



1600 TurboWide Area Mower



JOHN DEERE



OPERATOR'S MANUAL

Wide Area Mower 1600 Turbo

OMTCU40056 ISSUE J5 (ENGLISH)

CALIFORNIA

Proposition 65 Warning

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

If this product contains a gasoline engine:

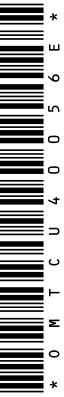
WARNING

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

The State of California requires the above two warnings.
Additional Proposition 65 Warnings can be found in this manual.

John Deere Turf Care

North American Version
Printed in U.S.A.



Introduction

Thank You for Purchasing a John Deere Product

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

Using Your Operator's Manual

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

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

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

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

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

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

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

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

Special Messages

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



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

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

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

Attachments for Your Machine

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

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

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

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Product Identification

Record Identification Numbers

Wide Area Mower 1600 Turbo PIN (400001-)

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

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

DATE OF PURCHASE:

DEALER NAME:

DEALER PHONE:

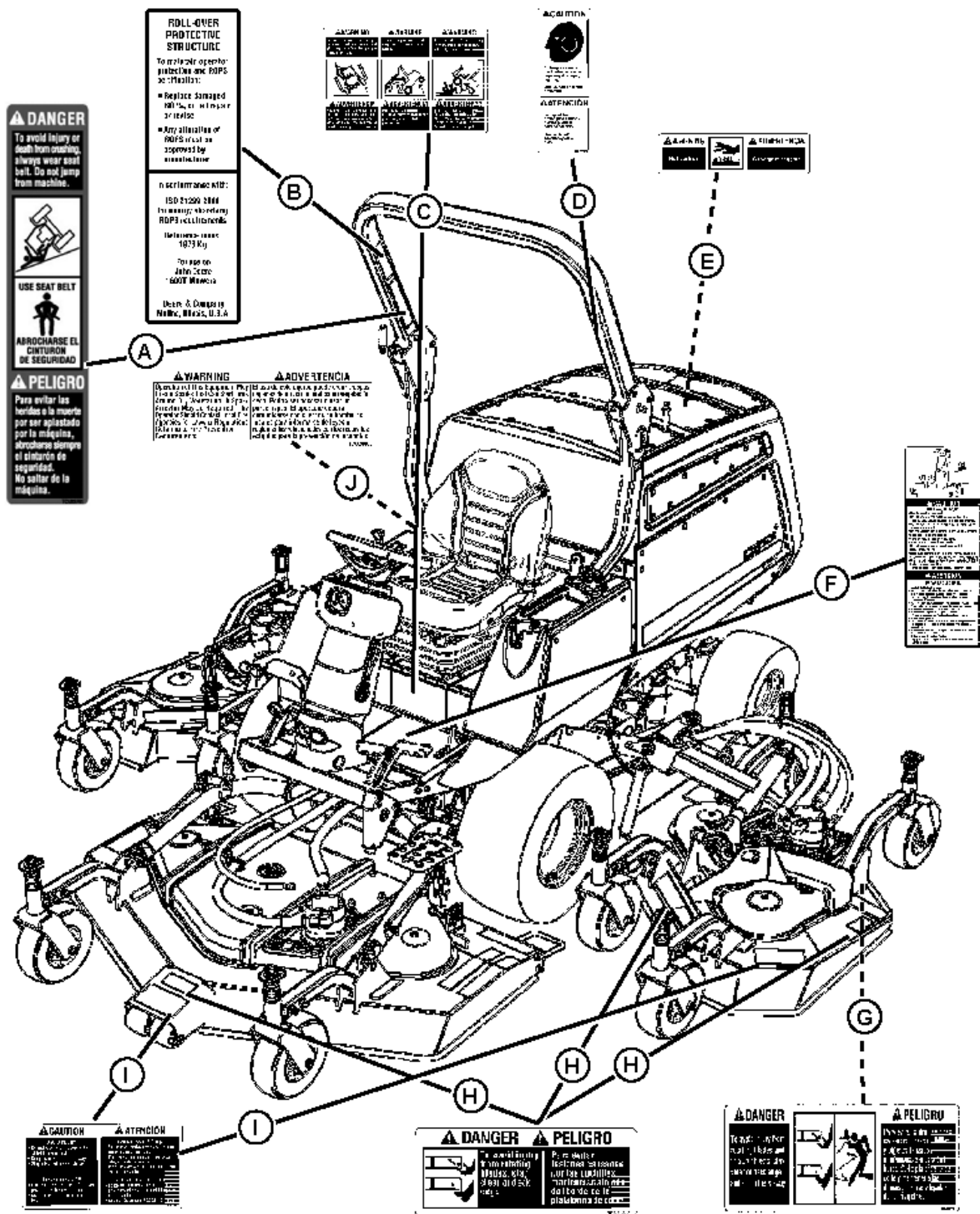


TCAL44807—UN—01APR13

PRODUCT IDENTIFICATION NUMBER (A):

ENGINE SERIAL NUMBER (B):

Safety Label Location



TCT011351—UN—15OCT15

- | | |
|-------------------------------------|---------------------|
| A —DANGER TCU22761 | F —CAUTION TCU20349 |
| B —ROPS TCU28257/TCU28258 (Spanish) | G —DANGER MT4080 |
| C —WARNING TCU51730 | H —DANGER M131739 |
| D —CAUTION TCU27738 | I —CAUTION M134073 |
| E —WARNING M134406 | J —WARNING TCU26800 |

Safety Labels Text

Understanding The Machine Safety Labels

DANGER



MXAL42363—UN—22MAY13

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

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

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

Replace missing or damaged safety labels. Use this operator's manual for correct safety label placement.

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

French or Spanish Safety Labels and Operator's Manual

Operator's manuals and safety labels with content in French or Spanish are available for this machine through authorized John Deere dealers. See your John Deere dealer.

NOTE: Both text and no-text labels are shown. Your machine is only equipped with one of these types of labels.

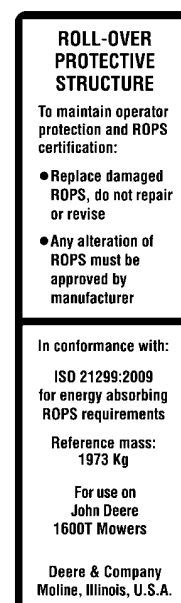


TCAL44810—UN—01APR13

Use Seat Belt

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

ROLL-OVER PROTECTIVE STRUCTURE



TCAL44811—UN—01APR13

Safety Labels Text

ROLL-OVER PROTECTIVE STRUCTURE

To maintain operator protection and ROPS certification:

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

In conformance with:

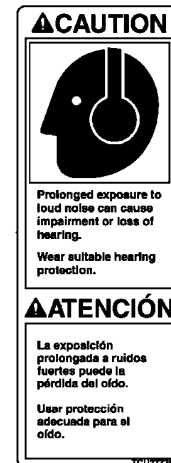
ISO 21299:2009 for energy absorbing ROPS requirements:

Reference mass: 1973 Kg

For use on John Deere 1600T Mowers

Deere & Company, Moline, Illinois, U.S.A.

CAUTION

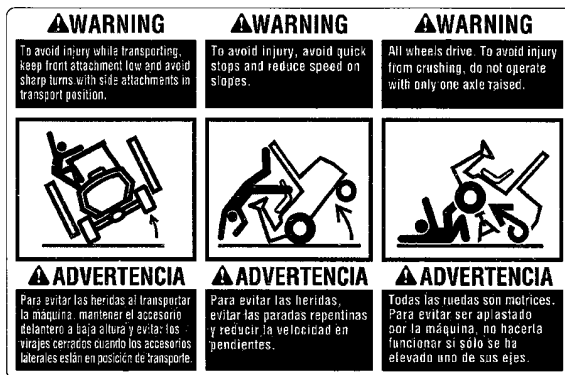


TCAL44813—UN—01APR13

Prolonged exposure to loud noise can cause impairment or loss of hearing.

Wear suitable hearing protection.

WARNING



TCAL44812—UN—01APR13

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

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

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

WARNING



TCAL44814—UN—01APR13

Hot surface.

Safety Labels Text

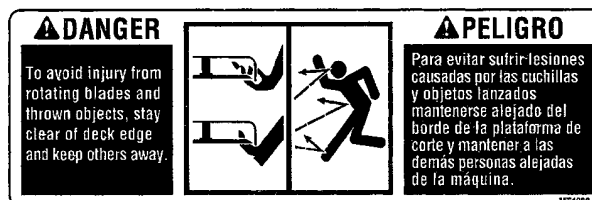
CAUTION



TCAL44818—UN—01APR13

- Read operator's manual.
- Do not operate the machine without guards, shields, and safety devices in place and working.
- Do not operate the machine when children and/or others are around.
- Do not operate the machine unless you are trained.
- Look behind before backing.
- Keep people a safe distance away.
- Stay clear of power driven parts.
- Do not operate where machine could tip.
- Never carry riders.
- Roll-Over Protection Structure (ROPS) should be installed unless prohibited by low clearance operation.
- Use seat belts unless machine is operated without ROPS.
- Before leaving machine:
 - Stop engine.
 - Lock park brake.
 - Remove key

DANGER



TCAL44819—UN—01APR13

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

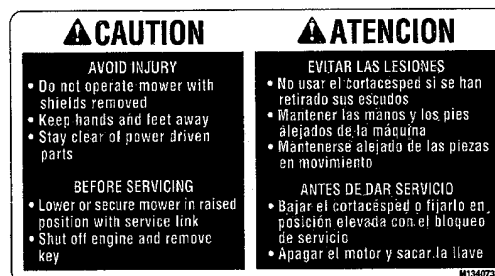
DANGER



TCAL44820—UN—01APR13

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

CAUTION



TCAL44821—UN—01APR13

CAUTION

Avoid Injury

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

Before Servicing

Safety Labels Text

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

WARNING

▲WARNING	▲ADVERTENCIA
Operation of This Equipment May Create Sparks That Can Start Fires Around Dry Vegetation. A Spark Arrestor May be Required. The Operator Should Contact Local Fire Agencies for Laws or Regulations Relating to Fire Prevention Requirements.	El uso de este equipo puede crear chispas capaces de iniciar incendios en vegetación seca. Podría ser necesario usar un parachispas. El operador deberá comunicarse con cuerpos de bomberos locales para informarse de leyes o reglamentos relacionados con los requisitos exigidos para la prevención de incendios.

TCU26800

TCT011352—UN—14OCT15

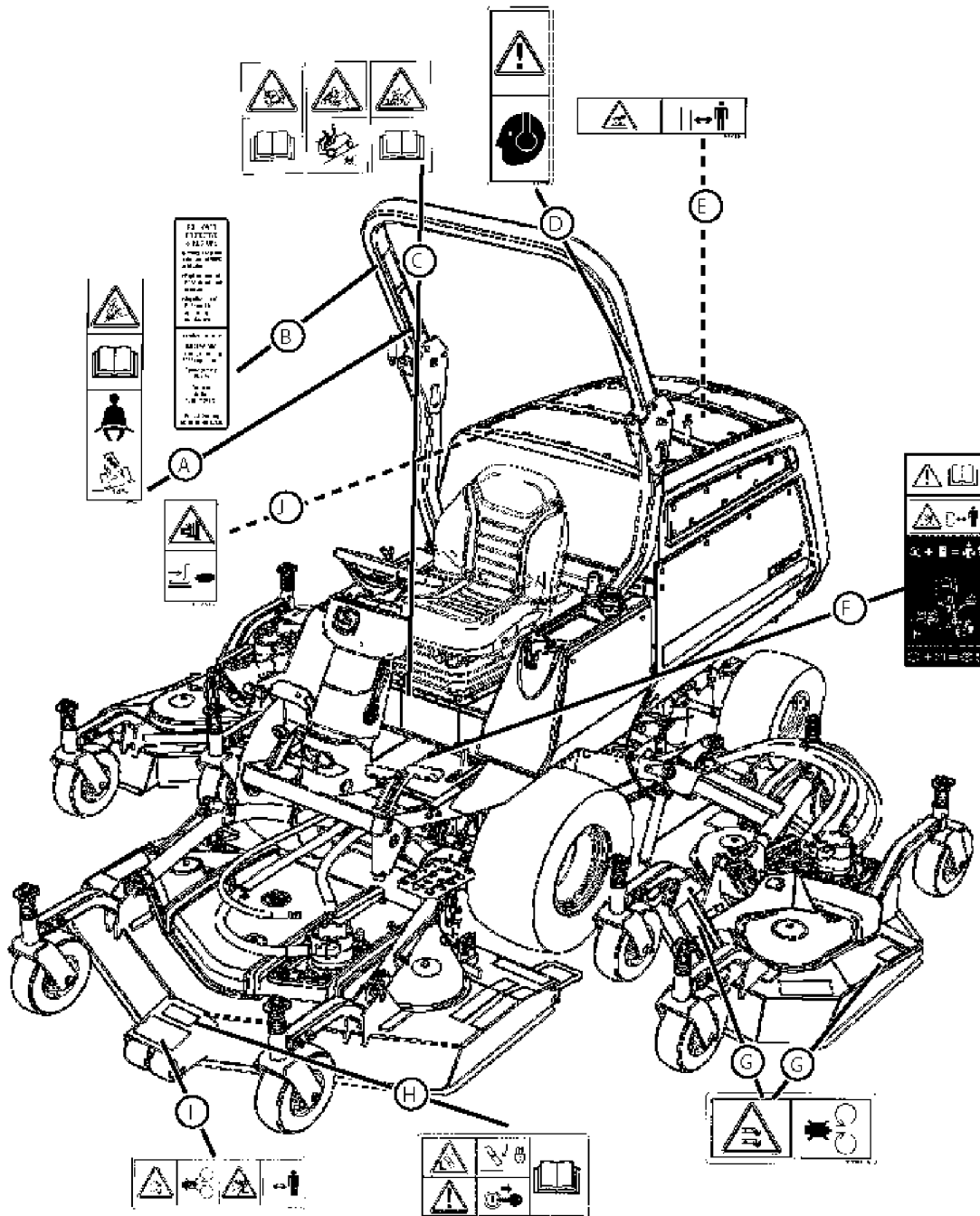
Operation of This Equipment May Create Sparks That Can Start Fires Around Dry Vegetation. A Spark Arrestor May be Required. The Operator Should Contact Local Fire Agencies for Laws or Regulations Relating to Fire Prevention Requirements.

Certification

Your product has been certified for compliance with American National Standards Institute B-71.4, Safety Specifications for Commercial Turf care Equipment.

Safety Labels No-Text

Safety Label Location



TCT011353—UN—14OCT15

- A —Avoid Injury from Tipping MT6349
- B —Roll-Over Protective Structure TCU28257/TCU28258
(English/Spanish)
- C —Avoid Injury from Transporting TCU51737
- D —Avoid Injury From Exposure to Loud Noise TCU27739
- E —Hot Surface M137684

- F —Read Operator's Manual, Avoid Injury From Thrown Objects
TCU16115
- G —Avoid Injury From Rotating Blades M118041
- H —Avoid Injury - Keep Shields in Place TCU51737
- I —Avoid Injury From Rotating Blades and Thrown Objects
M118040
- J —Avoid Injury from Pinch Point TCU51771

Safety Labels No-Text

Understanding The No-Text Machine Safety Labels

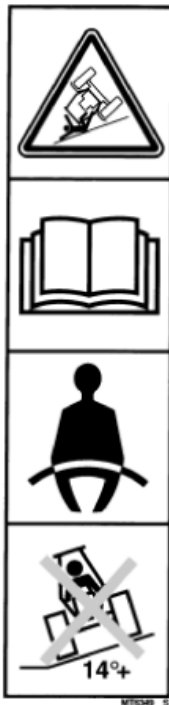


TCT005498—UN—11SEP12

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.

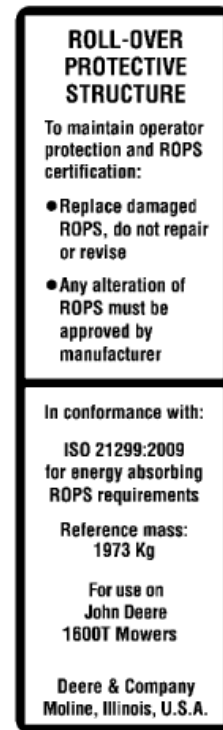
Avoid Injury From Tipping



TCT008746—UN—17SEP13

- Do not drive where machine could slip or tip. Do not jump from machine.
- Read Operator's Manual before operating machine.
- To avoid injury from crushing always wear seat belt.
- Do not drive on a slope with more than a 14° incline.

Roll-Over Protective Structure



TCT008748—UN—17SEP13

To maintain operator protection and ROPS certification:

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

In conformance with:

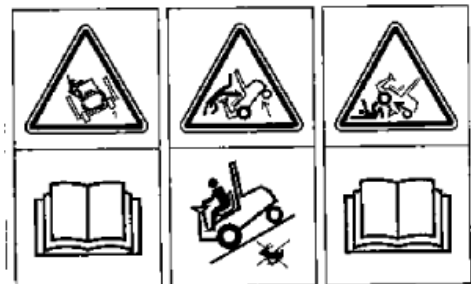
ISO 21299:2009 for energy absorbing ROPS requirements:

Reference mass: 1973 Kg

For use on John Deere 1600T Mowers

Deere & Company, Moline, Illinois, U.S.A.

Avoid Injury From Transporting



TCT008749—UN—17SEP13

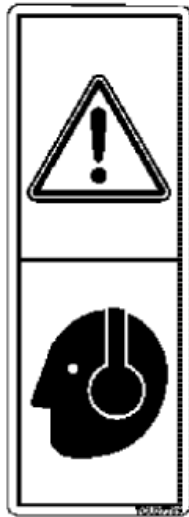
To avoid injury while transporting, keep front attachment low and avoid sharp turns with side attachments in transport position.

Safety Labels No-Text

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

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

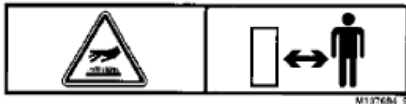
Avoid Injury from Exposure to Loud Noise



TCT008750—UN—17SEP13

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

Hot Surface



TCT008751—UN—17SEP13

Hot surface

Read Operator's Manual, Avoid Injury From Thrown Objects



TCT008756—UN—17SEP13

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

Avoid Injury From Rotating Blades

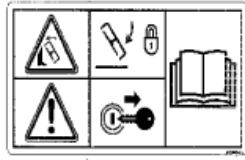


TCT008757—UN—17SEP13

- Do not put hands or feet under or into mower when engine is running.
- Do not operate mower without discharge chute or entire grass catcher in place.

Safety Labels No-Text

Avoid Injury Keep Shields In Place



TCT008759—UN—17SEP13

Avoid Injury

- Do not operate mower with shields removed.
- Keep hands and feet away from mower deck when engine is running.
- Remove ignition key before leaving mower.
- Blades are sharp, use caution when deck is raised.
- Read, understand, and follow all instructions in the operator's manual.

Before Servicing

- Lower or secure mower in raised position with service lock.
- Shut off engine and remove ignition key before performing service.

Avoid Injury From Rotating Blades And Thrown Objects



TCT008754—UN—17SEP13

- Do not put hands or feet under or into mower when engine is running.
- Do not operate mower without discharge chute or entire grass catcher in place.
- Before mowing, clear area of objects that may be thrown by blade.
- Stay clear while engine is running.

Avoid Injury from Pinch Point



TCU51771 S

TCT008758—UN—17SEP13

Hands or fingers may be pinched when lowering seat. Keep hands and fingers away from back of seat when lowering.

Safety

Operator Training Required

- Read the operator's manual, attachment manuals, and other training material carefully. If the operator or mechanic cannot read English, it is the owner's responsibility to explain this material to them. This publication is available in other languages.
- Become familiar with the safe operation of the equipment, operator controls, and safety signs.
- All operators and mechanics should be trained. The owner of the machine is responsible for training the users.
- Never let children or untrained people operate or service the equipment. Local regulations may restrict the age of the operator.
- The owner/user can prevent and is responsible for accidents or injuries occurring to themselves, other people, or property.
- Operate the machine in an open, unobstructed area under the direction of an experienced operator.
- Test drive area with attachment lowered, if equipped, but not running. Slow down when you travel over rough ground.

Preparation

- Evaluate the terrain to determine what accessories and attachments are needed to properly and safely perform the job. Only use accessories and attachments approved by the manufacturer.
- Wear appropriate clothing including hard hat, safety glasses and hearing protection. Long hair, loose clothing or jewelry may get tangled in moving parts.
- Inspect the area where the equipment is to be used and remove all objects such as rocks, toys and wire which can be thrown by the machine.
- Use extra care when handling gasoline and other fuels. They are flammable and vapors are explosive.
 - a. Use only an approved container.
 - b. Never remove gas cap or add fuel when engine is running. Do not smoke.
 - c. Never refuel or drain the machine indoors.
- Check that the operator's presence controls, safety switches and shields are attached and functioning properly. Do not operate unless they are functioning properly.

Operating Safely

- Never run an engine in an enclosed area where dangerous carbon monoxide fumes can collect.
- Only operate in good light, keeping away from holes, and hidden hazards.

- Be sure that all drives are in neutral and parking brake is engaged before starting engine. Only start engine from the operator's position. Use seat belts if provided.
- Slow down and use extra care on hillsides. Be sure to travel in the recommended direction on hillsides. For this machine, drive up and down hillsides, not across. Turf conditions can affect the machine's stability. Use caution while operating near drop-offs.
- Slow down and use caution when making turns and when changing directions on slopes.
- Never raise cutting units with reels rotating or deck with the blades running.
- Never operate without PTO shield or other guards securely in place. Be sure that all interlocks are attached, adjusted properly, and functioning properly.
- If equipped with a mower deck, never operate with the discharge deflector raised, removed, or altered, unless using a grass catcher. Do not operate mower without discharge chute or entire grass catcher in place.
- Do not change the engine governor setting or overspeed the engine. Operating the engine at excessive speed can increase the hazard of personal injury.
- Stop on level ground, lower implements, disengage drives, engage parking brake, and shut off engine before leaving the operator's position for any reason including emptying the grass catchers, clearing blockages or unclogging discharge chutes.
- Stop equipment and inspect blades or reels after striking objects or if an abnormal vibration occurs. Make necessary repairs before resuming operations.
- Keep hands and feet away from the cutting units.
- Look behind and down before backing up to be sure of a clear path.
- Never carry passengers and keep pets and bystanders away.
- Slow down and use caution when making turns and crossing roads and sidewalks. Stop blades or reels if not mowing. Watch for traffic when operating near or crossing roadways.
- If equipped with a mower deck, be aware of the mower discharge direction and do not point it at anyone.
- Do not operate the machine while under the influence of alcohol or drugs.
- Use care when loading or unloading the machine into or off of a trailer or truck.
- Use care when approaching blind corners, shrubs, trees, or other objects that may obscure vision.
- Inspect machine before you operate. Be sure that hardware is tight. Repair or replace damaged, badly worn, or missing parts. Be sure that guards and shields are in good condition and fastened in place. Make any necessary adjustments before you operate.

Safety

- If equipped with a mower deck, before using, always visually inspect to see that the blades, blade bolts and the mower assembly are not worn and damaged. To preserve balance replace worn and damaged blades and bolts in sets.
- Keep safety labels visible when installing accessories and attachments.
- Do not wear radio or music headphones. Safe service and operation require your full attention.
- When machine is left unattended, stored, or parked, lower the cutting units or mower deck unless a positive mechanical lock is used.

Using a Spark Arrestor

The California Public Resources Code, section 4442.5 provides as follows:

No person shall sell, offer for sale, lease, or rent to any person any internal combustion engine subject to Section 4442 or 4443, and not subject to Section 13005 of the Health and Safety Code, unless the person provides a written notice to the purchaser or bailee, at the time of sale or at the time of entering into the lease or rental contract, stating that it is a violation of Section 4442 or 4443 to use or operate the engine on any forest-covered, brush-covered, or grass-covered land unless the engine is equipped with a spark arrestor, as defined in Section 4442, maintained in effective working order or the engine is constructed, equipped, and maintained for the prevention of fire pursuant to Section 4443. Cal. Pub. Res. Code 4442.5.

Other states or jurisdictions may have similar laws. A spark arrestor for your machine may be available from your authorized dealer. An installed spark arrestor must be maintained in good working order by the operator.

Maintenance and Storage



TCT005713—UN—01FEB14

- Never operate machine in a closed area where dangerous carbon monoxide fumes can collect.
- Disengage drives, lower implement, lock parking brake, stop engine and remove key or disconnect spark plug (for gas engines). Wait for all movement to stop before adjusting, cleaning or repairing.
- Clean grass and debris from cutting units, drives, mufflers, and engine to help prevent fires. Clean up oil or fuel spillage.
- Let engine cool before storing and do not store near flame.
- Shut off fuel while storing or transporting. Do not store fuel near flames or drain indoors.
- Park machine on level ground. Never allow untrained personnel to service machine. Understand service procedure before doing work.
- Use jack stands or lock service latches to support components when required. Securely support any machine elements that must be raised for service work.
- Before servicing machine or attachment, carefully release pressure from any components with stored energy, such as hydraulic components or springs.
- Release hydraulic pressure by lowering attachment or cutting units to the ground or to a mechanical stop and move hydraulic control levers back and forth.
- Disconnect battery or remove spark plug (for gas engines) before making any repairs. Disconnect the negative terminal first and the positive last. Reconnect positive first and negative last.
- If equipped with mower decks, use care when checking blades. Wrap the blades or wear gloves, and use caution when servicing them. Only replace blades. Never straighten or weld them.
- If equipped with reel mowers, use care when checking reels. Wear gloves, and use caution when servicing them.
- Keep hands, feet, clothing, jewelry and long hair away from moving parts. If possible, do not make adjustments with the engine running.
- Charge batteries in an open well ventilated area, away from spark and flames. Unplug charger before connecting or disconnecting from battery. Wear protective clothing and use insulated tools.
- Keep all parts in good working condition and all hardware tightened. Replace all worn or damaged decals.
- If equipped with mower decks, keep all nuts and bolts tight, especially blade attachment bolts, to be sure the equipment is in safe working condition.
- Check brake operation frequently. Adjust and service as required.
- On multi-bladed machines, take care as rotating one blade or reel can cause other blades or reels to rotate.
- If equipped with reel mowers, be careful during adjustment of the machine to prevent entrapment of the fingers between moving blades and fixed parts of the machine.

Safety

Checking Mowing Area



MXAL41932—UN—22MAY13

- Clear mowing area of objects that might be thrown. Keep people and pets out of mowing area.
- Low-hanging branches and similar obstacles can injure the operator or interfere with mowing operation. Before mowing, identify potential obstacles such as low-hanging branches, and trim or remove those obstacles.
- Study mowing area. Set up a safe mowing pattern. Do not mow where traction or stability is doubtful.
- Test drive area with mower lowered (if equipped) but not running. Slow down when you travel over rough ground.
- Survey all mowing sites to determine which slopes are safe for machine operation and which slopes should be maintained through other maintenance techniques.

