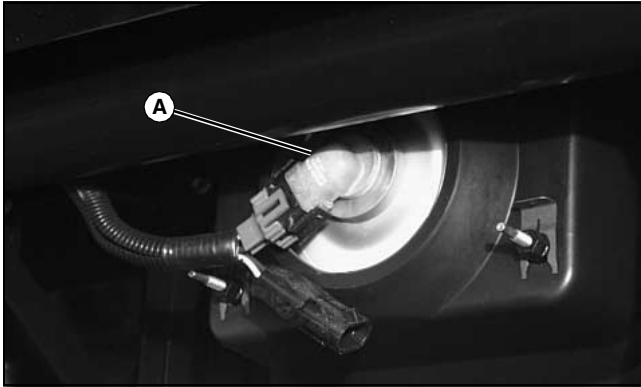
8. Install rubber plug.

9. Install front grille.

Service Electrical

Replacing Headlight Bulb

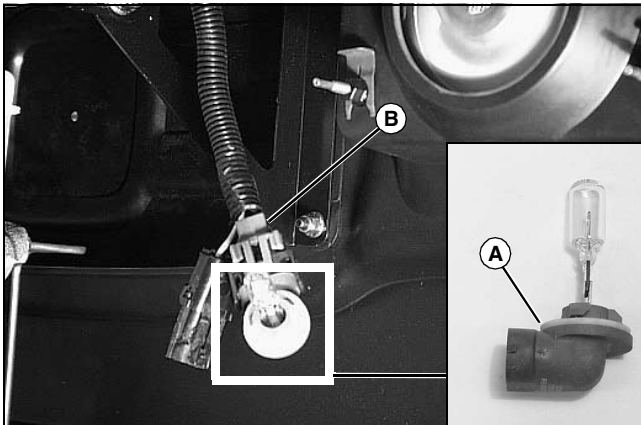
1. Park vehicle safely. (See Parking Safely in the Safety section.)
2. Locate headlight housing under the vehicle dash.



MX1683

3. Rotate bulb assembly (A) counterclockwise approximately 1/3 turn and remove from the socket.

IMPORTANT: Avoid damage! Do not touch glass headlight bulb with bare skin or bulb may fail prematurely. Use gloves or a cloth when inspecting or replacing the bulb.



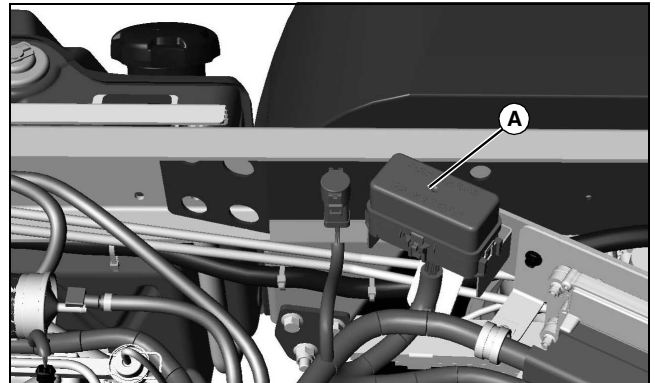
MX1648 MX1684

4. Disconnect wiring harness (B) from the bulb assembly.
5. Connect wiring harness to the replacement bulb assembly (A).
6. Install new headlight bulb assembly into housing socket and rotate into a locked position.
7. Check operation of lights.

Checking and Replacing Fuses

IMPORTANT: Avoid damage! Prevent vehicle electrical circuit damage. Make sure replacement fuse is the correct size.

1. Park vehicle safely. (See Parking Safely in the Safety section.)
2. Raise attachment to service position. (See Using the Lift Cylinder Safety Support in the Safety section.)
3. Open fuse box (A).



MX49207

4. Identify fuse, refer to the decal near the fuse box behind the controller on the diagonal frame.
5. Replace defective fuse.
 - Remove defective fuse from fuse holder.
 - Push in a new fuse.

Service Miscellaneous

Using Proper Fuel (Diesel)

Use the proper diesel fuel to help prevent decreased engine performance and increased exhaust emissions. Failure to follow the fuel requirements listed below can void your engine warranty.

Consult your local fuel distributor for properties of the diesel fuel in your area.

In general, diesel fuels are blended to satisfy the low temperature requirements of the geographical area in which they are marketed.

Diesel fuels specified to EN 590 or ASTM D975 are recommended.

Required fuel properties

In all cases, the fuel shall meet the following properties:

Cetane number of 45 minimum. Cetane number greater than 50 is preferred, especially when temperatures are below -20°C (-4°F) or elevations above 1500 m (5000 ft).

Cold Filter Plugging Point (CFPP) should be at least 5°C (9°F) below the expected lowest temperature or **Cloud Point** below the lowest ambient temperature.

Fuel lubricity should pass a maximum scar diameter of 0.45 mm as measured by ASTM D6079 or ISO 12156-1.

IMPORTANT: Avoid damage! Improper fuel additive usage may cause damage on fuel injection equipment of diesel engines.

If a fuel of low or unknown lubricity is used, addition of John Deere PREMIUM DIESEL FUEL CONDITIONER at the specified concentration is recommended.

Sulfur content

- Diesel fuel quality and fuel sulfur content must comply with all existing emissions regulations for the area in which the engine operates.
- Use only ultra low sulfur diesel (ULSD) fuel with a maximum of 0.0015% (15mg/kg) sulfur content.

IMPORTANT: Avoid damage! Do not mix diesel engine oil or any other type of lubricating oil with diesel fuel.

Using Bio-Diesel Fuel

Bio-diesel fuels may be used only if the bio-diesel fuel properties meet the latest edition of ASTM D6751, ASTM D7467, EN14214, or equivalent specification.

The current maximum allowable bio-diesel concentration is a 5% blend (also known as B5) in petroleum diesel fuel.

Concentrations up to B20 may be used if machine is modified with genuine John Deere B20 kit. Use of B6-B20

fuel will require maintenance interval changes from some components, and special procedures for fuel handling and machine storage.

To learn of any changes to the recommendations for bio-diesel usage with your diesel engine, ask your John Deere dealer or reference the Services and Support link on the John Deere Commercial and Consumer Equipment website.

Handling and Storing Diesel Fuel



CAUTION: Avoid injury! Handle fuel carefully. Do not fill the fuel tank when engine is running. Do not smoke while you fill the fuel tank or service the fuel system.

IMPORTANT: Avoid damage! Do not use galvanized containers—diesel fuel stored in galvanized containers reacts with zinc coating in the container to form zinc flakes. If fuel contains water, a zinc gel will also form. The gel and flakes will quickly plug fuel filters and damage fuel injectors and fuel pumps.

- Fill the fuel tank at the end of each day's operation to prevent water condensation and freezing during cold weather.
- When fuel is stored for an extended period or if there is a slow turnover of fuel, add a fuel conditioner to stabilize the fuel and to prevent water condensation. Contact your fuel supplier for recommendations.

Filling Fuel Tank



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

- Shut engine off before filling fuel tank.
- Allow engine to cool before refueling.
- 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.

