Commercial Walk Behind Mower

(Serial No. 010001 -)

JOHN DEERE

OPERATOR'S MANUAL

W36M, W48M, Commercial Walk Behind Mower

OMAUC11275E ISSUE D9 (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 Edition
Printed in U.S.A.

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.

MX00654,000020B-19-10MAY17

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 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 that 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.

MX00654,000020C-19-05JUN17

Special Messages

Your manual contains special messages to bring attention to potential safety concerns and 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.

MX00654,000020D-19-05JUN17

Attachments for Your Machine

There is 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, 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 is a John Deere attachment or kit to fill every need.

OUMX068,000051C-19-05JUN17

Service Literature

If you would like to purchase a copy of the Parts Catalog or Technical Manual for this machine, visit The John Deere Technical Information Store at:

https://techpubs.deere.com/?cid=VURL_TechInfoStore

or call:

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

TH84124,0000199-19-15AUG17

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.

TC00531,00000E9-19-06MAR15

Contents

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.

Record Identification Numbers

W36M, W48M

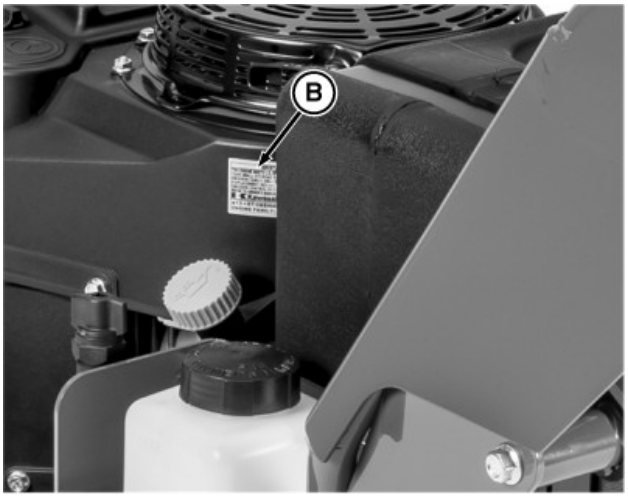
PIN (010001 -)

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

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

TCT015836—UN—30MAY18

Serial Number Location



TCT015837—UN—30MAY18

Engine Model and Serial Number Locations

DATE OF PURCHASE:

_____

DEALER NAME:

_____

DEALER PHONE:

_____

PRODUCT IDENTIFICATION NUMBER (A):

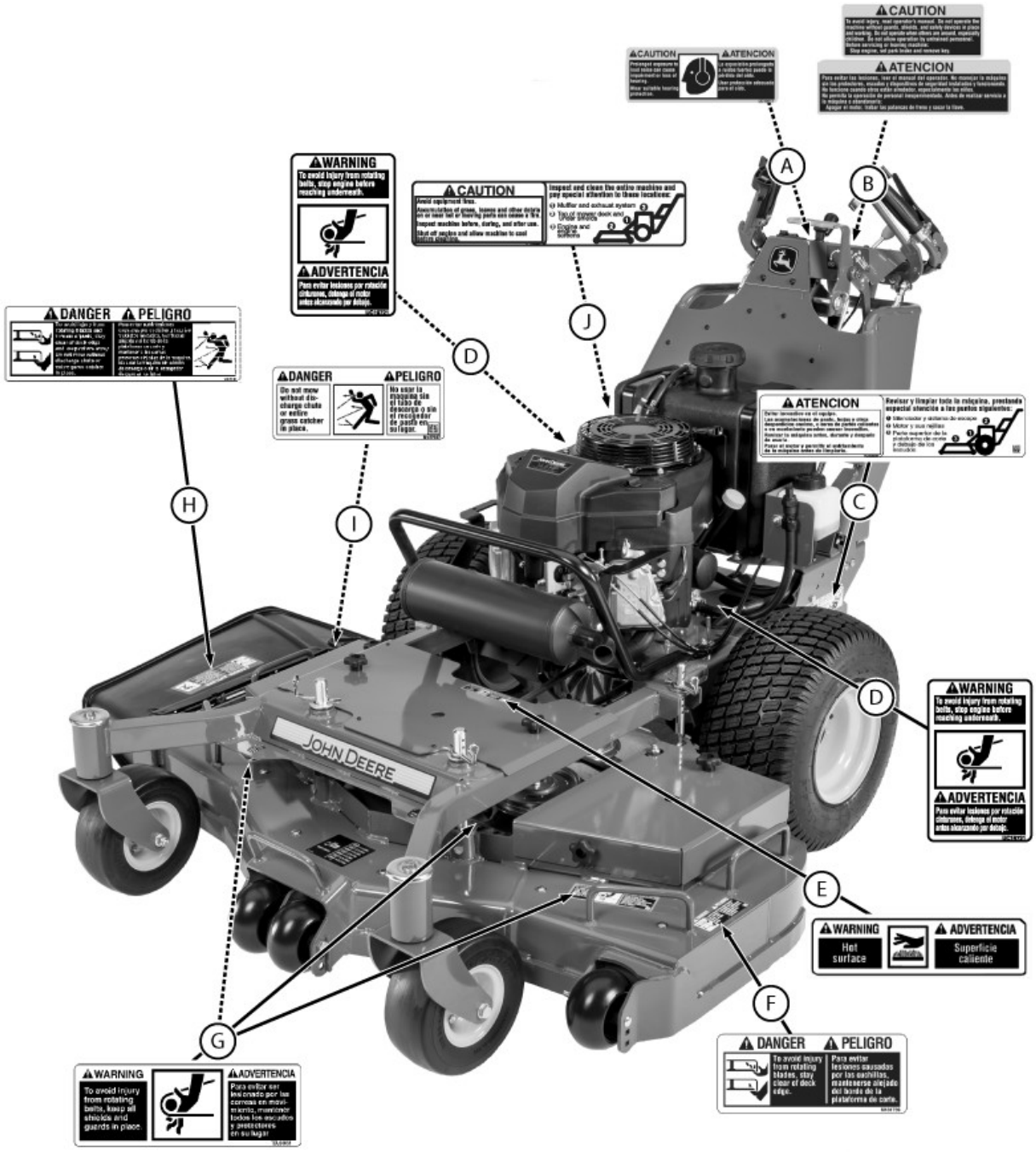
— — — — — — — — — — — — — — — — —

ENGINE SERIAL NUMBER (B):

— — — — — — — — — — — — — — — — —

MX52301,0001FB4-19-30MAY18

Safety Label Location

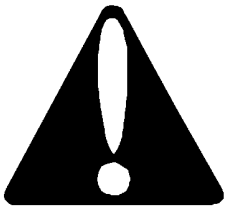


TC100905—UN—25APR19

A—CAUTION - UC10617
B—CAUTION - UC10617
C—CAUTION - TCU35855
D—WARNING - UC19721
E—WARNING - TCU13554
F—WARNING - TCU51051
G—DANGER - M131739
H—DANGER - M131748
I—DANGER - M137637
J—CAUTION - TCU35854

MX52301,0001FDF-19-29APR19

Understanding the Machine Safety Labels



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. DANGER or WARNING safety labels are located near specific 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.

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

- DANGER; The signal word DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.
- WARNING; The signal word WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.
- CAUTION; The signal word CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury. CAUTION may also be used to alert against unsafe practices associated with events which could lead to personal injury.

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.

MP47322,00F4601-19-24APR19

CAUTION

TCT015842—UN—29MAY18

To avoid injury, read operator's manual. Do not operate the machine without guards, shields, and safety devices in place and working. Do not operate when others are around, especially children. Do not allow operation by untrained personnel. Before servicing or leaving machine: Stop engine, set park brake and remove key.

MX52301,0001FE0-19-29MAY18

CAUTION

TCT015841—UN—29MAY18

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

Wear suitable hearing protection.

MX52301,0001FE1-19-29MAY18

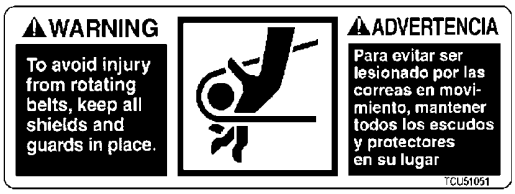
WARNING

TCT007807—UN—19JUL13

Hot surface.

TH84124,000024F-19-25AUG15

WARNING



TCAL45189—UN—10APR13

To avoid injury from rotating belts, keep all shields and stay guards in place.

TH84124,0000250-19-12NOV13

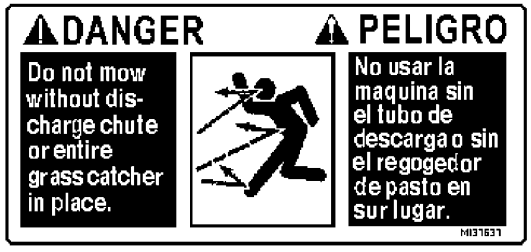
DANGER

TCAL45192—UN—10APR13

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

TH84124,0000252-19-25AUG15

DANGER



TCAL43429—UN—21MAR13

Do not mow without discharge chute or entire grass catcher in place.

MX00654,00001A5-19-16SEP15

DANGER

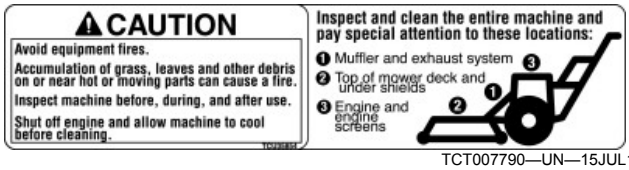
TCAL45185—UN—10APR13

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

Do not mow without discharge chute or entire grass catcher in place.

TH84124,0000018-19-12NOV13

CAUTION



TCT007790—UN—15JUL13

TC100907—UN—29APR19

Avoid Equipment Fires.

Accumulation of grass, leaves and other debris on or near hot or moving parts can cause a fire.

Inspect machine before, during, and after use.

Shut off machine and allow machine to cool before cleaning.

Inspect and clean the entire machine and pay special attention to these locations:

1. Muffler and exhaust system
2. Top of mower deck and under shields
3. Engine and engine screens

TH84124,0000255-19-29APR19

WARNING

TCT016225—UN—24JUL18

To avoid injury from rotating belts, stop engine before reaching underneath.

MX52301,0002083-19-24JUL18

Certification

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

TH84124,0000248-19-16JUL13

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 responsibility of the owner 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.
- Age, physical ability, and mental capacity can be factors in equipment-related injuries. Operators must be mentally and physically capable of operating the machine properly and safely.
- 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.

OUO1082,000657E-19-15MAY18

Preparation

- Evaluate the terrain and determine what accessories and attachments are required to perform the job safely and properly. Only use accessories and attachments approved by the manufacturer.
- Wear appropriate clothing including, 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. 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 presence controls, safety switches, and shields are attached and functioning properly. Do not operate machine unless all safety devices are functioning properly.

OUO1082,000657F-19-15MAY18

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 all drives are in neutral and parking brake is engaged before starting engine. Only start engine from the operator's position.
- Be sure of your footing while using pedestrian-controlled equipment, especially when backing up. Walk, don't run. Reduced footing could cause slipping.
- Slow down and use extra care on hillsides. Be sure to travel in the recommended direction on hillsides. For this machine, drive across hillsides, not up and down. 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 deck with the blades running.
- Never operate with guards not securely in place. Be sure all interlocks are attached, adjusted properly, and functioning properly.
- Never operate with the discharge deflector raised, removed or altered, unless using a grasscatcher. Do not operate mower without discharge chute or entire grasscatcher in place.
- Only install approved ride on devices or operate machine with approved ride on devices.
- 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 grasscatchers or unclogging the chute.
- Stop equipment and inspect blades 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 if not mowing. Watch for traffic when operating near or crossing roadways.
- 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 hardware is tight. Repair or replace damaged, badly worn, or missing parts. Be sure guards and shields are in good condition and fastened in place. Make any necessary adjustments before you operate.
- Before using, always visually inspect to see that the blades, blade bolts and the mower assembly are not worn and damaged. Replace worn and damaged blades and bolts in sets to preserve balance.
- Keep safety labels visible when installing accessories and attachments.
- Do not wear radio or music headphones. Safe service and operation require your full attention.
- Be sure all drives are in neutral and parking brake is locked before starting engine. Stand as far away from the discharge chute as possible with feet well away from the underside of the deck to start machine.

TH84124,00001D6-19-26JUL18

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.

OUO2005,0000213-19-05JUL17

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.

MP47322,00F4617-19-05JUL17

Parking Safely

1. Stop machine on a level surface, not on a slope.
2. Disengage mower blades.
3. Set neutral locks.
4. Put the unit in neutral.
5. Lock the park brake.
6. Stop the engine.
7. Remove the key.
8. Wait for engine and all moving parts to stop before you leave the operator's station.
9. Close fuel shutoff valve, if your machine is equipped with one.
10. Remove the spark plug wire (for gasoline engines) before servicing the machine.

MX52301,000204E-19-20AUG18

Operating Safely on Slopes

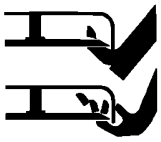
- Slopes are a major factor related to slip and fall accidents which can result in severe injury. Operation on all slopes requires extra caution. If you feel uneasy on a slope, do not mow it.

- Mow across the face of slope, not up and down. Use extreme caution when changing direction on slopes.
- Keep all movement on slopes slow and gradual. Do not make sudden changes in speed or direction.
- Watch for holes, ruts, bumps, rocks or other hidden objects. Uneven terrain could cause a slip and fall accident. Tall grass can hide obstacles.
- Use caution if mowing when grass is wet or slippery. Tires may lose traction or slip on slopes even though the brakes are functioning properly. Poor footing could cause a slip and fall accident.
- Do not mow near drop-offs, ditches, embankments, as well as ponds and other bodies of water. The operator could lose footing or balance. The machine could suddenly turn over if a wheel is over the edge of a cliff or ditch, or if an edge caves in.
- Follow the manufacturer's recommendations for counterweights for added stability when operating on slopes. Remove weights when not required. See Ballast Chart in Operating Section.
- Follow the manufacturer's recommendations for grass catcher and sulky. Remove and store when operating on slopes.
- Use extra care with grasscatchers and sulky. These can change the stability of the machine. Do not use grasscatcher or sulky on slopes.

TH84124,00001DA-19-26JUL18

Rotating Blades are Dangerous

HELP PREVENT SERIOUS OR FATAL ACCIDENTS:



TCAL43410—UN—15MAR13

- Rotating blades can cut off arms and legs, and throw objects. Failure to observe safety instructions could result in serious injury or death.
- Keep hands, feet and clothing away from mower deck when engine is running.
- Be alert at all times, drive forward carefully. People, especially children can move quickly into the mowing area before you know it.
- Do not mow in reverse.
- Shut off blades when you are not mowing.
- Park machine safely before leaving the operator station for any reason including emptying the catchers or unplugging the chute.

TH84124,00001DB-19-15JUL13

Rotating Blades are Dangerous - Protect Children and Prevent Accidents

TCAL45925—UN—10APR13

Protect Children:

- Tragic accidents can occur if the operator is not alert to the presence of children. Children are often attracted to lawn-mowing machines and mowing activity. Stay alert to the presence of children. Never assume that children will remain where you last saw them.
- 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.
- Be alert and turn mower off if a child enters the work area. They don't understand the dangers of rotating blades or the fact that the operator is unaware of their presence.
- Never allow a child or an untrained person to operate the machine.
- Use extra care when approaching blind corners, shrubs, trees, or other objects that may block your view of a child.

TH84124,00001DC-19-15JUL13

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.

OUO2005,000021D-19-05FEB13

Wear Appropriate Clothing

TCT015572—UN—24MAY18

- 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 operating this machine, 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.