Parking Safely

1. Stop machine on a level surface, not on a slope.
2. Disengage mower blades or any other attachments.
3. Lower attachments to the ground.
4. Lock the park brake.
5. Stop the engine.
6. Remove the key.
7. Wait for engine and all moving parts to stop before you leave the operator's seat.
8. Close fuel shutoff valve, if your machine is equipped.
9. Disconnect the negative battery cable or remove the spark plug wire(s) (for gasoline engines) before servicing the machine.

Rotating Blades Are Dangerous



TCT012793—UN—06JUL15

- Rotating cutting units can cut off arms and legs, and throw objects. Failure to observe safety instructions could result in serious injury or death.
- Keep hands, feet, and clothing away from rotating cutting units when engine is running.
- Be alert at all times, drive forward and in reverse carefully. People, especially children can move quickly into the mowing area before you know it.
- Before backing up, stop cutting units and look down and behind the machine carefully, especially for children.
- Do not mow in reverse.
- Shut off cutting units when you are not mowing.
- Park machine safely before leaving the operator's station for any reason including emptying the grass catchers or unplugging the chute, if equipped.
- Keep all parts of the body away from the cutting edges. Residual hydraulic pressure or other stored energy source in the system can cause cutting unit rotation when the blockage is released.
- If applicable, use a long-handled brush when applying reel sharpening compound.
- Keep bystanders away from cutting units when adjusting or servicing.
- Always wear gloves when manually rotating cutting units.
- Manually rotating one cutting unit can cause another to rotate if operated hydraulically.
- The cutting unit should stop in approximately five seconds when disengaged. If you believe that your cutting units may not be stopping in that period of time, take your machine to your authorized dealer where they can safely check and service your machine.

Protect Children

- Death or serious injury can occur when young children associate having fun with a lawn mowing machine simply because someone has given them a ride on a machine.
- Children are attracted to lawn mowing machines and mowing activities. They don't understand the dangers

Safety

of rotating blades or the fact that the operator is unaware of their presence.

- Children who have been given rides in the past may suddenly appear in the mowing area for another ride and be run over or backed over by the machine.
- Tragic accidents with children can occur if the operator is not alert to the presence of children, especially when a child approaches a machine from behind. Before and while backing up, stop mower blades and look down and behind the machine carefully, especially for children.
- Never carry children on a machine or attachment, even with the blades off. Do not tow children in a cart or trailer. They can fall off and be seriously injured or interfere with safe machine operation.
- Never use the machine as a recreational vehicle or to entertain children.
- Never allow children or an untrained person to operate the machine. Instruct all operators not to give children a ride on the machine or in an attachment.
- Keep children indoors, out of the mowing area, and in the watchful eye of a responsible adult, other than the operator, when a mower is being operated.
- Stay alert to the presence of children. Never assume that children will remain where you last saw them. Turn the machine off if a child enters the work area.

Avoid Tipping



TCAL42360—UN—08MAR13

Identify Slopes for Safe Operation

- Establish your own special procedures and rules for operating on slopes. These procedure must include a survey of all mowing sites to determine which slopes are safe for machine operation. Always use common sense and good judgement when performing this survey.
- Lay a straight piece of sturdy lumber 1.2 m (4 ft) long on the slope and measure the angle of the slope with an angle indicator or protractor level.
- Never mow or operate machine on slope angles greater than 25°.
- Exceeding the maximum recommended slope angle of 25° increases the risk of rollover accidents that can result in serious injury or death.
- Always consider potential turf conditions and slope angles when determining the risk of loss-of-control and tip-over accidents.
- On slope angles of 15° or less the risk of rollover is low, but as the slope angle increases to the John

Deere recommended maximum of 25° the risk increases to a moderate level.

Operate Safely on Slopes

- Slopes are a major factor related to loss-of-control and tip-over accidents, which can result in severe injury or death. Operation on all slopes requires extra caution.
- Use lower speeds while mowing and operating on slopes.
- If you feel uneasy on a hillside, do not mow it.
- Mow up and down slopes, not across.
- Watch for holes, ruts, bumps, rocks, or other hidden objects. Uneven terrain could overturn the machine. Tall grass can hide obstacles.
- Choose a low ground speed so you will not have to stop or shift while on a slope.
- Rollover can occur before the tires lose traction.
- Do not mow or operate machine on wet grass. Tires may lose traction. Tires may lose traction on slopes even though the brakes are functioning properly.
- Avoid starting, stopping or turning on a slope. If the tires lose traction, disengage the cutting units and proceed slowly, straight down the slope.
- Keep all movement on slopes slow and gradual. Do not make sudden changes in speed or direction, which could cause the machine to roll over.
- Do not mow near drop-offs, ditches, embankments, or bodies of water. The machine could suddenly roll over if a wheel goes over the edge or the edge caves in. Leave a safety area between the machine and any hazard.
- Drive machine very slowly and avoid quick stops when cutting units are removed.
- Keep cutting units lowered to ground while operating on slopes. Raising cutting units while operating on slopes can cause machine to become unstable.
- Transport machine with cutting units lowered to improve stability.

Use Seat Belt Properly



TCAL42361—UN—08MAR13

- 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.
- Do not use a seat belt if operating with an optional folding ROPS in the folded position. Return the folding ROPS to the upright position as soon as possible.
- Never modify, disassemble or attempt to repair the seat belt.

Safety

- 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.

Towing Loads Safely

- Stopping distance increases with speed and weight of towed load. Travel slowly and allow extra time and distance to stop.
- Total towed weight must not exceed combined weight of pulling machine, ballast and operator. Use counterweights or wheel weights as described in the attachment or pulling machine operator's manual.
- Excessive towed load can cause loss of traction and loss of control on slopes. Reduce towed weight when operating on slopes.
- Never allow children or others in or on towed equipment.
- Use only approved hitches. Tow only with a machine that has a hitch designed for towing. Do not attach towed equipment except at the approved hitch point.
- Follow the manufacturer's recommendations for weight limits for towed equipment and towing on slopes.
- If you cannot back up a slope with a towed load, the slope is too steep to operate on with the towed load. Reduce the towed load or do not operate.

- Do not turn sharply. Use additional caution when turning or operating under adverse surface conditions. Use care when reversing.
- Do not shift to neutral and coast downhill.

Stay Clear of Rotating Drivelines



TCAL41687—UN—21JAN13

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.

Keep Riders Off

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

Driving Safely on Public Roads

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

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

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.

Safety

Wear Appropriate Clothing



TCAL25962—UN—24MAY12

- Always wear safety goggles, or safety glasses with side shields when operating the machine.
- Wear close fitting clothing and safety equipment appropriate for the job.
- While mowing, always wear substantial footwear and long trousers. Do not operate the equipment when barefoot or wearing open sandals.
- Wear a suitable protective device such as earplugs. Loud noise can cause impairment or loss of hearing.

Avoid High Pressure Fluids



TCAL25960—UN—24MAY12

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

Prevent Fires

- Please review these recommendations with all operators. See your John Deere dealer with questions.
- Always follow all safety procedures posted on the machine and in this operator manual. Before carrying

out any inspection or cleaning always shut off engine, set parking brake and remove ignition key.

- Besides routine maintenance, one of the best ways to keep your John Deere equipment running efficiently and to reduce fire risk is to regularly remove debris buildup from the machine.
- After operating, allow machine to cool in an open area before cleaning or storing. Do not park machine near flammable materials such as wood, cloth or chemicals, or near an open flame or other sources of ignition, such as a water heater or furnace.
- Completely remove any combustible materials from equipment before storing, by emptying any grass catcher bags, containers and cargo boxes.
- Debris can accumulate anywhere on the machine, especially on horizontal surfaces. Remove grass and debris completely from engine compartment, muffler area, and from on top of the mower deck both before and after operating machine. Additional cleaning may be necessary when mowing or mulching in dry conditions.
- In addition to cleaning machine before using and storing, keeping engine area clean provides the greatest impact on fire prevention. Other areas requiring regular inspection and cleaning include behind wheel rims, wire harness, hose or line routing, mowing attachments, etc. Compressed air, leaf blowers, or high pressured water assists in keeping these areas clean.
- Frequency of these inspections and cleaning will vary depending on a number of factors including operating conditions, machine configuration, operating speeds and weather conditions particularly dry, hot and windy conditions. When you are operating in these conditions, inspect and clean these areas frequently throughout the day.
- Excess lubrication or fuel/oil leaks or spills on the machine can also serve as collection sites for debris. Prompt machine repair and oil and fuel clean-up reduces the potential for debris collection.
- Bearing failures or overheating can result in a fire. To reduce this risk, always follow the instructions in the machine operator's manual regarding lubrication intervals and locations. Contact your local dealer if you have any questions about the lubrication intervals or location and if any unusual noises are coming from areas where bearings might be located. Washing the machine while warm may also reduce bearing life and increase potential for premature bearing failure.
- Always shut off fuel when storing or transporting machine, if the machine has a fuel shutoff.
- Check fuel lines, tank, cap, and fittings frequently for cracks or leaks. Replace if necessary.

Safety

Tire Safety



TCAL25965—UN—24MAY12

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



TCAL25966—UN—24MAY12

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

- Extinguish all cigarettes, cigars, pipes, and other sources of ignition.
- Use only an approved fuel container. Use only non-metal, portable fuel containers approved by the Underwriter's Laboratory (U.L.) or the American Society for Testing & Materials (ASTM). If using a funnel, make sure it is plastic and has no screen or filter.
- Never remove the fuel tank cap or add fuel with the engine running. Allow engine to cool before refueling.
- Never add fuel to or drain fuel from the machine indoors. Move machine outdoors and provide adequate ventilation.

- Clean up spilled fuel immediately. If fuel is spilled on clothing, change clothing immediately. If fuel is spilled near machine, do not attempt to start the engine but move the machine away from the area of spillage. Avoid creating any source of ignition until fuel vapors have dissipated.
- Never store the machine or fuel container where there is an open flame, spark, or pilot light such as on a water heater or other appliance.
- Prevent fire and explosion caused by static electric discharge. Static electric discharge can ignite fuel vapors in an ungrounded fuel container.
- Never fill containers inside a vehicle or on a truck or trailer bed with a plastic liner. Always place containers on the ground away from your vehicle before fueling.
- Remove fuel-powered equipment from the truck or trailer and refuel it on the ground. If this is not possible, then refuel such equipment with a portable container, rather than from a fuel dispenser nozzle.
- Keep the nozzle in contact with the rim of the fuel tank or container opening at all times until the fueling is complete. Do not use a nozzle lock-open device.
- Never overfill fuel tank. Replace fuel tank cap and tighten securely.
- Replace all fuel container caps securely after use.
- For gasoline engines, do not use gas with methanol. Methanol is harmful to your health and to the environment.

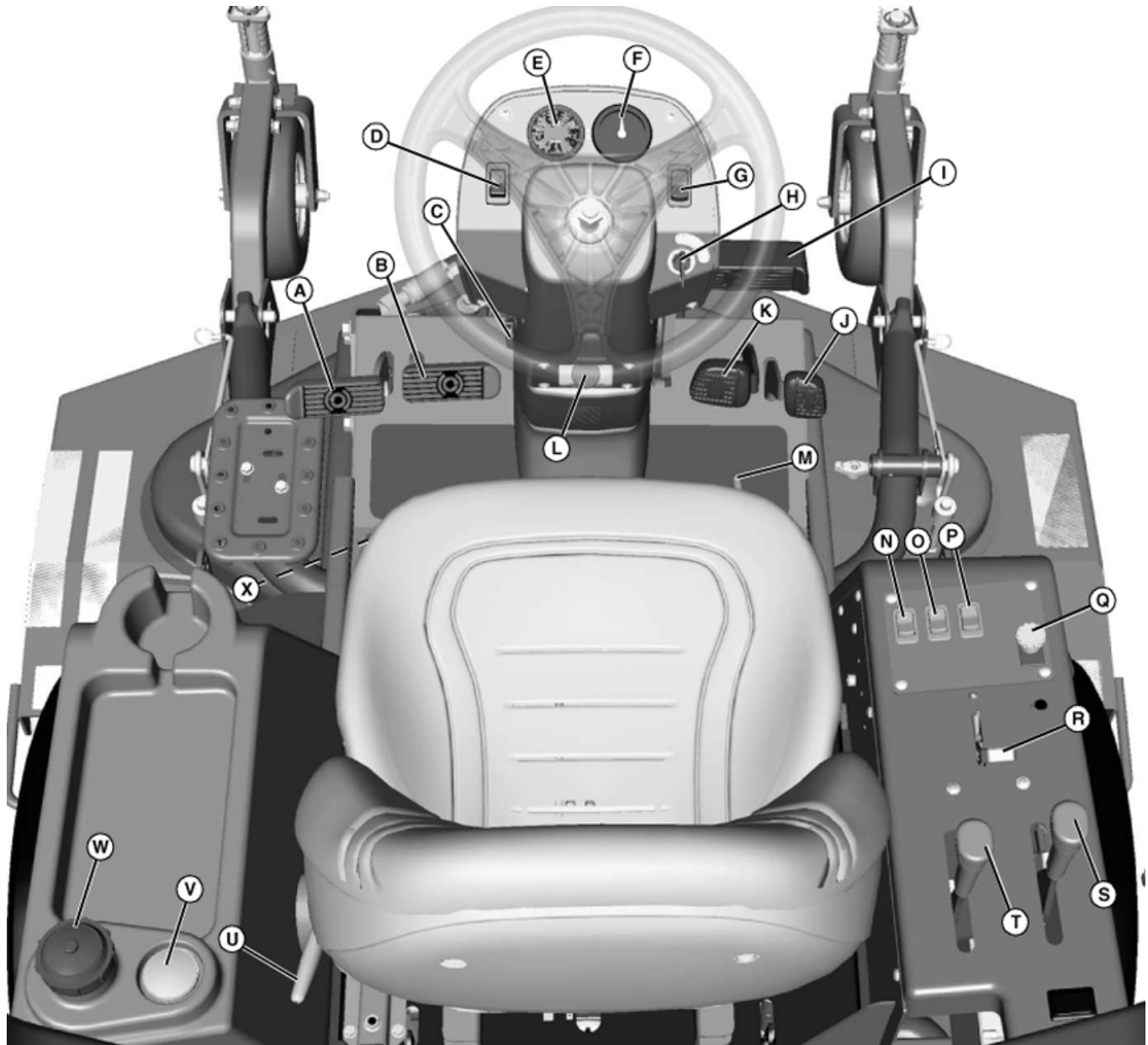
Handling Waste Product and Chemicals

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

- Do not use beverage containers for waste fluids - someone may drink from them.
- See your local Recycling Center or authorized dealer to learn how to recycle or get rid of waste products.
- A Material Safety Data Sheet (MSDS) provides specific details on chemical products: physical and health hazards, safety procedures, and emergency response techniques. The seller of the chemical products used with your machine is responsible for providing the MSDS for that product.

Operating Controls

Operator Station Controls



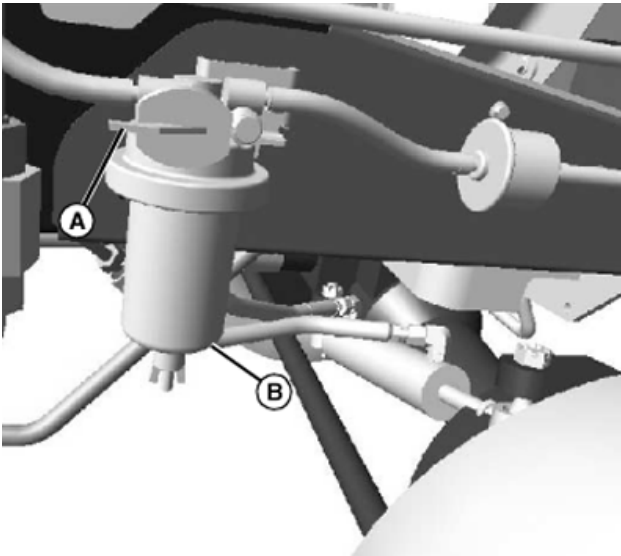
TCAL44823—UN—01APR13

- A —Left Turn Brake Pedal
- B —Right Turn Brake Pedal
- C —Steering Column Tilt Lock
- D —Headlight Switch
- E —Indicator Lights
- F —Engine Coolant Temperature Gauge
- G —Cruise Control Switch
- H —Key Switch
- I —Park Brake Pedal
- J —Reverse Drive Pedal
- K —Forward Drive Pedal
- L —Park Brake Knob

- M —Seat Adjustment Lever
- N —Left Mower Deck Lift Lever
- O —Front Mower Deck Lift Lever
- P —Right Mower Deck Lift Lever
- Q —PTO Switch
- R —Throttle Lever
- S —Speed Range Lever
- T —Four Wheel Drive Lever
- U —Seat Backrest Tilt Lever
- V —Fuel Gauge
- W —Fuel Cap
- X —Differential Lock Pedal

Operating Controls

Miscellaneous Controls



TCAL44829—UN—01APR13

A — Fuel Shutoff Valve

B — Water Separator

Operating Machine

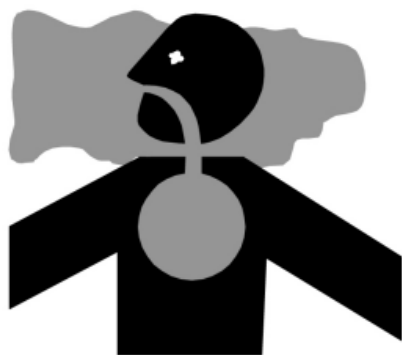
Daily Operating Checklist

- ☐ Test safety systems.
- ☐ Check tire pressure.
- ☐ Check fuel level.
- ☐ Check engine, transmission, and hydraulic oil levels.
- ☐ Remove grass and debris from engine compartment and muffler area, before and after operating machine.
- ☐ Clean air intake screen.
- ☐ Check area below machine for leaks.
- ☐ Check air restriction indicator.
- ☐ Check engine coolant level.

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 some surfaces.

Testing Safety Systems



TCT005796—UN—08NOV12



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 PTO Switch

1. Sit on the seat.
2. Lock the park brake.
3. Pull PTO switch up to the on position.
4. Try to start the engine. Engine must not start. If engine starts, there is a problem with your safety interlock circuit.
5. Unlock park brake. Try and start engine. Engine must not start. If engine starts, there is a problem with your safety interlock circuit.

Testing Seat and Park Brake Switch

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

Operating Machine

Result:

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

Testing Park Brake

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

Result:

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

Mounting and Dismounting Machine Safely

NOTE: Always mount and dismount from left side of machine to avoid bumping controls and pedals.

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

Adjusting Seat

To adjust seat position:

⚠ CAUTION: Never adjust seat while machine is moving. Stop machine before adjusting seat to prevent loss of machine control.



TCAL44831—UN—28MAR13

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

To adjust seat backrest:

1. Pull up backrest tilt lever (B), while moving backrest to most comfortable position.
2. Release lever to lock backrest in place.

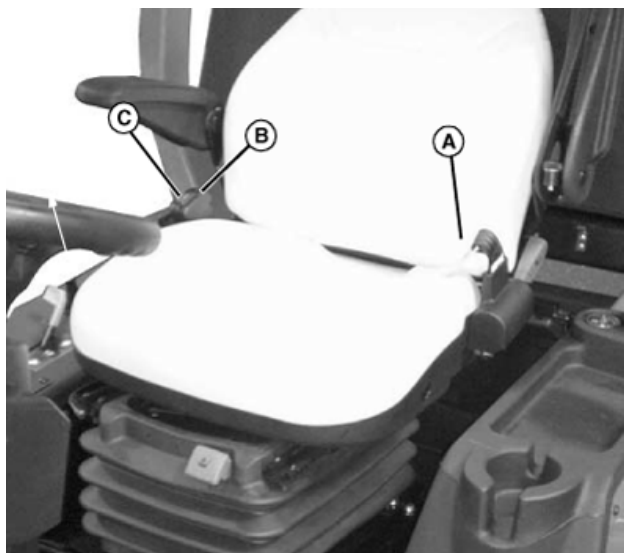
Using Seat Belt

Fasten Belt

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

1. Sit in seat.

Operating Machine



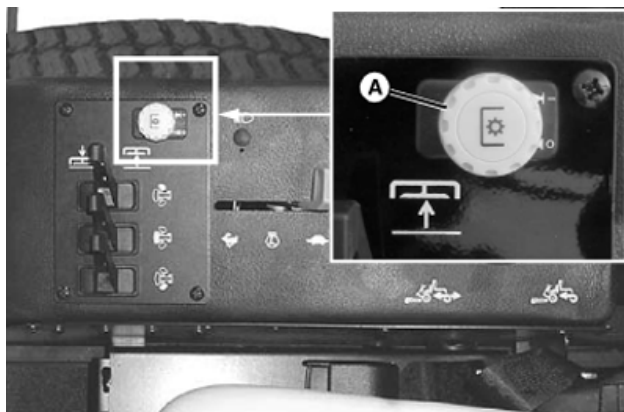
2. Pull out seat belt buckle (A) and stretch across your lap in one nonstop motion.
3. Insert seat belt buckle into latch (B) until it locks.

Release Seat Belt

1. Press red button (C) to release seat belt.

Using PTO Switch

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

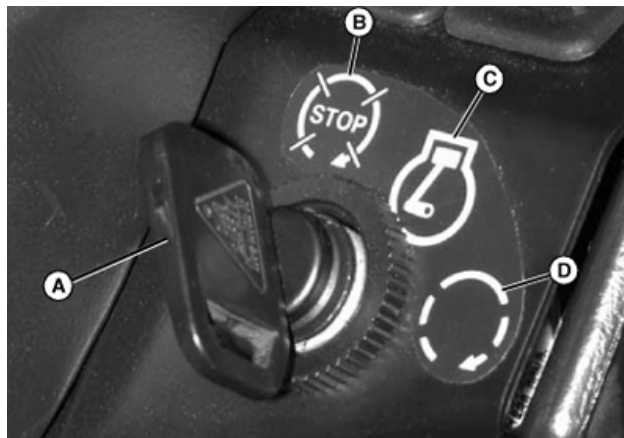


- Pull PTO knob (A) up to engage the PTO.
- Push PTO knob (A) down to disengage the PTO.

Using Key Switch

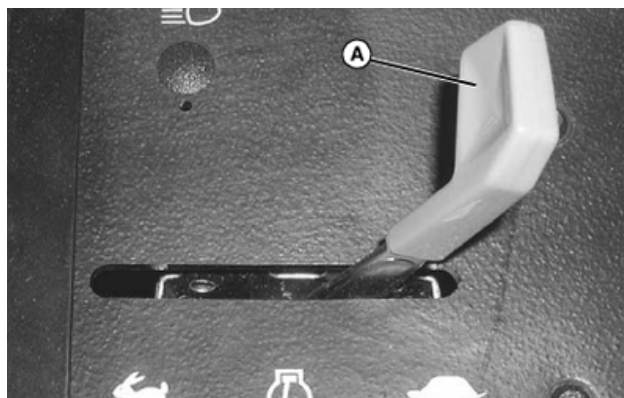
NOTE: Starter will not crank if any of the following conditions exist:

- PTO is engaged.
- Hydrostatic drive pedals are not in centered (neutral) position.
- Park brake is not locked.



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

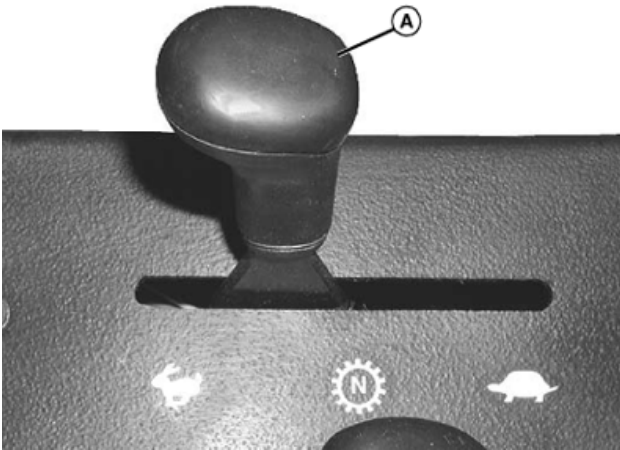
Using Throttle Lever



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

Operating Machine

Using Speed Range Lever

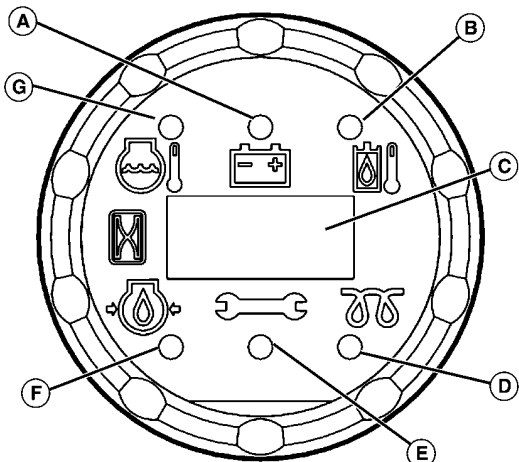


TCAL44836—UN—28MAR13

- Place speed range lever (A) in centered neutral position (N) to prevent machine from being driven.
- Pull speed range lever to rear for low speed range for mowing and low speed transport.
- Push lever to front position for high speed range used for high speed transport.

Indicator Lights

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



TCAL44837—UN—28MAR13

- Battery Discharge Indicator (A) will glow when alternator is not producing adequate current. Stop engine and determine cause.
- Hydraulic Oil Temperature Indicator (B) will glow when hydraulic oil temperature is high. Stop all hydraulic functions immediately. Let hydraulic oil temperature cool by allowing engine to idle under a no-load

situation. This keeps the oil flowing through the oil cooler and cools the oil. Check oil level and make sure oil cooler coils are clean. Continued operation may cause higher temperatures, resulting in damage.

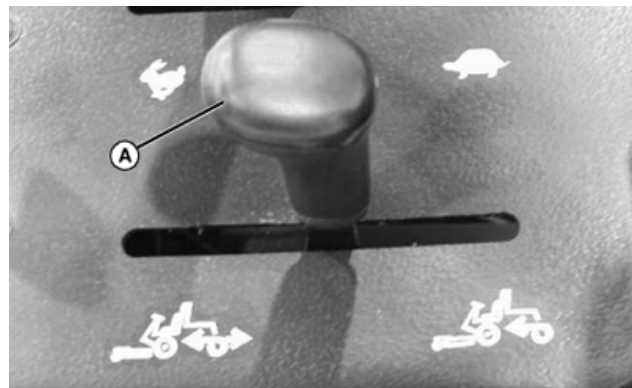
- Hourmeter (C) records the number of hours the engine has run. Use the hour meter and the periodic service chart (located in the engine compartment) to determine when service procedures need to be performed on the machine and mower deck.
- Engine Preheat Light (D) will glow when key switch is turned to the run position. After approximately three seconds the light will go out.
- Engine Controller Diagnostic Light (E) will flash when a problem occurs with the engine. The number of times it flashed indicates an error code listed in the troubleshooting section.
- Engine Oil Pressure Indicator (F) will glow when engine oil pressure is low. If lamp glows when engine is running, stop engine immediately. See your John Deere distributor.
- Engine Coolant Temperature Indicator (G) will glow if engine temperature becomes excessive. When engine overheats, the engine power is reduced to 92% and 2500 RPM maximum. Stop engine and determine cause.