Service Miscellaneous

IMPORTANT: Avoid damage! Dirt and water in fuel can cause engine damage:

- Clean dirt and debris from the fuel tank opening.
- Use clean, fresh, stabilized fuel.
- Fill the fuel tank at the end of each day's operation to keep condensation out of the fuel tank.
- Use a non-metallic funnel with a plastic mesh strainer when filling the fuel tank or container.

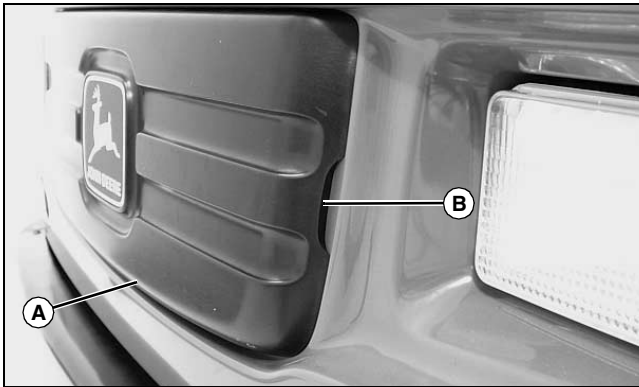
Fill fuel tank at the end of each day's operation to prevent condensation and freezing during cold weather.

1. Park machine safely. (See Parking Safely in the SAFETY section.)
2. Allow engine to cool.
3. Remove any trash from area around fuel tank cap.
4. Remove fuel tank cap slowly to allow any pressure built up in tank to escape.
5. Fill fuel tank only to bottom of filler neck. Do not overfill.
6. Install fuel tank cap.
 - Gas models: Turn cap until clicks.

Removing and Installing Front Grille

Remove Grille

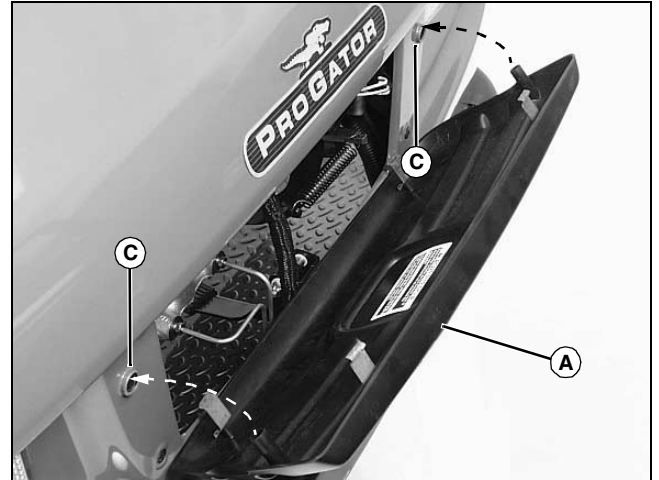
1. Park vehicle safely. (See Parking Safely in the Safety section.)



MX1719

2. Grasp each side of grille (A) at location (B).
3. Pull each side of grille firmly and evenly outward to remove.

Install Grille



MX3006

1. Align grille (A) with holes (C) in the front hood.
2. Push grille evenly forward on both ends. Make sure grille snaps into a closed position.

Removing and Installing Wheel Assembly

Removing

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



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

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

IMPORTANT: Avoid damage! Place jack stands under frame, not under transmission or engine, when raising or supporting machine.

2. Loosen lug nuts on wheel(s) being removed.
3. Raise and support machine so that the wheel being removed is just off the ground.
4. Remove lug nuts.
5. Remove wheel.

Service Miscellaneous



CAUTION: Avoid injury! Explosive separation of tire and rim parts is possible when they are serviced incorrectly:

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

6. Take wheel assembly to an authorized service dealer for repairs.

Installing

1. Apply grease to spindle shaft before installing wheel assembly.
2. Install wheel assembly with valve stem to the outside.
3. Tighten wheel nuts evenly in alternating sequence until snug.
4. Lower machine completely to the ground.
5. Tighten wheel nuts.

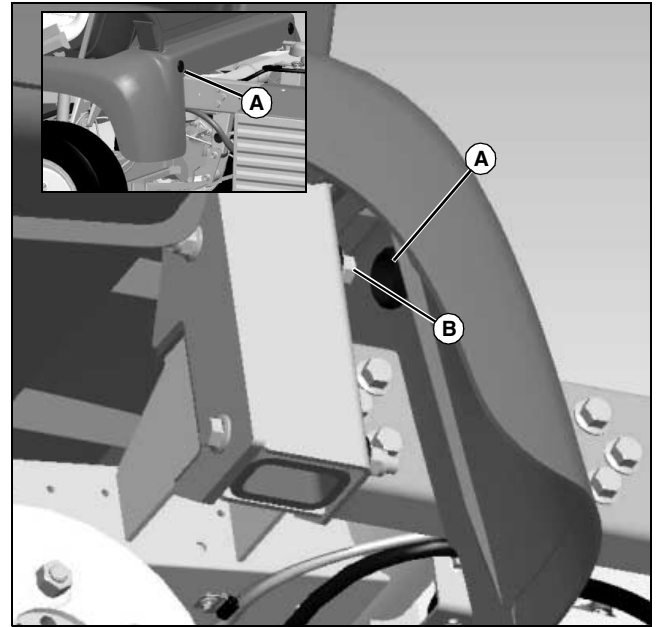
Checking and Tightening Roll-Over Protective Structure (ROPS) Hardware



CAUTION: Avoid injury! To maintain operator protection and ROPS certification:

- Do not repair or revise the ROPS.
- Any alteration of the ROPS must be approved by the manufacturer.

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



MX50079, MX50080

2. Remove plug (A) in seat base to access top bolt (B). Access bottom fasteners and top nut from below.

NOTE: Refer to the SPECIFICATIONS section for ROPS torque values.

3. Tighten each fastener on both side of ROPS to proper torque.
4. Install seat base plugs.

Tightening Wheel Hardware



MX1710

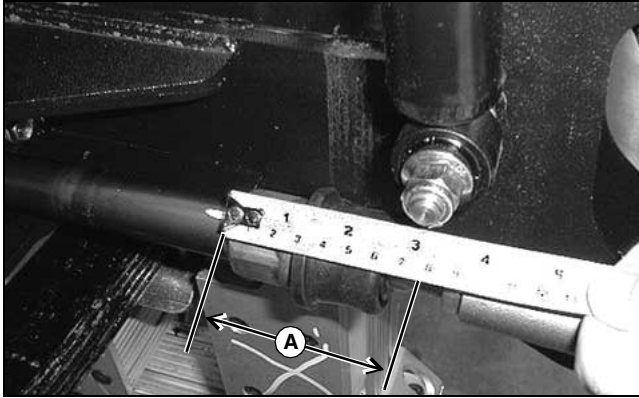
- Tighten front and rear wheel nuts (A) alternately to 115 N•m (85 lb-ft.).
- Tighten wheel hub bolts (B) to 81 N•m (60 lb-ft.).