TC00531,00001DE-19-26JUN18

Maintenance and Storage

TCAL43414—UN—15MAR13

- Never operate machine in a closed area where dangerous carbon monoxide fumes can collect.
- Disengage drives, lower implement (if equipped), 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 (if equipped) 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.
- Use care when checking tines or blades. Wrap the tines or blades, or wear gloves, and use caution when servicing them. Only replace tines or blades. Never straighten or weld 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 (if equipped) 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.
- Check grass catcher components and the discharge guard frequently and replace with manufacturer's recommended parts, when necessary. Grass catcher components are subject to wear, damage, and deterioration which could expose moving parts or allow objects to be thrown.
- Keep all nuts and bolts tight, especially tines or blades 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 tine or blade can cause others to rotate.

TH84124,00001DF-19-26JUL18

Hauling

- Use care when loading or unloading the machine into a trailer or truck.
- Use full width ramps for loading machine into trailer or truck.
- Tie the machine down securely using appropriate straps, chains, cable, or ropes. Both front and rear straps should be directed down and outward from the machine.
- Refer to "Transporting Machine" section for more information.

BB87125,00011D8-19-04JUN13

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.

OUO2005,0000220-19-05FEB13

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's 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 the mower deck or cutting units 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 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.

OUO2005,0000221-19-27MAR19

Tire Safety

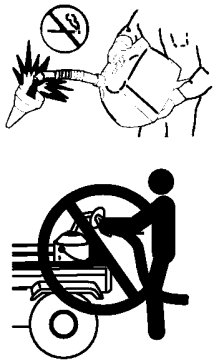
TCAL25965—UN—24MAY12

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.

OUO2005,0000222-19-10MAY17

Handling Fuel Safely



MXAL41938—UN—18FEB13

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.

OUO2005,0000223-19-12OCT16

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 Safety Data Sheet (SDS) 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 SDS for that product.

OUO2005,0000224-19-11OCT18

General Cleaning Guidelines

Machine must be inspected periodically throughout the day. Buildup of debris must be removed to ensure proper machine function and to reduce the risk of fire. Frequency of these inspections and cleanings vary depending on a number of factors including operating conditions, machine configuration, operating speeds, and weather conditions. Inspections and cleanings may be required multiple times throughout the day particularly in dry, hot, and windy conditions.

IMPORTANT: Regular and thorough cleaning of machine combined with other routine maintenance procedures listed in the Operator's Manual greatly reduce the risk of fire, downtime and improve machine performance.

Besides proper maintenance the condition of the material being handled is the most significant factor contributing to fires. Dry, light and fluffy materials that can create a dust cloud are the most likely to catch fire. Debris can accumulate in various areas especially on horizontal surfaces. Conditions such as wind speed and direction can change where the material accumulates. Be aware of these changing conditions and adjust your cleaning schedule and practices to ensure proper machine function and to reduce the risk of fire.

Always follow all safety procedures posted on the machine and in the Operator's Manual. Before carrying out any inspection or cleaning, always shut OFF engine, set parking brake and remove key.

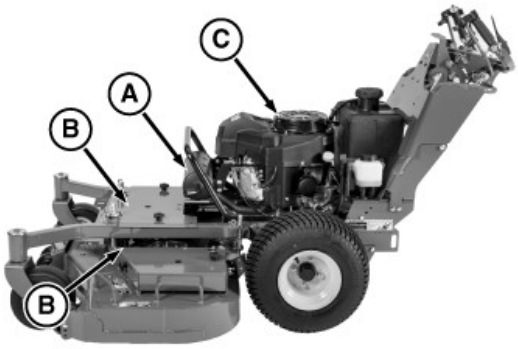
The entire machine should be inspected, with extra attention given to the areas noted below.

OUMX068,0001043-19-27MAR19

Cleanout Areas

Inspect and clean the entire machine and pay special attention to these locations:

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

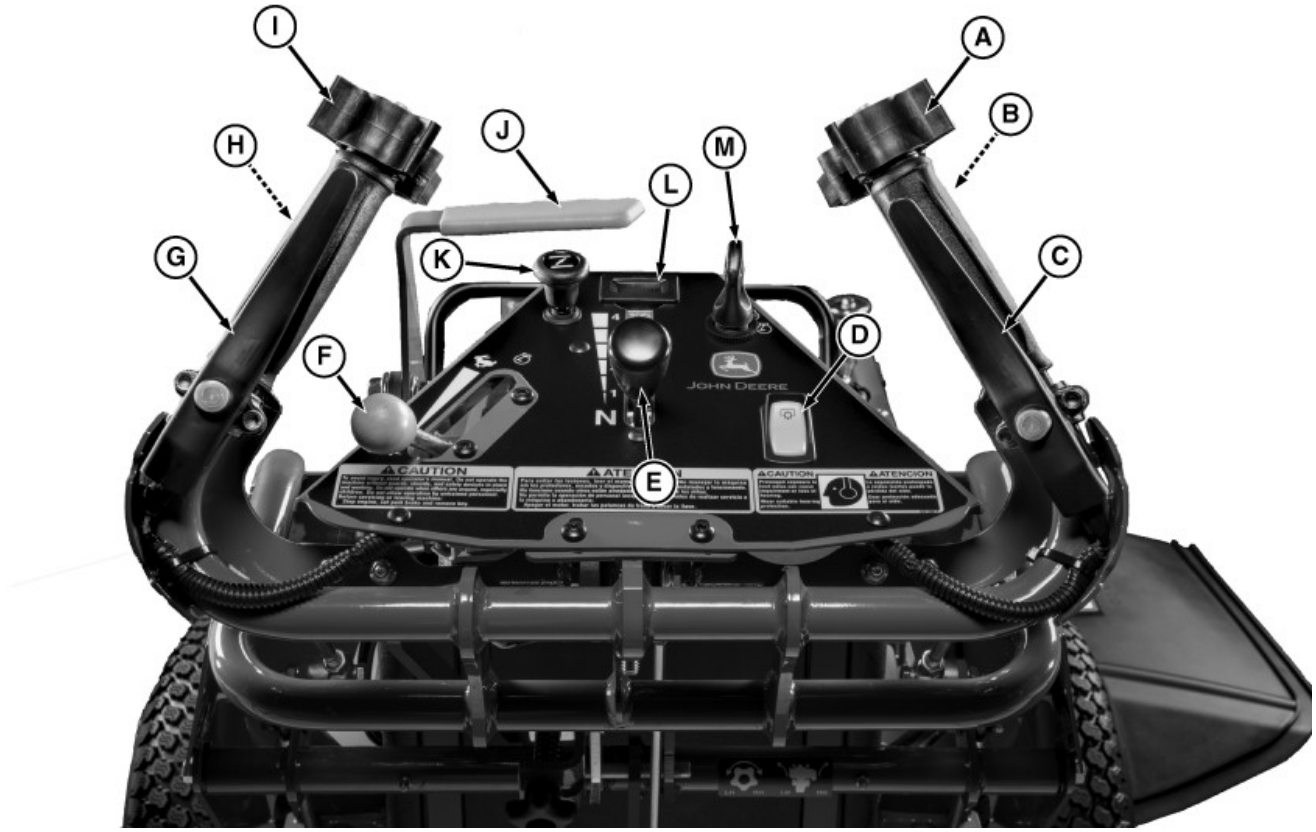


TCT015838—UN—28JUN18

2. Muffler and exhaust system (A).
3. Top of the mower deck and under shields (B).
4. Engine and engine screens (C).

MX52301,0001FB5-19-29JUN18

Operating Controls



TCT015839—UN—25JUN18

A—Right Steering Neutral Lock
B—Right Steering Control Lever
C—Right Operator Presence Control (OPC) Lever
D—Power Take Off (PTO) Switch
E—Speed Control Lever
F—Throttle Lever
G—Left Operator Presence Control (OPC) Lever
H—Left Steering control lever
I—Left Steering Neutral Lock
J—Parking Brake
K—Choke Control
L—Hourmeter
M—Ignition Switch

MX52301,0001FB6-19-24JUL18

Daily Operating Checklist

- ☐ Check engine oil.
- ☐ Check hydraulic oil.
- ☐ 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 belts.
- ☐ Check controls and control linkages.
- ☐ Check/fill fuel.
- ☐ Clean debris from machine.
- ☐ Clean debris from cooling system.
- ☐ Clean debris from traction drive system.
- ☐ Clean debris from mower and/or attachment drive systems.
- ☐ Clean debris from underside of mower deck
- ☐ Check mower deck drive belts.
- ☐ Check mower blades.
- ☐ Lubricate machine after washing.

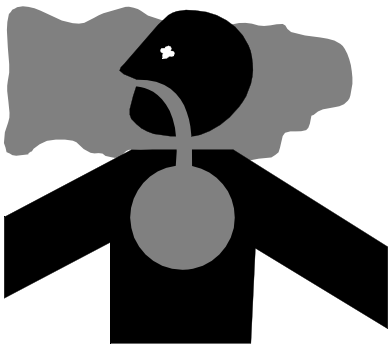
MX52301,0001FF1-19-28JUN18

Avoid Damage to Plastic and Painted Surfaces

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

TH84124,000027F-19-22JUL13

Testing Safety Systems



TCAL41599—UN—22JAN13

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.**

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.

TH84124,0000280-19-06AUG13

Test Machine Safety Systems

CAUTION: Avoid Injury! When the engine is running and the speed control levers are engaged, releasing only one steering latch causes the unit to circle around one drive wheel.

Always hold both steering levers in the neutral position when releasing the steering lever controls.

Always release levers slowly.

IMPORTANT: Avoid Damage! Safety interlock system failure and improper operation of unit can result in death or serious injury. Always know the safety interlock system is operating properly.

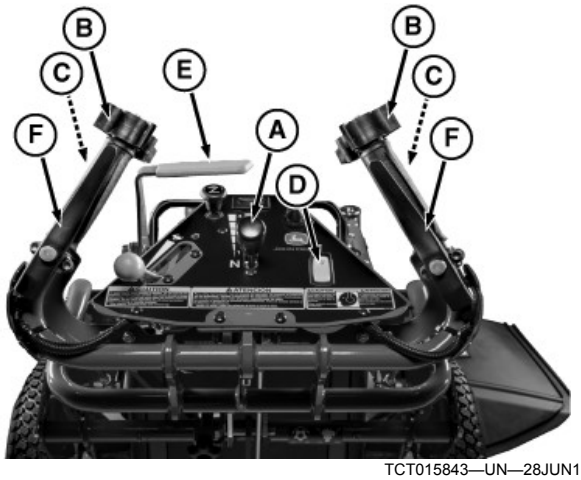
Testing Safety Interlock System

The speed control lever (A) is used to set the machine's fastest forward speed.

The neutral locks (B) hold the steering control levers in the neutral position.

The steering control levers (C) allow independent control of each hydraulic transmission to steer, operate in forward and reverse, and stop the machine.

Test the safety interlock system for all control positions. If the system does not function properly, do not operate the unit until repairs are made.



TCT015843—UN—28JUN18

A—Speed Control Lever
B—Neutral Lock
C—Steering Control Lever
D—PTO Switch
E—Parking Brake
F—Operator Presence Control (OPC) Levers

To Test:

1. With engine not running, set controls as follows:
   - Speed Control Lever (A) in Neutral - No
   - PTO (D) - Off
   - Parking Brake (E) - On
   - Ignition Switch - On
2. Turn ignition switch to Start.

   Result: The engine must not start.
3. If necessary, shut off unit. Turn ignition switch to STOP.
4. With engine not running, set controls as follows and repeat step 2 and 3:
   - Speed Control Lever (A) in Neutral - Yes
   - PTO (D) - Off
   - Parking Brake (E) - Off
   - Ignition Switch - On
5. With engine not running, set controls as follows and repeat step 2 and 3:
   - Speed Control Lever (A) in Neutral - Yes
   - PTO (D) - On
   - Parking Brake (E) - On
   - Ignition Switch - On
6. With engine not running, set controls as follows and repeat step 2 and 3:
   - Speed Control Lever (A) in Neutral - No
   - PTO (D) - Off
   - Parking Brake (E) - On
   - Ignition Switch - On

Test the Operator Presence Control

The operator presence control (OPC) levers (F) must be depressed to operate the PTO. When the speed control lever (A) is out of neutral position, the park brake (E) is off, or the PTO switch (D) is engaged, releasing both of the operator presence control levers stops the engine.

NOTE: One operator presence control (OPC) must be actuated to operate the PTO.

When either the speed control lever is not in Neutral, the park brake is off, or the PTO switch is engaged, releasing both operator presence controls stops the engine.

Test Parking Brake

Stop the unit on a maximum 17° slope. Stop the engine and engage the park brake.

Result: Parking brake must hold the unit stationary. If the unit moves more than 61 cm (24 in) in one hour, brake needs to be adjusted. See Adjusting Brakes in the SERVICE STEERING AND BRAKES Section.

MX52301,0001FB7-19-26JUL18

Ballast Chart

CAUTION: Avoid Injury! Machine can become unstable when operating with attachments. Ballast is required when the attachment is installed.

When the attachment is removed, also remove any ballast that was added to the machine.

Use only attachments and accessories recommended by the manufacturer.

Ballast is required for safe operation. Refer to ballast chart for the proper weight requirements for your

machine, not all models require ballast. See your authorized John Deere dealer for ordering.

Install the proper front ballast to help counterbalance the total weight of the bagger or sulky. Remove ballast when the bagger or sulky is removed. This ensures proper operation of the machine when not bagging or using a sulky.

Models	Attachment	Ballast is placed symmetrically on left and right side of frame arm	Required Weights
W36M	One-wheel sulky	(3) - 2 (lbs.) weights on each side frame arm	6
	One-wheel sulky and grass catcher	(3) - 2 (lbs.) weights on each side frame arm	6

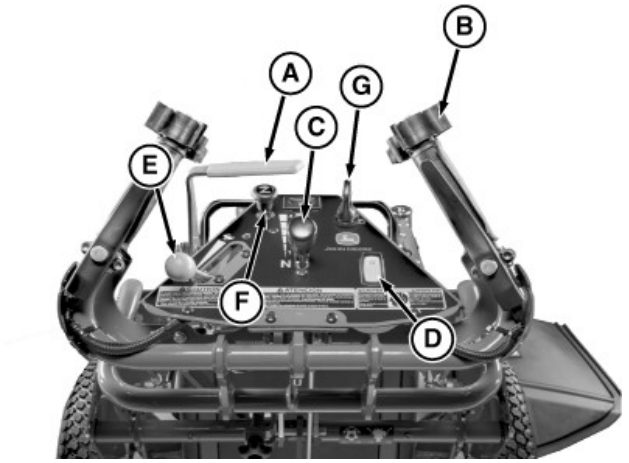
MX00654,00001C9-19-25JUL18

Starting Engine

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

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

NOTE: The engine will not start unless the speed control lever is in neutral, the park brake is on and the power take-off (PTO) is off.



TCT015844—UN—11JUN18

1. Rotate park brake lever (A) rearward to engage park brake.
2. Lock the steering control levers with the neutral locks (B) in the neutral position
3. Put the speed control lever (C) in neutral.
4. Move PTO switch (D) to off position.
5. Adjust throttle lever: Move throttle lever (E) to half-speed position.
   - Cold Engine: Set throttle lever at 1/2—3/4 fast position
   - Warm/Hot Engine: Set throttle lever to full throttle position
6. Set choke knob (F):
   - If engine is cold, pull choke knob up to on position.
   - If engine is at operating temperature, choke should be in down (off) position. If necessary, pull choke knob up part way to start.
7. Turn the ignition key (G) to the run position.
8. Pull the recoil starter grip slowly until compression is observed, then pull briskly.
9. With engine started:
   - Push choke knob to the off position.
   - Move throttle lever to the fast (full throttle) position.