Using Four Wheel Drive Lever

CAUTION: To avoid loss of control or damage to turf, do not turn suddenly or at high speeds while machine is in four wheel drive. Do not use four wheel drive any longer than required.

NOTE: "On-demand" operates only forward.

The four wheel drive lever is spring loaded and stays in off position unless held forward. The four wheel drive on-demand is automatic at all times and will engage the four wheel drive system if slippage occurs.



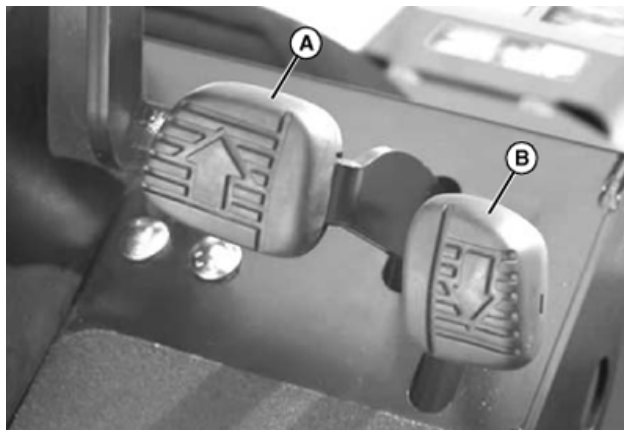
TCAL44838—UN—28MAR13

Operating Machine

IMPORTANT: Damage can result if driven in full-time four wheel drive while mowing or transporting. Only use four wheel drive as needed during reverse travel.

- Push forward on four wheel drive lever (A) to use “on-demand” four wheel drive when traveling in reverse. When driving forward, rear wheels will engage automatically whenever front wheel slip is detected, and will also disengage automatically.
- Release four wheel drive lever to disengage four wheel drive. Lever is spring loaded and will return to the off position.

Using Hydrostatic Pedals



TCAL44839—UN—28MAR13

Using Forward Travel Pedal:

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

Using Reverse Travel Pedal:

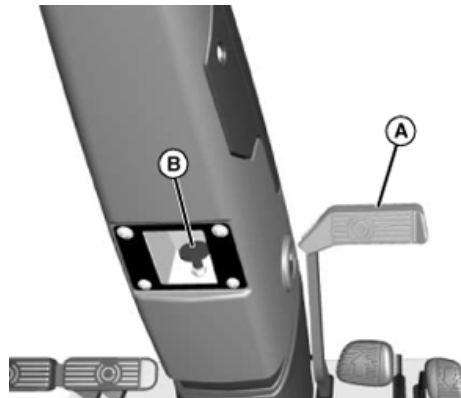
CAUTION: Rotating blades are dangerous. Children or bystanders may be injured by run over and rotating blades.

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

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

Using Brakes

Using Master Brake Pedal



TCAL44840—UN—28MAR13

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

Using Park Brake

CAUTION: Children or bystanders may attempt to move or operate an unattended machine.

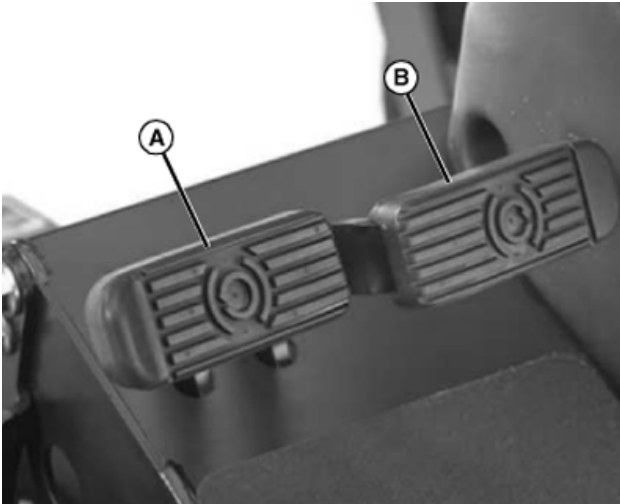
Always lock the park brake and remove the key before leaving the machine unattended.

1. Lock the park brake by pulling the park brake knob (B) fully upwards. Press the master brake pedal (A) down fully. The park brake should now be locked.
2. Unlock the park brake by pushing the park brake knob (B) down fully. Fully press and release the master brake pedal (A). The park brake should now be unlocked.

Using Turn Brakes

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

Operating Machine



TCAL44841—UN—28MAR13

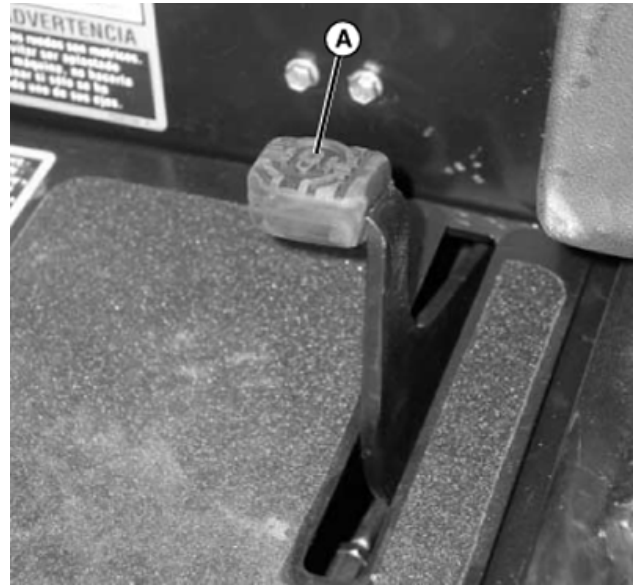
1. Press down on the left turn brake pedal (A) to slow or stop the rotation of the left front tire, while power is applied to the right wheel. The machine will turn to the left. Release the turn brake pedal to resume driving in a straight line.
2. Press down on the right turn brake pedal (B) to turn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

Using Differential Lock Pedal

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

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

To lock the differential:



TCAL44842—UN—28MAR13

Push the pedal (A) down with the left foot and hold it.

To unlock the differential:

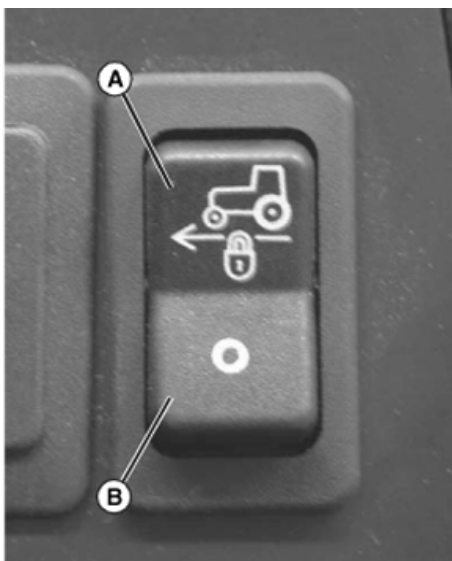
1. Release the pedal.
2. The differential will stay locked as long as wheel slip is unequal. Once the load on the transmission is equalized and reduced, the differential lock will disengage.

Using Cruise Control

Engaging Cruise Control

1. Push the forward travel pedal down until the machine has reached the desired travel speed.

Operating Machine



TCAL44843—UN—09APR13

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

Disengaging Cruise Control

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

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

Raising and Lowering ROPS

CAUTION: Always wear seat belt when operating machine with folding Roll-Over Protective Structure (ROPS) in upright position. Do not jump from machine if machine tips.

If ROPS must be folded to operate in a low clearance area, do not use seat belt. Raise ROPS and use seat belt as soon as conditions permit.

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



TCAL44844—UN—28MAR13

2. Pull ROPS (A) forward to compress isolators (B).
3. Remove spring pin (C) from drilled pin (D) on side of ROPS.
4. Remove drilled pin (D) from ROPS.
5. Repeat procedure for opposite side of machine.

CAUTION: Fingers and hands can be pinched or crushed. Be aware of potential pinch points and keep hands away.



TCAL44845—UN—28MAR13

6. Pull ROPS rearward to lowered position (E).
7. Install drilled pins and spring pins back into holes in ROPS to secure in place.

Operating Machine

Using Fuel Shutoff Valve

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

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

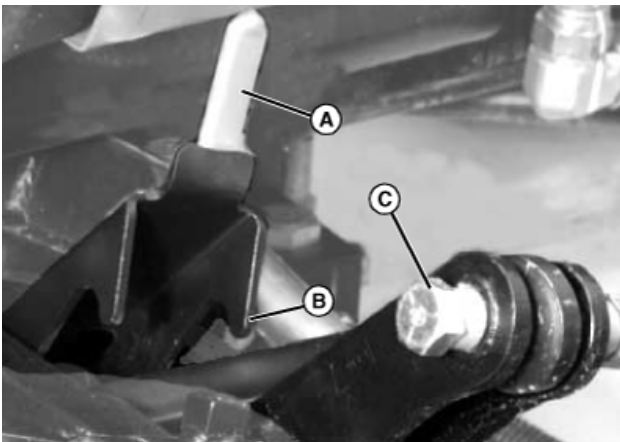


TCAL44846—UN—28MAR13

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

Using Mower Deck Transport Locks

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



TCAL44847—UN—28MAR13

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

Raising and Lowering Mower Decks

CAUTION: Do not raise the mower decks on slopes or when traveling at high speeds, as the machine could become unstable. Deck lowers quickly when control lever is pushed forward.



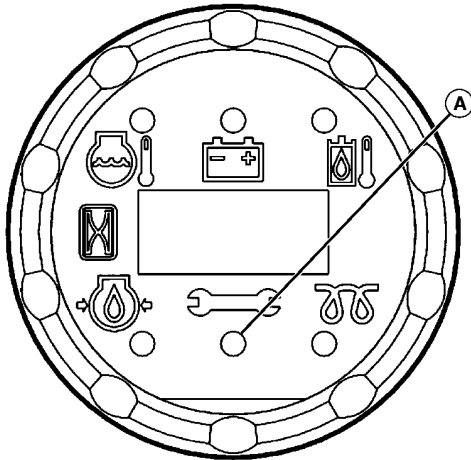
TCAL44848—UN—28MAR13

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

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

Operating Machine

Using Starting Trouble Codes



TCAL44849—UN—28MAR13

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

- One flash, a short pause, and two flashes - Operator attempted to start machine without park brake locked.
- One flash, a short pause, and three flashes - Operator attempted to start machine with PTO engaged.
- Two flashes, a short pause, and one flash - Hydrostatic pedals are not centered into the neutral position.

Starting Engine

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

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

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

1. Open the fuel shutoff valve (if closed).
2. Sit on the operator's seat. Put on seat belt.
3. Lock the park brake.

4. Push the PTO switch to the off position.
5. Pull the throttle lever back to the slow idle position.
6. Turn the key switch to the run position. Wait for the engine preheat light to turn off.

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

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

IMPORTANT: Unnecessary engine idling may cause engine damage. Excessive idling can cause engine overheating, carbon buildup, and poor performance.

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

Stopping Engine

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

IMPORTANT: Allow engine to idle for two minutes before shutting down after running under load to avoid damage to turbocharger.

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

Transporting Machine

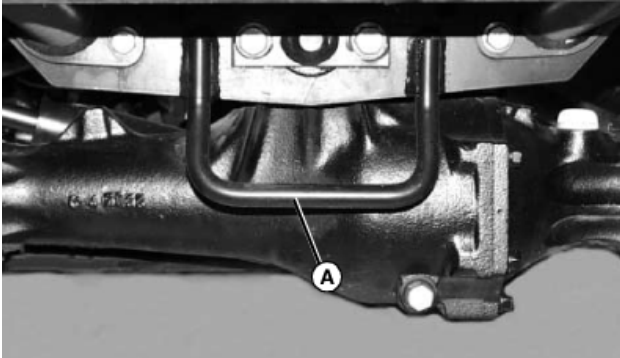
1. Turn PTO switch to off position.
2. Lower front mower deck.
3. Lower left and right side mower decks. (If necessary to transport with side decks raised, engage transport locks and keep transport speeds low).
4. Move speed range lever forward to transport position.

Operating Machine

Towing Machine

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

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



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

Transporting Machine on Trailer

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

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

- Park trailer on a level surface.
- Use of a trailer with sides is recommended.
- Keep wheels away from drop-offs and edges.
- Back slowly and in a straight line.
- Close fuel shut-off valve, if your machine is equipped.

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

- Position machine on trailer so hood or engine cover opens from rear of trailer to prevent wind from blowing hood or cover open.
 - Secure hood or engine cover with existing machine locks or latches.
 - Secure hood or engine cover with tie down straps if no locks or latches exist.
1. Raise side decks and engage transport locks.
 2. Drive forward onto heavy-duty trailer with front deck raised.
 3. Lower front deck down to platform of trailer.
 4. Stop engine, remove key, lock park brake.
 5. Close the fuel shutoff valve.
 6. Fasten machine to trailer with heavy-duty straps, chains, or cables. Fasten rear straps to rear tow loop behind rear axle. Fasten front straps to tie down holes on operator's platform. Both front and rear straps must be directed down and outward from machine.
 7. Check that engine cover latches are locked down.

Operating - Mower

Adjusting Cutting Height

1. Stop machine on level surface, PTO off, park brake locked.
2. Raise all mower decks. Engage left and right side deck transport locks. Stop engine.
3. Check tire pressures on all machine tires, and deck caster wheels, according to specifications.

Specification

Front Tires — Pressure 207 kPa (30 psi)

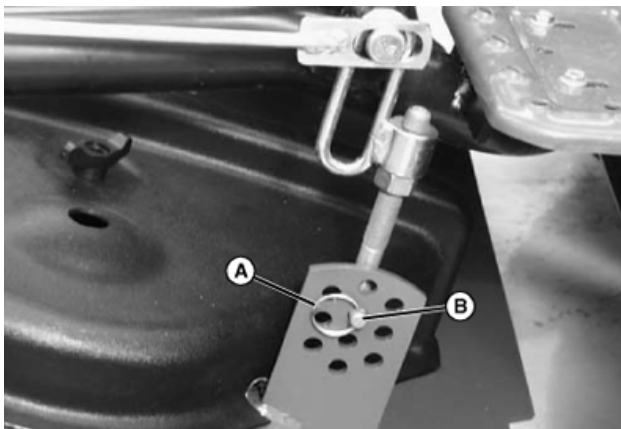
Specification

Rear Tires — Pressure 193 kPa (28 psi)

Specification

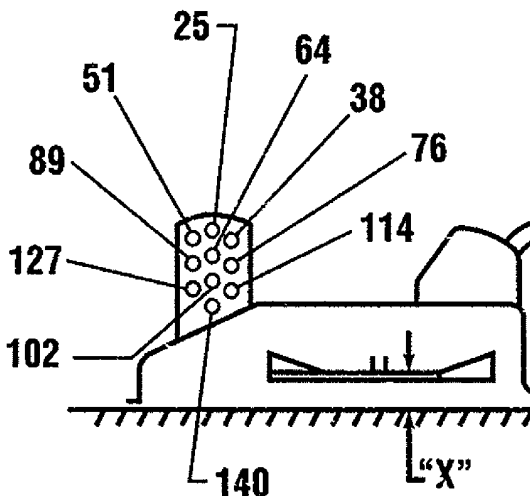
Mower Deck Caster Wheels
— Pressure 275 kPa (40 psi)

Adjusting Front Deck Cutting Height



TCAL44851—UN—28MAR13

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



TCAL44852—UN—28MAR13

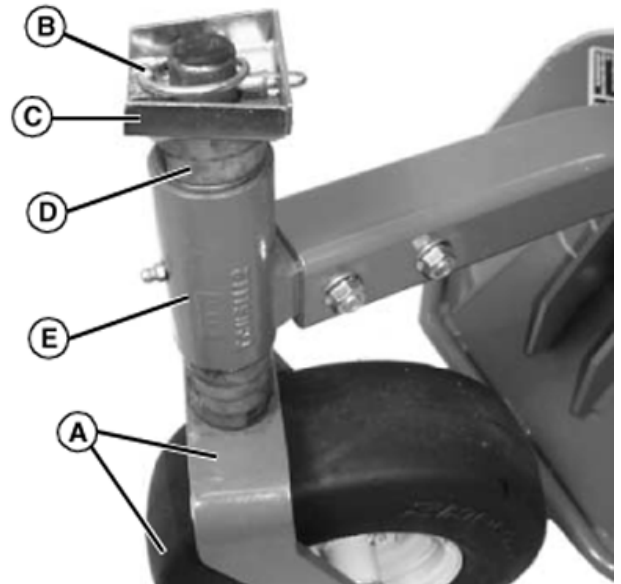
2. Using the figure above, or decal mounted on front deck, place deck hangers into holes that match desired cutting height.

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

Adjusting Caster Wheels Cutting Height

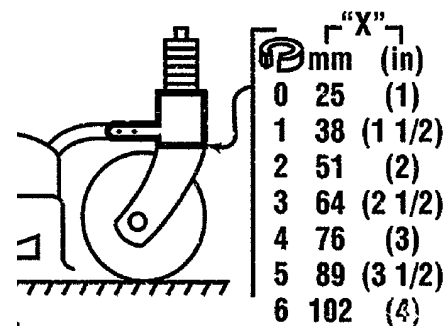
NOTE: This adjustment is for all caster wheels on front and side mower decks.

1. Raise mower decks.



TCAL44853—UN—28MAR13

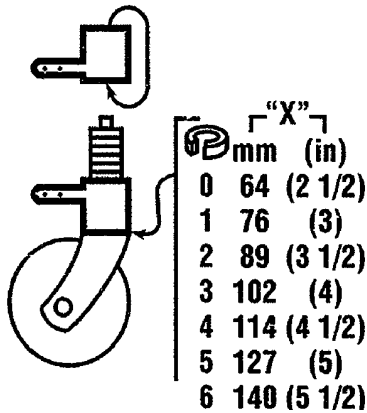
2. Support the caster wheel and bracket (A) with one hand, while removing quick-lock pin (B) and spacer guard (C).
3. Remove the spacers (D) from the top of the caster pivot shaft.
4. Lower the caster and pivot shaft out of the caster support bracket (E).



TCAL44854—UN—28MAR13

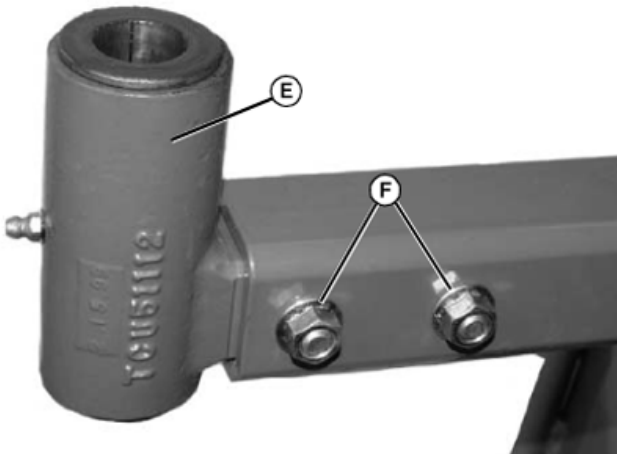
5. Use the figures above, or decal mounted on front mower deck to select the number of spacers needed to set caster wheel to desired height.

Operating - Mower



TCAL44855—UN—28MAR13

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



TCAL44856—UN—28MAR13

- To flip the caster support brackets (E), remove two cap screws, nuts, and bushings (F), holding support bracket to mower deck arm. Remove bracket from arm, flip over bracket, and install back into arm.
7. Install cap screws and nuts, but do not tighten nuts at this time.
 8. Install the proper number of spacers onto the bottom of the caster shaft.
 9. Install the caster wheel and bracket up through the caster support bracket.
 10. Install remaining spacers onto the top of the caster shaft.

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

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

12. Install quick-lock pin into caster shaft and hole in spacer guard. Snap retainer loop over caster shaft.
13. If cutting height was adjusted above 102 mm (4 in.) perform the follow steps:
 - Lower mower deck to ground.
 - Turn caster wheels so they are trailing to the rear (as would happen during normal forward travel).
 - Tighten caster support bracket hardware.

Checking Mower Deck Level

1. Park machine safely. (See Parking Safely in the SAFETY section.)
2. Lower all mower decks completely to ground.
3. Check tire pressures on all machine tire, according to specifications.

Specification

Machine Front Tires — Pressure 207 kPa (30 psi)

Specification

Machine Rear Tires — Pressure 193 kPa (28 psi)

4. Check tire pressures on deck caster wheels (Serial No. 050001-100000).

Specification

Mower Deck Caster Wheels

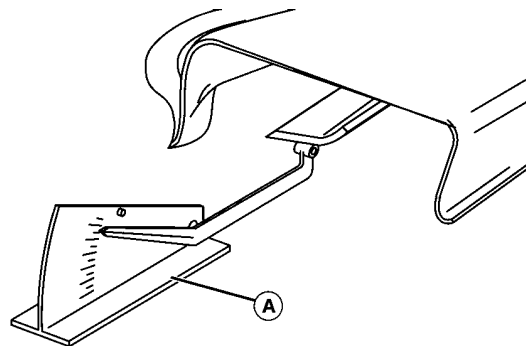
— Pressure 275 kPa (40 psi)

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

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

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

6. Check that the front mower deck caster wheels and rear hangers are all set to the same height.
7. Check that all caster wheels are trailing towards the rear, as they would be during normal forward travel.
8. Turn the blades until parallel to the front axle.



TCAL44857—UN—28MAR13

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

Operating - Mower

A —Leveling Gauge

9. Measure distance from tip of outside blade to the ground. Repeat for blade on other side of deck. Mower blades should be level on both sides of deck.
10. Turn outer mower blades to face front-to-rear.
11. Measure height of front and rear of outer blade to ground. Repeat for other side.

Results:

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

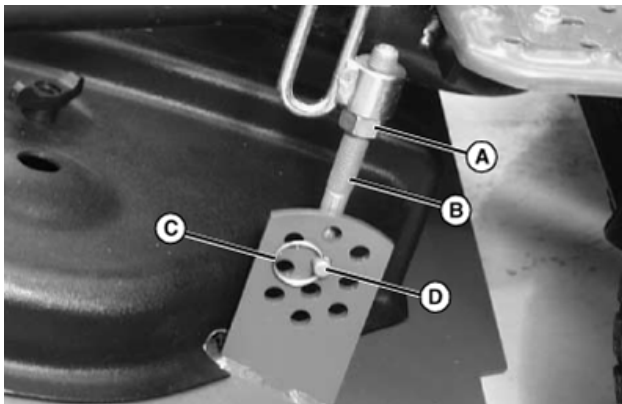
Adjusting Mower Deck Level

1. Park machine safely. (See Parking Safely in the SAFETY section.)
2. Lower all mower decks completely to ground.
3. Check tire pressures on all machine tires, and deck caster wheels, according to specifications.

	Specification
Front Tires — Pressure	207 kPa (30 psi)
Rear Tires — Pressure	193 kPa (28 psi)
4. Check tire pressures on deck caster wheels (Serial No. 050001-100000).

	Specification
Mower Deck Caster Wheels — Pressure	275 kPa (40 psi)
5. Set the mower decks at the desired cutting height.
6. Turn all caster wheels so they are trailing to the rear (as would happen during normal forward travel).

Adjusting Front Mower Deck Level



TCAL44858—UN—28MAR13

1. Loosen locknut (A) on deck hanger (B).
2. Remove retainer ring (C) on hanger pin (D).

3. Turn rear hanger up or down to adjust deck height until blades are level side-to-side and front-to-rear.
4. Insert hanger pin (D) back into proper height adjuster hole, and secure with retainer ring.
5. Tighten locknut (A).

NOTE: On machines with a serial number between 050001 - 100000, it may be necessary to reduce caster wheel air pressure on one side only to help level mower deck.

Adjusting Side Mower Deck Level (Serial No. 050001 - 100000)

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

Adjusting Side Mower Deck Level (Serial No. 100001 -)

See your John Deere dealer.

Engaging Blades

CAUTION: Clear mowing area of all bystanders when operating this machine. Thrown objects could cause serious injury or death.

Keep hands and feet away from blades and discharge opening.

Do not mow in reverse unless necessary.

NOTE: Operate engine at full throttle while mowing.

1. Start engine and warm up.
2. Move the speed range lever to the low speed position.
3. Unlock the park brake.
4. Lower the mower decks to ground. If the decks are already in the lowered position, toggle the deck lift lever switches to the lower position (forward), then allow them to return to the center position. This sequence must be repeated every time the engine is started.
5. Move throttle forward to full throttle position.
6. Pull up on PTO switch.
 - Blades should start.
 - If one side deck is not lowered, the blades for that deck will not start up until deck is lowered.
 - If front deck is not lowered, none of the blades will start up.
7. Raise decks to disengage blades:

Operating - Mower

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

Replacement Parts

Service Literature

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.

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.

Service Intervals

Servicing Your Machine

IMPORTANT: Avoid damage! High-pressure washing can cause damage to machine components.

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.

Park the vehicle safely. (See Park Safely in the SAFETY Section.)

Service Intervals

Before Each Use

- Check engine oil.
- Check hydraulic oil.
- Check coolant
- Check transaxle fluid.
- Check for leaks.
- Inspect tires and check air pressure.
- Check safety interlock system.
- Check brake system.
- Check air filtration system.
- Check for loose, missing, or damaged parts.
- Check all safety guards and shields.
- Check fuel / water separator.
- Check belts.
- Check pedals and / or steering control.
- Check seat belt.
- Check and clean hood sealing surfaces.

After Each Use

- Check / fill fuel.
- Clean debris from machine.
- Clean debris from cooling system.
- Clean debris from mower and / or attachment drive systems.
- Clean debris from cutting units and attachments.
- Clean debris from underside of mower deck.
- Check mower deck drive belts.
- Check mower blades.
- Lubricate machine after washing.

Break-In - After First 5 Hours

- Check and tighten wheel hardware.

Break-In - After First 50 Hours:

- Change engine oil and filter.
- Change hydraulic oil filter.