Service Miscellaneous

Checking and Adjusting Toe-In

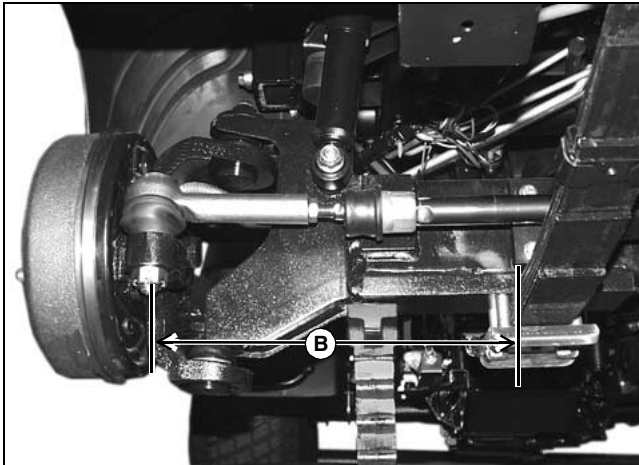
Checking Toe-In

1. Park machine on level surface.
2. Park machine safely. (See Parking Safely in the SAFETY section.)
3. Turn key switch OFF.
4. Lock park brake.



MX8779

5. Place wheels in straight-ahead position. Measure the distance (A) from the inside edge of the ball socket nut to the center of the lower shock mounting stud on each side of the vehicle. Turn the steering wheel left or right until this measurement is equal on both sides.

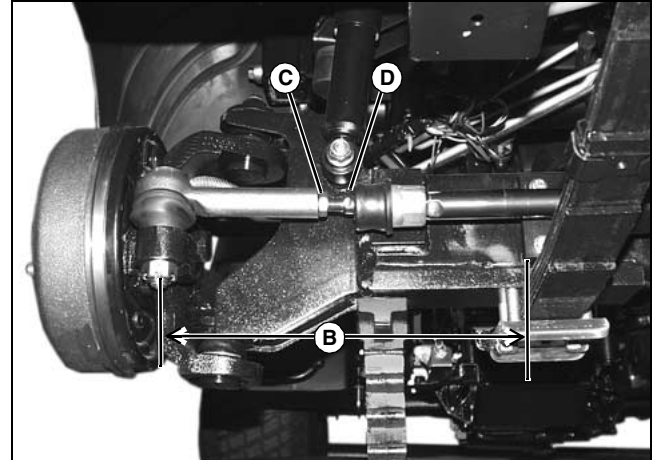


MX8764

6. Measure the distance (B) from the outside edge of the front leaf spring to the center of the tie rod bolt on each side of the vehicle. This dimension should be equal. If it is not, perform the following adjustments.

Adjusting Toe-In

Initial Adjustment



MX8764

1. If the dimension (B) from the center of the wheel to the edge of the leaf spring is not equal, loosen tie rod locknut (C) and turn link (D) until the measurement is equal. Tighten locknuts.

Final Adjustment



MX24067

1. Measure the distance (A) between the center of the tire beads (center of tire) at front of tire, hub height. Record measurement.
2. Measure the distance between the center of the tire beads (center of tire) at rear of tire, hub height. Record measurement.

Service Miscellaneous

Cleaning Plastic Surfaces

IMPORTANT: Avoid damage! Improper care of machine plastic surfaces can damage that surface:

- Do not wipe plastic surfaces when they are dry. Dry wiping will result in minor surface scratches.
- Use a soft, clean cloth (bath towel, diaper, automotive mitt).
- Do not use abrasive materials, such as polishing compounds, on plastic surfaces.

1. Rinse hood and entire machine with clean water to remove dirt and dust that may scratch the surface.
2. Wash surface with clean water and a mild liquid automotive washing soap.
3. Dry thoroughly to avoid water spots.
4. Wax the surface with a liquid automotive wax. Use products that specifically say "contains no abrasives."

IMPORTANT: Avoid damage! Do not use a power buffer to remove wax.

5. Buff applied wax by hand using a clean, soft cloth.

Cleaning and Repairing Metal Surfaces

Cleaning:

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

Repairing Minor Scratches (surface scratch):

1. Clean area to be repaired thoroughly.

IMPORTANT: Avoid damage! Do not use rubbing compound on painted surfaces.

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

Repairing Deep Scratches (bare metal or primer showing):

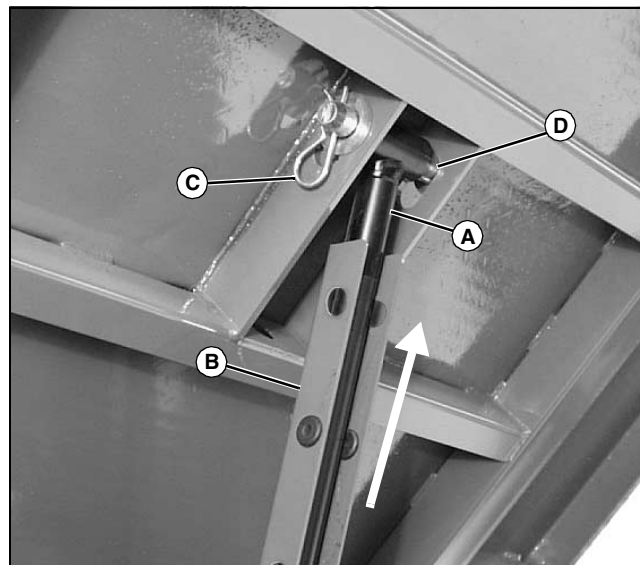
1. Clean area to be repaired with rubbing alcohol or mineral spirits.
2. Use paint stick with factory-matched colors available from your authorized dealer to fill scratches. Follow directions included on paint stick for use and for drying.
3. Smooth out surface using an automotive polishing

compound. Do not use power buffer.

4. Apply wax to surface.

Removing the Cargo Box

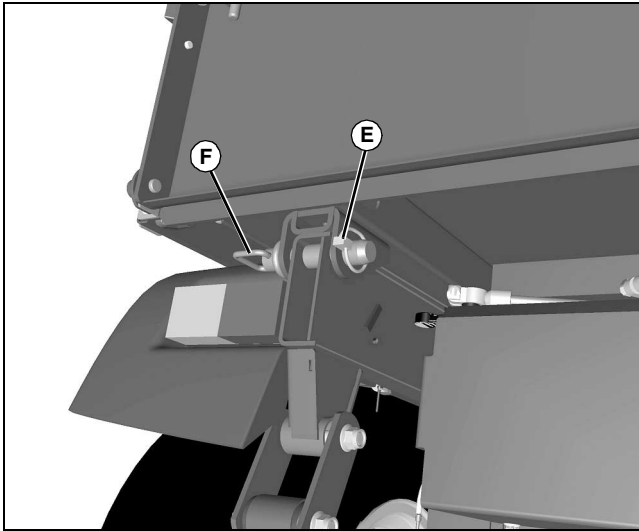
1. Empty cargo box.
2. Park vehicle on a hard, level surface.
3. Lock park brake and start engine.
4. Raise the cargo box.