MX52301,0001FB8-19-24JUL18

Stopping the Engine

IMPORTANT: Avoid Damage! To help prevent engine backfiring, throttle lever should be set at the 1/2 throttle position and run for 30 seconds prior to stopping the engine.

Do not stop engine when mower is on a slope of more than 30° for an extended period of time. Oil may run through valve train into carburetor and muffler.

1. Lock steering controls with neutral locks in the neutral position.
2. Set speed control lever to neutral.
3. Lock park brake.
4. Turn key switch to the stop position and remove key.

MX52301,0001FB9-19-05APR19

Operating Mower

The speed control lever is used to set the unit's fastest forward speed.

The steering control levers allow independent control of each hydraulic drive pump to steer, operate in forward and reverse, and stop the unit.

The steering neutral locks hold the steering control levers in neutral.

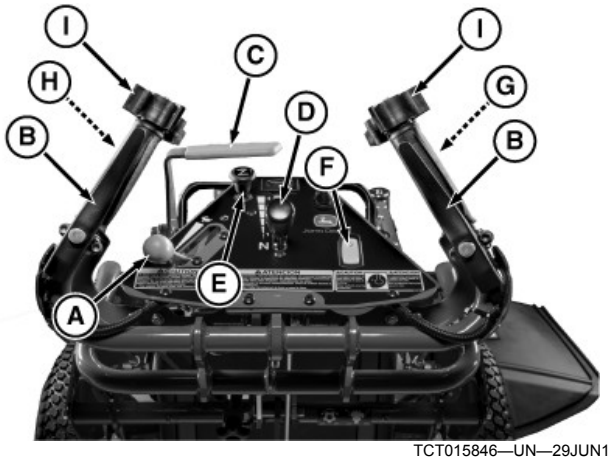
CAUTION: Avoid Injury! Clear mowing area of all bystanders when operating this machine. Thrown objects could cause serious injury or death.

Keep hands and feet away from blades and discharge opening.

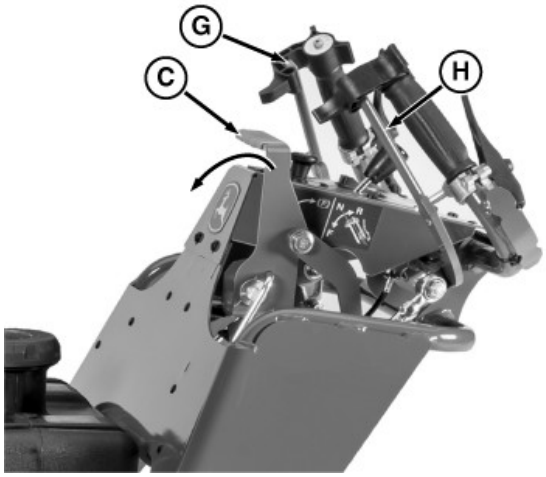
Do not mow in reverse unless absolutely necessary.

IMPORTANT: Avoid Damage! Operate unit only when in the operator's position directly behind controls.

1. Adjust mower deck to desired cutting height. (See Adjusting Cutting Height in the OPERATING Section.)
2. Start and warm up engine.



TCT015846—UN—29JUN18



TCT015845—UN—29JUN18

3. Move throttle lever (A) to fast position.
4. Engage either or both operator presence control (OPC) levers (B).
5. Rotate park brake lever (C) forward to release park brake.
6. Set speed control lever (D) to the desired speed.

NOTE: In cold weather or with a new machine, it may be necessary to engage the choke (E) at the same time as PTO/clutch switch (F) to prevent engine from stalling.

7. Move PTO/clutch switch (F) to on position.

CAUTION: Avoid Injury! Learn use of the motion control levers and practice at half throttle until becoming proficient and comfortable with the operation of the machine.

Do not move motion control levers from forward to reverse or reverse to forward position rapidly. Sudden direction changes could cause loss of control or damage the machine.

8. Hold steering control levers (G and H) in neutral and release the steering neutral locks (I).

NOTE: The travel speed and turn rate will vary with the amount that the right (G) left (H) control levers are moved.

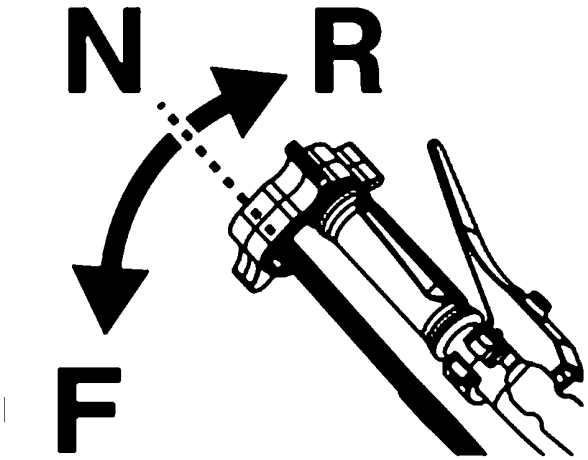
9. Drive the unit:

CAUTION: Avoid Injury! When the engine is running and the speed control levers are engaged, releasing only one steering latch causes the unit to circle around one drive wheel.

Always hold both steering levers in the neutral position when releasing the neutral locks.

Always release levers slowly.

NOTE: You must keep either or both operator presence control levers engaged to operate the PTO for mowing.



TCT015847—UN—29MAY18

- To drive the unit forward, slowly release both the Left and Right steering control levers in a smooth and even manner.

NOTE: Fully releasing the steering control levers will allow the machine to travel at the speed allowed by the speed control lever setting.

- To drive the unit to the right, pull the right steering control lever back toward the neutral position while the left steering control lever is allowed to stay in a forward position.
- To drive the unit to the left, pull the left steering control lever back toward the neutral position while the right steering control lever is allowed to stay in a forward position.

CAUTION: Avoid Injury! 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 absolutely necessary.

- To drive the unit in reverse, pull both steering control levers back evenly to the handlebar.

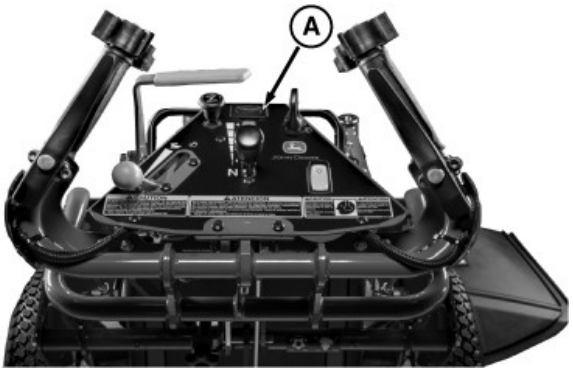
10. To stop the machine:

NOTE: For stopping in an emergency, release operator presence control levers. This will cause engine to stop.

- Hold steering levers (G and H) in neutral and engage steering neutral locks (I).
- Move the speed control levers to the neutral position.
- Move the PTO/clutch switch to the off position.
- Move the throttle lever to the 1/2 throttle position and run for 30 seconds.
- Lock park brake.
- Turn the key switch to the stop position.
- Remove key.
- Block the wheels if parked on a slope.

MX52301,0001FBA-19-25JUL18

Using Hourmeter



TCT015848—UN—29MAY18

The hourmeter (A) shows the number of hours the engine has run.

- Hourmeter cannot be reset.
- The hourmeter display will always be on.
- The hourmeter will flash while the hourmeter is accumulating time.

MX52301,0001FBB-19-24JUL18

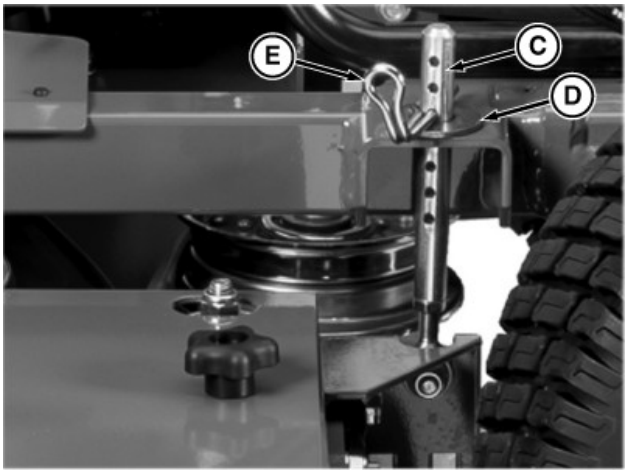
Adjusting Cutting Height

Cutting height can be adjusted from 38—-114 mm (1-1/2—4-1/2 in) in 13 mm (1/2 in) increments.

TCT015849—UN—29MAY18

Holes in the height of cut (HOC) rods (A) are used to adjust the cut height. The holes are spaced at 13 mm (1/2 in) increments. Grab handles (B) for adjusting height are located at each side of deck and in the front on some models.

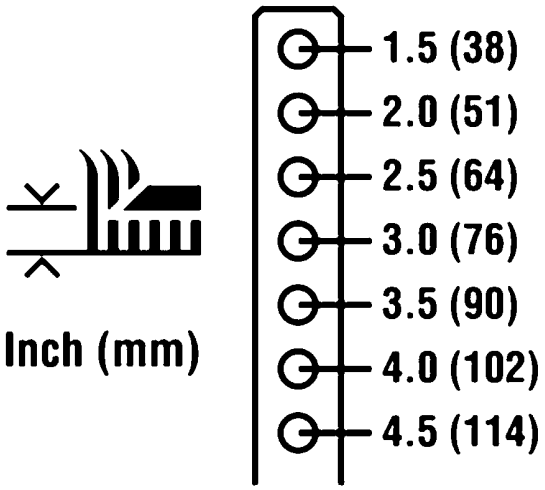
To adjust height of cut:



TCT015850—UN—29MAY18

Shown in position 3.

1. Using the grab handle (B), raise the deck until the desired hole in the HOC rod (C) is above the top of the frame and washer (D).
2. Insert the spring locking pin (E) in the hole and set deck back down. Insert spring locking pins from the outside facing inward.
3. Use the following to determine height:



TCT015851—UN—29MAY18

MX52301,0001FBC-19-24JUL18

Moving Machine by Hand

CAUTION: Avoid Injury! When the bypass valve is open, the machine will have unrestricted motion.

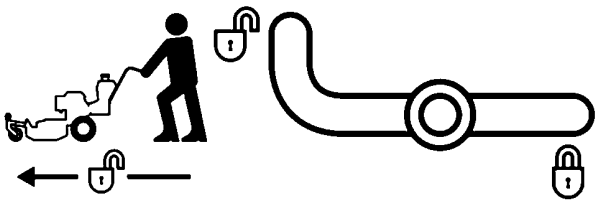
- **Do not open the bypass valve when the machine is stopped on an incline to prevent it from going downhill out of control.**

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

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

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

TCT015853—UN—29MAY18



TCT015852—UN—29MAY18

2. Move both the Left and Right side vehicle bypass valves (A) to the unlocked position.
3. Release park brake.

NOTE: Due to internal hydraulic system resistance, the unit will move slowly.

4. Push unit to desired location.
5. Return both the Left and Right side vehicle bypass levers to the locked position.
6. Set park brake.

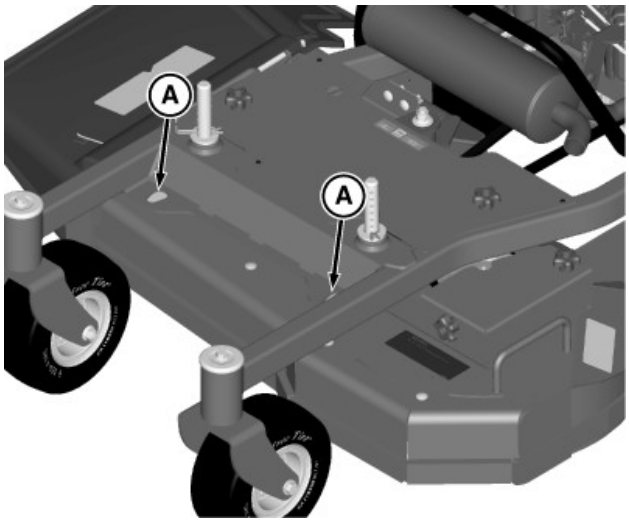
MX52301,0001FBD-19-24JUL18

Transporting Machine on a Trailer

Use a heavy-duty trailer to transport your machine. Trailer must have signs and lights required by law.

CAUTION: Avoid Injury! Use extra care when loading or unloading the machine into a trailer or truck. Use full width ramps for loading machine. Close fuel shut-off valve, if your machine is equipped.

1. Drive machine onto a trailer.
2. Hold steering levers in neutral and engage neutral locks.
3. Place speed control lever in neutral.
4. Set park brake.
5. Shut off engine.
6. Remove key.



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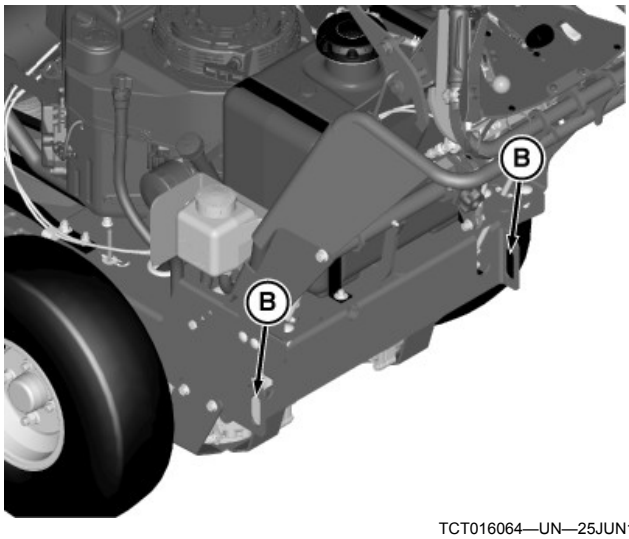


TCT016064—UN—25JUN18

7. Fasten machine to trailer with heavy-duty straps, chains, or cables. Both front and rear straps must be directed down and outward from the machine as follows:
   a. Front hook pockets (A) are located behind the caster spindles.
   b. One hook pocket (B) on each side of the machine on the lower frame behind the rear tires.

MX52301,0001FBE-19-24JUL18

Mowing Tips

- Mow grass with throttle lever in the full throttle position.
- Cut grass when it is dry.
- Keep mower deck and discharge chute clean.
- Mow with sharp blades.
- Properly level mower deck for a smooth cut.
- Mow grass high and often.

- Use a travel speed that fits the conditions:
  - Mow tall grass twice. Cut grass at half desired height – then cut at desired height.
  - Travel slow when mowing tall or thick grass.
  - Avoid damaging grass by slipping or skidding machine drive wheels. Practice smooth control lever movements.
  - When performing sharp turns, do not allow inside machine drive wheel to stop and twist on grass.

MX52301,0001FF2-19-29MAY18

Servicing Your Machine

IMPORTANT: 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.)

TH84124,0000222-19-16JUL13

Service Intervals

Before Each Use

- Check engine oil
- Check hydraulic oil
- 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 belts
- Check controls and control linkages

After Each Use

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

Break-In (After First 10 Hours)

- Check and tighten wheel hardware
- Check traction drive belt
- Check mower deck drive belt tension

Every 50 Hours or Yearly

- Lubricate deck components
- Clean battery terminals and check battery fluid level (if applicable)
- Lubricate traction and brake linkage components
- Check rotary blade bolt torque
- Lubricate caster wheels
- Check belts
- Check all control cables

Every 100 Hours or Yearly

- Change engine oil and filter
- Inspect mower deck drive belt
- Inspect traction drive belt
- Remove cooling shroud and remove debris

Every 200 Hours or Yearly

- Check all hoses and clamps
- Check all lines and fittings

Every 300 Hours

- Change paper air cleaner element
- Check and adjust valve clearance
- Change transmission oil and filter
- Change fuel filter

Every 500 Hours

- Check engine high and low idle
- Change secondary air filter
- Remove combustion chamber deposits
- Remove cooling shroud and remove debris

Every 1000 Hours

- Inspect deck idler pivot bearing
- Check deck idler pivot bearings
- Change spark plugs

MX52301,000204F-19-28JUN18

Grease

IMPORTANT: The recommended grease is 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.