Every 50 Hours or Yearly

- Lubricate deck components.
- Lubricate cutting unit or mower lift components.
- Lubricate drive shafts.
- Clean battery terminals and check battery fluid level (if applicable).
- Lubricate rear axle components.
- Lubricate steering cylinder.
- Check mower deck belts.
- 4WD Model: Check rear axle oil level.
- Check and tighten wheel hardware.

Every 100 Hours

- Lubricate rockshaft pivots.
- Lubricate rear axle pivot.
- Lubricate hydrostatic linkage.
- Lubricate turn brake pedals.

Every 200 Hours

- Change engine oil and filter.

Every 500 Hours

- Change transmission oil and filter (Every 500 Hours after Initial Break In).
- Check torque on ROPS hardware.
- Replace fuel filter.
- Change hydraulic oil and filter.
- 4WD Model: Change rear axle oil.
- Inspect rear axle pivot pin.

Every 1500 Hours

- Check coolant freeze point and clarity.
- Check fuel injectors.
- Check valve clearance.
- Change engine coolant and thermostat.

Service Intervals After Converting to BioDiesel Fuel

IMPORTANT: 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.

Service Intervals

*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 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: 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:

High Speed Applications

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

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

Other Applications

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

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

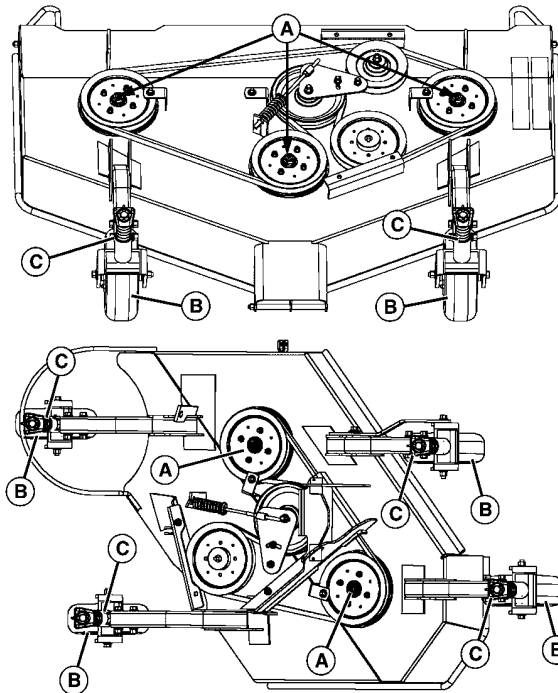
If not using any of the preferred greases, be sure to use a general purpose grease with a NLGI grade No. 2 rating. Avoid use of John Deere Moly High Temperature EP Grease on high speed applications such as mower spindles and the rear axle.

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

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

Lubricating Mower Spindles, Caster Wheels, and Caster Wheel Yokes

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



TCAL44859—UN—28MAR13

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

3. Lubricate mower deck grease fittings:

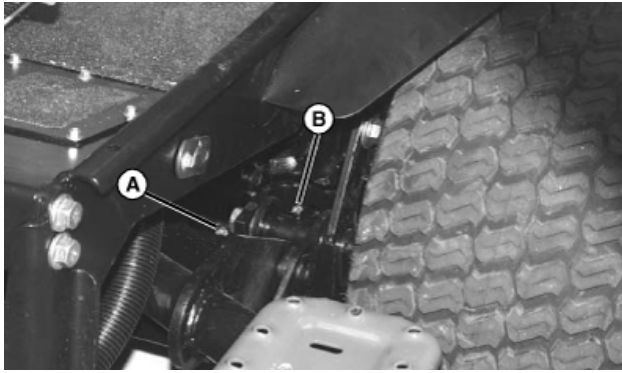
NOTE: Do not use John Deere Moly High Temperature EP Grease on mower spindles.

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

Lubricating Mower Lift Arms, Rockshaft, and Lift Cylinders

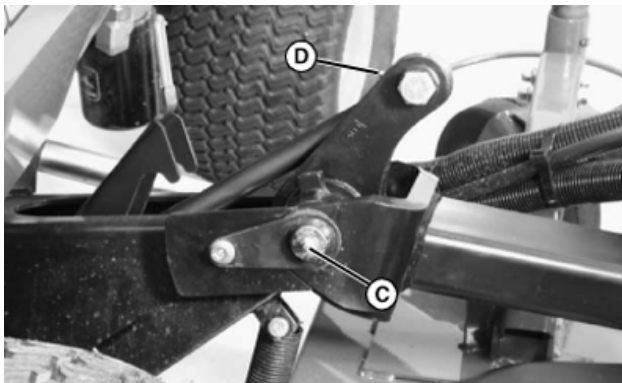
1. Lower mower decks completely.
2. Park machine safely. (See Parking Safely in the SAFETY section.)

Service Lubrication



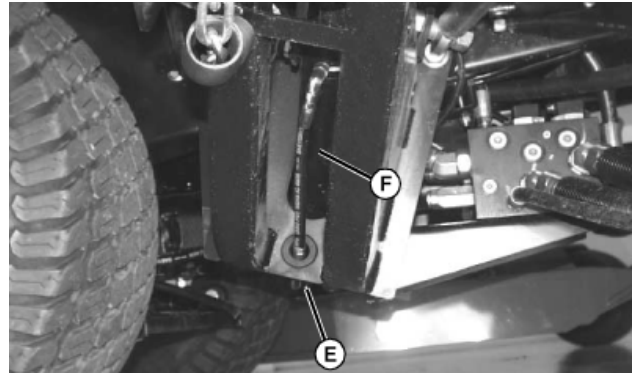
TCAL44860—UN—28MAR13

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



TCAL44861—UN—28MAR13

4. Lubricate the side deck lift arm pivot joint (C) and lift cylinder pivot joint (D) at both sides of machine with John Deere Multi-Purpose HD Lithium Complex Grease or John Deere Moly High Temperature EP Grease.
5. Start machine. Raise side decks completely.
6. Engage both side deck transport locks.
7. Stop engine and remove the key.



TCAL44862—UN—28MAR13

8. Lubricate grease fitting (E) at the base end of side deck lift cylinder (F) at both sides of machine with John Deere Multi-Purpose HD Lithium Complex Grease or John Deere Moly High Temperature EP Grease.

Lubricating Rear Axle Pivot Pin

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



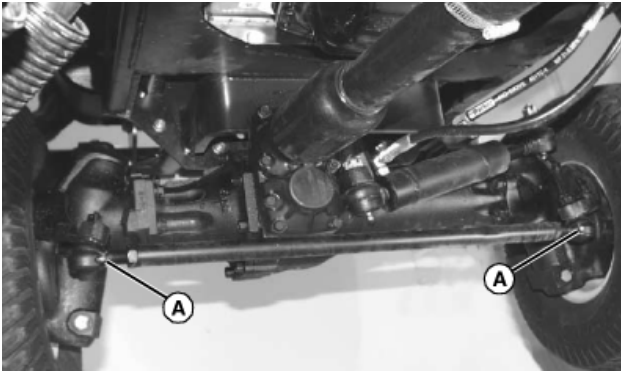
TCAL44863—UN—28MAR13

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

Lubricating Rear Tie Rod

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

Service Lubrication

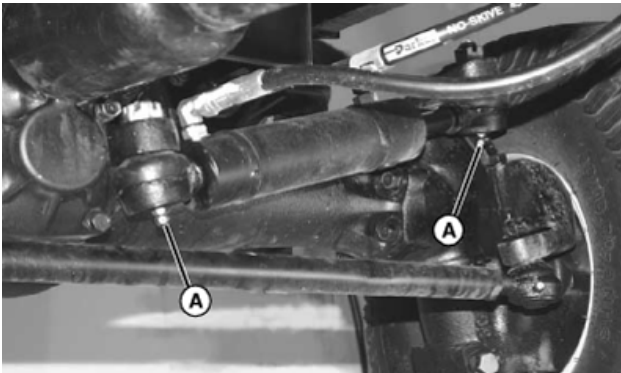


TCAL44864—UN—28MAR13

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

Lubricating Hydraulic Steering Cylinder

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



TCAL44865—UN—28MAR13

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

Lubricating Hydrostatic Control Arm

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



TCAL44866—UN—28MAR13

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

Lubricating Drive Shaft

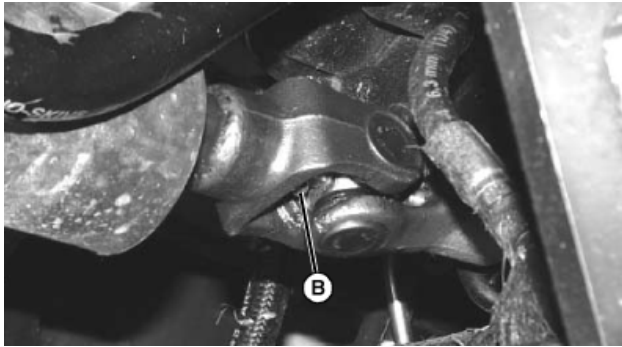
1. Raise side mower decks completely.
2. Engage both side deck transport locks.
3. Park machine safely. (See Parking Safely in the SAFETY section.)



TCAL44867—UN—28MAR13

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

Service Lubrication

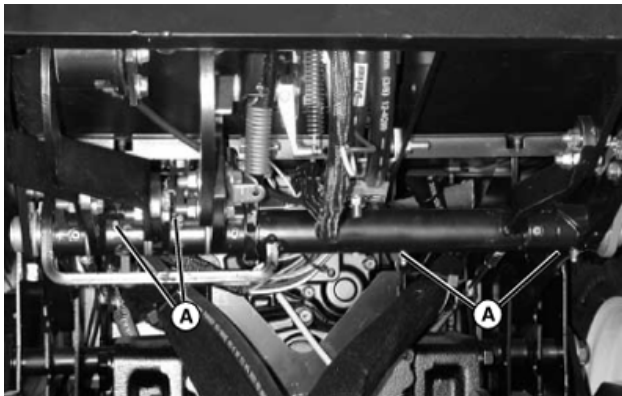


TCAL44868—UN—28MAR13

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

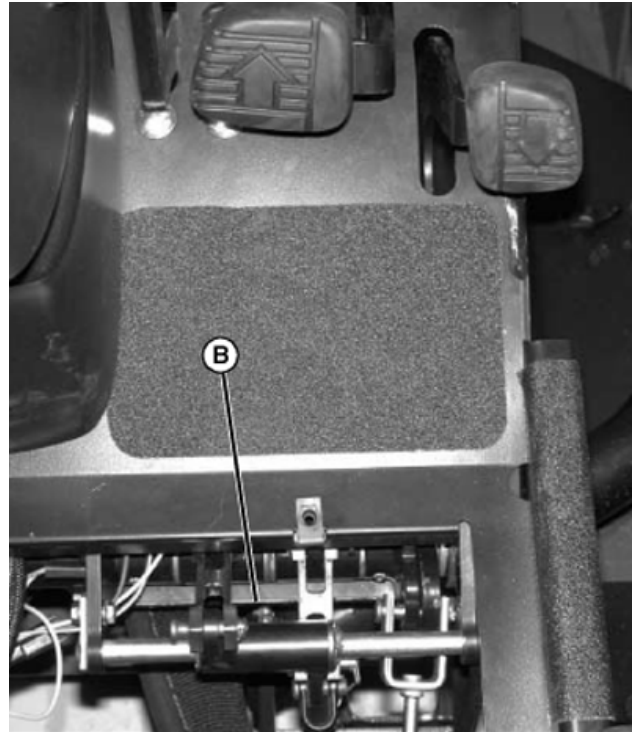
Lubricating Pedal Linkages

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



TCAL44869—UN—28MAR13

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



TCAL44870—UN—28MAR13

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

Service Engine

Emissions Service Information

A qualified 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.

Within the warranty period, John Deere will reimburse reasonable service costs incurred at service providers outside the John Deere authorized network only in an unsafe, emergency condition if an authorized John Deere dealer is not available and the failure does not arise from the owner's misuse or failure to perform required maintenance. An emergency situation exists under this section if, after 30 days, the authorized John Deere network is unable to perform the repairs or source replacement parts.

Emission Control System Certification Label

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

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

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

Altitude Adjustment (Gasoline Engines Only)

If your engine features a carburetor it is calibrated by the engine manufacturer and is not adjustable.

If your engine is operated at altitudes below 1006 m (3,300 ft.), a high altitude carburetor jet kit is not required. If your engine is operated at altitudes above 1006 m (3,300 ft.), a high altitude carburetor jet kit may be required for proper engine performance and emissions control. Operating the engine with the wrong carburetor configuration at a given altitude may increase the engine's emissions and decrease fuel efficiency and performance.

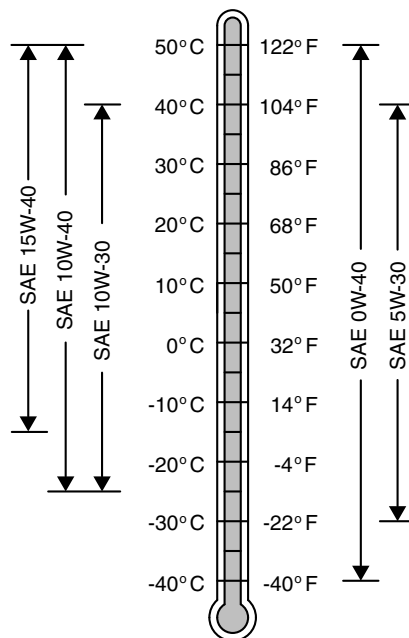
See a qualified service provider for details on jet kit requirements for your specific product.

Avoid Fumes

CAUTION: 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



TS1691—UN—18JUL07

Oil Viscosities for Air Temperature Ranges

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

The following John Deere oils are preferred:

- John DeerePlus-50™ II
- John DeereTorq-Gard™ Supreme

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

- API Service Classification CJ-4
- ACEA Specification E6 or E9
- JASO Specification DH-2

™Plus-50 is a trademark of Deere & Company
™Torq-Gard is a trademark of Deere & Company

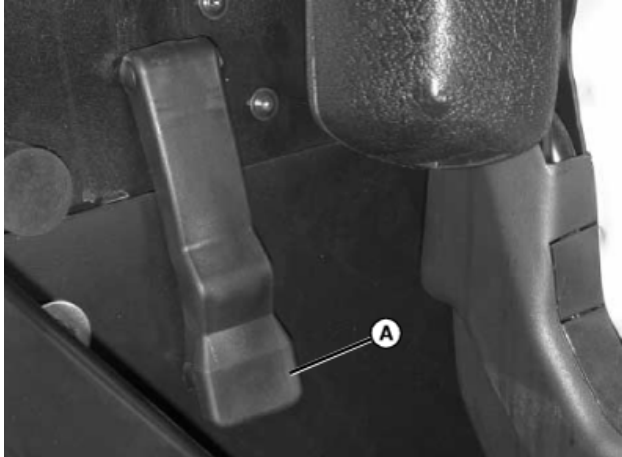
Service Engine

Diesel fuel quality and fuel sulfur content must comply with all existing emissions regulations for the area in which the engine operates.

Raising and Lowering the Engine Cover

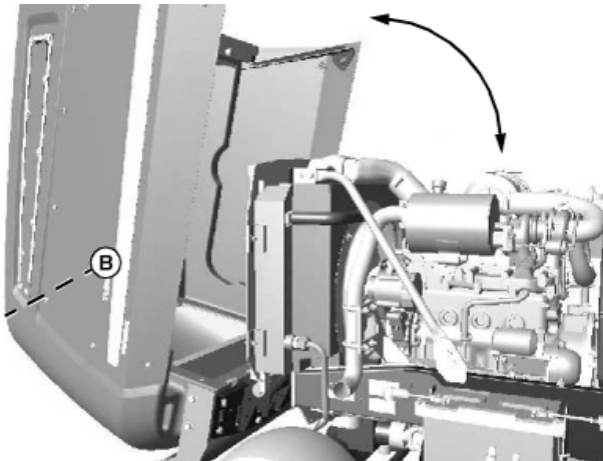
1. Park machine safely. (See Parking Safely in the SAFETY section.)

IMPORTANT: Do not operate the machine with the engine cover in the raised position.



TCAL44872—UN—28MAR13

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



TCAL44873—UN—28MAR13

4. Raise engine cover using handle (B). Open engine cover completely until it comes to rest.
5. Carefully lower engine cover using handle (B).

6. Hook the tops of the engine cover latches onto engine cover, and press in on bottom of latches to lock closed.

Raising and Lowering Seat Platform

To raise the operator's seat platform:

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

CAUTION: Fingers and hands can be pinched or crushed. Be aware of potential pinch points and keep hands away.

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

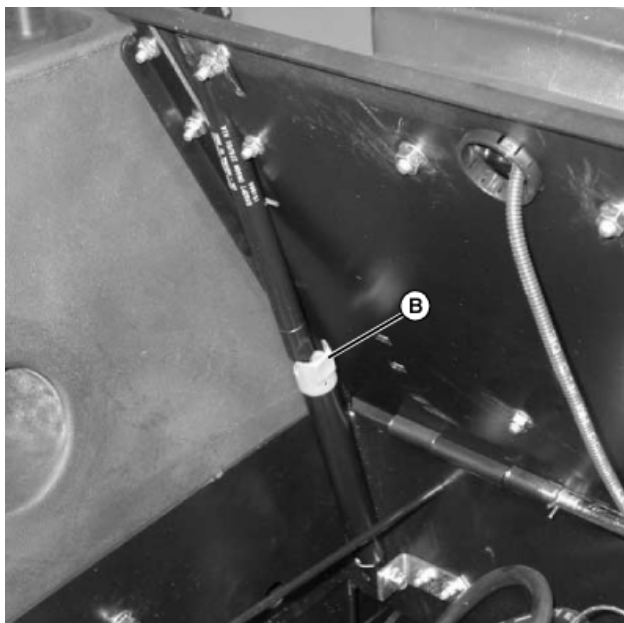


TCAL44874—UN—28MAR13

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

Service Engine

To lower the operator's seat platform:



TCAL44875—UN—28MAR13

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

Checking Engine Oil

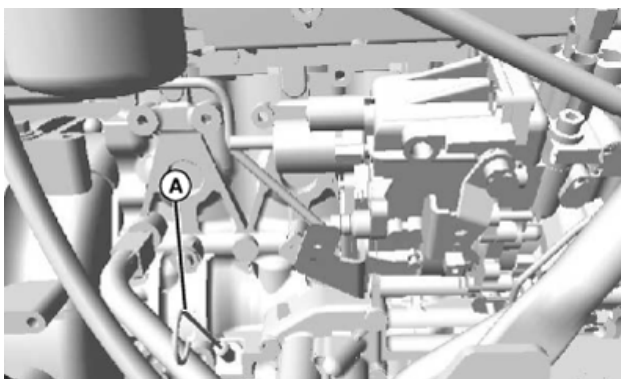
1. Park machine safely. (See Parking Safely in the SAFETY section.)

IMPORTANT: Failure to check the oil level regularly could lead to serious engine problems if oil level is out of the operating range:

- Check oil level before operating.
- Check oil level when the engine is cold and not running.
- Keep oil level between the dipstick marks.
- Shut off engine before adding oil.

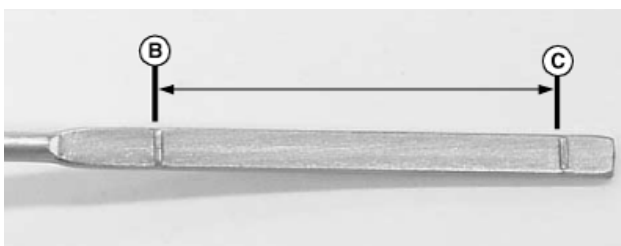
2. Raise engine cover.

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



TCAL44876—UN—28MAR13

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



TCAL44877—UN—28MAR13

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

Changing Engine Oil and Filter

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

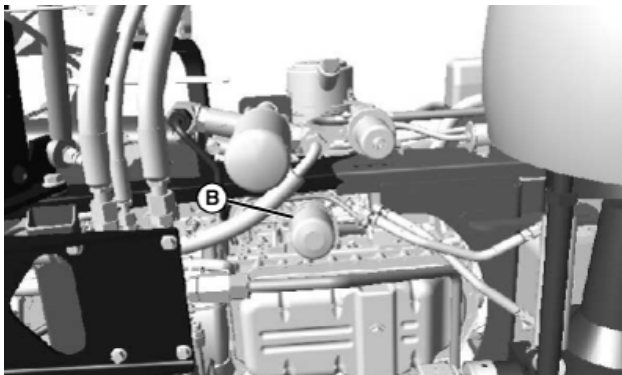
IMPORTANT: Dirt and debris in oil may cause damage to the engine. Clean area around opening before removing plug or dipstick.

Service Engine



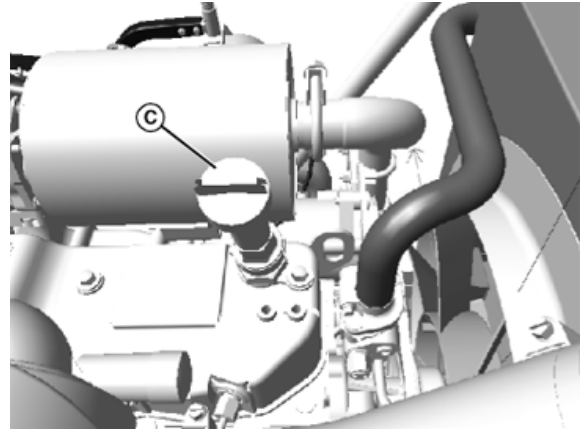
TCAL44878—UN—28MAR13

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



TCAL44879—UN—28MAR13

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



TCAL44880—UN—28MAR13

11. Remove oil fill cap (C) on top of engine.

IMPORTANT: Do not overfill crankcase with oil. Oil capacities given are with engine and crankcase completely dry. Some oil will remain in engine after draining.

12. Add oil, according to specification.

Specification

Engine Oil — Capacity (approximately) 7.4 L (7.8 qt)

13. Install oil fill cap.

14. Start engine.

- Run engine at a slow throttle speed for approximately two minutes.
- Check area under engine for oil leaks.

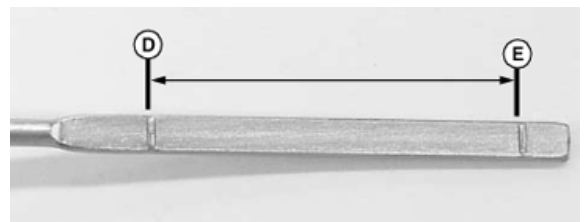
15. Stop engine.

16. After approximately two minutes check engine oil level.

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

17. Remove dipstick. Wipe with a clean cloth.

18. Install dipstick.



TCAL44881—UN—28MAR13

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

Service Engine

20. Install dipstick.
21. Lower engine cover.

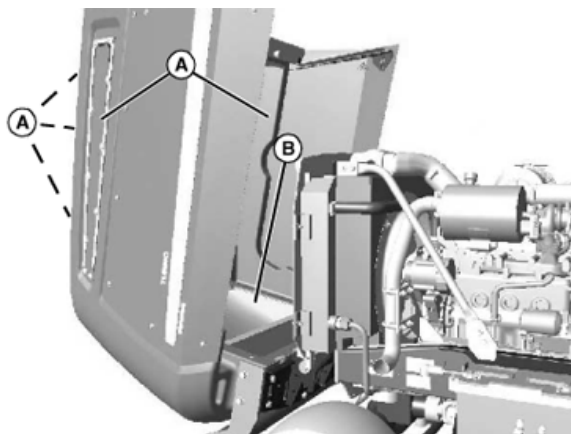
Cleaning Hood Screens

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

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



TCAL44882—UN—28MAR13

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

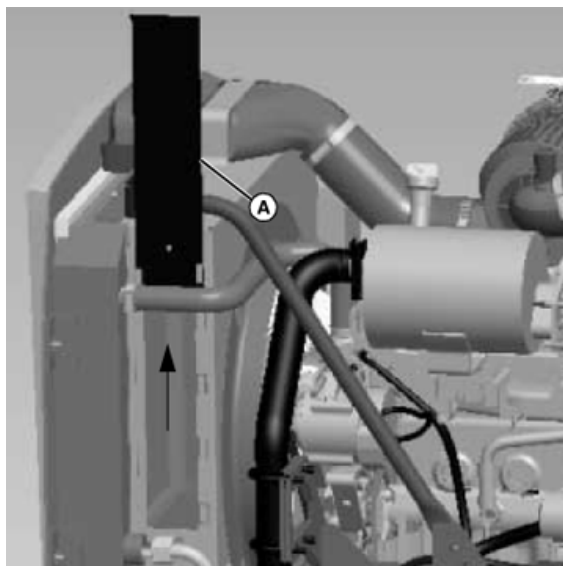
Cleaning Oil Cooler and Radiator

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

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



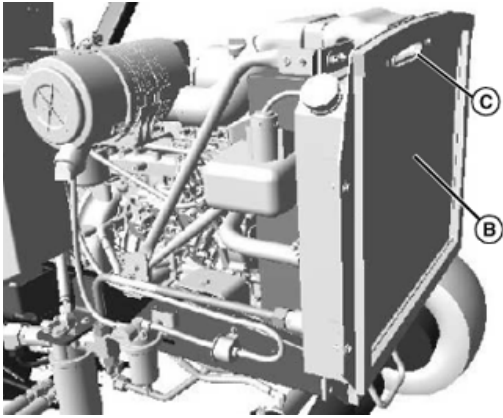
TCAL44883—UN—28MAR13

Machines SN 100001 -)

4. Machines with serial number 100001 and above, raise radiator shroud cleanout cover (A).

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

Service Engine



TCAL44884—UN—28MAR13

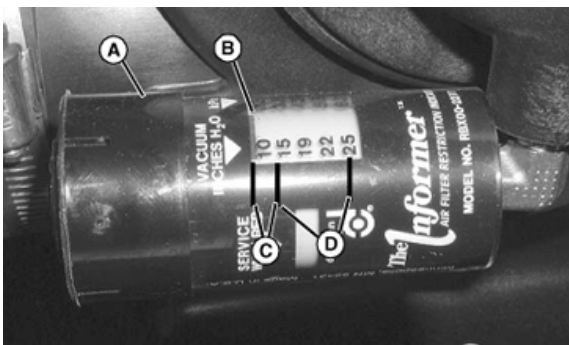
5. Remove dirt and debris from oil cooler and radiator (B) by directing a stream of compressed air or water from the front side of radiator to the rear, being certain not to allow water or debris to enter air cleaner intake hose (C).
6. Check oil cooler coils and radiator fins for damage.
7. Lower radiator shroud cleanout cover.
8. Lower engine cover.