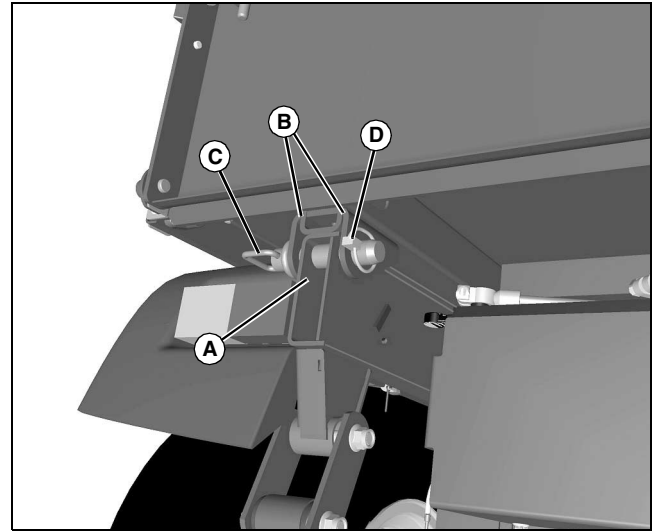
MX14983

- Extend the lift cylinder (A) until the cargo box is fully raised.
5. Stop engine.
 6. Install the lift cylinder safety support (B).
 7. Raise front of cargo box slightly with a safe lifting device.
 8. Disconnect lift cylinder from the cargo box.
 - a. Remove quick-lock pin (C), cylinder pin (D) and washer.
 - b. Install cylinder pin and quick-lock pin back into the lift cylinder for storage.
 9. Return safety support to the stored position.
 10. Start engine.
 11. Retract lift cylinder fully and stop engine.
 12. Slowly lower front of cargo box onto top of vehicle frame.

Service Miscellaneous



MX44261

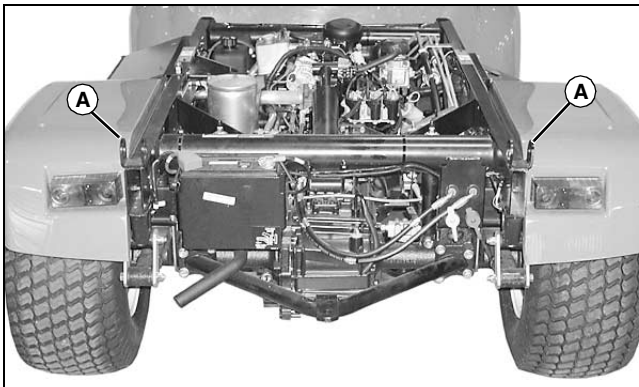


MX44261

13. Remove quick-lock pins (E) and drilled pins (F) securing the rear of the cargo box to the frame.
14. Carefully remove cargo box from the vehicle.
15. Install drilled pins and quick-lock pins back into vehicle brackets for storage.

Installing the Cargo Box

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

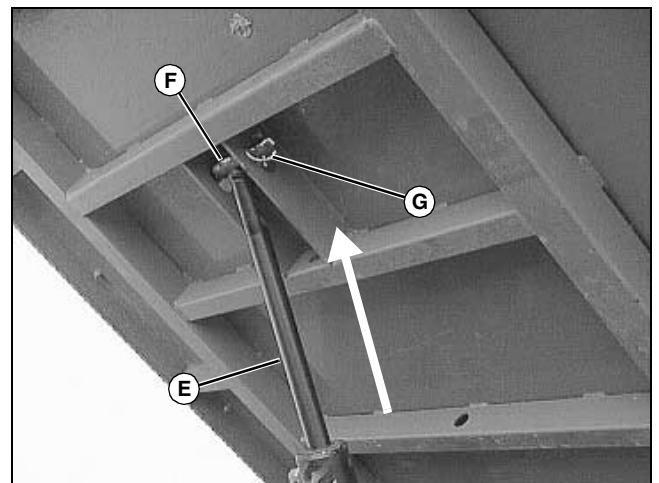


MX24130

2. Remove quick-lock pins and drilled pins stored in brackets (A) at the rear of the vehicle.
3. Carefully position cargo box on top of vehicle frame with a safe lifting device.

CAUTION: Avoid injury! Make sure cargo box is safely supported in the raised position before connecting the lift cylinder to the bottom of the cargo box.

5. Raise front of cargo box with a safe lifting device.
6. Remove quick-lock pin, cylinder pin and washer stored in the lift cylinder.
7. Start engine.



MX7257

8. Extend the lift cylinder (E) until the holes in the bottom of the cargo box frame and the top of the lift cylinder align.

Service Miscellaneous

NOTE: Washer must be installed on cylinder pin on same side as quick-lock pin.

9. Attach lift cylinder to the cargo box with cylinder pin (F) and quick-lock pin (G) and washer.
10. Disconnect lifting device.
11. Lower cargo box.
12. Stop engine.

Troubleshooting

Using Troubleshooting Chart

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

When you have checked all the possible causes listed and you are still experiencing the problem, see your authorized dealer.

Engine

IF	CHECK
Engine Will Not Crank	PTO indicator light lit - disengage hydraulic PTO lever. Defective fuse. Gearshift lever is in neutral position. Loose or corroded battery connections. Loose or corroded electrical connections. Low battery output. Sulfated or worn out battery. Starter faulty. Gas Models: Go to Blink Code Function Section.
Engine Will Not Start	Stale fuel/improper fuel/low fuel level. Fuel is dirty - replace fuel filter, clean fuel pick up, drain and clean fuel tank, refill tank with clean fresh fuel. Defective fuse. Loose or corroded electrical connections. Starter faulty. Air cleaner filter element(s) plugged. Diesel Models: Fuel shut-off valve closed. Diesel Models: Air in system. Gas Models: Spark plug wire(s) loose or disconnected. Gas Models: Check spark plug gap. Gas Models: Go to Blink Code Function Section. Valves not seating correctly - adjust valves. (See your technical manual or your John Deere dealer) Dirty or faulty fuel injectors. (See your technical manual or your John Deere dealer)

Troubleshooting

IF	CHECK
Engine Hard To Start	Stale fuel/improper fuel/low fuel level. Fuel is dirty - replace fuel filter, clean fuel pickup, drain and clean fuel tank, refill tank with clean fresh fuel. Air cleaner filter element(s) plugged. Loose or corroded electrical connections. Diesel Models: Check fuel filter sediment bowl. Diesel Models: Air in system. Gas Models: Spark plug wire(s) loose or disconnected. Gas Models: Check/replace failing spark plug. Gas Models: Check spark plug gap. Valves not seating correctly - adjust valves. (See your technical manual or your John Deere dealer) Dirty or faulty fuel injectors. (See your technical manual or your John Deere dealer)
Engine Misses Under Load	Stale fuel/improper fuel/low fuel level. Fuel is dirty - replace fuel filter, clean fuel pick up, drain and clean fuel tank, refill tank with clean fresh fuel. Air cleaner filter element(s) plugged. Diesel models: Fuel shut-off valve partially closed. Diesel Models: Air in system. Operating at too fast ground speed for conditions. Engine overload - reduce load. Gas Models: Spark plug wire(s) loose or disconnected. Gas Models: Check/replace failing spark plug. Gas Models: Check spark plug gap. Gas Models: Go to Blink Code Function section. Valves not seating correctly - adjust valves. (See your technical manual or your John Deere dealer) Dirty or faulty fuel injectors. (See your technical manual or your John Deere dealer)