Use a general all-purpose grease with an NLGI grade No.2 rating.

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

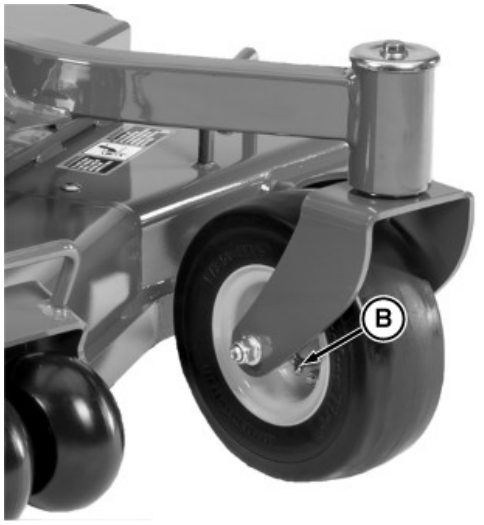
TH84124,0000296-19-22JUL13

Lubricating Points

Lubricating Machine

TCT015896—UN—28JUN18

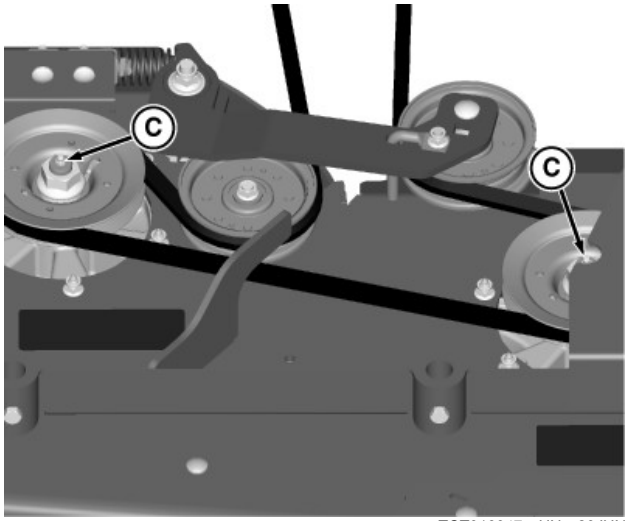
1. Apply grease to the hydro pump control linkage grease fittings (A) on both sides.
2. When lubricating mower deck, use a general all-purpose grease with an NLGI grade No.2 rating.



TCT015897—UN—29JUN18

Apply grease to the caster wheel bearing grease fitting (B) on both wheels.

3. Lubricate mower deck grease fittings:



TCT016047—UN—20JUN18

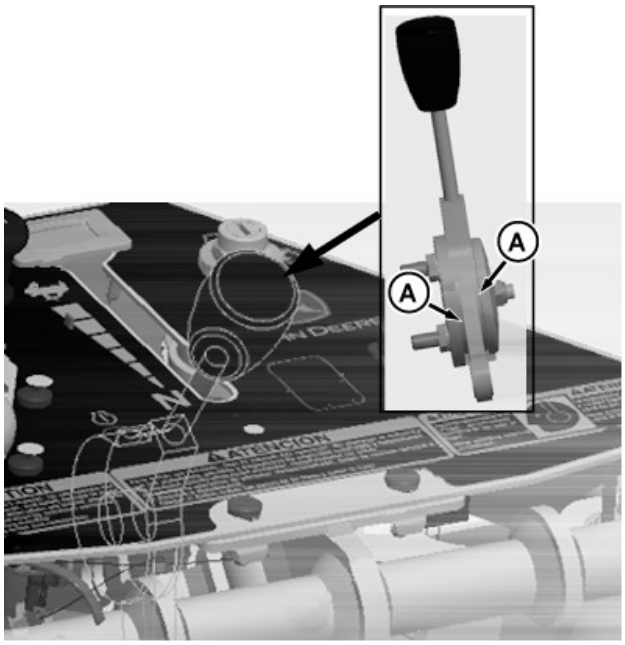
36 inch deck shown

- Remove knob and mower belt cover, and apply grease to the spindle bearing grease fittings (C), until grease is expelled from vent on spindle housings.
- Install mower belt cover and secure with knob.

MX52301,0001FC0-19-29JUN18

Lubricating Speed Control Lever (As Necessary)

IMPORTANT: Only use a high quality lithium lubricant. John Deere White Lithium Grease (TY26393) is recommended.



TC100903—UN—05APR19

Spray both sides of the speed control lever (A) with the recommended high quality lithium lubricant.

MX00654,0000352-19-05APR19

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 or Propane Converted 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 610 m (2,000 ft.), a high altitude carburetor jet kit is not required. If your engine is operated at altitudes above 610 m (2,000 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.

TC00531,00000EC-19-28MAR16

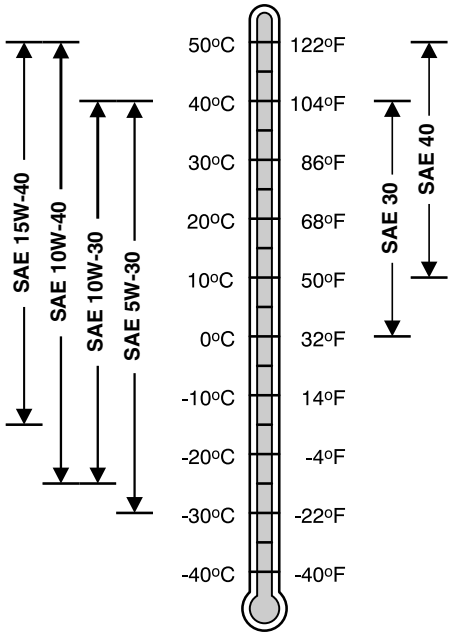
Avoid Fumes

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.**

TH84124,0000218-19-16JUL13

Gasoline Engine Oil



TS1734—UN—04SEP13

Oil Viscosities for Air Temperature Ranges

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

Using single viscosity grade oils such as SAE 30 or SAE 40 can reduce oil consumption in air cooled engines.

John Deere Turf-Gard™ is preferred.

The following John Deere oils are preferred:

Turf-Gard is a trademark of Deere & Company

- John Deere Plus-50™ II 15W40

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

- ILSAC GF-5
- API Service Category SN
- API Service Category SM
- API Service Category SL
- API Service Category SJ
- ACEA Oil Sequence A5
- ACEA Oil Sequence A3
- ACEA Oil Sequence A1
- ACEA Oil Sequence C4
- ACEA Oil Sequence C3
- ACEA Oil Sequence C2
- ACEA Oil Sequence C1

MX52301,0001FF3-19-30MAY18

Checking Engine Oil Level

IMPORTANT: Avoid Damage! 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.**

NOTE: Check oil twice a day if you run engine over 4 hours in a day.

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

TCT015899—UN—30MAY18

2. Clean area around dipstick (A) to prevent debris from entering the crankcase.
3. Remove dipstick. Wipe clean.
4. Install dipstick in tube, but do not tighten; let dipstick threads rest on top of the tube.
5. Remove dipstick. Check oil level on dipstick; oil should be between ADD and FULL marks.
6. Add or remove oil if necessary.

MX52301,0001FC1-19-25JUL18

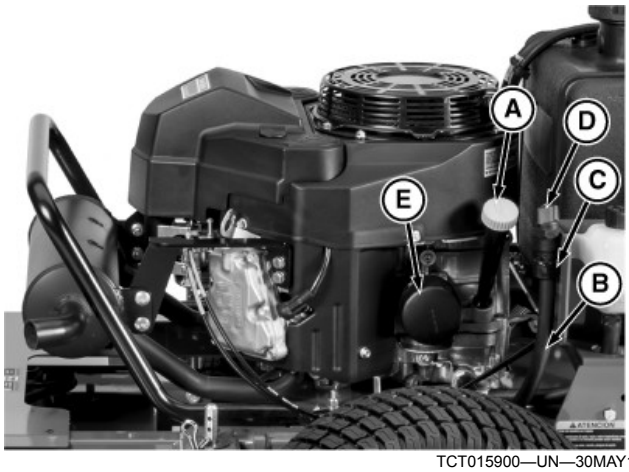
Changing Engine Oil and Filter

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

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

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

1. Start engine and run until it reaches normal operating temperature.
2. Park machine safely. (See Parking Safely in the SAFETY section.)
3. Drain oil:



TCT015900—UN—30MAY18

   a. Loosen dipstick (A), but do not remove.
   b. Remove oil drain tube (B) from clip (C) and lower, as shown.
   c. Place a drain pan under the drain tube (B) at left rear of the machine frame.
   d. Loosen drain cap (D) and allow oil to drain into the drain pan. Allow to completely drain.

Plus-50 is a trademark of Deere & Company

NOTE: Change engine oil and filter (E) at recommended service intervals.

e. Install oil drain cap, and raise oil drain tube onto clip.

4. Replace oil filter (E):
   a. Place container under filter.
   b. Turn filter counterclockwise to remove. Make sure that rubber seal is removed with filter, then discard old filter.
   c. Put film of clean engine oil on the seal of the new filter.
   d. Install new filter by turning clockwise until seal contacts mounting surface, then turn filter by hand an additional 3/4 turn.
5. Remove dipstick (A).
6. Add oil slowly into dipstick filler tube.

Engine Oil — Specification

With Filter Change—Capacity. . . . . 1.7 L (1.8 qt)

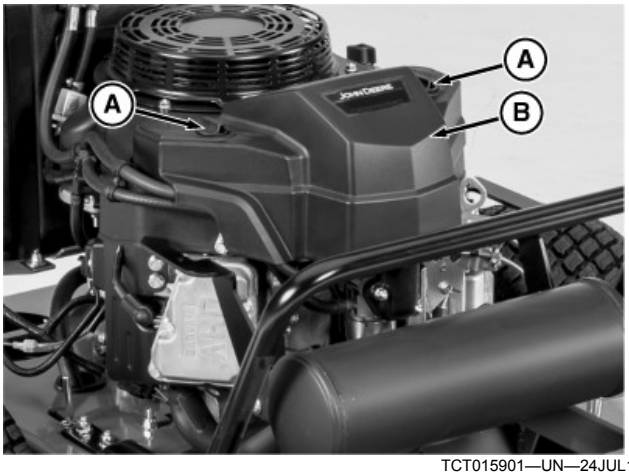
7. Start engine to fill filter with oil and check for oil leaks. Then stop engine.
8. Check oil level, add if necessary, and check for oil leaks. Correct any oil leaks before operating.

MX52301,0001FC2-19-25JUL18

Cleaning Engine Cooling Fins

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

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

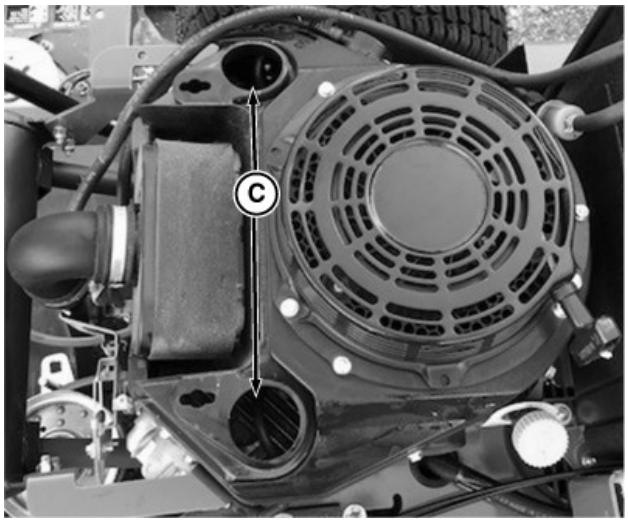


TCT015901—UN—24JUL18

2. Remove two knobs (A) and cover (B).

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

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



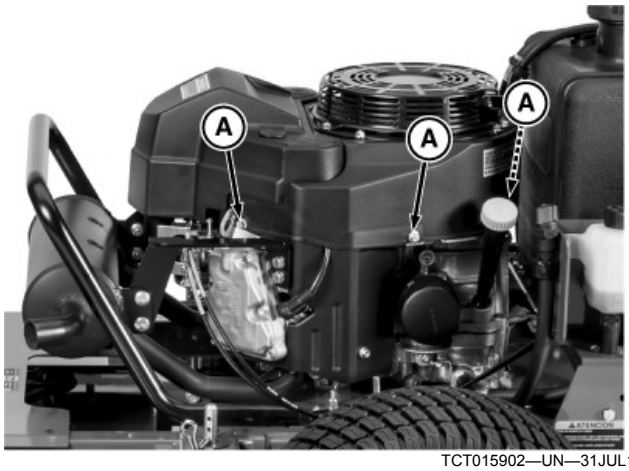
TCT016095—UN—29JUN18

3. With compressed air, thoroughly clean debris buildup from clean out ports (C).
4. Install cover and knobs.

MX52301,0001FC3-19-29JUN18

Checking and Cleaning Under Blower Housing

1. Remove three screws securing the flywheel screen to the flywheel. Remove the flywheel screen.
2. Remove air filter cover and air filter.



TCT015902—UN—31JUL18

3. Remove three screws (A) on the left side of the upper blower housing.
4. Remove two mounting screws securing the fuel pump to the blower housing.
5. Remove one screw securing the vent line to the front of the engine.
6. Remove one screw on the right side of the blower housing and remove the housing from the engine.

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

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

7. Use compressed air to clean the blower fan and housing of debris.
8. Install blower housing on the engine and secure with four screws.
9. Install screw securing vent line to front of engine and two screws securing fuel pump to the blower housing.
10. Install air filter and cover on engine.
11. Install flywheel screen and secure with three screws.

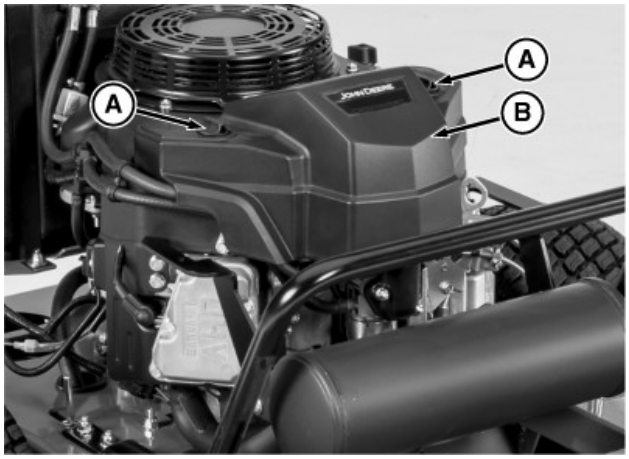
MX52301,0001FC4-19-24JUL18

Checking and Cleaning Air Filter Elements

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

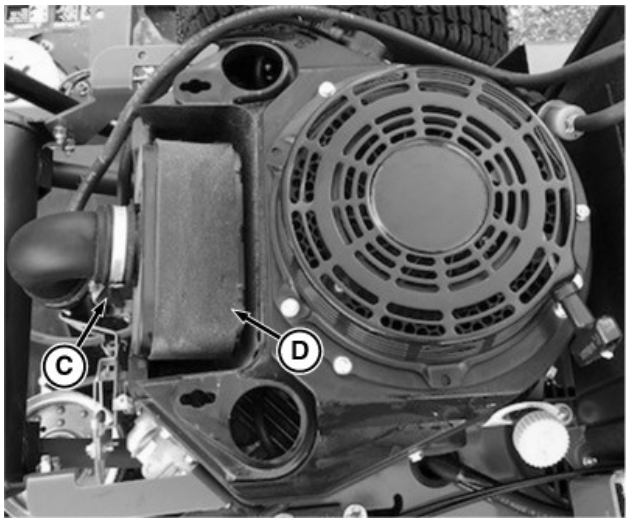
NOTE: It may be necessary to check the air filter more frequently if operating machine in dusty conditions.