Checking Air Restriction Indicator

Air Restriction Indicator (SN 090001 - 100000)

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

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



TCAL44885—UN—28MAR13

Air Restriction Indicator (SN 090001 - 100000)

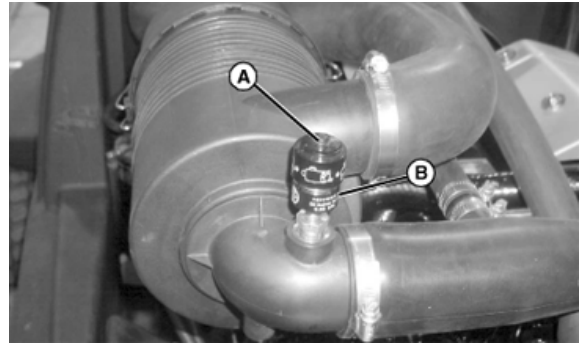
3. Check air filter restriction indicator (A).
 - When the line (B) on the yellow plunger inside the indicator is within range (C), no air cleaner service is required.
 - When line on the yellow plunger inside the indicator is within range (D), air cleaner needs replacement.

4. Lower engine cover.

Air Restriction Indicator (SN 100001 -)

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

NOTE: Indicator will not signal correctly if indicator case is cracked or broken.



TCAL44886—UN—28MAR13

(SN 100001 -)

3. Push reset button (A) on end of indicator.
4. Start engine. Run at full throttle.
5. Check air filter restriction indicator.
6. Change primary element only when red plunger is visible in window (B).

Changing Air Cleaner Elements

IMPORTANT: Do not disturb filter unless air filter restriction indicator shows red plunger in window.

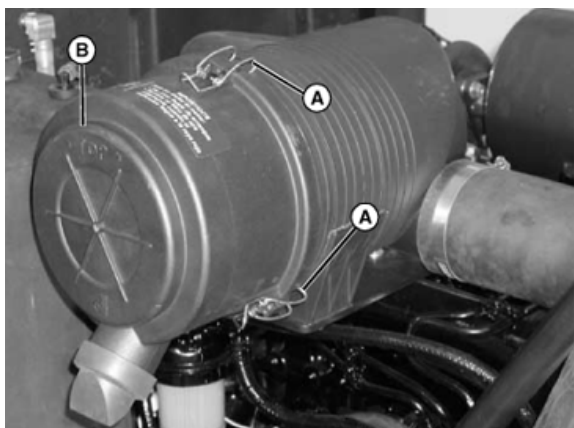
Air Cleaner Elements (SN 090001 - 100000)

IMPORTANT: 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.

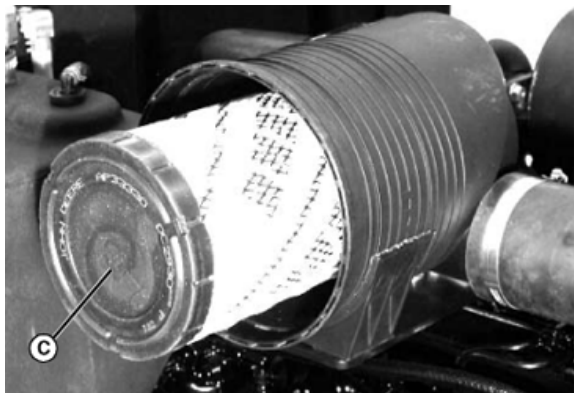
1. Park machine safely. (See Parking Safely in the SAFETY section.)
2. Allow engine to cool.
3. Raise engine cover.

Service Engine



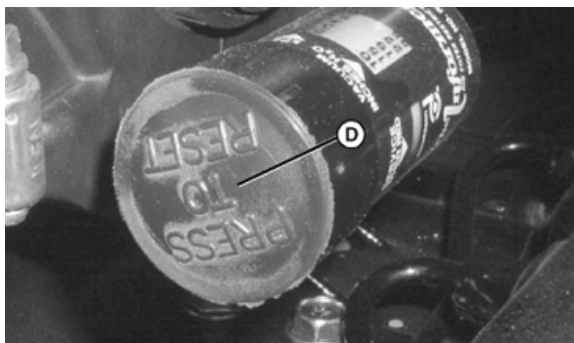
TCAL44887—UN—28MAR13

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



TCAL44888—UN—28MAR13

5. Remove and discard primary element (C). Replace with a new primary filter element.
6. Install air cleaner canister cover with rubber dust unloading valve pointing downward. (Check direction molded into canister cover for proper installation.)



TCAL44889—UN—28MAR13

7. Push reset button (D) on the air filter restriction indicator.
8. Start engine. Allow engine to run approximately one minute at maximum throttle speed. Return to idle speed and run for another minute.

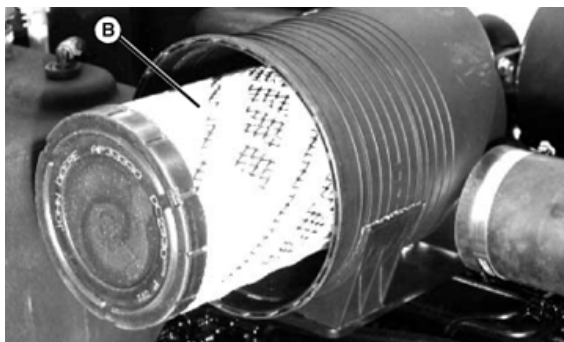
9. Stop engine.
10. Check air filter restriction indicator.
 - If yellow plunger inside the indicator is visible inside the red zone, replace secondary air filter element.

Air Cleaner Elements (SN 100001 -)



TCAL44890—UN—28MAR13

1. Stop engine. Remove cover (A).



TCAL44891—UN—28MAR13

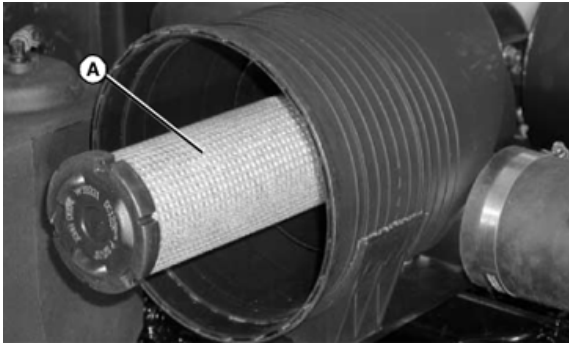
2. Remove and discard primary element (B).
3. Install new element into housing.
4. Install cover, and reset air filter restriction indicator.
5. Start engine. Check air filter restriction indicator. If indicator shows red plunger in window, change secondary element.
6. If indicator still shows red plunger after resetting and running engine, check for blockage in air cleaner housing or in hose from radiator bulkhead to air cleaner.

Changing Secondary Element

NOTE: Check air filter restriction indicator. If indicator shows red plunger in window, change secondary element.

Service Engine

1. Remove cover and primary element.



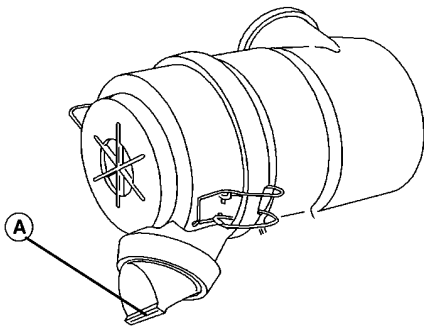
TCAL44892—UN—28MAR13

2. Remove and discard element (A).
3. Install new element.
4. Install primary element and cover.

Cleaning Dust Unloading Valve

IMPORTANT: 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.

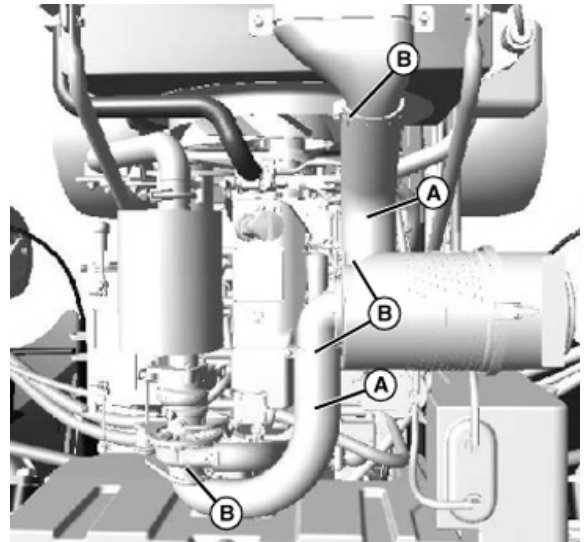


TCAL44893—UN—28MAR13

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

Checking Radiator Hoses, Air Intake Hoses and Clamps

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



TCAL44894—UN—28MAR13

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



TCAL44895—UN—28MAR13

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

Service Engine

Service Cooling System Safely



TCAL44896—UN—28MAR13

CAUTION: 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.

Diesel Engine Coolant

Preferred coolants:

The following pre-mix engine coolants are preferred:

- John Deere Cool-Gard™ II
- John Deere Cool-Gard™ II PG

Not all Cool-Gard™ II pre-mix products are available in all countries.

Use COOL-GARD™ II PG when a non-toxic coolant formulation is required.

Additional Recommended Coolants

The following engine coolant is also recommended:

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

IMPORTANT: Avoid damage! When mixing coolant concentrate with water, do not use less than 40% or greater than 60% concentration of coolant. Less than 40% gives inadequate additives for corrosion protection. Greater than 60% can result in coolant gelation and cooling system problems.

Other Coolants

Other ethylene glycol or propylene glycol base coolants may be used if they meet one of the following specifications:

- Pre-mix coolant meeting ASTM D6210 requirements
- Coolant concentrates meeting ASTM D6210 requirements in a 40% to 60% mixture of concentrate with quality water
- Pre-mix coolant meeting ASTM D3306 requirements
- Coolant concentrates meeting ASTM D3306 requirements in a 40% to 60% mixture of concentrate with quality water

If coolant meeting one of these specifications is unavailable, use a coolant concentrate or pre-mix coolant that has a minimum of the following chemical and physical properties:

- Is formulated with a quality nitrite-free additive package.
- Protects the cooling system metals (cast iron, aluminum alloys, and copper alloys such as brass) from corrosion.

Water Quality

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

Coolant Drain Intervals

Drain and flush the cooling system and refill with fresh coolant at the indicated interval, which varies with the coolant used.

When Cool-Gard™ II or Cool-Gard™ II PG is used, the drain interval is 6 yr. or 6000 operating hours.

If a coolant other than Cool-Gard™ II or Cool-Gard™ II PG is used, reduce the drain interval to 2 yr. or 2000 operating hours.

IMPORTANT: Avoid damage! Do not use cooling system sealing additives or antifreeze that contains sealing additives.

IMPORTANT: Avoid damage! Do not mix ethylene glycol and propylene glycol base coolants.

IMPORTANT: Avoid damage! Do not use coolants that contain nitrites.

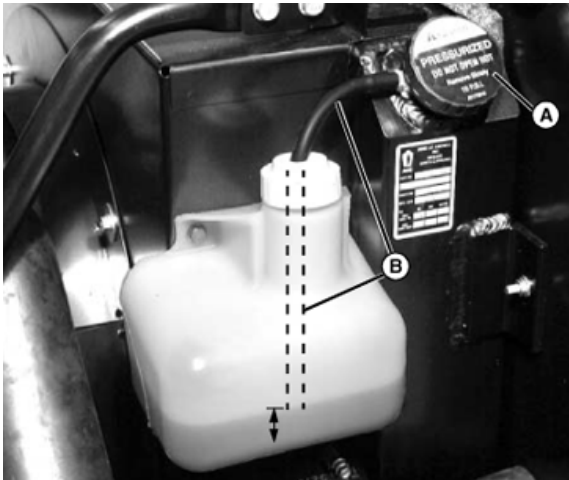
™Cool-Gard is a trademark of Deere & Company

Service Engine

Checking Coolant Level

IMPORTANT: Using incorrect coolant mixture can damage the radiator:

- Do not operate engine without coolant or with plain water.
 - Use antifreeze approved for use in aluminum engines.
 - Do not exceed a 50% antifreeze mixture for the coolant.
 - Do not pour coolant or water into radiator when engine is hot.
 - Do not add Stop Leak or other additives.
1. Park machine safely. (See Parking Safely in the SAFETY section.)
 2. Allow engine to cool. Raise engine cover.



TCAL44897—UN—28MAR13

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

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

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

Servicing the Cooling System

Draining Cooling System

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

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

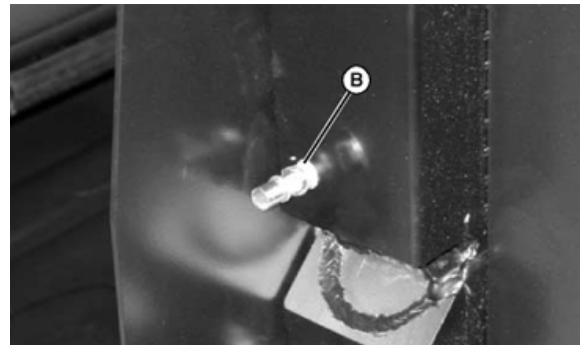
IMPORTANT:

- Do not operate engine without coolant.
 - Do not pour coolant into the radiator when the engine is hot.
1. Park machine safely. (See Parking Safely in the SAFETY section.)
 2. Allow engine to cool.
 3. Raise engine cover.



TCAL44898—UN—28MAR13

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



TCAL44899—UN—28MAR13

5. Open petcock (B) located on the right side of the radiator. Drain coolant into a pan.
6. Close petcock after all coolant has drained from the radiator.
7. Flush the cooling system.

Service Engine

Flushing Cooling System

IMPORTANT:

- **Do not flush the cooling system when the engine is hot.**
 - **Do not operate engine without coolant.**
1. Drain cooling system and add John Deere Cooling System Cleaner, or John Deere Cooling System Quick Flush or equivalent. Fill system with clean water. Follow directions on can.
 2. Install and tighten radiator cap.
 3. Start and run engine until it reaches operating temperature.
 4. Stop engine.

 **CAUTION: 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.**

5. Open radiator petcock.
 - Drain cooling system immediately before rust and dirt settle.
6. Close radiator petcock.
7. Fill cooling system with clean water and repeat flushing until system is clean.
8. Drain system and fill with coolant.

Filling Cooling System

IMPORTANT: Using incorrect coolant mixture can damage the radiator:

- **Do not operate engine without coolant or with plain water.**
 - **Use antifreeze approved for use in aluminum engines.**
 - **Do not exceed a 50% antifreeze mixture for the coolant.**
 - **Do not pour coolant or water into radiator when engine is hot.**
 - **Do not add Stop Leak or other additives.**
1. With engine and cooling system cool, open radiator cap to the first stop to release all pressure. Press down on cap slightly and turn counterclockwise to remove.
 2. Fill cooling system to specification.
 - Certain geographical areas may require lower temperature protection. See the label on your antifreeze container or consult your John Deere dealer to obtain the latest information and recommendations.
 - John Deere Cooling System Sealer or its equivalent may be added to the radiator to seal

leaks. Do not use any other additives in the cooling system.

Specification

Cooling System — Capacity 7.5 L (8 qt)

3. Start engine and watch coolant level in radiator. Add coolant if necessary to bring coolant level up to filler neck.
4. Install and tighten radiator cap. Run engine until at operating temperature.
5. Stop engine and allow to cool down.
6. Add coolant if necessary.
7. Check condition of hoses and clamps. Check for leaks or loose connections.

Servicing Fuel Water Separator Sediment Bowl

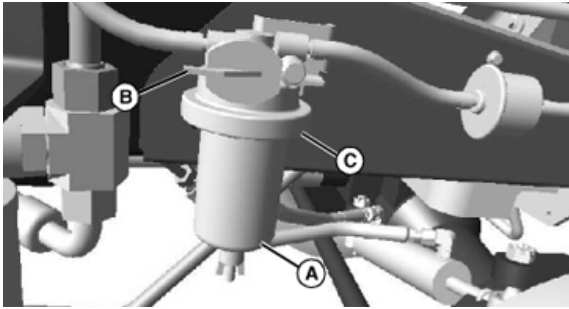
 **CAUTION: Fuel vapors are explosive and flammable:**

- **Shut engine off and allow to cool before filling fuel tank.**
- **Do not smoke while handling fuel.**
- **Keep fuel away from flames or sparks.**
- **Fill fuel tank outdoors or in ventilated area.**
- **Clean up spilled fuel immediately.**
- **Use clean approved non-metal container to prevent static electric discharge.**
- **Use clean approved plastic funnel without screen or filter to prevent static electric discharge.**
- **Loosen fuel cap slowly to release pressure and to keep fuel from escaping around the cap.**

Checking

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

Service Engine



TCAL44900—UN—28MAR13

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

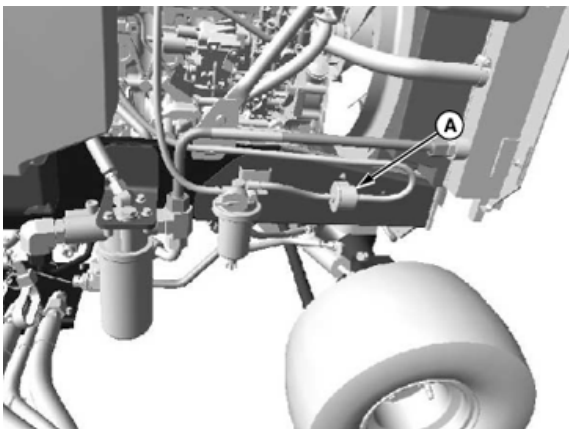
Cleaning and Replacing

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

Priming Diesel Fuel System

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

1. Make sure the machine is on a level surface, not a slope.
2. Turn off PTO switch.
3. Lower attachments to the ground.
4. Lock the park brake.



TCAL44901—UN—28MAR13

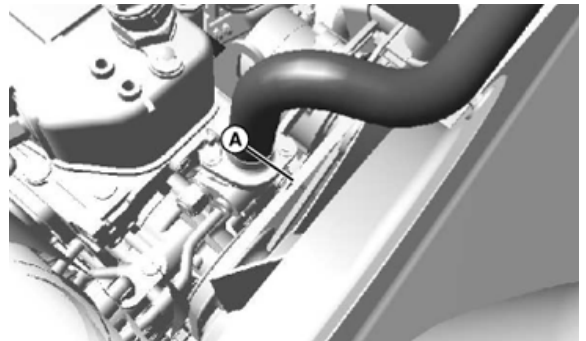
5. Turn key switch to RUN position for 2 minutes prior to starting engine. The fuel pump (A) will pressurize the fuel and remove any air in the system
6. Start engine. If engine will not start, repeat previous step.

Checking and Adjusting Alternator Belt

⚠ CAUTION: Rotating parts can catch fingers, loose clothing, or long hair. Wait for engine and all moving parts to stop before leaving operator's station to adjust or service machine.

Check Belt Tension

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

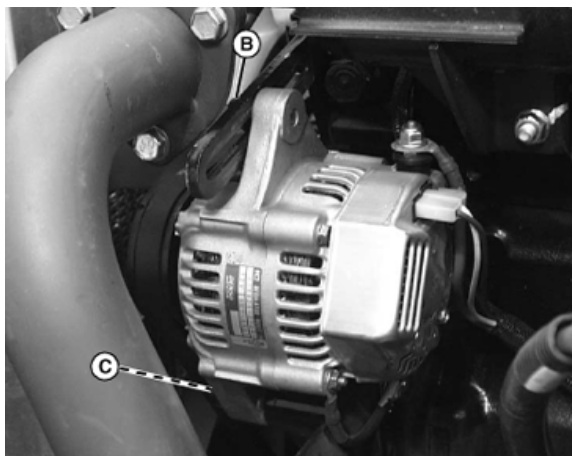


TCAL44902—UN—28MAR13

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

Service Engine

Adjusting Belt Tension



TCAL44903—UN—28MAR13

Alternator located on right side of engine.

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

Replacing Alternator Belt

CAUTION: Rotating parts can catch fingers, loose clothing, or long hair. Wait for engine and all moving parts to stop before leaving operator's station to adjust or service machine.

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



TCAL44904—UN—28MAR13

Alternator located on right side of engine.

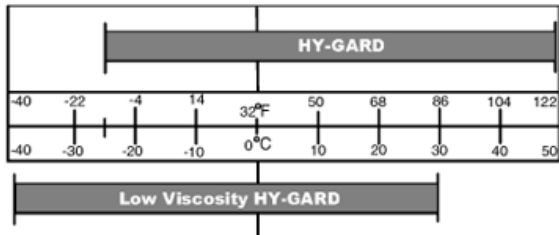
4. Loosen alternator mounting bolt (A).
5. Loosen and remove adjustment bolt (B).
6. Apply inward pressure to the alternator housing.
7. Remove worn belt from the alternator sheave and both engine sheaves.

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

8. Install new belt over fan blades and engine sheaves, and over alternator pulley.
9. Adjust belt so it deflects approximate 11 mm (.5 inch) when pushed on between water pump and alternator pulleys with finger.

Service Transmission

Transmission and Hydraulic Oil



TCAL44905—UN—28MAR13

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

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

Do not use type “F” automatic transmission fluid.

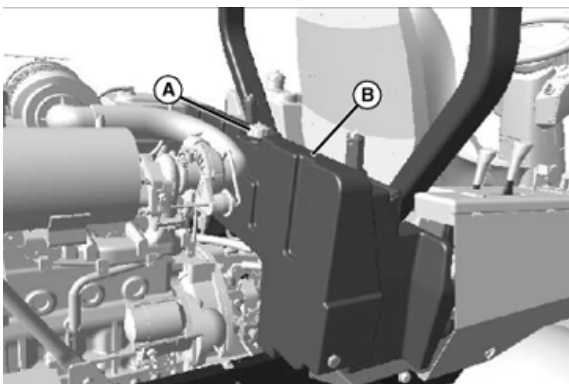
John Deere HY-GARD® (J20C) transmission oil is specially formulated to provide maximum protection against mechanical wear, corrosion, and foaming.

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

Checking the Hydraulic Oil Level

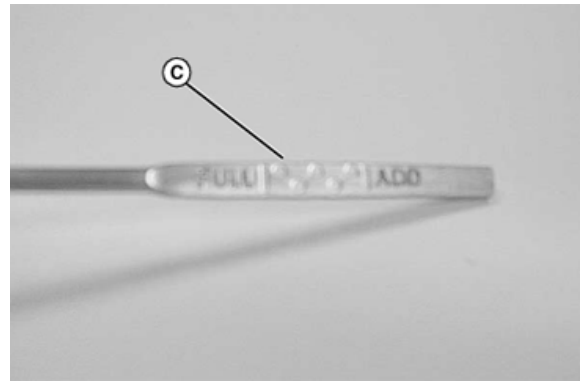
Check the oil level before you start the engine.

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



TCAL44906—UN—28MAR13

3. Remove oil fill cap (A) on hydraulic reservoir (B).



TCAL44907—UN—28MAR13

4. Check the oil level on the dipstick indicator (C). Oil level should be between the FULL and ADD marks on the indicator when machine is cold.
5. Install reservoir cap and close engine cover.

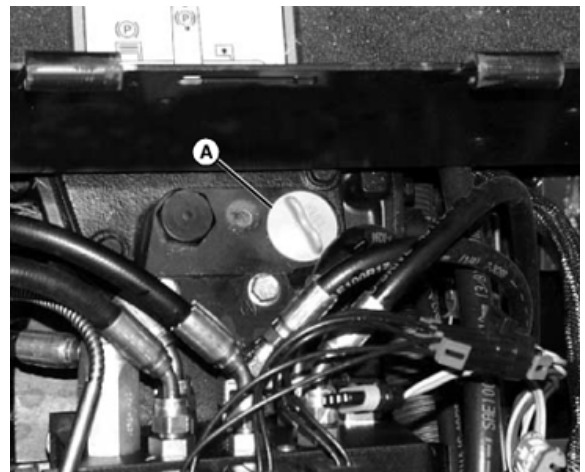
Checking the Transmission Oil Level

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

IMPORTANT: Hot hydraulic oil will expand and show incorrect oil level. Check reservoir tank:

- When oil is cold.
- Engine not running.

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



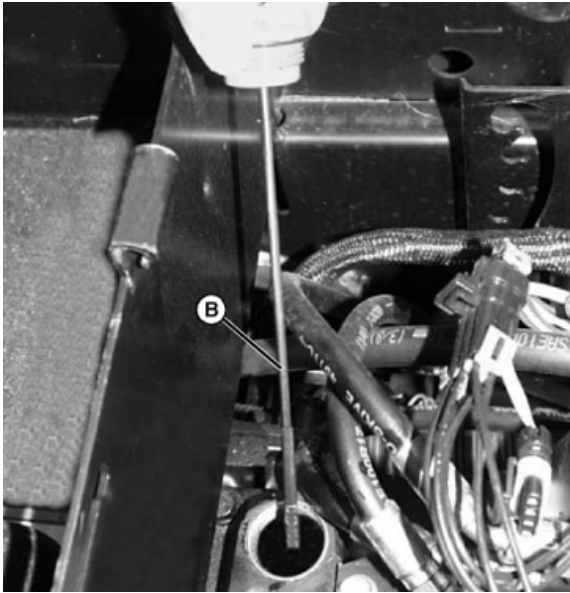
TCAL44908—UN—28MAR13

Oil filler cap (seat platform removed for clarity)

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

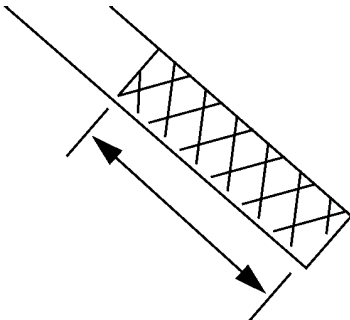
IMPORTANT: Dirt and debris in oil may cause damage to the transaxle. Clean area around opening before removing dipstick.

Service Transmission



TCAL44909—UN—28MAR13

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



TCAL44910—UN—28MAR13

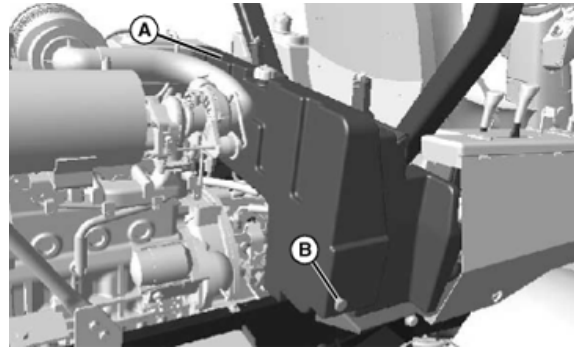
5. Oil level should be in XXX range on dipstick. Add oil to transmission if level does not show on dipstick.
6. Install dipstick and lower seat platform. If oil was added, check oil level after driving machine.

Changing the Hydraulic Oil and Filter

⚠ CAUTION: 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.

1. Lower all mower decks to ground.
2. Park machine safely. (See Parking Safely in the SAFETY section.)
3. Wait until the engine and the transmission are cool before beginning service.