Troubleshooting

IF	CHECK
Engine Overheats	Air cleaner element plugged - replace filter element. Clean radiator air intake screen, fan shroud and cooling fins. Clean oil cooler coils (optional). Check engine oil level - add oil. Low coolant level. Cooling system needs changing/flushing. Defective radiator cap. Fan fuse blown. Defective fan switch relay. Defective thermostat. Loose or defective alternator belt. Engine overload - reduce load. Gas Models: Go to Blink Code Function section. Valves not seating correctly - adjust valves. (See your technical manual or your John Deere dealer.) Dirty or faulty fuel injectors. (See your technical manual or your John Deere dealer)
Engine Will Not Slow Idle	Stale fuel/improper fuel/low fuel level. Fuel is dirty - replace fuel filter, clean fuel pick up, drain and clean fuel tank, refill tank with clean fresh fuel. Air cleaner filter element(s) plugged. Diesel Models: Fuel shut-off valve partially closed. Diesel Models: Air in system. Gas Models: Spark plug wire(s) loose or disconnected. Gas Models: Check/replace failing spark plug. Gas Models: Check spark plug gap. Gas Models: Go to Blink Code Function section. Valves not seating correctly - adjust valves. (See your technical manual or your John Deere dealer) Dirty or faulty fuel injectors. (See your technical manual or your John Deere dealer)

Troubleshooting

IF	CHECK
Engine Backfires	Stale fuel/improper fuel/low fuel level. Fuel is dirty - replace fuel filter, clean fuel pick up, drain and clean fuel tank, refill tank with clean fresh fuel. Air cleaner filter element(s) plugged. Operating at too fast ground speed for conditions. Diesel Models: Air in system. Gas Models: Spark plug wire(s) loose or disconnected. Gas Models: Check/replace failing spark plug. Gas Models: Check spark plug gap. Gas Models: Go to Blink Code Function section. Valves not seating correctly - adjust valves. (See your technical manual or your John Deere dealer) Dirty or faulty fuel injectors. (See your technical manual or your John Deere dealer)
Engine Vapor Locks	Replace fuel filter. Replace carbon canister. Check fuel lines.
Engine Runs Rough	Stale fuel/improper fuel/low fuel level. Fuel is dirty - replace fuel filter, clean fuel pick up, drain and clean fuel tank, refill tank with clean fresh fuel. Air cleaner filter element(s) plugged. Too much oil in engine - drain to correct level. Operating at too fast ground speed for conditions. Engine overload - reduce load. Engine overheating - clean radiator screen, fan shroud, cooling fins and oil cooler coils (optional). Diesel Models: Fuel shut-off valve partially closed. Diesel Models: Air in system. Gas Models: Spark plug wire(s) loose or disconnected. Gas Models: Check/replace failing spark plug. Gas Models: Check spark plug gap. Gas Models: Go to Blink Code Function section. Valves not seating correctly - adjust valves. (See your technical manual or your John Deere dealer) Dirty or faulty fuel injectors. (See your technical manual or your John Deere dealer)

Troubleshooting

IF	CHECK
Engine Knocks	Stale fuel/improper fuel. Engine oil level low. Engine overload - reduce load. Diesel Models: Injection pump out of time. (See your technical manual or your John Deere dealer) Gas Models: Go to Blink Code Function section.
Low Oil Pressure	Engine oil level low. Excessive bearing or oil pump wear. Plugged oil filter. Improper type of oil. Oil leaks.
Engine Uses Too Much Oil	Improper type of oil. Excessive ring or cylinder wear. Low engine temperature. Defective thermostat. (See your technical manual or your John Deere dealer) Gas Models: Go to Blink Code Function section. Diesel Models: Injection pump out of time. (See your technical manual or your John Deere dealer)
Engine Emits Black Or Gray Exhaust Smoke	Stale fuel/Improper fuel. Plugged air intake system. Engine overload - reduce load. Dirty or faulty fuel injectors. (See your technical manual or your John Deere dealer) Gas Models: Go to Blink Code Function section.
Engine Emits White Exhaust Smoke	Stale fuel/improper fuel. Low engine temperature. Head gasket leakage. Diesel Models: Low Cetane fuel. Gas Models: Go to Blink Code Function section.

Steering

IF	CHECK
Steering Not Working Correctly	Check tire inflation pressure. Transmission oil level low - check oil level. 4WD Models: Front axle oil level low - check oil level. Check and align toe-in adjustment. (See your technical manual or your John Deere dealer.)

Troubleshooting

Brakes

IF	CHECK
Brakes Not Working Correctly	Brake fluid level low - check fluid level. Adjust brakes. (See your technical manual or your John Deere dealer.) Replace worn brake pads. (See your technical manual or your John Deere dealer.) Repair/replace worn or damaged brake linkage. (See your technical manual or your John Deere dealer.)

Electrical System

IF	CHECK
Starter Does Not Work Or Will Not Turn Engine	Clean and tighten all electrical connections. Put gearshift lever in "neutral" position. Defective fuse. Both at starter and in fuse center. Low battery output - check electrolyte level. Charge/replace battery. Battery cables loose or corroded - clean and tighten battery cables. Failed key switch, starter motor or safety interlock switches. (See your technical manual or your John Deere dealer.)
Starter Turns Slowly	Low battery output - check electrolyte level. Low battery power - charge battery. Engine oil viscosity too heavy. Battery cables loose or corroded - clean and tighten battery cables.
Battery Low Voltage Indicator Remains On With Engine Running	Low engine speed. Defective battery Defective alternator. Loose connections or corroded connectors. Loose or defective alternator belt.
Battery Will Not Charge	Battery cables/connection loose or corroded - clean and tighten battery cables and alternator connections. Defective battery - check electrolyte level. Dead battery cell. Loose or defective alternator belt. Defective alternator.
Lights Do Not Work	Defective fuse. Loose or defective bulb. Loose switch connection.

Troubleshooting

Hydraulics

If	Check
Valve makes relief noise, or attachment does not work properly	• Weight of load versus limit, check that weight is evenly distributed. • If locks are on the sprayer. • The relief setting in the valve. (See your John Deere dealer).

Using Troubleshooting Blink Code Chart

Before attempting to troubleshoot your vehicle using Diagnostic Trouble Codes listed, ensure MIL system is working correctly. The light should illuminate when key is in RUN position, and engine is not running. This feature verifies that the lamp is in proper working order. If the light does not illuminate with vehicle key in RUN position and engine OFF, see your Technical Manual or your authorized John Deere dealer. Once the engine has started, the light should go off. If light stays on while engine is running, a current Diagnostic Trouble Code may be set or a problem may exist with the MIL electrical wiring.

The following is not a complete list of Diagnostic Trouble Codes which may display on your machine instrument panel when blink code function has been initiated. Contact your John Deere dealer when any other codes are displayed. If multiple codes are listed, always troubleshoot using the lowest first.

Blink Codes (Gas Models Only)

Blink Code	Description	Check
111	Intake Air Temperature Higher Than Expected	• Air inlet for obstructions or damaged components. • Air cleaner element(s) plugged - replace filter element. • Inspect the air inlet system for cracks or breaks that may allow unwanted under hood air in to the air inlet system. • The exhaust system for leaks. • Operating in an enclosed area.