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



TCT015901—UN—24JUL18

2. Loosen thumbscrews (A) 1/4 turn counterclockwise and lift cover (B) to remove.



TCT016096—UN—29JUN18

3. Loosen air filter clamp by turning thumbscrew (C) counterclockwise until the clamp loosens. Carefully lift the filter element (D) out of the air cleaner base.

TCAL45230—UN—10APR13

4. Remove the foam precleaner (E) from the paper filter element (F). If the foam precleaner is dirty:

- Wash foam precleaner in a solution of warm water and liquid detergent. Squeeze out excess water in a dry cloth until precleaner is completely dry. (Do not wring.)

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

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

5. Inspect paper filter element (F) and replace if damaged or dirty.
6. Install foam element (E) on paper filter element (F). Position air filter in the air filter base and on the air intake tube. Align air filter clamp on the intake tube groove and tighten the clamp by turning thumbscrew clockwise until secure.
7. Install air cleaner cover on the engine and turn thumbscrews (A) 1/4 turn clockwise to secure.

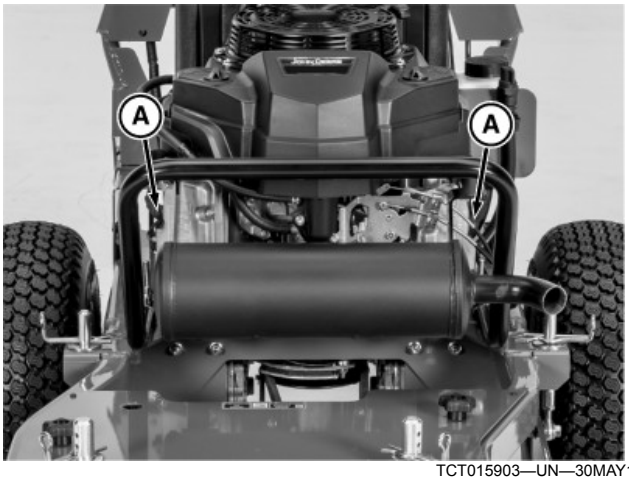
MX52301,0001FC5-19-29JUN18

Checking Spark Plugs

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

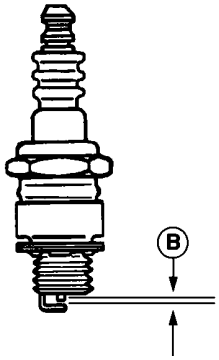
IMPORTANT: Avoid Damage! Do not clean spark plugs with abrasives.

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



TCT015903—UN—30MAY18

2. Disconnect spark plug wires (A).
3. Clean the area around each spark plug.
4. Remove and inspect spark plugs:
   - Clean plugs and check for damage, replace if necessary.
   - If plugs are in good condition, check gap.



TCAL45232—UN—10APR13

5. Adjust spark plug gap (B) to specifications.

Specification	
Spark Plug—Gap	0.75 mm (0.030 in)

6. Install spark plugs and tighten to specifications.

Specification	
Spark Plug—Torque	22 N·m (195 lb·in)

7. Install spark plug wires.

MX52301,0001FC6-19-01AUG18

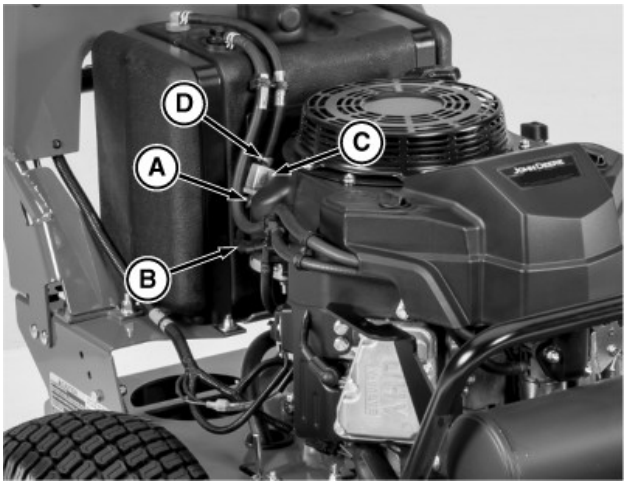
Replace Fuel Filter

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

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

IMPORTANT: Avoid Damage! When installing a new fuel filter, the filter arrow must be pointed in the direction of the fuel flow.

1. Park machine safely. (See Parking Safely in the SAFETY section.)
2. Let engine cool.
3. Place a clean drain pan near the fuel filter.



TCT015904—UN—30MAY18

4. Slide hose clamp (A) away from the fuel filter, and disconnect the fuel hose (B) from the outlet side of the fuel filter (C). Drain gasoline from the filter into the drain pan.
5. Place a drain pan under hoses to catch any fuel that may be left in the hoses. Slide remaining hose clamp (D) away from the fuel filter (B), and remove the fuel filter from the inlet fuel hose. Discard filter in appropriate manner.
6. Install new filter with embossed arrow pointing in direction of fuel flow.
7. Connect hoses to the new filter.
8. Secure with clamps.

MX52301,0001FC7-19-25JUL18

Spark Arrestor Maintenance (If Equipped)

Spark arrestor assemblies include a screen element that should be inspected and cleaned periodically. Visually inspect the screen for tears, broken wires, or loose welds. Replace the spark arrestor assembly if any of these conditions exist. If the screen is determined to be in good condition, proceed with cleaning the screen by brushing away loose dirt or carbon using a brush.

RM87422,00002DA-19-05JUL17

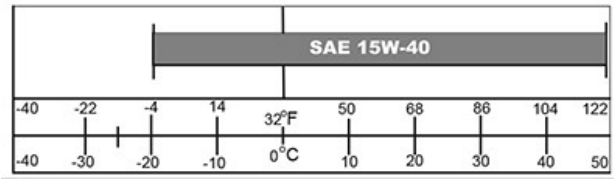
Avoid Fumes

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.**

TH84124,000028D-19-22JUL13

Hydrostatic Transmission and Hydraulic Oil



TCAL45234—UN—10APR13

Use the following oil viscosity based on the air temperature range. Operating outside of the recommended oil air temperature range may cause premature hydrostatic transmission failure.

IMPORTANT: Avoid Damage! Only use a quality oil in this transmission. Do not mix any other oils in this transmission. Do not use Bio Hy-Gard™ in this transmission. Do not use Type F (Red) Automatic Transmission Fluid in this transmission.

The following oil is preferred:

- John Deere Plus-50™ II 15W40

The following oil is also recommended:

- SAE 15W-40

The following oil is allowable:

- John Deere Plus-50™ 0W-40 Synthetic

Oil must meet the following:

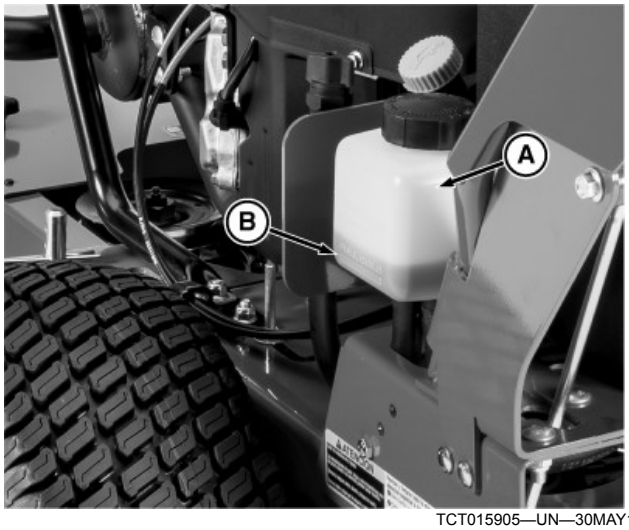
- API Service Classification SG or higher

MX52301,0001FC8-19-25JUL18

Bio Hy-Gard is a trademark of Deere & Company
Plus-50 is a trademark of Deere & Company

Checking Transmission Oil Level

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



TCT015905—UN—30MAY18

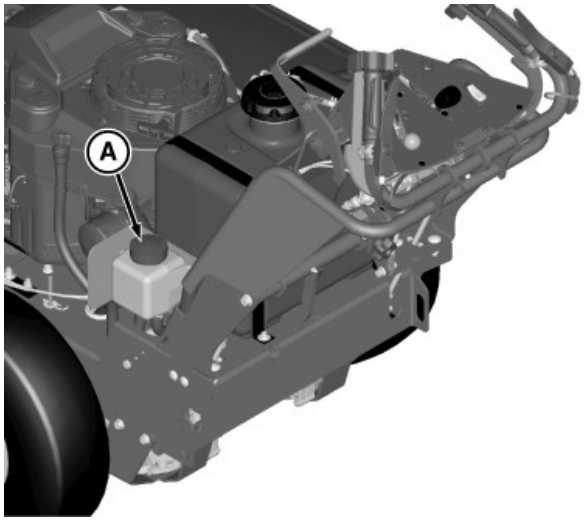
2. Locate hydraulic reservoir (A) on the left side.
3. Hydraulic oil level (B) is visible through hydraulic reservoir.
4. Clean area around the hydraulic reservoir cap before adding oil.
5. Add oil as needed.

MX52301,0001FC9-19-30MAY18

Changing Transmission Oil Filter

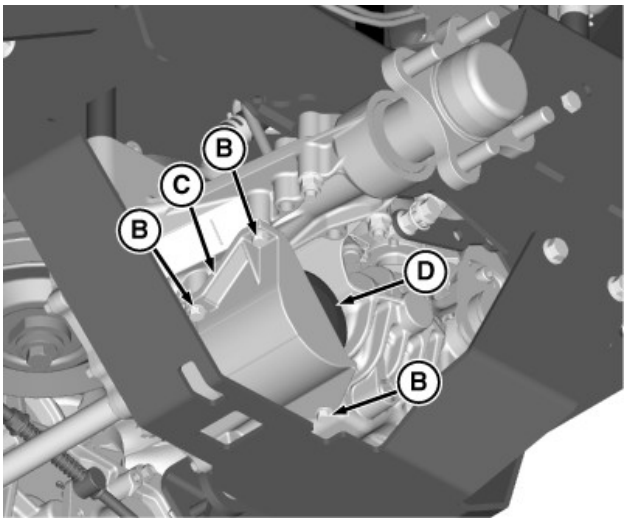
Changing Transmission Oil Filter

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



TCT016046—UN—20JUN18

3. Clean area around the hydraulic reservoir cap (A).



TCT016045—UN—25JUL18

Wheel removed for better view.

4. Remove three cap screws (B) and oil filter guard (C) from transmission.
5. Clean area around the oil filter (D).
6. Place a properly marked container with a capacity of at least 11.4 L (12 qt) under the hydraulic filter.
7. Turn hydraulic filter counterclockwise to remove and drain oil.
8. Apply a film of clean oil to gasket of the new filter.
9. Install filter. Turn filter clockwise until gasket makes contact with the mounting surface. Tighten 1/2 to 3/4 turn after contact.
10. Reinstall filter guard to transmission with three cap screws.
11. Repeat for other transmission.
12. Fill reservoir until oil level is at the cold fill mark.
13. Install filler cap onto reservoir.
14. Start engine and run at 3/4 throttle position. Release the park brake and cycle the control levers forward and rearward several times. Check for leaks.
15. Stop engine. Check reservoir oil fluid level. Add oil as necessary.

Purge Transmission

1. Park machine safely. (See Parking Safely in the SAFETY section.)
2. Verify that oil level in reservoir is above the cold fill line.
3. Start engine.
4. Open bypass valves in transmissions.
5. Disengage park brake.
6. Slowly move the directional control levers in both forward and reverse directions 5—6 times.
7. Engage park brake.
8. Close bypass valves in transmission.
9. Slowly move the directional control levers in both forward and reverse directions 5—6 times.
10. Check oil level in reservoir. Add oil if reservoir level is below the cold fill line.
11. Repeat steps until transmission operates at normal noise levels and moves smoothly forward and reverse at normal speeds.

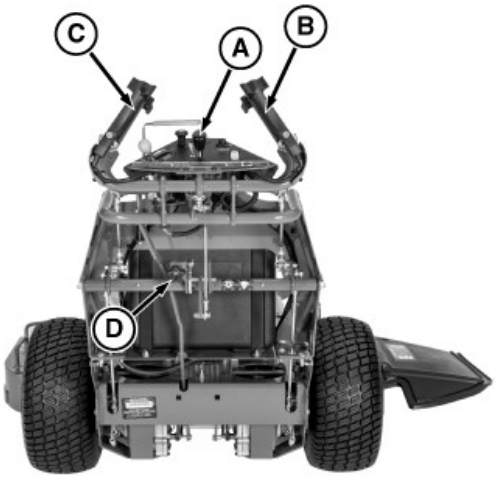
MX52301,0001FCA-19-28JUN18

Adjusting Tracking

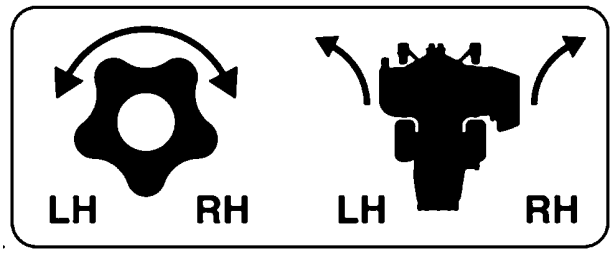
1. Park machine safely. (See Parking Safely in the SAFETY section.)
2. Start and run the engine until it reaches normal operating temperature.

CAUTION: Avoid Injury! Wheels and other components can rotate at high rate of speed. Clear area of all bystanders before performing this service procedure.

3. Move unit to an open area for operation.



TCT015906—UN—30MAY18



TCT016090—UN—28JUN18

4. Slowly push speed control lever (A) forward to the desired speed setting.

5. Slowly release both left (B) and right (C) steering levers from the neutral position.
6. Note which direction, if any, the unit pulls.

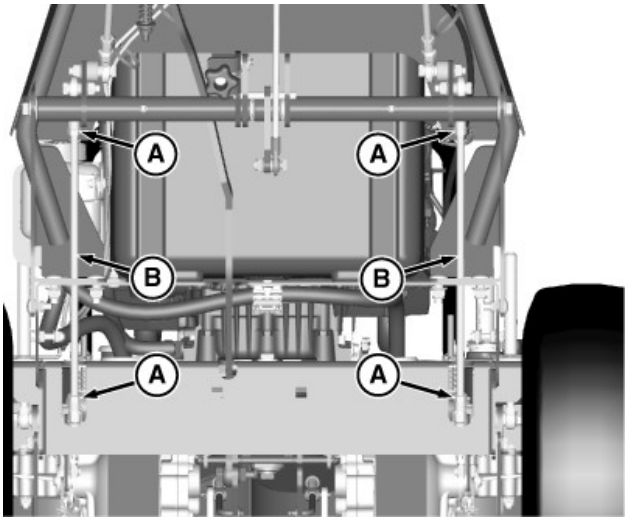
NOTE: Unit will be pulled in the direction opposite the faster drive wheel.