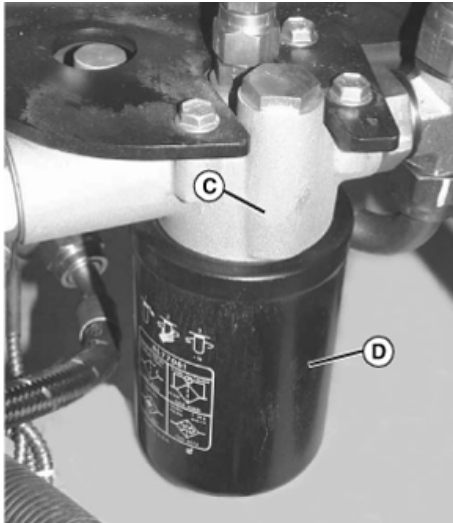


TCAL44911—UN—28MAR13

A — Hydraulic Reservoir
B — Right Side Reservoir Drain

4. Drain the hydraulic reservoir (A) using a siphon pump and the drain plug (B) on the right side rear corner of reservoir.
5. Install drain plug.

Service Transmission



TCAL44912—UN—09APR13

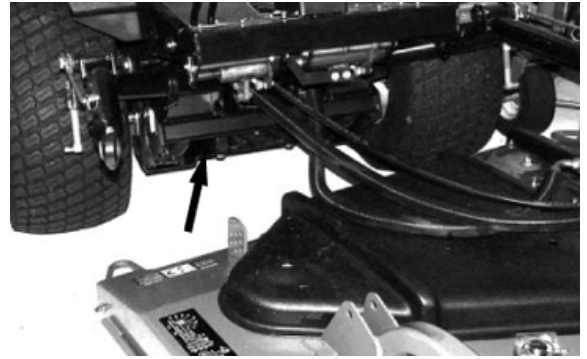
6. Clean debris from around hydraulic oil filter base (C) on left side of machine.
7. Use a filter wrench to turn the filter (D) counter clockwise. Remove the filter and drain the remaining hydraulic oil.
8. Clean the filter base and put a film of clean transmission oil on the seal of the new filter.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

Changing the Transmission Oil

⚠ CAUTION: 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.

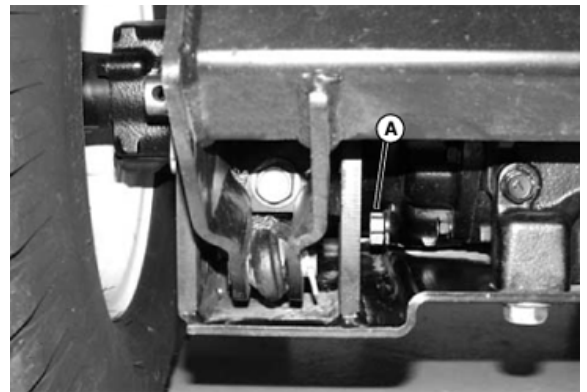
Use caution when filling and draining hydraulic oil. During periods of machine operation the hydraulic oil reservoir can get hot. Allow engine and oil reservoir to cool before servicing.

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



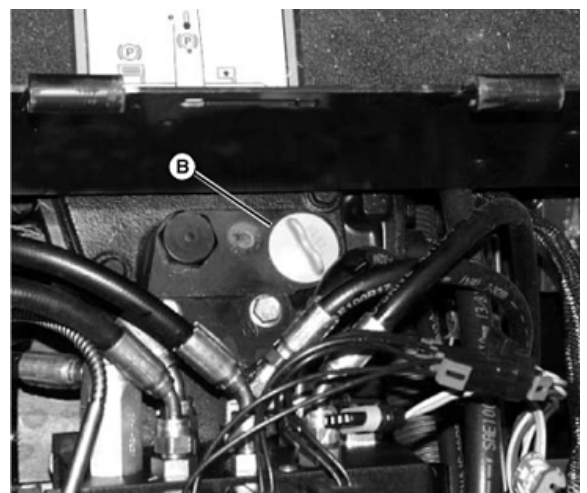
TCAL44913—UN—28MAR13

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



TCAL44914—UN—28MAR13

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



TCAL44915—UN—28MAR13

Seat platform removed for clarity

6. Raise and lock seat platform.

Service Transmission

IMPORTANT: Dirt and debris in oil may cause damage to the transaxle. Clean area around opening before removing plug or dipstick.

Be sure dipstick is installed before removing drain plug. Slowly remove dipstick after plug is removed to control rate of oil flow draining into drain pan.

7. Unscrew oil filler cap and dipstick (B).
8. Fill transmission with hydraulic oil until level is up to top of XXX marks on dipstick. Transmission capacity may take less when performing oil change. Do not overfill.

Specification

Transmission — Capacity (when dry) 13.3 L (3.5 gal)

9. Run machine, cycling hydrostatic pedals to purge air from transmission. Recheck transmission oil level.

Adjusting Transmission Neutral

CAUTION: Do not attempt this adjustment unless you are a qualified and properly trained technician. Improper adjustment can result in an unsafe machine.

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

1. Park machine on a firm, level surface. Place controls in following position:
 - Park brake unlocked.
 - Side decks raised and transport locks engaged.
 - Engine off.
 - PTO disengaged.
 - Differential lock disengaged.
 - Four wheel drive disengaged.
 - Range shift lever not in neutral.
2. Jack up front of machine. Place hardwood blocks under front sub frame so front tires are off of ground.

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

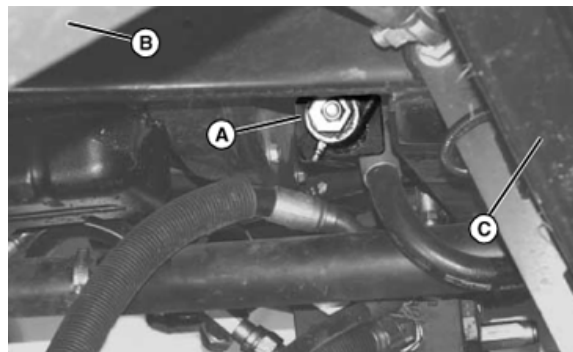
- Use a safe lifting device rated for the load to be lifted.
 - Lower machine onto jack stands or other stable supports and block wheels before servicing.
3. Jack up rear of machine. Place jack stands under rear axle so rear tires are off of ground.

CAUTION: Do not raise or lower decks, engage four wheel drive or differential lock, or turn PTO switch on during adjustment. Keep people clear of machine while running.

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

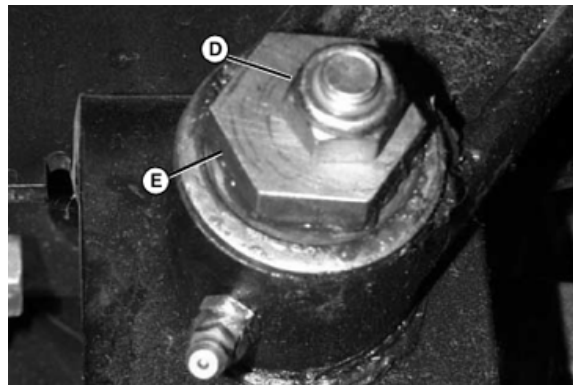
Stay away from tires while making adjustments.

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



TCAL44916—UN—28MAR13

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

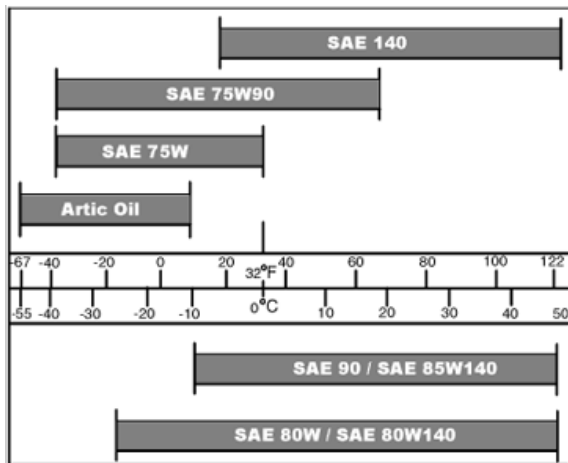


TCAL44917—UN—28MAR13

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

Service Transmission

Mechanical Four Wheel Drive (MFWD) Oil

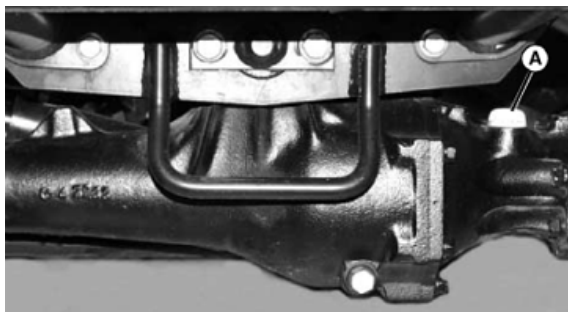


TCAL44918—UN—28MAR13

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

Checking the Mechanical Four Wheel Drive (MFWD) Oil Level

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

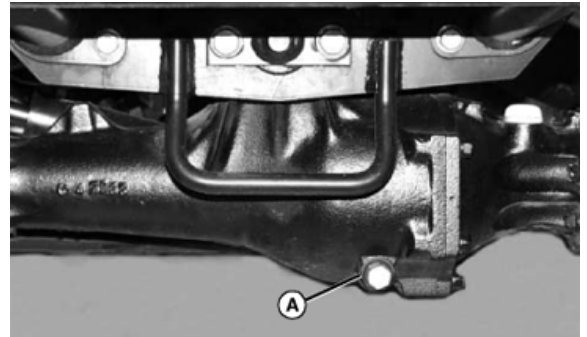


TCAL44919—UN—28MAR13

2. Locate filler cap (A) on right rear side of rear axle.
3. Unscrew filler cap and wipe dipstick clean.
4. Install filler cap back into axle housing but do not turn threads back in.
5. Remove dipstick and check oil level on it. Oil should be in XXX area on dipstick but not above top mark.
6. Add oil if needed. Do not overfill.

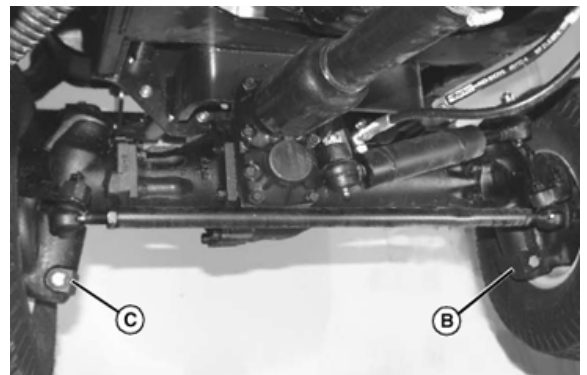
Changing the Mechanical Four Wheel Drive (MFWD) Oil Level

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



TCAL44920—UN—28MAR13

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



TCAL44921—UN—28MAR13

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

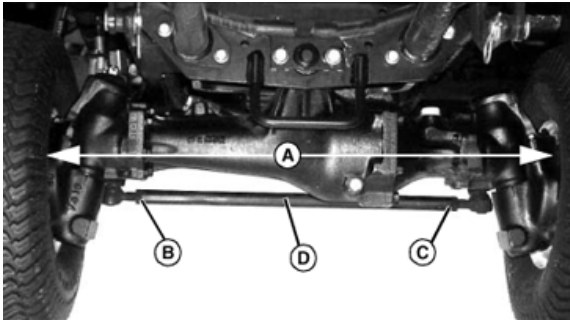
Specification

Rear Axle Housing — Capacity 4.7 L (5 qt)

Service Steering & Brakes

Adjusting Toe-In

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



TCAL44922—UN—28MAR13

2. Measure the distance between rear tires at rear of tires (A).
3. Measure the distance between rear tires at front of tires.
4. Distance between tires (toe-in) should be less in front than in rear and within specification.

Specification

Toe-In — Distance 3 - 4 mm (0.12 - 0.16 in.)

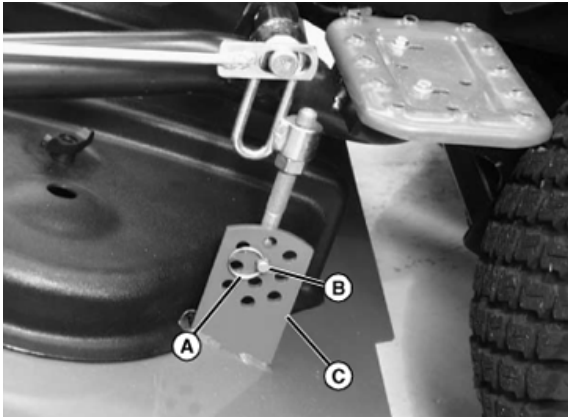
5. If toe-in requires adjustment, loosen locknuts on left and right side tie-rod ends (B and C).
6. Turn body of tie-rod (D) to adjust toe-in.
7. Measure toe-in again. If correct, tighten locknuts.

Service Mower

Rotating the Front Mower Deck

Rotate for Service

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

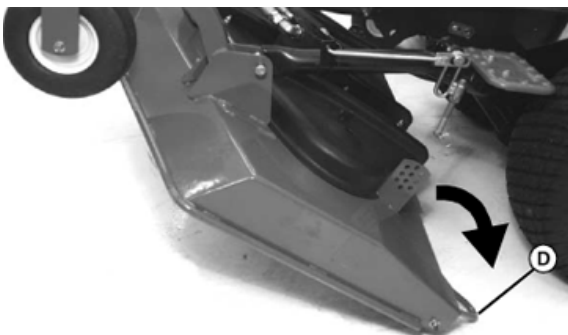


TCAL44923—UN—28MAR13

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

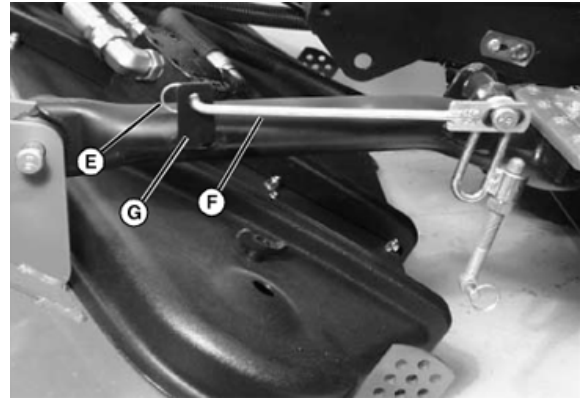
NOTE: To ensure deck can be returned to its original cutting height, note hole location in the adjustment plate before removing the hanger pin.

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



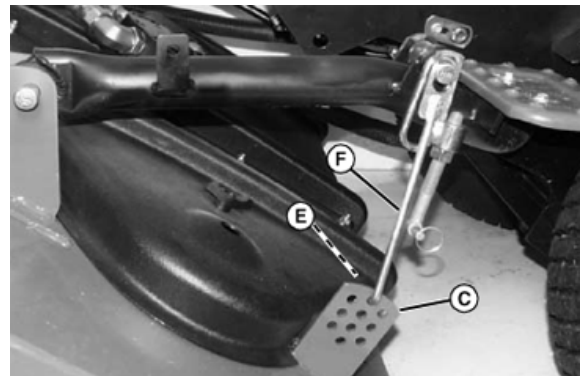
TCAL44924—UN—28MAR13

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



TCAL44925—UN—28MAR13

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



TCAL44926—UN—28MAR13

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

Rotate for Operation

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

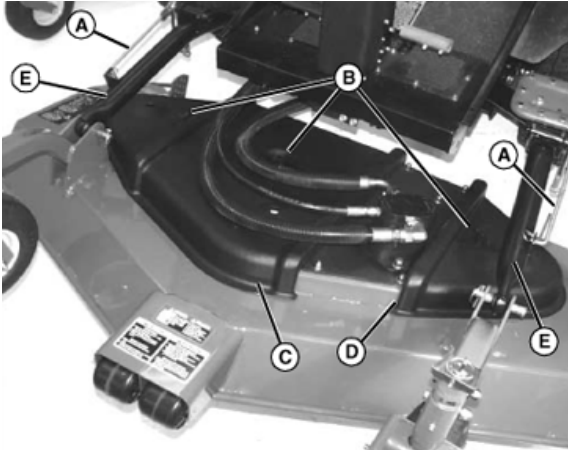
Service Mower

Removing and Installing Belt Shields

⚠ CAUTION: Rotating blades are dangerous. Before adjusting or servicing mower:

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

Front Deck Shields

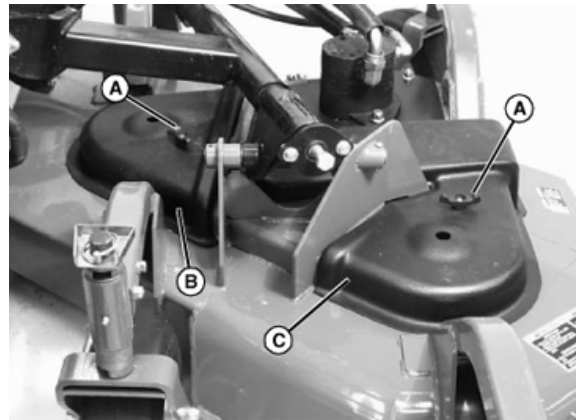


TCAL44927—UN—28MAR13

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

Side Deck Shields

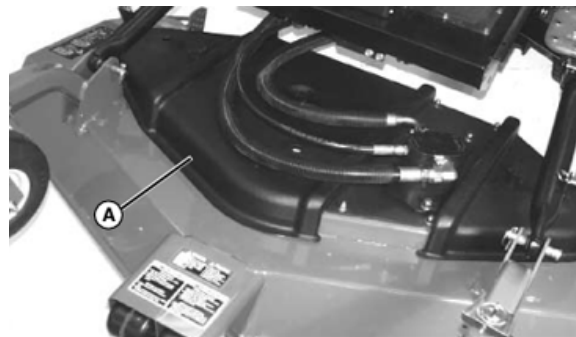
1. Park the machine safely. (See Parking Safely in SAFETY section.)



TCAL44928—UN—28MAR13

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

Adjusting Mower Deck Drive Belt Tension

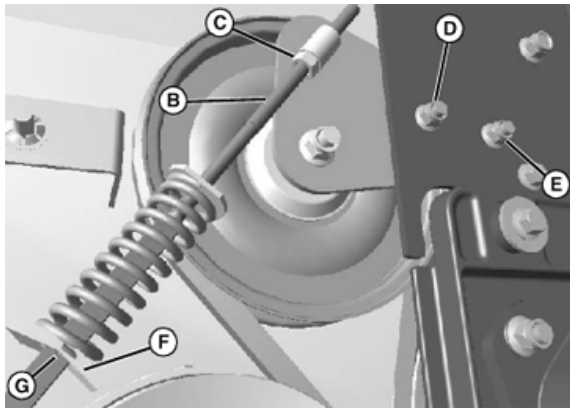


TCAL44929—UN—28MAR13

Front deck shown upper, side deck shown lower.

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

Service Mower



(Front deck shown, side deck similar)

3. Loosen hex nuts (D) and (E).
4. Adjust nut (C) until tension indicator hole (G) becomes visible on the outside of retaining plate (F) as shown.
5. Tighten hex nuts (D) and (E) to specification.

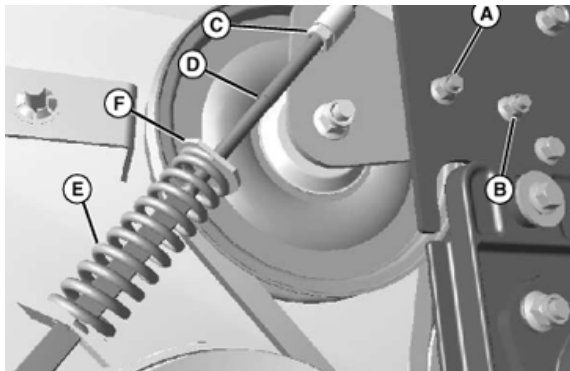
Specification

Hex Nut — Torque 60 N·m (81 lb-ft)

Removing and Installing Front Mower Deck Drive Belt

Front Belt Removal

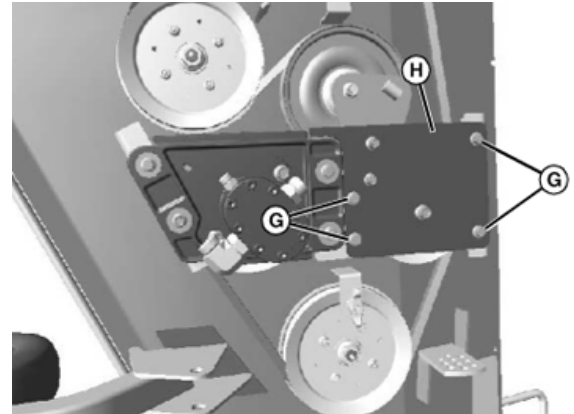
1. Remove belt shields from mower deck.
2. Lower mower deck completely.



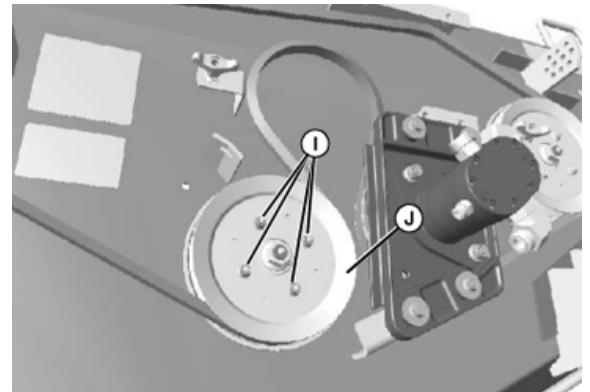
3. Loosen hex nuts (A) and (B).
4. Loosen nut (C) until all spring tension is removed.
5. Remove tension rod (D), spring (E), and spring retainer (F).

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

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

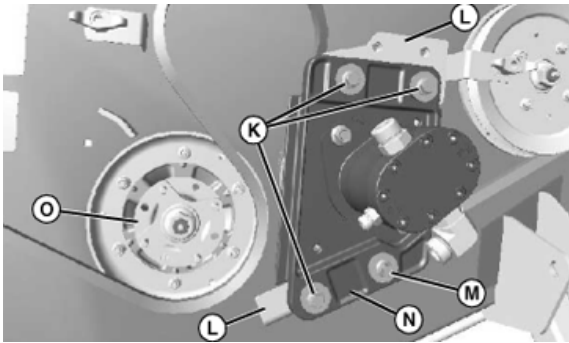


6. Remove four cap screws (G).
7. Remove sheet metal plate (H).



8. Remove four hex nuts (I) and mower deck spindle sheave (J).

Service Mower

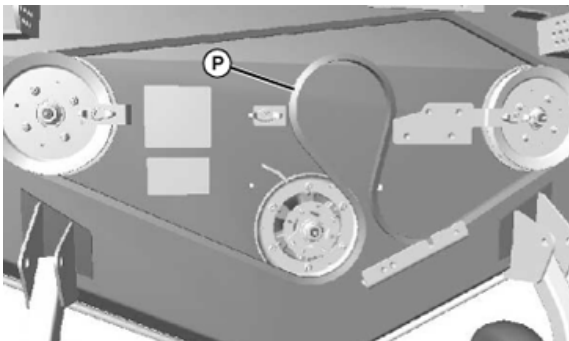


TCAL44934—UN—28MAR13

9. Remove three cap screws (K), three washers, and three upper rubber isolator halves.
10. Remove nut (M), washer, and rubber isolator half from carriage bolt.

NOTE: The lower halves of the rubber isolators are fit into the deck side of the cast mounting plate. Washers are glued to the bottom of each isolator. Ensure rubber isolators and washers remain installed in the mounting plate during installation of the mounting plate to the mower deck.

11. Slide cast mounting plate (N) towards mower deck spindle (O) to remove it from the mounting brackets (L).

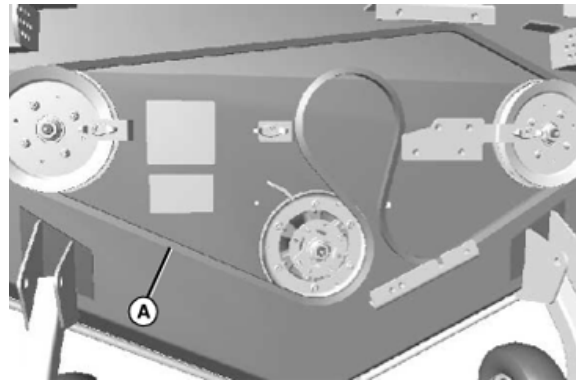


TCAL44935—UN—28MAR13

12. Remove drive belt (P) from mower deck sheaves.

Front Belt Installation

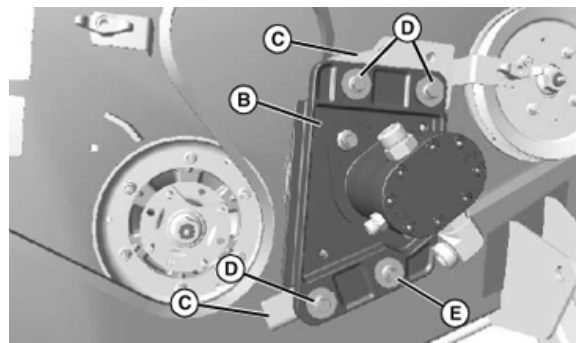
NOTE: Belt routing diagram is affixed to mower deck.



TCAL44936—UN—28MAR13

1. Route drive belt (A) around mower deck sheaves as shown.

NOTE: The lower halves of the rubber isolators are fit into the deck side of the cast mounting plate. Washers are glued to the bottom of each isolator. Ensure rubber isolators and washers remain installed in the mounting plate during installation of the mounting plate to the mower deck.



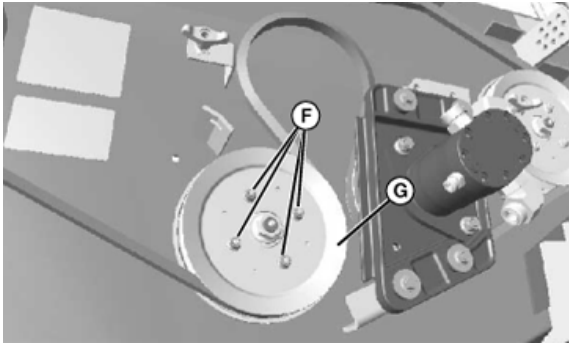
TCAL44937—UN—28MAR13

2. Position cast mounting plate (B) onto mounting brackets (C) so that belt is routed properly around drive motor sheave. Install carriage bolt, upper isolator half, washer, and nut (E). Do not tighten.
3. Install 3 upper isolator halves, washers, and cap screws (D). Tighten cap screws (D) and nut (E) to specification.