Troubleshooting

Blink Code	Description	Check
116	Engine Coolant Temperature Higher Than Expected (Stage 1) NOTE: Engine power will automatically reduce to 50% of normal capacity.	• Air cleaner element plugged - replace filter element. • Clean radiator air intake screen, fan shroud and cooling fins. • Clean oil cooler coils (optional). • Check engine oil level - add oil. • Low coolant level. • Cooling system needs flushing. • Defective radiator cap. • Fan fuse blown. • Defective fan switch relay. • Defective thermostat. • Loose or defective alternator belt. • Operating at too fast ground speed for conditions, • Excessive load.
127	Intake Air Temperature Higher Than Expected	• The air inlet for obstructions or damaged components. • Inspect the air inlet system for cracks or breaks that may allow unwanted under hood air in to the air inlet system. • Air cleaner element(s) plugged - replace filter element. • The exhaust system for leaks. • Operating in an enclosed area.
171	Heated Oxygen Sensor Adaptive Learn High	• Oxygen sensor wires may be mis-routed and contacting the exhaust manifold. • Vacuum leaks and/or crankcase leaks. • Stale fuel/improper fuel/low fuel level. • Fuel is dirty - replace fuel filter, drain and clean fuel tank, refill tank with clean fresh fuel. • ECM grounds must be clean, tight and in the proper location. • Air cleaner element(s) plugged - replace filter element. • Open or leaking fuel injector.
172	Heated Oxygen Sensor Adaptive Learn Low	• Oxygen sensor wires may be mis-routed and contacting the exhaust manifold. • Vacuum leaks and/or crankcase leaks. • Stale fuel/improper fuel/low fuel level. • Fuel is dirty - replace fuel filter, drain and clean fuel tank, refill tank with clean fresh fuel. • ECM grounds must be clean, tight and in the proper location. • Air cleaner element(s) plugged - replace filter element. • Open or leaking fuel injector.

Troubleshooting

Blink Code	Description	Check
217	Engine Coolant Temperature Higher Than Expected (Stage 2) NOTE: Engine power will remain at 50% of normal capacity. Engine speed will be limited to 1500 RPM.	• Air cleaner element(s) plugged - replace filter element. • Clean radiator air intake screen, fan shroud and cooling fins. • Clean oil cooler coils (optional). • Check engine oil level - add oil. • Low coolant level. • Cooling system needs flushing. • Defective radiator cap. • Fan fuse blown. • Defective fan switch relay. • Defective thermostat. • Loose or defective alternator belt. • Operating at too fast ground speed for conditions. • Excessive load.
219	Max Govern Speed Override	• Vacuum leaks and/or crankcase leaks.
524	Low Oil Pressure	• Engine oil level low. • Excessive bearing or oil pump wear. • Plugged oil filter. • Improper type of oil. • Oil leaks. • Defective oil pressure switch.
562	Low System Voltage	• Battery low - charge battery. • Battery cables loose or corroded - clean and tighten battery cables. • Loose or defective alternator belt.
1111	Fuel Rev Limit Exceeded	• Vacuum leaks and/or crankcase leaks.
1112	Spark Rev Limit Exceeded	• Vacuum leaks and/or crankcase leaks.
1155	Heated Oxygen Sensor Closed Loop Multiplier High	• Oxygen sensor wires may be mis-routed and contacting the exhaust manifold. • Vacuum leaks and/or crankcase leaks. • Stale fuel/improper fuel/low fuel level. • Fuel is dirty - replace fuel filter, drain and clean fuel tank, refill tank with clean fresh fuel. • ECM grounds must be clean, tight and in the proper location. • Air cleaner element(s) plugged - replace filter element. • Air inlet for obstructions or damaged components. • Open or leaking fuel injector.

Troubleshooting

Blink Code	Description	Check
1156	Heated Oxygen Sensor Adaptive Learn Low	• Oxygen sensor wires may be mis-routed and contacting the exhaust manifold. • Vacuum leaks and/or crankcase leaks. • Stale fuel/improper fuel/low fuel level. • Fuel is dirty - replace fuel filter, drain and clean fuel tank, refill tank with clean fresh fuel. • ECM grounds must be clean, tight and in the proper location. • Air cleaner element(s) plugged - replace filter element. • Air inlet for obstructions or damaged components. • Open or leaking fuel injector.

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.
- Machine fires and structure fires can occur if a machine is stored before allowing it to cool, or if debris is not removed from around the engine and muffler, or if stored near combustible materials.
- Do not store vehicle with fuel in the tank inside a building where fumes may reach an open flame or spark.
- Allow the engine to cool before storing the machine in any enclosure.

Preparing Machine for Storage

1. Repair any worn or damaged parts. Replace parts if necessary. Tighten loose hardware.
2. Repair scratched or chipped metal surfaces to prevent rust.
3. Remove grass and debris from machine.
4. Wash the machine and apply wax to metal and plastic surfaces.
5. Run machine for five minutes to dry belts and pulleys.
6. Apply light coat of engine oil to pivot and wear points to prevent rust.
7. Clean out above hydraulic PTO control valve under seats. Apply hydraulic oil on both spools where they enter the valve block.
8. Lubricate grease points and check tire pressure.

Preparing Fuel and Engine For Storage

Fuel:

If you have been using "Stabilized Fuel," add stabilized fuel to tank until the tank is full.

NOTE: Filling the fuel tank reduces the amount of air in the fuel tank and helps reduce deterioration of fuel.

If you are not using "Stabilized Fuel:"

1. Park machine safely in a well-ventilated area. (See

Parking Safely in the SAFETY section.)

NOTE: Try to anticipate the last time the machine will be used for the season so very little fuel is left in the fuel tank.

2. Turn on engine and allow to run until it runs out of fuel.
3. For machines equipped with key switch, turn key to off position.

IMPORTANT: Avoid damage! Stale fuel can produce varnish and plug carburetor or injector components and affect engine performance.

- Add fuel conditioner or stabilizer to fresh fuel before filling tank.

4. Mix fresh fuel and fuel stabilizer in separate container. Follow stabilizer instructions for mixing.
5. Fill fuel tank with stabilized fuel.
6. Run engine for a few minutes to allow fuel mixture to circulate through carburetor on gas engine or fuel injectors on diesel engine.

Engine:

Engine storage procedure should be used when vehicle is not to be used for longer than 60 days.

1. Change engine oil and filter while engine is warm.
 2. Service air filter if necessary.
 3. Clean debris from engine air intake screen.
 4. On gas engines:
 - Remove spark plugs. Put 30 mL (1 oz) of clean engine oil in cylinder(s).
 - Install spark plugs, but do not connect spark plug wires.
 - Crank the engine five or six times to allow oil to be distributed.
 5. Clean the engine and engine compartment.
 6. Remove battery.
 7. Clean the battery and battery posts. Check the electrolyte level, if your battery is not maintenance free.
 8. Close fuel shut-off valve, if your machine is equipped.
 9. Store the battery in a cool, dry place where it will not freeze.
- NOTE: The stored battery should be recharged every 90 days.**
10. Charge the battery.

Storage

IMPORTANT: Avoid damage! Prolonged exposure to sunlight could damage the hood surface. Store machine inside or use a cover if stored outside.