7. Adjust tracking as necessary with the tracking control knob (D). For example, if unit pulls to left, rotate knob to the right.

MX52301,0001FCB-19-24JUL18

Adjusting Neutral Creep

1. Park machine safely. (See Parking Safely in the SAFETY section.)
2. Raise drive wheels off the ground and securely support the unit and block caster wheels.
3. Start engine.
4. Set speed control to neutral.



TCT016091—UN—28JUN18

5. Loosen jam nuts (A).
6. Rotate rod (B) until wheel stops.

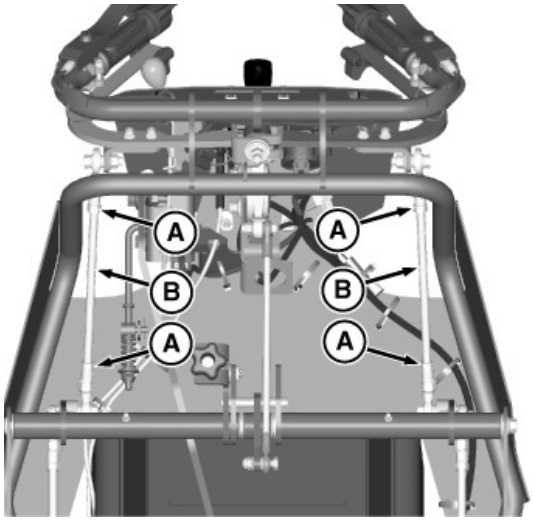
IMPORTANT: Avoid machine damage! Be sure to keep ball joint from twisting and or binding while tightening jam nuts.

7. Tighten jam nuts to 11 N·m (8 lb·ft).
8. Shut off engine.
9. Repeat for the other side.

MX52301,0001FCC-19-06APR19

Adjusting Neutral Locks

1. Park machine safely. (See Parking Safely in the SAFETY section.)
2. Raise drive wheels off the ground and securely support the unit and block caster wheels.
3. Start engine.
4. Set speed control to neutral.



TCT016062—UN—28JUN18

5. Engage neutral locks.
6. Move speed control to setting 4.
7. Loosen jam nuts (A) and adjust steering control rods (B) until wheels do not rotate.

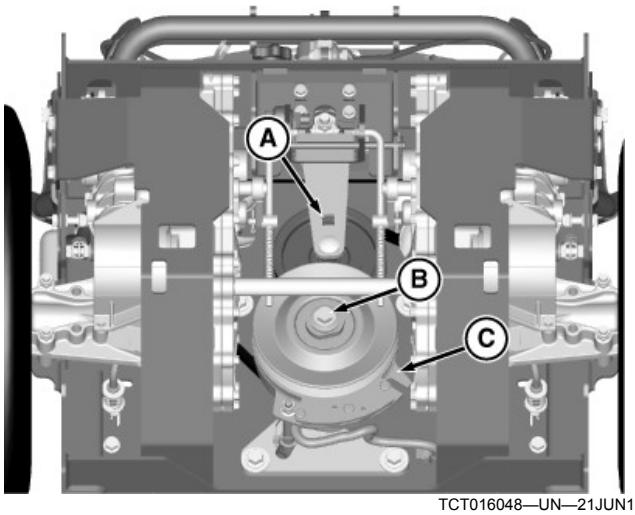
IMPORTANT: Avoid machine damage! Be sure to keep ball joint from twisting and or binding while tightening jam nuts.

8. Tighten jam nuts to 11 N·m (8 lb·ft).
9. Shut off engine.

MX52301,0001FCD-19-06APR19

Replacing Traction Drive Belt

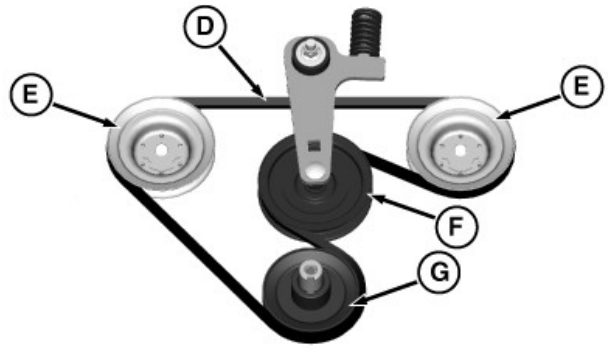
Removing



TCT016048—UN—21JUN18

1. Park machine safely. (See Parking Safely in the SAFETY section.)
2. Remove mower deck drive belt. (See Replacing Mower Deck Drive Belt in the SERVICE MOWER Section.)
3. Insert a 1/2” breaker bar or ratchet into the square hole (A) of the idler arm and release tension on the idler pulley.
4. Unplug pigtail harness from clutch.
5. Remove bolt (B) washer, and shim from the PTO clutch (C).
6. Remove PTO clutch from the machine.
7. Remove traction drive belt.

Installing



TCT016049—UN—21JUN18

1. Install new traction drive belt (D) around transmission sheaves (E), idler pulley (F), and engine pulley (G).
2. Reinstall PTO clutch to the machine.
3. Install mower deck drive belt.

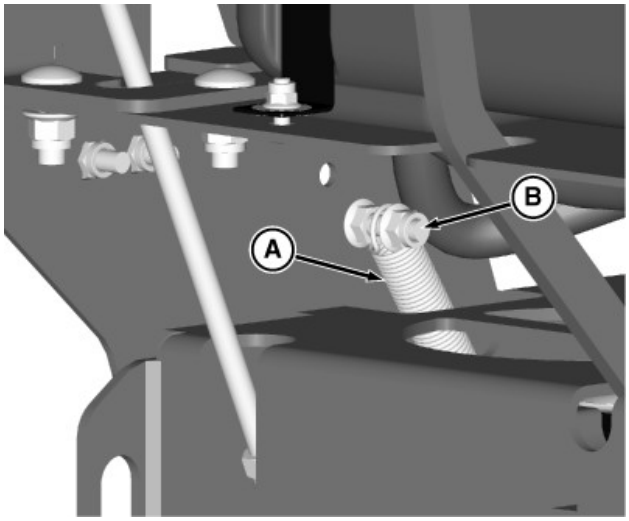
MX52301,0001FCE-19-28JUN18

Adjustment for Increased Performance

For heavy duty drive conditions such as operation with a sulky on steep slopes, a higher spring force may be required on the transmission control arm to prevent the drive system from losing speed and/or stalling. Use the following procedure to increase control arm spring tension.

NOTE: In heavy duty positions, the drive lever force at the upper handle will also be increased.

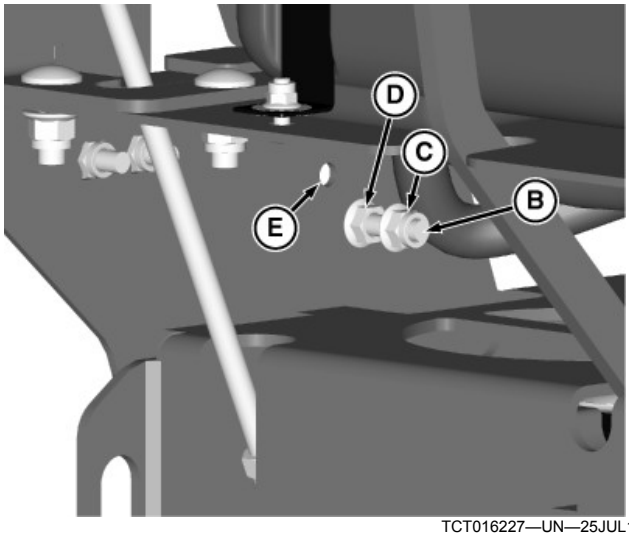
1. Park machine safely. (See Parking Safely in the SAFETY section.)



TCT016226—UN—24JUL18

Left side shown

2. Remove return spring (A) from bolt (B).



TCT016227—UN—25JUL18

3. Remove locknut (C) and flange nut (D) from bolt (B).
4. Increase steering responsiveness by inserting bolt (B) into the upper hole (E) in the machine frame.
5. Reinstall flange nut (D) onto bolt and tighten to 23 N·m (17 lb·ft).
6. Reinstall locknut (C). Tighten locknut until two threads show past end of nylon insert.
7. Reinstall return spring.
8. Repeat for the other side.

MX52301,0002084-19-01AUG18

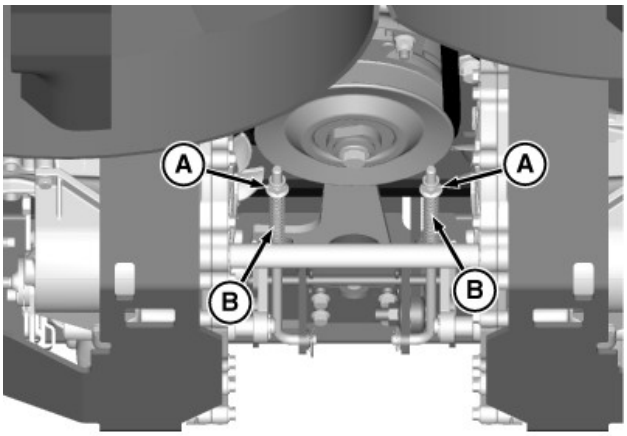
Adjusting Brakes

NOTE: This adjustment should be performed on a hard rough surface such as a blacktop parking lot.

NOTE: Brakes must be adjusted evenly to ensure maximum brake performance and prevent uneven brake wear. Park brake that is adjusted too tightly can damage the transmission or cause premature brake wear.

To adjust:

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



TCT016092—UN—10JUL18

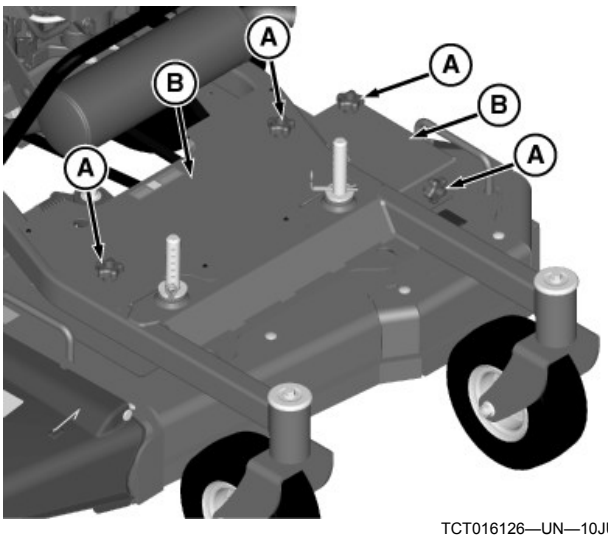
2. With the park brake engaged, gradually tighten nuts (A) on left-hand and right-hand brake rods (B) (1/4 turn) and retest park brake. (See Test Safety Systems in the OPERATING section.)
3. Repeat adjustment until brakes pass parking brake test. (See Test Safety Systems in the OPERATING section.)

MX52301,0001FD0-19-10JUL18

Replacing Mower Deck Drive Belt

1. Park machine safely. Ensure that vehicle exhaust system has been allowed to adequately cool to prevent potential injury. (See Parking Safely in the SAFETY section.)

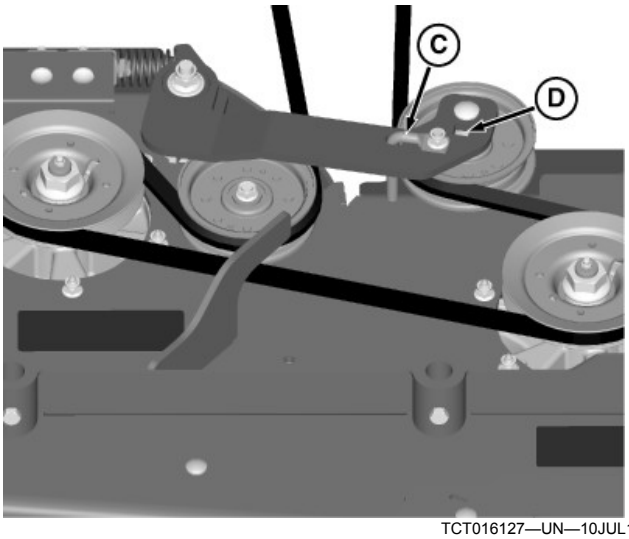
CAUTION: Avoid Injury! Help prevent serious personal injury. Do not operate mower without belt shields installed.



TCT016126—UN—10JUL18

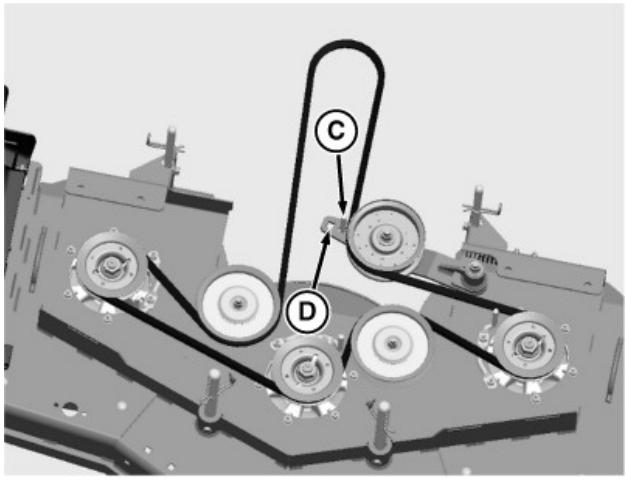
36 in Deck Shown

2. Loosen knobs (A) and remove belt shields (B).
3. Remove pivot idler retaining pin (C) as needed.



TCT016127—UN—10JUL18

36 in Deck



TCT016125—UN—10JUL18

48 in, 52 in, and 61 in Decks

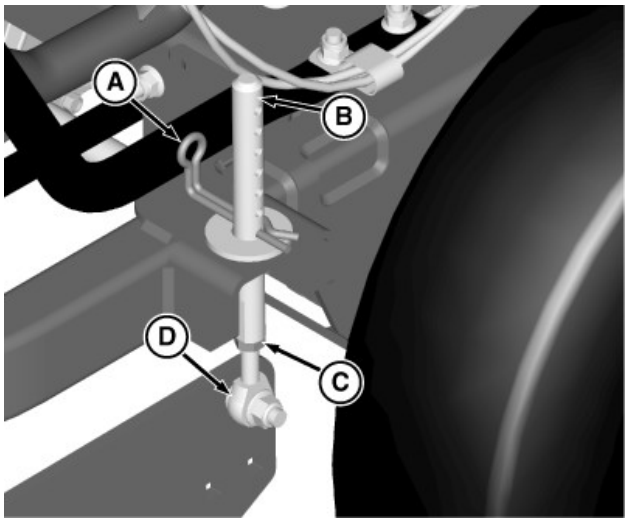
4. Insert a 1/2” breaker bar or ratchet into the square hole (D) of the idler arm.
5. De-tension the belt and remove from the clutch and sheaves. Remove old belt from the vehicle.
6. Insert new belt into the vehicle and route as shown.
7. Utilize the 1/2" breaker bar feature to allow for the necessary slack to enable proper belt routing.
8. Reinstall the pivot idler retaining pin.
9. Reinstall belt shields.

MX52301,0001FD2-19-01AUG18

Adjusting Mower Deck Rake

1. Stop machine on a smooth, level surface.
2. Park machine safely. (See Parking Safely in the SAFETY section.)

NOTE: The height of the rear blade tip should be 3—6 mm (1/8—1/4 in) higher than the front blade tip.