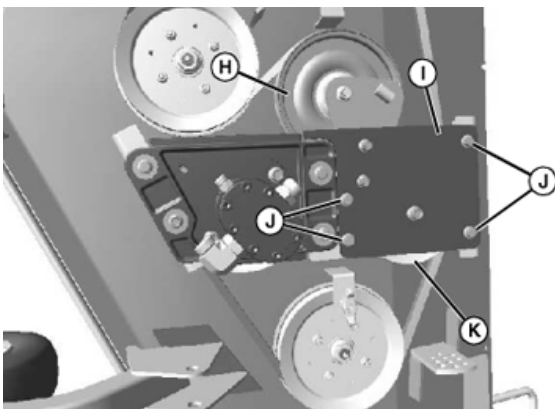
Specification

Cap Screw and Nut — Torque 47 N·m (35 lb-ft)

Service Mower



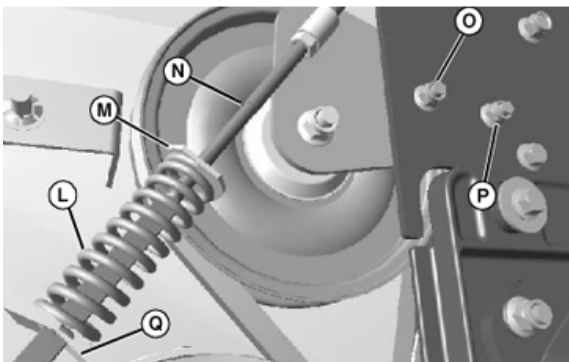
4. Install mower deck spindle sheave (G) and four hex nuts (F). Route belt around spindle sheave.



5. Install sheet metal plate (I) and route belt around tensioner sheave (H) and idler sheave (K). Install four cap screws (J). Tighten cap screws to specification.

Specification

Cap Screw — Torque. 81 N·m (60 lb-ft)



6. Ensure spring retainer (M) and spring (L) are installed on tension rod (N). Install tension rod into retaining plate (Q) on mower deck.
7. Adjust drive belt to proper tension.

8. Tighten hex nuts (O) and (P) to specification.

Specification

Cap Screw — Torque. 81 N·m (60 lb-ft)

9. Move the drive belt by hand to turn the sheaves. Ensure belt motion is smooth and sheaves do not rub on deck surfaces.

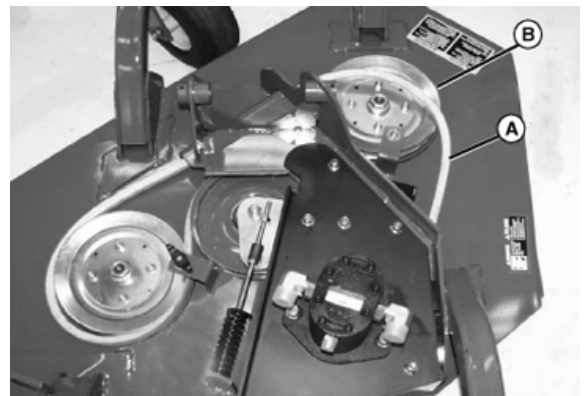
Removing and Installing Side Mower Deck Drive Belt

Side Belt Removal

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

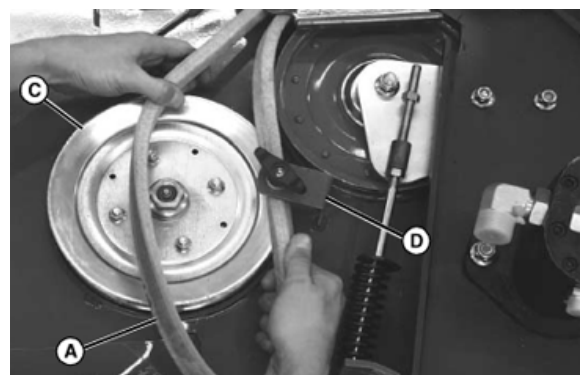
! CAUTION: Rotating blades are dangerous. Before adjusting or servicing mower:

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



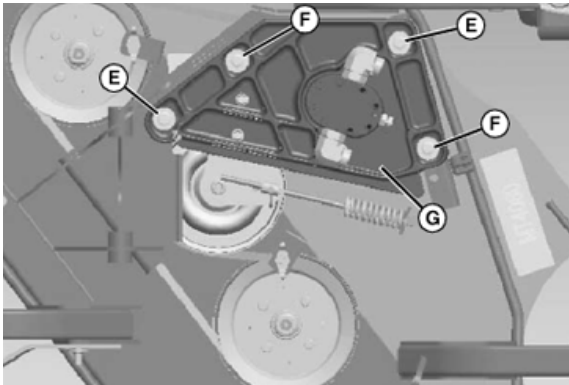
Mower deck shown removed for clarity

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



Service Mower

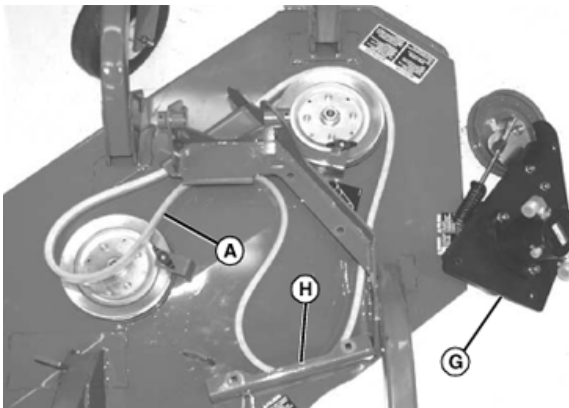
5. Remove drive belt (A) from sheave (C) by twisting the belt and sliding it between belt shield support bracket (D) and the sheave.



TCAL44943—UN—28MAR13

6. Remove two cap screws (E), washers, and rubber isolators from motor plate (G). Remove two cap screws (F), washers, rubber isolators, and hex nuts.

NOTE: The lower halves of the rubber isolators are fit into the deck side of the cast mounting plate. Washers are glued to the bottom of each isolator. Ensure rubber isolators and washers remain installed in the mounting plate during installation of the mounting plate to the mower deck.

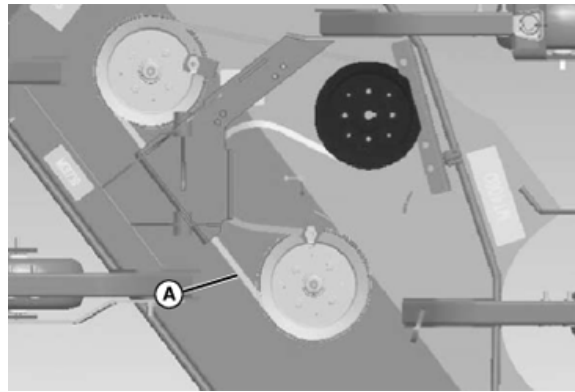


TCAL44944—UN—28MAR13

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

Side Belt Installation

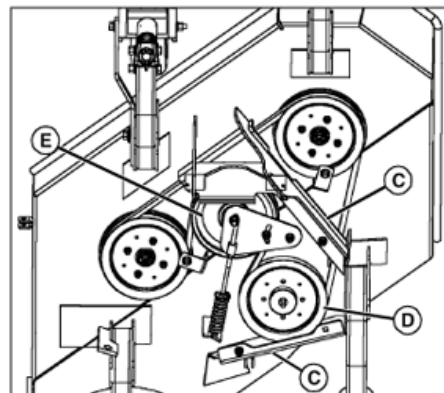
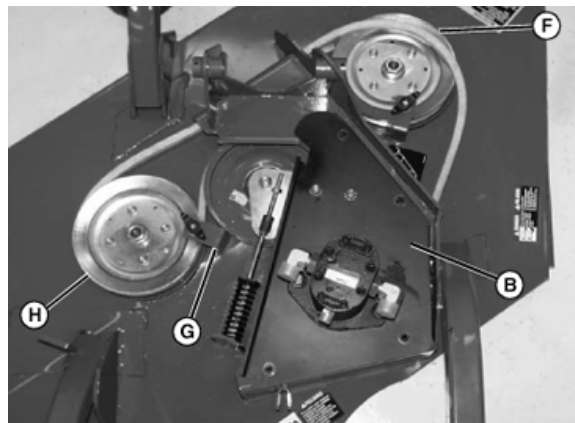
NOTE: Belt routing diagram is affixed to mower deck.



TCAL44945—UN—28MAR13

1. Route drive belt (A) as shown.

NOTE: The lower halves of the rubber isolators are fit into the deck side of the cast mounting plate. Washers are glued to the bottom of each isolator. Ensure rubber isolators and washers remain installed in the mounting plate during installation of the mounting plate to the mower deck.

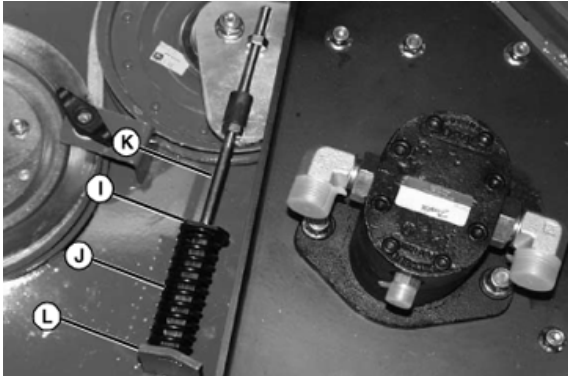


TCAL44946—UN—28MAR13

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

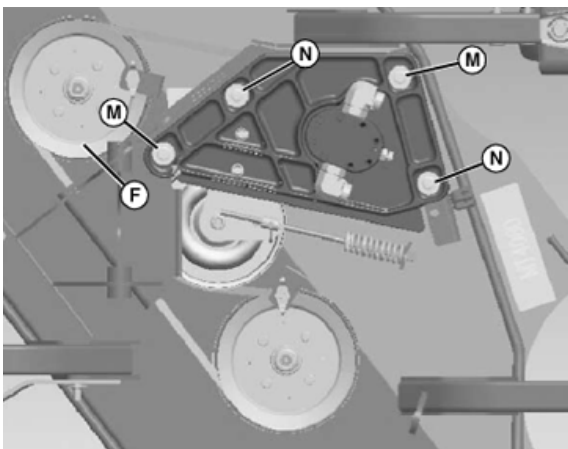
Service Mower

- Slide drive belt between belt shield support bracket (G) and sheave (H). Ensure proper positioning of belt in the belt grooves.



TCAL44947—UN—28MAR13

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



TCAL44948—UN—28MAR13

- Install two isolators, washers, and cap screws (M). Install two isolators, washers, cap screws, and hex nuts (N). Do not tighten completely.

- Install drive belt onto sheave (F).

- Tighten cap screws (M and N) to specification.

Specification

Cap Screw — Torque 47 N·m (35 lb-ft).

- Adjust drive belt to proper tension.

- Move the drive belt by hand to turn the sheaves. Make sure belt motion is smooth and sheaves do not rub on deck surfaces.

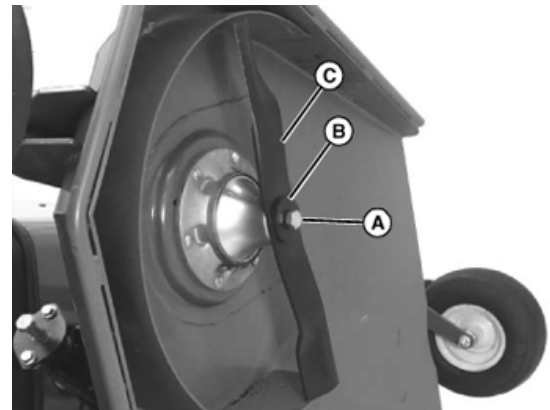
- Raise mower decks completely.

- Stop engine and remove the key.

- Rotate front mower deck for service if blades on front deck will be removed.

CAUTION: Blades are sharp. Always wear gloves when handling blades or working near blades.

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



TCAL44949—UN—28MAR13

- Remove bolt (A), washer (B), and blade (C) by turning the bolt counterclockwise until removed. Repeat for all blades requiring service.

- Inspect the blades for damage. Replace all damaged blades.

- Sharpen dull blades.

- Clean blades, spindles, and hardware.

- Balance the blades.

- Install blade onto mower deck spindle with wings of blade facing up.

IMPORTANT: Make sure cupped side of concave washer is positioned against the mower blade or blade could be damaged.

- Install blade bolt and washer with the cupped side of washer against the blade. Tighten blade bolt to specification. Repeat for other blades.

Specification

Bolt — Torque 122 N·m (90 lb-ft)

- Lower mower decks completely.

Removing and Installing Blades

- Stop machine on a level surface.
- Lock park brake.

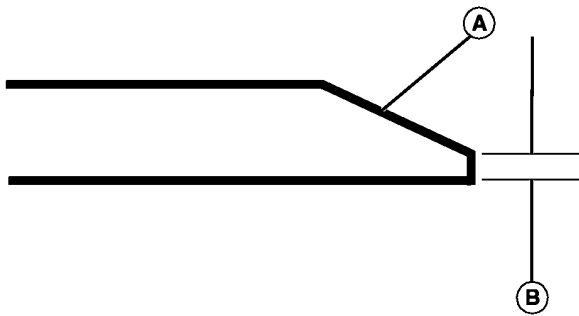
Sharpening Blades

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

Always wear safety eye protection when grinding.

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

- Check balance. If blade is not balanced, heavy end of blade will drop.
- Grind bevel of heavy end. Do not change blade bevel.



GXAL42041—UN—04MAR13

- Keep original bevel (A) when grinding.
- The blade cutting edge (B) should meet specifications.

Specification

Mower Blade Cutting Edge

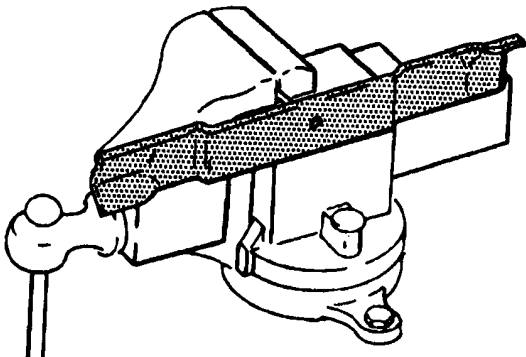
— Distance 0.40 mm (1/64 in.)

- Balance blades before installing.

Balancing Blades

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

- Clean blade.



GXAL42042—UN—04MAR13

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

Service Electrical

Electrical

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

Service the Battery Safely



MXAL42869—UN—09APR13

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

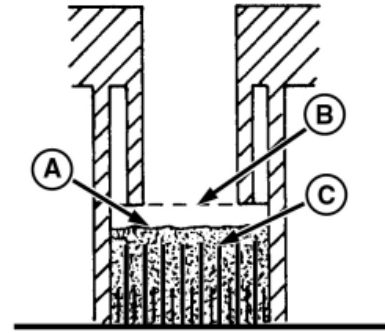
To prevent the battery from exploding:

- Do not smoke or have open flame 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.



TCT005681—UN—11SEP12

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

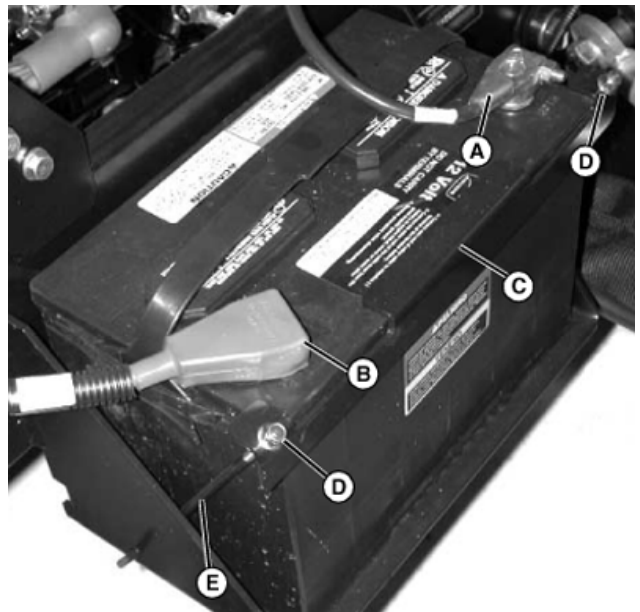
IMPORTANT: Avoid damage! Do not overfill battery. Electrolyte can overflow when battery is charged and cause damage.

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

Removing and Installing the Battery

Removing:

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



TCAL44954—UN—09APR13

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

Service Electrical

4. Pull up red plastic cover (B) from positive (+) battery clamp and disconnect positive (+) cable clamp from battery terminal.
5. Remove battery hold down bracket (C) by removing locknuts (D) from left and right side J-bolts (E).
6. Remove battery from machine.

Installing:

1. Install battery with positive terminal (+) towards rear of machine.
2. Install battery hold down bracket onto J-bolts and secure with locknuts.
3. Install positive cable clamp (red cable) onto positive (+) battery terminal. Pull red plastic cover over positive cable clamp.
4. Install negative cable clamp (black cable) onto negative (-) battery post.
5. Apply spray lubricant to terminals to prevent corrosion.

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.

Using Booster Battery

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

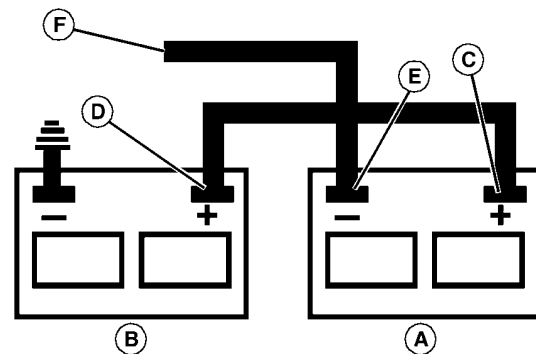
To prevent the battery from exploding:

- 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 specification.

Specification

Battery — Temperature 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.



MXAL42872—UN—09APR13

- A — Booster Battery
- B — Disabled Vehicle Battery
- C — Positive (+) Post
- D — Positive (+) Post
- E — Negative (-) Post
- F — Negative (-) Booster Cable End

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 charges from the booster battery damages 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.

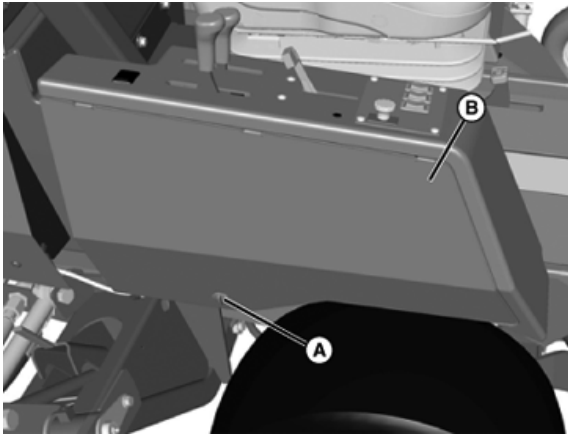
4. Connect the other end (F) of negative (-) booster cable to a metal part of the disabled machine engine block away from battery.

Service Electrical

5. Start the engine of the disabled machine and run machine for several minutes.
6. Carefully disconnect the booster cables in the exact reverse order: negative cable first and then the positive cable.

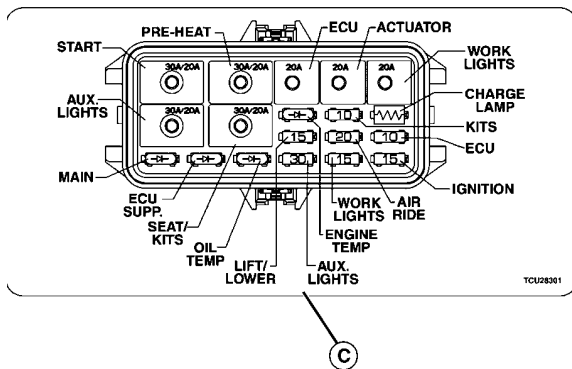
Checking and Replacing Fuses

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



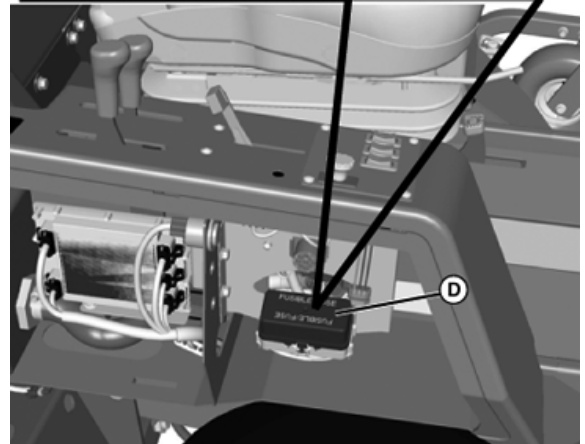
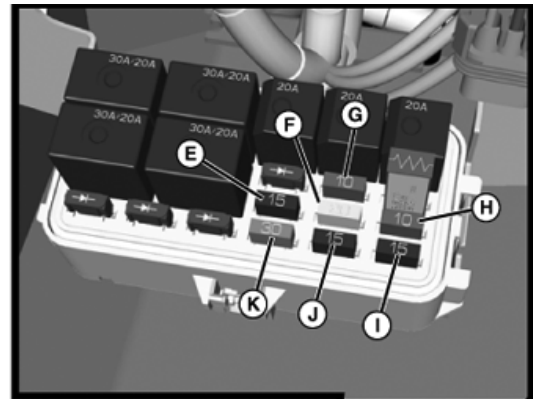
TCAL44956—UN—01APR13

2. Loosen knob (A) and remove right side electrical service panel (B) to access fuse holders.



TCAL44957—UN—01APR13

3. Locate label (C) on back side of panel (B) for a fuse and relay location reference.



TCAL44958—UN—01APR13

4. Remove fuse cover (D).
5. Test fuses with voltmeter or test light and replace if blown. Replace blown fuse with new fuse of correct amperage.
 - (E) 15 Amp fuse – raise/lower valve power circuit
 - (F) 20 Amp fuse – air ride power circuit
 - (G) 10 Amp fuse – kits circuit
 - (H) 10 Amp fuse – ECU circuit
 - (I) 15 Amp fuse – ignition circuit
 - (J) 15 Amp fuse – work lights circuit
 - (K) 30 Amp fuse – auxiliary lights circuit
6. Replace fuse cover.
7. Replace electrical service panel and tighten knob to secure.

Service Miscellaneous

Diesel Fuel

Use the proper diesel fuel to help prevent decreased engine performance and increased exhaust emissions. Failure to follow the fuel requirements listed 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 ISO 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 comply with ISO EN 590 or ASTM D975.

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 BioDiesel Fuel

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

The current maximum allowable BioDiesel concentration is a 7% blend (also known as B7) in petroleum diesel fuel.

To learn of any changes to the recommendations for BioDiesel usage with your diesel engine, ask your John Deere dealer.

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 also forms. The gel and flakes 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: 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.

IMPORTANT: 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.

Service Miscellaneous

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.

Cleaning Plastic Surfaces

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

- Do not wipe plastic surfaces when they are dry. Dry wiping will result in minor surface scratches.
 - Use a soft, clean cloth (bath towel, diaper, automotive mitt).
 - Do not use abrasive materials, such as polishing compounds, on plastic surfaces.
 - Do not use degreaser.
 - Do not spray insect repellent near machine.
1. Rinse hood and entire machine with clean water to remove dirt and dust that may scratch the surface.
 2. Wash surface with clean water and a mild liquid automotive washing soap.
 3. Dry thoroughly to avoid water spots.
 4. Wax the surface with a liquid automotive wax. Use products that specifically say "contains no abrasives."

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

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

Cleaning and Repairing Metal Surfaces

Cleaning:

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

Repairing Minor Scratches (surface scratch):

1. Clean area to be repaired thoroughly.

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

2. Use automotive polishing compound to remove surface scratches.

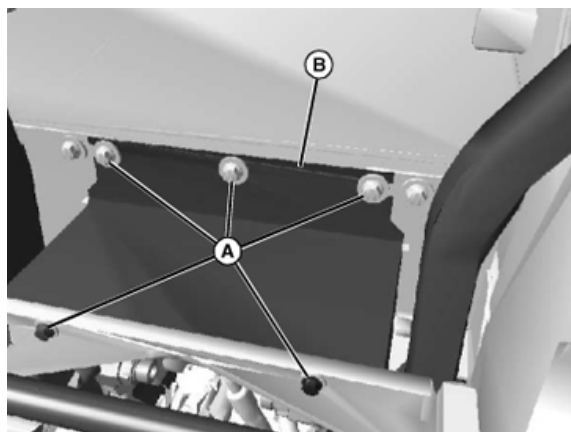
3. Apply wax to entire surface.

Repairing Deep Scratches (bare metal or primer showing):

1. Clean area to be repaired with rubbing alcohol or mineral spirits.
2. Use paint stick with factory-matched colors available from your authorized dealer to fill scratches. Follow directions included on paint stick for use and for drying.
3. Smooth out surface using an automotive polishing compound. Do not use power buffer.
4. Apply wax to surface.

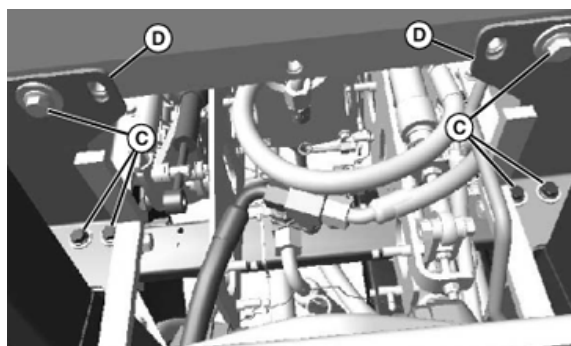
Tightening ROPS Hardware

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



TCAL44959—UN—28MAR13

3. Remove cap screws and washers (A) securing panel (B) to machine.
4. Carefully lift panel from machine and set it aside.

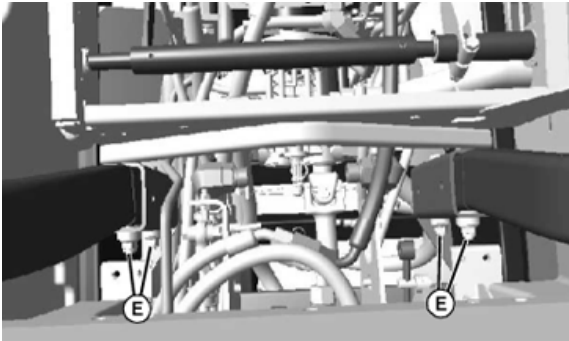


TCAL44960—UN—28MAR13

5. Remove cap screws and washers (C) securing side panels (D).

Service Miscellaneous

6. Carefully lift panel from machine and set it aside.



TCAL44961—UN—28MAR13

7. Tighten the four ROPS attaching cap screws, washers, and hex nuts (E) to specification.

Specification

Cap Screw — Torque. 136 N·m (100 lb-ft)

8. Install panels and secure with cap screws and washers.
9. Lower seat platform and engine cover.

Removing and Installing Front Tires

CAUTION: 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.