11. Store the vehicle in a dry, protected place. If vehicle is stored outside, put a waterproof cover over it.

Removing Machine From Storage

1. Check tire pressure.
2. Check engine oil level.
3. Check battery electrolyte level, if your battery is not maintenance free. Charge battery if necessary.
4. Install battery.
5. On gas engines: Check spark plug gap. Install and tighten plugs to specified torque.
6. Lubricate all grease points.
7. Open fuel shut-off valve, if your machine is equipped.
8. Be sure all shields and guards or deflectors are in place.
9. Run the engine 5 minutes without any attachments running to allow oil to be distributed throughout engine.
10. Clean out above hydraulic PTO control valve under seats. Apply hydraulic oil on both spools where they enter the valve block.

Storage for BioDiesel Fuel

IMPORTANT: Avoid damage! Biodiesel fuel must be used within three months of the date of production by the fuel supplier.

Before placing a biodiesel fueled machine in long term storage (without operating the engine):

- Drain all biodiesel fuel from the fuel tank.
- Fill the tank with conventional petroleum fuel as indicated in the Operator's Manual.
- Start the engine and run for a minimum of five hours.

Specifications

Engine (Model 2030A-Diesel)

Manufacturer	Yanmar
Model Number	3TNV76
Displacement	1115 cm ³ (68 cu. in.)
Cylinders	Three
Cycle	Four
Slow Idle RPM (± 50)	1250 rpm
Fast Idle RPM (± 50)	3450 rpm
Oil Filter	Full Flow, Replaceable
Lubrication	Full Pressure
Cooling	Liquid
Air Cleaner	Canister Type w/ Secondary Element

Fuel System (Diesel Models)

Fuel Types (Recommended)

.....	Diesel No. 1 or No. 2
.....	B5 Bio-Diesel (5% Blend)

Fuel Filter	Replaceable Element
Fuel Pump	Mechanical

Electrical System

Type	Flywheel, Alternator
Alternator Capacity	55 amp
Battery Voltage	12 volts DC
Cold Cranking Amps @ 0°F	500
Ignition	CDI

Steering and Brakes

Service Brake Type	4-Wheel Hydraulic Drum
Park Brake Type	Mechanical Drum
Park Brake Actuation	Hand Lever
Steering	Hydraulic Power

Tires

Front (Standard)

Size	23x10.50-12
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Specifications

Ply Rating	4
Pressure	.82 kPa (12 psi) Minimum
Rear (Standard)	
Size	26x12.00-12
Ply Rating	4
Pressure	.82 kPa (12 psi) Minimum
Rear (Optional)	
Size	26x14.00-12
Ply Rating	4
Pressure	.82 kPa (12 psi) Minimum
Pressure with HD300 Sprayer Installed	.110 kPa (16 psi) Minimum

Transaxle

Manufacturer.....	Kanzaki
Type	5-speed, synchro-mesh
4WD Option.....	Manual Shift

Ground Speeds (All Models Equipped with Standard Rear Tires)

Gear 1	4.5 km/h (2.8 mph)
Gear 2	7.4 km/h (4.6 mph)
Gear 3	12.7 km/h (7.9 mph)
Gear 4	24.1 km/h (15 mph)
Gear 5	30.7 km/h (19.1 mph)
Reverse	5.8 km/h (3.6 mph)

Torque

Roll-Over Protective Structure (ROPS) Bolts.....	101 N•m (75 lb-ft)
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Dimensions

Ground Clearance	16.8 cm (6.6 in.)
Wheelbase (Front to Rear Axle)	167.6 cm (66 in.)
Wheel Tread, Front	123.2 cm (48.5 in.)
Wheel Tread, Rear	129 cm (50.8 in.)
Overall Length w/ Optional Cargo Box.....	328.4 cm (129.3 in.)
Overall Length w/o Optional Cargo Box.....	319.3 cm (125.7 in.)
Overall Width	158.5 cm (62.4 in.)

Specifications

Overall Height	193.7 cm (76.3 in.)
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Turning Circle Clearance

Inside Clearance Circle - 2WD	43 cm (17 in.)
Inside Clearance Circle - 4WD	175 cm (69 in.)
Outside Clearance Circle - 2WD	498 cm (196 in.)
Outside Clearance Circle - 4WD	630 cm 248 in.)

Base Machine Weight*

Model 2030A 2WD with Standard Suspension	927 kg (2044 lb)
Model 2030A 4WD with Standard Suspension	856 kg (1887 lb)
Model 2030A 2WD with Standard Suspension and Auxiliary Hydraulic	870 kg (1917 lb)
Model 2030A 4WD with Standard Suspension and Auxiliary Hydraulic	928 kg (2045 lb)

*Vehicle full of fluids; without operator, passenger or attachments.

Fluid Capacities

Fuel Tank	30.3 L (8 gal)
Cooling System (Total).	3.8 L (4.1 qt)
Crankcase with Oil Filter (Diesel Models)	2.1 L (2.2 qt)
Transmission Oil System (Total).	10.6 L (2.8 gal)
Front Axle Oil (4WD Models)	3.3 L (3.5 qt)

Towing

Maximum Towing Capacity (Rear Hitch)	680.4 kg (1500 lb)
Maximum Tongue Weight (Rear Hitch).	90.7 kg (200 lb)

Cargo Box

Overall Length, Inside	165 cm (65 in.)
Overall Width, Inside	128.4 cm (50.5 in.)
Overall Depth, Inside	26.8 cm (10.5 in.)
Weight	146.5kg (323 lb)
Bedliner	Optional
Automatic Tailgate Release	Optional

Specifications

Recommended Lubricants

Engine Oil - Diesel Models.....	John Deere PLUS 50™ SAE 15W-40
.....	John Deere TORQ-GARD SUPREME™ SAE 5W-30
Engine Coolant.....	John Deere COOL-GARD II™ PREMIX
.....	John Deere COOL-GARD PREMIX
.....	John Deere COOL-GARD PG PREMIX
Transaxle/Hydraulic Oil.....	John Deere J20C HY-GARD™
.....	John Deere BIO HY-GARD™
Grease.....	John Deere Multi-Purpose HD Lithium Complex Grease
.....	John Deere Multi-Purpose SD Polyurea Grease

Sound Measurements

Averaged Sound Level at Work Station According to 776/311/EEC Annex I

2030A 84.5 +/- 1 dB(A) at 3500 r/min engine speed and ground speed of 19 mph

Vibration Measurements

Hand/Arm Measured Per ISO5349

2030A.....2.2 +/- 0.1 m/s² at 3500 r/min engine speed and ground speed at 19 mph

Whole Body Measured Per ISO 2631/1

2030A..... 0.8 +/- 0.1 m/s² at 3500 r/min engine speed and ground speed at 19 mph

NOTE: The value listed above represents the weighted root means square acceleration to which the whole body is subjected on a representative machine during actual transport conditions. The acceleration value depends upon the roughness of the ground, the speed at which the Gator is operating, the operator weight and driving habits. Measurements were obtained through actual field data according to STD Procedure in EN1033 & EN1032.

Declaration of Conformity

EC Declaration of Conformity

Deere & Company

Moline, Illinois U.S.A.