TCT016061—UN—22JUN18

3. Remove pins (A) from rear HOC rods (B) on both sides of the deck and allow rear of the deck to rest on anti-scalp wheels or a block of wood.
4. Loosen the jam nut (C) on the trunnion (D).
5. Rotate HOC rods in or out to achieve desired height.
6. Tighten trunnion jam nuts (C) to 22 N·m (16 lb·ft).
7. Install pins and reset deck height of cut.
8. Measure blade height from front to back and side to side. Ensure that deck is level from side to side and that rear-to-front rake is 3—6 mm (1/8—1/4 in).

   Repeat procedure if necessary.

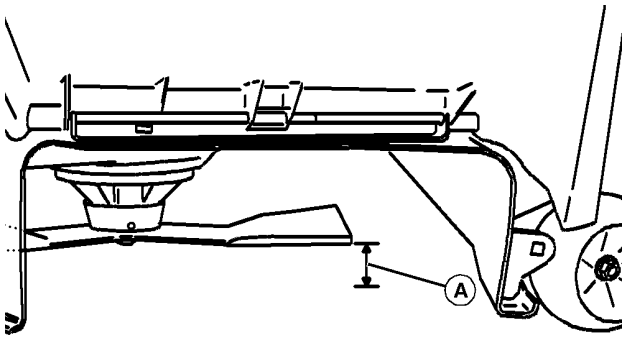
MX52301,0001FD3-19-04APR19

Checking for Bent Mower Blades

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

Replace blades if defective. Never straighten or weld them.

1. Park machine safely. (See Parking Safely in the SAFETY section.)
2. Raise mower deck to highest position to access blades.



MXAL42867—UN—09APR13

Mower deck with side discharge used for illustration

3. Measure distance (A) between blade tip and flat ground surface.
4. Rotate blade 180° and measure distance between other blade tip and flat ground surface.
5. Install new blade if the difference between the two measurements is more than 3 mm (1/8 in).
6. Repeat for all blades.

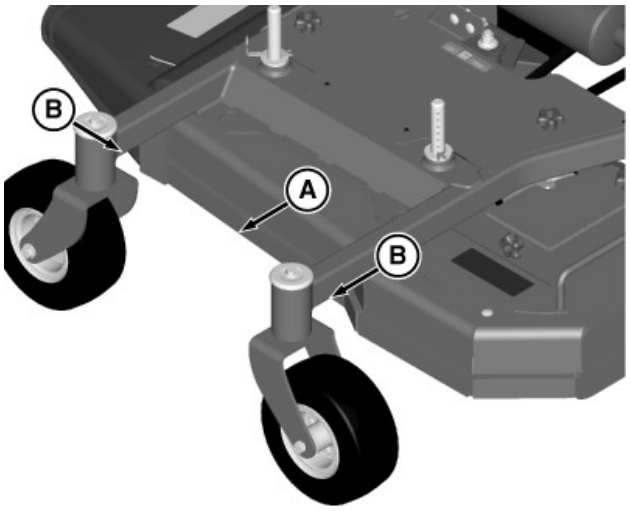
MP47322,00F466C-19-25JUL18

Replacing Mower Blades

1. Park machine safely. (See Parking Safely in the Safety section.)
2. Raise mower deck to the highest cutting position.

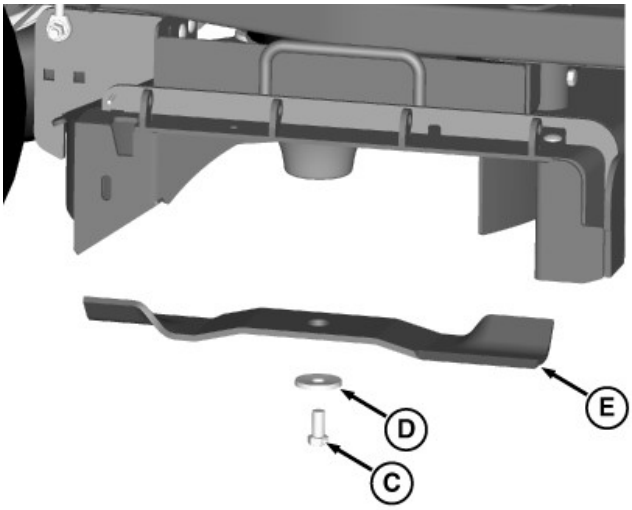
CAUTION: Avoid Injury! The machine can fall or slip from an unsafe lifting device or supports.

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



TCT016093—UN—29JUN18

3. Place jack under the mower deck lip (A) close to the mower deck center, or the anti-scalp wheels (if applicable).
4. Lift machine to desired working height.
5. Support the front of the machine with jack stands under the caster arm (B).
6. To prevent mower blades from spinning, use a wooden block.



TCT016094—UN—29JUN18

7. Remove screw (C), large concave blade washer (D), and blade (E).
8. Install replacement blade:
   - Blade wing must face toward top of the mower deck.

   IMPORTANT: Avoid Damage! When installing the blade:

   · Make sure the blade is properly seated on the spindle.

   · Make sure the concave side of the large washer faces towards the blade.

   - Install hardened washer, blade, large concave blade washer, and cap screw.
   - Tighten blade bolts to specification.

Specification

Blade—Torque. . . . . 67.8 N·m (50 lb·ft)

9. Lower machine.
10. Adjust mower deck to a desirable cutting height.

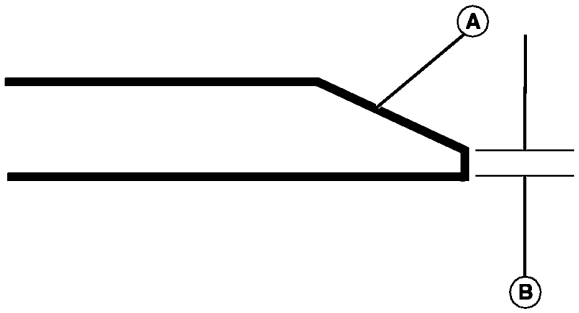
MX52301,0002055-19-25JUL18

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.



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)

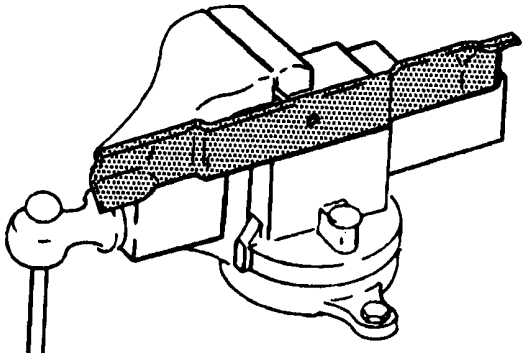
- Balance blades before installing.

MX00654,000039E-19-05JUL17

Balancing Blades

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

1. Clean blade.



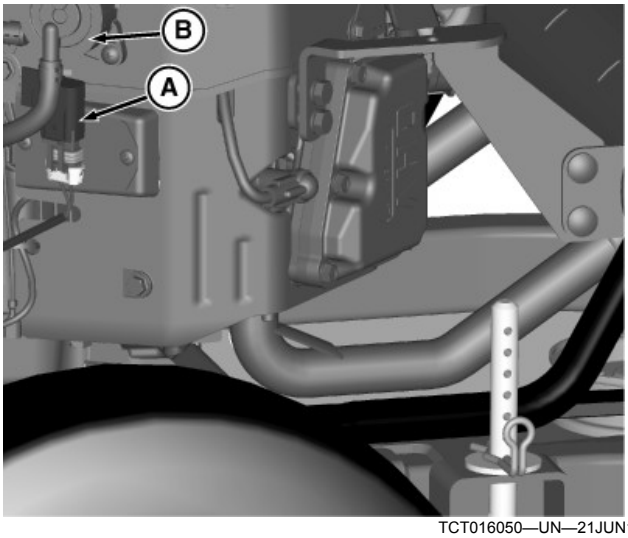
GXAL42042—UN—04MAR13

2. Put blade on nail in a vise. Turn blade to horizontal position.
3. Check balance. If blade is not balanced, heavy end of blade will drop.
4. Grind bevel of heavy end. Do not change blade bevel.

MX00654,000039F-19-26MAY15

Replacing Fuse and Diode

Replacing Fuse



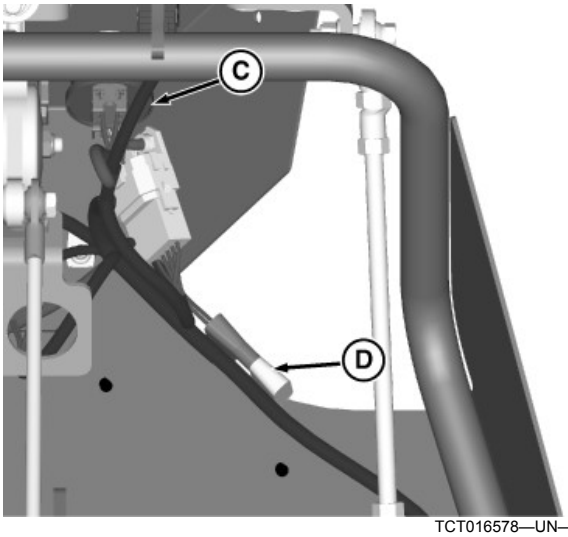
TCT016050—UN—21JUN18

IMPORTANT: Avoid Damage! When replacing fuses - use only a 10-amp fuse or you may damage the circuit.

One 10 A fuse is located in a connector (A) below the fuel pump (B) on the right side of the engine.

1. Unplug fuse plug connector from the connector cap.
2. Remove 10 A fuse from socket.
3. Check metal clip in fuse window and discard fuse if clip is broken.
4. Install new fuse into socket.
5. Plug fuse plug connector back into cap.

Replacing Diode



TCT016578—UN—21AUG18

1. Locate diode (D) below the key switch (C) on the right side of the machine.
2. Remove diode from socket.
3. Install new diode into socket.

MX52301,0001FD6-19-21AUG18

Using Proper Fuel and Stabilizer

IMPORTANT: Using stale, contaminated or improper fuel can result in engine and fuel system damage. Repairs caused by stale, contaminated or improper fuel are not covered by warranty.

Use regular grade unleaded fuel with an octane rating of 87 octane or higher. Fuel blends containing up to 10% ethanol or up to 15% MTBE reformulated fuel are acceptable. Do not use fuel or additives containing methanol as engine damage can occur.

Always use fresh, clean fuel that is purchased in a quantity that can be used within approximately 30 days. Fuel stabilizer should always be added to the fuel each time fuel is purchased. Add stabilizer before filling the fuel container to insure proper mixing. Such practice helps prevent engine performance problems and allows fuel storage in the machine all year without draining.

Store fuel in plastic containers to reduce condensation. Make sure the cap on the fuel container is tight to reduce fuel contamination and evaporation. For best fuel storage life, use a self-sealing gas can.

Fuel is blended to give best seasonal performance. To avoid engine performance problems such as hard starting or vapor lock, use in-season fuel. Use fuel during warm weather that was purchased during that season, and use fuel during cold weather that was purchased during that season.

Fuel can become stale in machines with engines that are used seasonally or infrequently during a season. Stale fuel can produce varnish and plug carburetor or EFI components which can affect engine performance.

Keep fuel storage container tightly covered and in a cool area out of direct sunlight. Fuel can break down and degrade if not sealed properly or exposed to sun and heat.

Condensation may collect in the fuel tank because of a variety of operating or environmental conditions and, over time, may affect your machine's operation. Fill machine fuel tank at the end of the day.

TH84124,00001F5-19-16JUL13

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.**
- **If using a funnel, make sure it is plastic and has no screen or filter.**

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

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

TH84124,00001F6-19-01AUG16

Checking Tire Pressure

TCAL43703—UN—26MAR13

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

- **Do not attempt to mount a tire without the proper equipment and experience to perform the job.**
- **Do not inflate the tires above the recommended pressure.**
- **Do not weld or heat a wheel and tire**

assembly. Heat can cause an increase in air pressure resulting in an explosion. Welding can structurally weaken or deform the wheel.

- **Do not stand in front or over the tire assembly when inflating. Use a clip-on chuck and extension hose long enough to allow you to stand to one side.**

Replace drive tires with less than 3/32 in. of any tread groove left.

Always keep the correct tire pressure in the drive tires.

Higher pressures will cause the tires to have less traction; creating slower speeds and giving a harder ride.

Front casters are equipped with non-pneumatic tires and do not require any air, but should still be checked for wear and be replaced when excessively worn.

1. Check tires for damage.
2. Check tire pressure with an accurate gauge.
3. Add air, if necessary.

Tire Size	Pressure
Front:	N/A
Rear:	83—103 kPa (12—15 psi)

MX52301,0002082-19-24JUL18

Removing and Installing Rear Drive Wheels

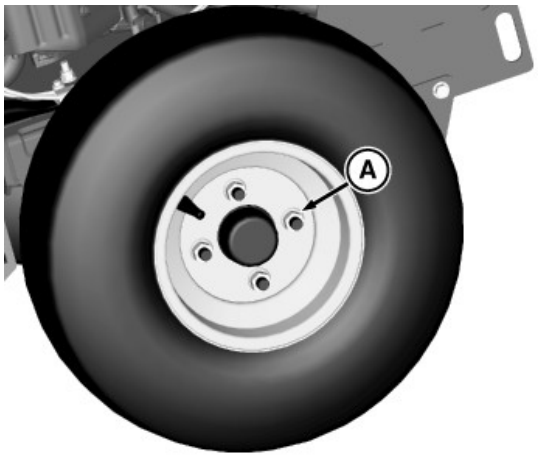
Removing

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

CAUTION: Avoid Injury! The machine can fall or slip from an unsafe lifting device or supports, injuring anyone beneath it.

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

2. Raise rear of the machine with a safe lifting device.
   - Use wheel chocks to block front wheels.
   - Support with jack stands.



TCT015908—UN—28JUN18

3. Remove wheel nuts (A).
4. Remove wheel.

Installing

1. Place wheel onto the hub of the transmission.
2. Hand start lug nuts onto the studs hand tight. The taper side of the lug nuts should be contacting the hub.
3. Torque lug nuts in an alternating pattern to specification.

Specification

Rear Wheel Nut—Torque. . . . . 101.68 N·m (75 lb·ft)

4. Repeat process for the opposite side.
5. Lower machine.

MX52301,0002056-19-24JUL18

Cleaning the Mower

The underside of the mower deck should be checked and cleaned twice daily and more often if the grass being mowed is lush or wet. The entire mower should be cleaned at the end of each work day.

- Cleaning should be done with a leaf blower or low-pressure compressed air.
- Wash with water only when necessary. Do not use a pressure washer or nozzle, as the water can enter bearings and electrical connections, causing an electrical short, rust, and corrosion.
- When washing with water, avoid spraying near the hydro cap and do so when the unit has cooled down.
- Washing a hot machine can cause various unseen system damage.
- If water is used for cleaning the machine, immediately dry it with a leaf blower or low-pressure compressed air and run it with blades engaged for approximately 10 minutes.

- Once the wash is complete, always lubricate and grease all applicable areas.

BB87125,0001490-19-08JUL13

Cleaning Plastic Surfaces

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

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

1. Wash surface with clean water and a mild liquid automotive washing soap.
2. Dry thoroughly to avoid water spots.

TH84124,00001FB-19-16JUL13

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: 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.