Removing Front Tires

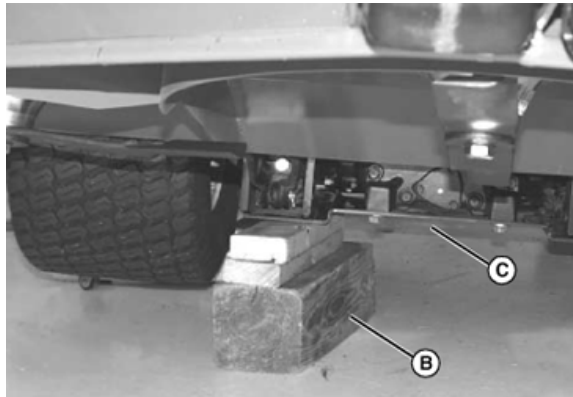
1. Raise side deck completely on side of machine requiring front wheel removal. Leave other side deck lowered completely.
2. Engage the side deck transport lock.
3. Raise front mower deck completely.
4. Park machine safely. (See Parking Safely in SAFETY section.)
5. Rotate front deck for service to obtain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

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



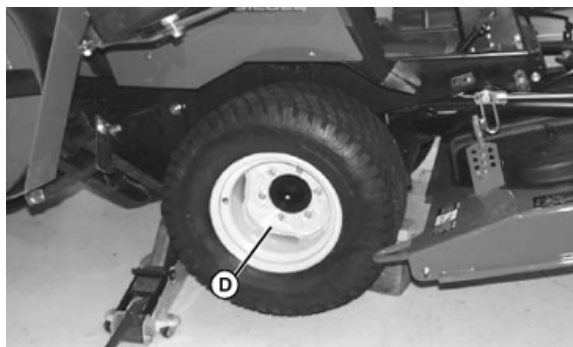
TCAL44962—UN—28MAR13

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



TCAL44963—UN—28MAR13

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



TCAL44964—UN—28MAR13

9. Remove wheel bolts (D) and wheel.

Service Miscellaneous

Installing Front Tires



TCAL44965—UN—28MAR13

1. Install wheel onto axle hub with valve stem facing outward. Secure with wheel bolts (A).
2. Using torque wrench, Tighten front wheel bolts to specification.

Specification

Wheel Bolts — Torque 136 - 163 N·m (100 - 120 lb-ft)

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



TCAL44966—UN—28MAR13

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

Removing and Installing Rear Tires

CAUTION: 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.

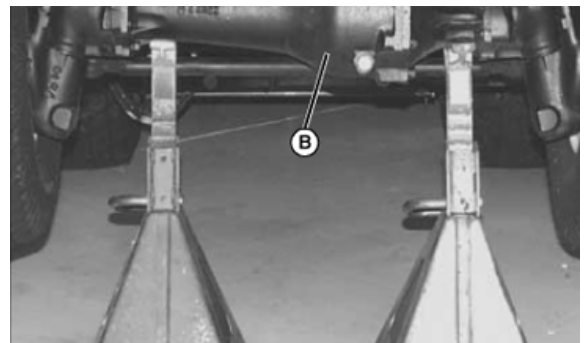
Removal

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



TCAL44967—UN—28MAR13

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



TCAL44968—UN—28MAR13

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

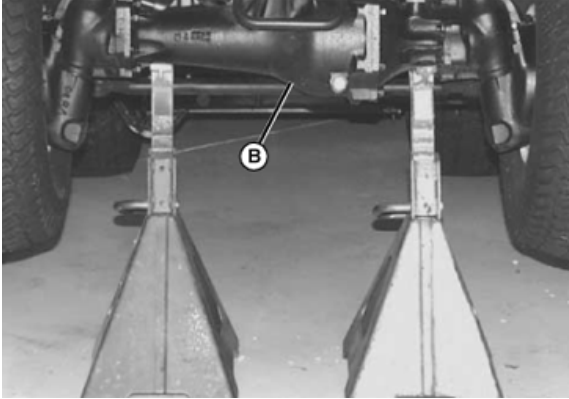
Service Miscellaneous

Installation

1. Install wheel onto axle hub with valve stem facing outward. Secure with wheel bolts.
2. Tighten rear wheel bolts to specification, using torque wrench.

Specification

Rear Wheel Bolt — Torque. 81 - 95 N·m (60 - 70 lb-ft)



TCAL44969—UN—28MAR13

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

Troubleshooting

Using Troubleshooting Chart

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

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

Engine

IF	CHECK
Poor Engine Performance	Fuel: • Dirt in fuel system or fuel is old. Replace fuel with fresh stabilized fuel. Obtain fuel from another supplier before suspecting machine problems. Suppliers blend fuels differently and changing suppliers will generally solve any performance problems • Fuel blended for cold or warm climate may contribute to performance problems if used in the wrong season, especially if fuel is stored for several months or more. Obtain fresh fuel.
Engine Will Not Start (Starter Engages and Turns Engine)	Fuel shutoff valve is in off position. Out of fuel or improper fuel. Plugged fuel filter. Electrical problem - See Electrical Troubleshooting Section
Engine Is Hard To Start	Plugged fuel filter. Stale or improper fuel.
Engine Runs Unevenly	Fuel line or fuel filter plugged. Stale or dirty fuel. Fuel injector clogged. Air cleaner element plugged.
Engine Misses Under Load	Stale or dirty fuel. Plugged fuel filter.
Engine Overheats	Engine air intake screen plugged. Engine coolant level is low. Engine oil level is low or too high. Engine operated too long at a slow idle speed.
Engine Will Not Idle	Fuel level too low. Air cleaner element dirty. Operator raising off the seat without park brake locked.
Engine Knocks	Stale fuel. Engine overloaded. Low engine speed.
Engine Stops Or Misses When Operating On Hillsides	Fuel tank less than half full of fuel. Operator raising off the seat.
Engine Backfires	Operator raising off the seat.
Engine Loses Power	Engine overheating. Too much oil in engine. Dirty air cleaner. Travel speed is too fast for conditions. Improper fuel.
Black Exhaust Smoke	Air filter element is dirty.

Electrical

IF	CHECK
Starter Does Not Engage	Park brake is not locked. PTO switch is in on position. Hydrostatic pedals are not in centered neutral position. Battery terminals are corroded. Battery not charged. 15 main fuse is blown.
Battery Will Not Charge	Dead cell in the battery. Battery cables and terminals are dirty. Low engine speed or excessive idling.

Troubleshooting

IF	CHECK
Lights Do Not Work	Light plug disconnected. Loose or burned out bulb.

Machine

IF	CHECK
Vibrates Too Much or Rattles Excessively	Engine cover not latched closed. Electrical panel not latched closed.
Machine Will Not Move With Engine Running	Park brake locked. Range shift lever is in neutral position.

Mower Decks

IF	CHECK
Mower Deck Plugs With Grass	Grass too wet or too long. Engine not being run at full throttle while mowing. Rear of deck too low.
Patches Of Grass Uncut	Travel speed too fast. Engine should be at full throttle. Dull blades. Cutting height set too high.
Belt Slipping	Mower belt tension not set correctly. Debris in sheaves. Worn belt.
Mower Blades Do Not Stop	Belt routed incorrectly. Mower belt tension needs adjustment.
Too Much Vibration	Debris on mower deck or in sheaves. Damaged drive belt. Damaged sheaves or sheaves out of alignment. Blades out of balance.
Uneven Cut	Check procedures on Adjusting Mower Deck Level. Travel speed too fast. Blades are dull. Check caster wheel tire pressure (Serial No. 050001-100000).
Blades Scalping Grass	Turning speed too fast. Ridges in terrain. Rough or uneven terrain. Low tire pressure. Cutting too low. Bent blade(s).
Mower Loads Down Tractor	Engine should be at full throttle. Travel speed too fast. Debris wrapped around mower spindles. Check procedure on Adjusting Mower Level Front-to-Rear. Grass conditions. Cutting height set too low.
Uneven Clipping Distribution	Cutting height set too low. Mowing too fast. Grass too wet.

Error Codes

The following is not a complete list of errors which may display on your machine instrument panel. Contact your John Deere dealer when any other errors are displayed.

Troubleshooting

DESCRIPTION	PROBLEM SOURCE	MACHINE RESPONSE	ACTION	Lamp Number of Flash
Coolant temperature sensor failure.	Sensor voltage is 4.8 V or more, or 0.2 V or less.	- Continued operation in the coolant temperature condition of 30°C (EGR valve is not in operation) - The same limited operation is performed as the EGR valve failure	Key off	4
Accelerator sensor failure	Sensor voltage is 4.8 V or more, or 0.2 V or less.	Without optional back-up accelerator sensor (standard): - The speed immediately before is held (standard) - The engine operation in 1500 min-1	Correct failure	5
Speed sensor failure	Engine start signal (E8) is on, but the engine speed cannot be detected.	Engine stops	Key off	6
Rack position sensor failure	- When the rack position sensor voltage is raised above the rated value by rack self-diagnostics - When the rack position relationship for the rack actuator output is raised above the rated value - When the rack position relationship for the rack actuator output is raised below the rated value	The engine operation with output/speed limitation (Rack position control is inactive and speed control is active).	Key off	7
Rack actuator failure	- When the rated rack doesn't operate by rack self-diagnostics - When the rack actuator output is raised above the rated value - When the rack actuator output is reduced below the rated value - When the engine accelerates rapidly even with minimum rack actuator output - When the engine stalls while rack position sensor is in failed operation	Engine stops	Key off	8
Overspeed	Idling engine speed exceeds high idling speed +600 min-1	Engine stop caused by independent circuit	Key off	9
CAN communication failure	CAN communication packets cannot be received	- Last value is retained - Switch to backup sensor - The failure isn't indicated during the engine start or the power supply voltage is below 10.5 V	Correct failure	1-2
EGR valve failure (37 kW Min.)	- Low status is detected even though port is off - High status is detected even though port is off	The limited engine operation in output 92% and speed 1800 min-1	Key off	1-3
CSD solenoid valve failure	Low status is detected even though port is off	Engine continues to run with CSD being off	Key off	1-4

Troubleshooting

DESCRIPTION	PROBLEM SOURCE	MACHINE RESPONSE	ACTION	Lamp Number of Flash
	High status is detected even though port is off			
Starting aid relay failure	- Low status is detected even though port is off - High status is detected even though port is off	Engine continues to run with starting aid relay being off	Key off	1-5
Main relay failure	ECU power is not shut off even though main relay is off	Engine runs normally	Retained until correct failure	1-6
Rack actuator relay failure	- Low status is detected even though port is off - High status is detected even though port is off	Engine stop	Key off	1-7
Oil pressure failure	Oil pressure switch fails to turn on when engine is off	Engine runs normally	Key off	2-1
Power supply voltage failure	- ECU supply voltage exceeds 10.0 V - ECU supply voltage exceeds 16.0 V	Engine runs normally	Correct failure	2-3
Sensor 5 V failure	- Monitoring voltage is approximately 0 V - Monitoring voltage is approximately 4.5 V or less - Monitoring voltage is approximately 5.5 V or more	Engine runs normally	Key off	2-4
ECU overheat alarm	- Detected when ECU temperature exceeds 105°C* or above - Canceled when ECU temperature decreases to 100°C* or below (Optional change is possible)	Engine runs normally*	Correct failure	2-5
Oil pressure low	Oil pressure switch fails to turn off when engine is running	Engine runs normally*	Correct failure	3-1
Coolant temperature high alarm	- Coolant temperature is 110°C* or higher - Alarm is canceled when coolant temperature decreases to 105°C* or below	Engine runs normally*	Correct failure	3-6
ECU failure (ROM error)	Flash ROM's EEPROM check-sum error	Engine stops	Key off	4-1
ECU failure (EEPROM error)	- Reading/writing fails - EEPROM suffers checksum error	Engine runs normally	Key off	4-1
ECU failure (Sub CPU failure)	ECU fails to communicate with sub CPU	Engine runs normally	Key off	4-1
ECU failure (Mapping error)	Map format is invalid	Engine stops	Key off	4-1
ECU failure (ECU temperature sensor failure)	Sensor voltage is 4.6 V or more, or 1.0 V or less	Engine runs normally	Correct failure	4-1

Storage

Storing Safety

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

Engine exhaust fumes contain carbon monoxide and cause serious illness or death:

- Run the engine only long enough to move the machine to or from storage.
- If a machine is stored before allowing it to cool, machine fires and structure fires can occur. Fires can occur 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 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. To prevent rust, repair scratched or chipped metal surfaces.
3. Remove grass and debris from machine.
4. Clean under the deck and remove grass and debris from inside chute and bagger, if applicable.
5. Wash the machine and apply wax to metal and plastic surfaces.
6. To dry belts and pulleys, run machine for five minutes.
7. To prevent rust, apply light coat of engine oil on pivot and wear points.
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 usage time of the machine for the season so 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 produces varnish and plugs injector components and affects 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. To allow fuel mixture to circulate through fuel injectors, run engine for a few minutes.

Engine:

Engine storage procedure must be used when vehicle is not 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. Clean the engine and engine compartment.
5. Remove battery.
6. Clean the battery and battery posts. Check the electrolyte level, if your battery is not maintenance free.
7. Close fuel shutoff valve, if your machine is equipped.
8. Store the battery in a cool, dry place it does not freeze.

NOTE: Recharge stored battery every 60 days.

9. Charge the battery.

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

10. 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.

Storage

6. Lubricate all grease points.
7. Open fuel shut-off valve, if your machine is equipped.
8. Run the engine 5 minutes without the mower or any attachments running to allow oil to be distributed throughout engine.
9. Be sure all shields and guards or deflectors are in place.

Storage for BioDiesel Fuel

IMPORTANT: Avoid damage! BioDiesel fuel must be used within three mo. 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 5 operating hours.

Specifications

Specifications

Engine

Engine Model Number	Yanmar 4TNV84T
Engine Type	4-Cycle, 4-Cylinder, In-Line Turbocharged Diesel
Bore	84 mm (3.307 in.)
Stroke	90 mm (3.543 in.)
Displacement	1.995 L (121.74 cu in.)
Armature Air Gap	0.3 mm (0.012 in.)
Intake and Exhaust Valve Clearance (cold)	0.13 ± 0.025 mm (0.005 ± 0.001 in.)
Cooling	Liquid Cooled
Power Output	41.2 kW (56 hp)
Injection Type	Direct
Air Cleaner	Dry, Replaceable Dual Element

Capacities

Engine Oil (with Filter)	7.4 L (7.8 qt.)
Fuel Tank	.83 L (22 gal.)
Coolant	7.5 L (8 qt.)
Hydraulic System	58.7 L (15.5 gal.)
Hydrostatic Transmission	13.3 L (3.5 gal.)
Rear Axle	4.7 L (5 qt.)

Travel Speeds

High Range

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

Low Range

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

Tires Dimensions

Front Drive Tires	26x12.00-12
Rear Tires	18x9.50-8
Mower Deck Caster Tires	11x4-5

Tire Inflation Pressures

Machine Front Tires	.207 kPa (2.07 bar) (30 psi)
Machine Rear Tires	.193 kPa (1.93 bar) (28 psi)

Dimensions

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

Specifications

Cutting Width. 3.3 m (131 in.)

Front Mower Deck

Cutting Width. 1.6 m (62 in.)

Cutting Height 2.5—15.2 cm (1—6 in.)

Number of Blades 3

Side Mower Decks

Cutting Width. 1 m (40 in.)

Cutting Height 2.5—14 cm (1—5.5 in.)

Number of Blades 2

Tightening Torques

Front Wheels. 136—163 N·m (100—120 lb.-ft.)

Rear Wheels 81—95 N·m (60—70 lb.-ft.)

Blade Mounting Cap Screws 122 N·m (90 lb.-ft.)

Recommended Lubricants

Engine Oil John Deere PLUS-50™ II

. John Deere TORQ-GARD SUPREME™

Engine Coolant John Deere COOL-GARD™ II

. John Deere COOL-GARD II PG

Hydraulic Oil John Deere HY-GARD™ J20C

Transmission Oil. John Deere HY-GARD™ J20C

Grease: (This may change for high-speed applications such as cutting units)

. John Deere Multi-Purpose SD Polyurea Grease

. John Deere Multi-Purpose HD Lithium Complex Grease

(Specifications and design subject to change without notice.)

Warranty

Product Warranty

John Deere offers a standard warranty on new John Deere products. For a copy of the product warranty statement or for details on the warranty terms and conditions for products purchased in the United States and Canada, please contact your local John Deere Dealer or utilize the following resources:

United States

Website:

http://www.deere.com/en_US/services_and_support/warranty/warranty.page

Toll Free: 1-800-537-8233

Dealer Locator:

<http://dealerlocator.deere.com/servlet/country=US>

Canada

Website (English):

http://www.deere.ca/en_CA/services_and_support/service_plans_warranties/service_plans_warranties.page

Website (French):

http://fr.deere.ca/en_CA/services_and_support/service_plans_warranties/service_plans_warranties.page

Toll Free: 1-800-537-8233

Dealer Locator:

<http://dealerlocator.deere.com/servlet/country=CA>

Emission-related warranties are included in this Operator's Manual, and applicable if required by law or regulation.

For products purchased in a country other than the United States or Canada, please contact your local John Deere dealer for assistance.

John Deere, California and U.S. EPA Emission Control System Warranty (Non-Road Diesel)

Your Warranty Rights and Obligations:

The California Air Resources Board (CARB), the United States Environmental Protection Agency (EPA) and John Deere are pleased to explain the **emission control system warranty** on your 2015, 2016, or 2017 model year industrial compression-ignition engine. California-certified, new off-road compression-ignition engines must be designed, built and equipped to meet the State's stringent anti-smog standards. In the remaining forty nine (49) states, new non-road compression-ignition engines must be designed, built and equipped to meet the United States EPA emissions standards. John Deere must warrant the emission control system on your engine for the periods of time listed below provided there has been no abuse, neglect or improper maintenance of your engine.

Your emission control system may include parts such as the fuel injection system, the air induction system, the electronic control system, EGR (exhaust gas recirculation) system and the diesel particulate filter system. Also included may be hoses, belts, connectors and other emission-related assemblies.

Where a warrantable condition exists, John Deere will repair your off-road compression-ignition engine at no charge to you including diagnosis, parts and labor.

Manufacturer's Warranty Period:

2015, 2016, or 2017 model year off-road compression-ignition engines are warranted for the periods listed below. If any emission-related part on your engine is found to be defective during the applicable warranty period, the part will be repaired or replaced by John Deere.

If your engine is certified as	And its maximum power is	And its rated speed is	Then its warranty period is
Variable speed or constant speed	kW <19	Any speed	1,500 hours or two (2) years whichever comes first. In the absence of a device to measure the hours of use, the engine has a warranty period of two (2) years.
Constant speed	19 ≤ kW <37	3000 rpm or higher	1,500 hours or two (2) years whichever comes first. In the absence of a device to measure the hours of use, the engine has a warranty period of two (2) years.
Constant speed	19 ≤ kW <37	Less than 3,000 rpm	3,000 hours or five (5) years whichever comes first. In the absence of a device to measure the hours of use, the engine has a warranty period of five (5) years.
Variable speed	19 ≤ kW <37	Any speed	3,000 hours or five (5) years whichever comes first. In the absence of a device to measure the hours of use, the engine has a warranty period of five (5) years.
Variable speed or constant speed	kW ≥ 37	Any speed	3,000 hours or five (5) years whichever comes first. In the absence of a device to measure the hours of use, the engine has a warranty period of five (5) years.

Warranty

Warranty Coverage:

This warranty is transferable to each subsequent purchaser for the duration of the warranty period. Repair or replacement of any warranted part will be performed at an authorized John Deere service provider.

Warranted parts not scheduled for replacement as required maintenance in the owner's manual shall be warranted for the warranty period. Warranted parts scheduled for replacement as required maintenance in the owner's manual are warranted for the period of time prior to the first scheduled replacement. Any warranted parts scheduled for replacement as required maintenance that are repaired or replaced under warranty shall be warranted for the remaining period of time prior to the first scheduled replacement. Any part not scheduled for replacement that is repaired or replaced under warranty shall be warranted for the remaining warranty period.

During the warranty period, John Deere is liable for damages to other engine components caused by the failure of any warranted part during the warranty period.

Any replacement part which is functionally identical to the original equipment part in all respects may be used in the maintenance or repair of your engine, and shall not reduce John Deere's warranty obligations. Add-on or modified parts that are not exempted may not be used. The use of any non-exempted add-on or modified parts shall be grounds for disallowing a warranty.

Warranted Parts:

This warranty covers engine components that are a part of the emission control system of the engine as delivered by John Deere to the original retail purchaser. Such components may include the following:

- (A) Fuel injection system (including Altitude compensation system)
- (B) Cold start enrichment system
- (C) Intake manifold and Air intake throttle valve
- (D) Turbocharger systems
- (E) Exhaust manifold
- (F) Positive crankcase ventilation system
- (G) Charge Air Cooling systems
- (H) Exhaust Gas Recirculation (EGR) systems
- (I) Exhaust gas after treatment (diesel particulate filter system)
- (J) Electronic Control units, sensors, solenoids and wiring harnesses used in above systems
- (K) Hoses, belts, connectors and assemblies used in above systems
- (L) Emission Control Information Labels

Since emissions related parts may vary slightly between models, certain models may not contain all of these parts and other models may contain the functional equivalents.

Exclusions:

Failures other than those arising from defects in material or workmanship are not covered by this warranty. The warranty does not extend to the following: malfunctions caused by abuse, misuse, improper adjustment, modification, alteration, tampering, disconnection, improper or inadequate maintenance, or use of fuels and lubricating oils not meeting specified standards, accident-caused damage and replacement of expendable items made in connection with scheduled maintenance. John Deere disclaims any responsibility for incidental or consequential such as loss of time, inconvenience, loss of use of equipment/engine or commercial loss.

Owner's Warranty Responsibilities:

As the off-road compression-ignition engine owner, you are responsible for the performance of the required maintenance listed in your owner's manual.

John Deere recommends that you retain all documentation, including receipts, covering maintenance on your off-road compression-ignition engine, but John Deere cannot deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.

John Deere may deny your warranty coverage if your off-road compression-ignition engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.

Your engine is designed to operate on diesel fuel only. Use of any other fuel may result in your engine no longer operating in compliance with CARB and EPA emissions requirements.

You are responsible for initiating the warranty process. You must present your engine to a John Deere service provider as soon as a problem exists. The warranty repairs should be completed by the dealer as expeditiously as possible.

If you have a question about your emissions warranty coverage, how to make an emissions warranty claim or how to make arrangements for emissions-related authorized repairs, you should contact your John Deere Turf and Utility retailer, or the John Deere Customer Contact Center at 1-800-537-8233, or e-mail John Deere from https://groundsca.custhelp.com/app/utis/login_form/redirect/ask.

Tire Warranty

John Deere warranty applies for tires available through the John Deere parts system. For tires not available through the John Deere parts system, the tire manufacturer's warranty applicable to your machine may

Warranty

not apply outside the U.S. (See your John Deere dealer for specific information.)

Limited Battery Warranty For Factory Installed Batteries

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

TO SECURE WARRANTY SERVICE

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

FREE REPLACEMENT PERIOD

Any new battery which becomes unserviceable (not merely discharged) due to defects in material or workmanship within the FREE REPLACEMENT PERIOD will be replaced free of charge. Installation costs will be covered by warranty if the unserviceable battery was installed by a John Deere factory or dealer and the replacement battery is installed by a John Deere dealer.

PRO RATA ADJUSTMENT (batteries with letter code identification only)

Any new battery which becomes unserviceable (not merely discharged) due to defects in material or workmanship within the Pro Rata Warranty Period will be replaced upon payment of the battery's current list price less a pro rata credit for unused months of service. The applicable adjustment period is determined from the Warranty Code printed at the top of the battery and table below. Installation costs are not covered after the battery warranty period has ended.

THIS WARRANTY DOES NOT COVER

- A. Breakage of the container, cover, or terminals.
- B. Depreciation or damage caused by lack of reasonable and necessary maintenance or by improper maintenance.
- C. Transportation, mailing, or service call charges for warranty service.
- D. Batteries that are merely discharged.

LIMITATION OF IMPLIED WARRANTIES AND PURCHASER'S REMEDIES

To the extent permitted by law, neither John Deere nor any company affiliated with it makes any warranties, representations, or promises as to the quality, performance or freedom from defect of the products covered by this warranty. IMPLIED WARRANTIES OF

MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, TO THE EXTENT APPLICABLE, SHALL BE LIMITED IN DURATION TO THE APPLICABLE ADJUSTMENT PERIOD SET FORTH HERE. THE PURCHASER'S ONLY REMEDIES IN CONNECTION WITH THE BREACH OR PERFORMANCE OF ANY WARRANTY ON JOHN DEERE BATTERIES ARE THOSE SET FORTH HERE. IN NO EVENT WILL THE DEALER, JOHN DEERE OR ANY COMPANY AFFILIATED WITH JOHN DEERE BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES. (Note: Some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages. So these limitations and exclusions may not apply to you.) This warranty gives you specific legal rights, and you may also have some rights which vary from state to state.

NO DEALER WARRANTY

The selling dealer makes no warranty of its own and the dealer has no authority to make any representation or promise on behalf of John Deere, or to modify the terms or limitations of this warranty in any way.

WARRANTY TERMS TABLE

NOTE: If your battery is not labeled with a warranty code, it is a warranty code 6.

Warranty Code	Free Replacement Period	Pro Rata Warranty Period
A	90 Days	40 Months
B	90 Days	36 Months
C	90 Days	24 Months
D	12 Months	48 Months
E	90 Days	12 Months
F	90 Days	60 Months
G	12 Months	60 Months
H	12 Months	60 Months
6	6 Months	0 Months
12	12 Months	0 Months
18	18 Months	0 Months

John Deere Quality Statement

John Deere Quality

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

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

Step 1

Refer to your operator's manual

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

Step 2

Contact your dealer

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

Step 3

Contact John Deere

- A. Your John Deere dealer is the most efficient source in addressing any concern, but if you are not able to resolve your problem after checking your operator's manual and contacting your dealer, contact John Deere for assistance.
- B. For prompt, effective service, please have the following ready before you call:
 - The name of the dealer with whom you've been working.
 - Your equipment model number.
 - Number of hours on machine (if applicable).
 - Your serial number which you recorded on the inside front cover of this manual.
 - If the problem is with an attachment, your attachment identification number.

C. Then call 1-800-537-8233 (United States and Canada) and our advisor will work with your dealer to investigate your concern. If you are outside the United States and Canada, visit the following website:

http://www.deere.com/globalhome/deerecom/global_home.page?CC=true

Select your country and then click on the Contact Us link.

Service Record

Record Service Dates

[illegible]

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