The person named below declares that

Machine Type: ProGator / Diesel / (2WD DSL, 4WD DSL)
Model: 2030A
Serial Number: See Product Identification Page

fulfills all relevant provisions and essential requirements of the following directives:

DIRECTIVE	NUMBER	CERTIFICATION METHOD
Machinery Directive	98/37/EC (Until Dec. 28, 2009)	Self-Certification
Machinery Directive	2006/42/EC	Self-Certification
Electromagnetic Compatibility Directive	2004/108/EC	Self-Certification

Name and address of the person in the community authorized to compile the technical construction file:

Brigitte Birk
Deere & Company European Office
John Deere Strasse 70
Mannheim, Germany D-68163
EUConformity@JohnDeere.com

Signed:



The image shows a handwritten signature in black ink, enclosed within a rectangular border. The signature appears to be 'R. Frank'.

Place of declaration: Fuquay-Varina, NC USA

Date of declaration: 03 October 2006

Manufacturing unit: John Deere Turf Care

Name: Reinhard Frank

Title: Manager European Product Conformity Turf & Utility Platform

Index

A

Accelerator Cable, Adjusting	48
Air Cleaner Element, Servicing	38
Air Intake Hose, Hydraulic Hoses, Radiator Hoses and Clamps, Check	40
Air Restriction Indicator, Checking	38
Alternator Belt, Checking and Adjusting	42
Alternator Belt, Replacing	43
Auxiliary Hydraulics, Servicing	50

B

Battery and Terminals, Cleaning	54
Battery, Removing and Installing	54
Battery, Service Safely	54
Battery, Using Booster	55
Belt, Checking and Adjusting Alternator	42
Belt, Replacing Alternator	43
Bio-Diesel Fuel, Using	58
Brake Fluid, Checking	53
Brake, Using the Park	16
Bulb, Replacing Headlight	57
Bulb, Replacing Indicator Light	56
Bulb, Replacing Stoplight, Taillight	56

C

Cargo Box Tailgate, Operating the	28
Cargo Box Tailgate, Removing the	28
Cargo Box, Installing	63
Cargo Box, Loading	26
Cargo Box, Raising and Lowering	27
Cargo Box, Removing	62
Cleaning Radiator Screen	37
Clutch Cable, Adjusting	48
Clutch Pedal, Using	21
Coils, Cleaning Oil Cooling	52
Coolant, Engine	40
Cooling System, Service Safely	40
Cooling System, Servicing	41

D

Daily Operating Checklist	14
Diesel Fuel, Using	58
Differential Lock Lever, Using the	16
Disengaged Vertical Mode, Using	22
Drive Shaft (4WD Models), Lubricating the	34
Dust Unloading Valve, Cleaning	38

E

Electrolyte Level, Checking Battery	54
Element, Servicing Air Cleaner	38
Engine Oil - Diesel Model	35
Engine and Fuel Storage, Preparing	75
Engine with Operator Off the Seat, Operating Vehicle	24
Engine, Starting the	23

Engine, Stopping	24
------------------------	----

F

Filter, Changing Engine Oil	36
Filter, Changing Transmission Oil and	45
Fluid, Brake	53
Fluid, Checking Brake	53
Front Axle Oil	47
Front Axle Oil (4WD Models), Changing the	48
Front Axle Oil Level (4WD Models), Checking the	48
Fuel Safety	10
Fuel Sediment Bowl (Diesel Models), Servicing	42
Fuel Shut-Off Valve (Diesel Models), Using	16
Fuel Storage	75
Fuel Tank, Filling	58
Fuses, Checking and Replacing	57

G

Gear Lockout, Using	18
Gearshift Lever, Using	21
Governor Mode, Using	23
Grease	34
Grille, Removing and Installing Front	59

H

Hydraulic Hoses, Radiator Hoses and Clamps, Check Air Intake Hose	40
Hydraulic Oil	50
Hydraulic Oil Level, Check	50

I

Instrument Panel	19
------------------------	----

L

Lever, Using the Differential Lock	16
Lift Cylinder Lever, Using	17
Lift Cylinder Safety	10
Light Switch, Using	16
Literature, Service	30

M

Metal Surfaces, Repairing and Cleaning	62
--	----

N

Neutral Switch, Testing	15
-------------------------------	----

O

Oil - Diesel Model, Engine	35
Oil (4WD Models), Changing the Front Axle	48
Oil Cooling Coils, Cleaning	52
Oil Level (4WD Models), Checking the Front Axle	48
Oil Level, Check Hydraulic	50
Oil Level, Checking Transmission	45
Oil Strainer, Clean Transmission	47
Oil and Filter, Changing Transmission	45
Oil, Changing Engine	36
Oil, Checking Engine	35

Index

Oil, Front Axle	47
Oil, Hydraulic	50
Oil, Transmission	45
Operating Checklist, Daily	14

P

PTO Control Lever, Using	17
Panel, Instrument	19
Park Brake Switches, Testing Seat and	15
Park Brake, Adjusting	53
Park Brake, Using the	16
Parking Safely	6
Parts Catalog	30
Parts, Replacement	30
Payload Capacity	27
Plastic And Painted Surfaces, Avoid Damage To	14
Plastic Surfaces, Cleaning	62

R

ROPS, Checking and Adjusting Hardware	60
Radiator Hoses, Air Intake Hose, Hydraulic Hoses Check Hoses and Clamps	40
Radiator Screen, Cleaning	37

S

Safety Systems, Testing	15
Safety, Operating	5
Safety, Tire	10
Seat Belts, Using	14
Seat and Park Brake Switches, Testing	15
Seats, Adjusting	14
Service Literature	30
Service Safety	9
Storage, Preparing Fuel and Engine for	75
Storage, Preparing Machine for	75
Storage, Removing Machine from	76
Storing Safety	75
Strainer, Clean Transmission Oil	47
Switch, Testing Auxiliary Hydraulic System	15
Switch, Testing Neutral	15

T

Tailgate, Operating the Cargo Box	28
Tailgate, Removing the Cargo Box	28
Technical Manual	30
Testing Auxiliary Hydraulic System Switch	15
Testing Neutral Switch	15
Testing Seat and Park Brake Switches	15
Throttle Governor Control, Using (Diesel Units Only)	22
Throttle Mode, Using	22
Toe-In, Checking and Adjusting	61
Towing Loads	25
Towing, Utility Vehicle	24
Transmission Oil Level, Checking	45
Transmission Oil Strainer, Clean	47
Transmission Oil and Filter, Changing	45
Transmission, Operating	21

Transporting, Utility Vehicle	25
Troubleshooting Chart	65

W

Wheel & Brake Drum Hardware, Tightening	60
Wheel Assembly, Removing and Installing	59

Notes

Notes

Notes

Service Statement

John Deere Parts



We help minimize downtime by putting genuine John Deere parts in your hands in a hurry.

That's why we maintain a large and varied inventory - to stay a jump ahead of your needs.

Well-Trained Technicians



School is never out for John Deere service technicians.

Training schools are held regularly to be sure our personnel know your equipment and how to maintain it.

Result? - Experience you can count on!

The Right Tools



Precision tools and testing equipment enable our Service Department to locate and correct troubles quickly... to save you time and money.

Prompt Service



Our goal is to provide prompt, efficient care when you want it and where you want it.

We can make repairs at your place or at ours, depending on the circumstances: see us, depend on us.

JOHN DEERE SERVICE SUPERIORITY: We'll be around when you need us.

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