TH84124,00001FC-19-16JUL13

Using Troubleshooting Chart

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

MP47322,00F467B-19-13NOV18

Engine

If	Check
Engine Will Not Start Or Is Hard To Start	Control levers not in neutral position. Key switch not in proper position. Parking brake not set. PTO switch in the ON position. Stale fuel / Improper fuel / fuel level. Plugged fuel filter. Plugged air intake filter. Spark plug wire is loose or disconnected. Spark plug not gapped correctly. Wrong engine oil viscosity. Blown 10 amp fuse. Faulty relay module or relay module connection. Choke adjusted incorrectly - See your John Deere Dealer.
Engine Will Not Slow Idle	Carburetor problems - See your John Deere Dealer. Bent or kinked throttle cable.
Engine Runs Rough	Plugged fuel filter. Plugged air intake filter. Fuel cap vent dirty. Stale or improper fuel / fuel level. Spark plug damaged or not gapped correctly. Spark plug wire loose or damaged. Choke adjusted incorrectly - See your John Deere Dealer. Carburetor problems - See your John Deere Dealer.
Engine Overheats	Cooling fins blocked with debris. Clean cooling fins. Cooling air intake screen is dirty. Clean intake screen. Low oil level. Operating at too low engine speed. Increase engine speed. Plugged carburetor air intake filter. Operating at too fast ground speed for conditions.
Engine Knocks	Engine oil level low. Operating at too fast ground speed for conditions. Fuel is bad. Fill tank with fresh fuel, correct octane. Engine speed too low for load conditions.
Engine Lacks Power	Load too heavy. Plugged air intake filter. Plugged fuel filter. Improper type of fuel. Drain and fill tank with correct fuel. Cooling fins blocked with debris, engine overheating. Clean cooling fins. Spark plug damaged or not gapped correctly. Throttle cable bent or kinked.
Engine Uses Too Much Oil	Oil leaks at filter, drain plug, or other location. Incorrect engine oil. Plugged oil filter. Plugged air intake filter.
High Fuel Consumption	Improper type of fuel. Drain and fill tank with correct fuel. Plugged air intake filter. Operating at too fast ground speed for conditions. Improper valve clearance - See your John Deere Dealer.
Engine Backfires Through Muffler	Carburetor problems - See your John Deere Dealer.
Engine Backfires Through Carburetor	Carburetor problems - See your John Deere Dealer.

MX52301,0002081-19-24JUL18

Mower

If	Check
Discharge Chute Is Plugged	Grass too wet for mowing. Cutting height too low. Engine speed too low when mowing. Increase to full throttle. Ground speed too fast for conditions. Mower deck drive belt incorrectly installed.
Mower Deck Vibrates	Engine speed too slow when mowing. Increase to full throttle. Loose deck hardware. Worn or damaged drive belt(s). Loose blade bolts and hardware. Bent or worn or unbalanced blade(s). Debris packed around belt sheaves. Remove belt shields to check. Belt sheaves misaligned or damaged. See a John Deere dealer.
Mower Blades Do Not Engage	Operator presence lever not engaged or faulty circuit. Deck drive belt slipping or broken. Deck belt tensioner spring broken or disconnected. Faulty PTO switch. Blown 10 amp fuse. Faulty relay module or relay module connection. Loose electrical connections or damaged wiring harness.
Mower Cuts Unevenly	Mower deck not properly leveled. Ground speed too fast for conditions. Engine speed too slow when mowing. Increase to full throttle. Bent or worn or unbalanced blade(s). Tire pressure incorrect.

MX52301,0002051-19-28JUN18

Electrical System

If	Check
PTO Clutch Does Not Engage	Blown 10 amp fuse. Faulty relay module or relay module connection. Faulty PTO switch. Loose PTO connections. Faulty PTO clutch - See your John Deere Dealer.

MX52301,0002052-19-28JUN18

Parking Brake

If	Check
Parking Brake Not Working Correctly	Parking brake out of adjustment. Brake components damaged - See your John Deere Dealer.

TH84124,00001F2-19-16JUL13

Steering

If	Check
Steering Not Working	Parking brake engaged. Transmission bypass valves open. Tire pressure incorrect. Hydraulic oil level low. Traction drive belt slipping. Traction drive belt damaged or worn. Steering linkage detached.
Machine Will Not Follow A Straight Path	Steering linkage out of adjustment.
Machine Moves to Left or Right with Engine Running and Transmission in Neutral	Transmission linkage (neutral position) out of adjustment.

MX52301,0002053-19-28JUN18

Machine

If	Check
Excessive Machine Vibration	Engine speed too low when mowing. Increase to full throttle. Worn or damaged drive belt(s). Dirt or debris on drive sheaves. Loose or damaged electric PTO or drive sheave. Bent or worn or unbalanced blade(s).
Machine Will Not Move with Engine Running	Parking brake engaged. Hydraulic oil level low. Hydraulic oil cold - allow engine to warm. Traction drive belt slipping. Transmission bypass valves open. Traction drive belt damaged or worn. Transmission problems. See a John Deere dealer.
Machine Creeps with Engine Running and Control Levers in a Neutral Position	Transmission linkage (neutral position) out of adjustment.
Speed Control Lever Difficult to Move	Lever sticking, needs lubricating.

MX52301,0002054-19-05APR19

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.**

MP47322,00F4680-19-06MAY15

Preparing Fuel and Engine For Storage

Fuel:

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

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

If you are not using “Stabilized Fuel:”

1. Park machine safely in a well-ventilated area. (See Parking Safely in the SAFETY section.)

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

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

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

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

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

Engine:

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

1. Change engine oil and filter while engine is warm.
2. Service air filter if necessary.
3. Clean debris from engine air intake screen.
4. On gas engines:
   - Remove spark plugs. Put 30 mL (1 oz.) of clean engine oil in cylinders.
   - Install spark plugs, but do not connect spark plug wires.
   - Crank the engine 5 or 6 times to allow oil to be distributed.
5. Clean the engine and engine compartment.

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

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

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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 rotary 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.

MP47322,00F4681-19-13JUL16

Removing Machine From Storage

1. Check tire pressure.
2. Check engine oil level.
3. On gas engines: check spark plug gap. Install and tighten plugs to specified torque.
4. Lubricate all grease points.

5. Run the engine 5 minutes without the mower or any attachments running to allow oil to be distributed throughout engine.
6. Be sure all shields and guards or deflectors are in place.

MX00654,00001CB-19-26JUL18

Specifications

Engine

For Kawasaki Certified Power Info: www.kawasaki-criticalpower.com

Engine Model Number	Kawasaki FS481V
Bore	73 mm (2.88 in)
Stroke	72 mm (2.84 in)
Displacement	603 cc (36.8 in³)
Compression Ratio	8.1:1
Spark Plug - Gap	0.75 mm (0.030 in)
Spark Plug - Torque	22 N·m (195 lb·in)
Ignition Coil Air Gap	0.2—0.4 mm (0.008—0.016 in)
Cylinders	2
Speed, Fast Idle	3600 rpm
Speed, Slow Idle (Governed Idle)	1550 rpm
Operating Range	1550—3600 rpm
Stroke/Cycle	Four
Lubrication	Full Pressure
Oil Filter	Standard Single Element
Air Cleaner	Paper Element with Foam Precleaner

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Fuel System

Fuel	Regular Unleaded Gasoline (Minimum 87 Octane)
Fuel Filter	Single Stage, 60 Micron
Fuel Pump	Vacuum Operated-Diaphragm

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Travel Speeds

Forward	0—10.5 km/h (0—6.5 mph)
Reverse	0—5 km/h (0—3 mph)

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Tires

Tire Size (Front - Solid)	22.9 x 8.9 x 10.2 cm (9 x 3.5 x 4 in)
Tire Size (Rear - Pneumatic) W36M	45.7 x 16.5-20.3 cm (18 x 6.50-8 in)
Tire Size (Rear - Pneumatic) W48M	45.7 x 21.6-20.3 cm (18 x 8.50-8 in)
Air Pressure (Front)	Non-Pneumatic
Air Pressure (Rear)	83—103 kPa (12—15 psi)

MX52301,0001FDA-19-28JUN18

Specifications

Capacities

Fuel Tank Capacity	20.5 L (5.4 gal)
Crankcase Oil Capacity (with Filter) W36M, W48M	1.7 L (1.8 qt)
Hydraulic System	4.7 L (5 qt)

MX52301,0001FDB-19-04APR19

Dimensions

W36M

Overall Height	113.9 cm (44.85 in)
Overall Length	194.1 cm (76.4 in)
Overall Width (With Chute)	127.1 cm (50 in)
Vehicle Weight	255 kg (562 lb)

W48M

Overall Height	113.9 cm (44.85 in)
Overall Length	187.4 cm (73.78 in)
Overall Width (With Chute)	158.3 cm (62.32 in)
Vehicle Weight	300.3 kg (622 lb)

MX52301,0001FDC-19-10JUL18

Mower Deck

36 in. Mower Deck

Cutting Width	91.4 cm (36 in)
Blades	2
Blade Bolt Torque	67.8 N·m (50 lb·ft)
Cutting Heights	38 mm—114.3 mm (1-1/2—4-1/2 in)
Cutting Positions	7

48 in. Mower Deck

Cutting Width	121.9 cm (48 in)
Blades	3
Blade Bolt Torque	67.8 N·m (50 lb·ft)
Cutting Heights	38 mm—114.3 mm (1-1/2—4-1/2 in)
Cutting Positions	7

MX52301,0001FDD-19-24JUL18

Recommended Lubricants

Engine Oil	Plus-50™ II 15W40
Transmission Oil	Plus-50™ II 15W40
Grease	John Deere Multi-Purpose SD Polyurea Grease
Grease	John Deere Multi-Purpose HD Lithium Complex Grease
Grease	John Deere Moly High Temperature EP Grease

Lubricant	John Deere White Lithium Grease (TY26393)

Plus-50 is a trademark of Deere & Company

Specifications and design subject to change without notice.

MX52301,0001FDE-19-05APR19

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.

MP47322,00F4690-19-09JUL15

California and U.S. EPA Emissions Control System Warranty Statement (Off-Road Gas Engines)

Your Warranty Rights and Obligations

The California Air Resources Board, John Deere, and the United States Environmental Protection Agency are pleased to explain the emissions control system's warranty on your model year 2018 or 2019 spark ignited off-road engine equipment. In California, new equipment that uses small or large (less than 1 liter) spark ignited off-road engines must be designed, built and equipped to meet the State's stringent anti-smog standards. John Deere must warrant the emissions control system on your spark ignited off-road engine equipment for the period listed below provided there has been no abuse, neglect or improper maintenance of your equipment leading to the failure of the evaporative emissions system.

Your emissions control system may include parts such as: carburetors or fuel-injection system, ignition system, catalytic converters, fuel tanks, valves, filters, clamps, connectors, fuel lines (for liquid fuel and fuel vapors) and other associated components. Also included may be hoses, belts, sensors and other emission-related assemblies.

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

Manufacturer's Warranty Coverage

This emissions control system is warranted for two years for models Z335E, Z335M, Z345M, Z345R, Z355E, Z355R, Z375R, Z525E, Z535M, Z535R, E100, E110, E120, E130, E140, E150, E160, E170, E180 and three years for all other models referenced in this operator's manual. If any emissions related part on your equipment is defective, the part will be repaired or replaced by John Deere.

Owner's Warranty Responsibilities

- As the spark ignited off-road engine equipment owner, you are responsible for the performance of the required maintenance listed in your Operator's Manual. John Deere recommends that you retain all receipts covering maintenance on your spark ignited off-road engine equipment, but John Deere cannot deny warranty coverage solely for lack of receipts or for your failure to ensure the performance of all scheduled maintenance.
- As the spark ignited off-road engine equipment owner, you should be aware that John Deere may deny you warranty coverage if your spark ignited off-road engine equipment or a part has failed due to abuse, neglect, or improper maintenance or unapproved modifications.
- You are responsible for presenting your spark ignited off-road engine equipment to a John Deere Turf and Utility distribution center or service center as soon as a problem exists. The warranty repairs shall be completed in a reasonable amount of time, not to exceed 30 days. 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 email John Deere from https://groundscare.custhelp.com/app/utils/login_form/redirect/ask.

General Emissions Warranty Coverage

The warranty period begins on the date the equipment is delivered to an ultimate purchaser. John Deere warrants

to the ultimate purchaser and each subsequent purchaser that the spark ignited off-road engine equipment is:

- Designed, built and equipped so as to conform to all applicable regulations adopted by the California Air Resources Board;
- Designed, built and equipped so as to conform at the time of sale to the ultimate purchaser with applicable U.S. Environmental Protection Agency regulations under 40 CFR Parts 1054 and 1060: and,
- Free from defects in materials and workmanship which cause such engine to fail to conform with applicable regulations for the Emissions Control System Warranty period provided herein.
- For owners located more than 100 miles from a John Deere authorized service center, John Deere will pay either for shipping costs to and from an authorized service center, provide for a service technician to come to the owner to make the warranty repair, or pay for the repair to be made at a local non-authorized service center. These provisions do not apply to Alaska, Hawaii, Arizona, Colorado, Idaho, Montana, Nebraska, Nevada, New Mexico, Oregon, Texas, Utah, and Wyoming.

Emissions Warranty Interpretation

- Any warranted part that is not scheduled for replacement as required by the maintenance instructions in the Operator's Manual is warranted as provided herein. If any such part fails during the period of warranty coverage it will be repaired or replaced by John Deere. Any such part repaired or replaced under warranty is warranted for the remaining warranty period.
- Any warranted part that is scheduled only for regular inspection in the maintenance instructions in the Operator's Manual is warranted as provided herein. A statement in the Operator's Manual to the effect of "repair or replace as necessary" does not reduce the period of warranty coverage. Any such part repaired or replaced under warranty is warranted for the remaining warranty period.
- Any warranted part that is scheduled for replacement as required maintenance in the Operator's Manual is warranted for the period of time prior to the first scheduled replacement point for that part. If the part fails prior to the first scheduled replacement, the part will be repaired or replaced by John Deere. Any such part repaired or replaced under warranty is warranted for the remainder of the period prior to the first scheduled replacement point for the part.
- Repair or replacement of any warranted part under the warranty will be performed at no charge to the owner at any authorized John Deere Turf and Utility retailer.
- The owner will not be charged for diagnostic labor which leads to the determination that a warranted part is defective, provided such work is performed by John Deere or an authorized John Deere service provider.
- John Deere will repair damages to other engine components proximately caused by a failure under warranty of any emissions-related warranted part.
- Add-on or modified parts that are not exempted by the California Air Resources Board may not be used. The use of any non-exempted add-on or modified parts will be grounds for disallowing a warranty claim. John Deere will not be liable to warrant failures of warranted parts caused by the use of a non-exempted add-on or modified part.

Emission Warranty Parts List

Coverage under this warranty includes, but is not limited to, the parts listed below (the emissions control system parts) to the extent these parts were on the engine and equipment purchased.

Fuel Metering System:

- Carburetor and internal parts (or fuel injection system)
- Air/fuel ratio feedback and control system
- Cold start enrichment system

Evaporative System:

- Fuel tank, fuel cap and tether
- Fuel hose, line, fittings, clamps
- Fuel pump, fuel shut-off valve
- Fuel vapor hoses, fittings
- Carbon canister
- Rollover/slant valve for fuel vapor control
- Purge and vent line

Air Induction System:

- Air cleaner
- Intake manifold

Ignition System:

- Spark plugs
- Magneto or electronic ignition system
- Spark advance/retard system
- Gaskets

Exhaust System:

- Exhaust manifold
- Catalyst muffler

Miscellaneous Items Used in Above Systems

- Valves and Switches: vacuum, temperature, position, check, time-sensitive

- Electronic controls
- Hoses, belts, connectors and assemblies

Limited Liability

a) The liability of John Deere under this Emissions Control System Warranty is limited solely to the remedying of defects in materials or workmanship. Except as otherwise expressly provided herein, this warranty does not cover inconvenience or loss of use of the non-road equipment or engine or transportation of the equipment or engine to or from the John Deere Turf and Utility retailer. John Deere shall not be liable for any other expense, loss, or damage, whether direct, incidental, consequential (except as listed above under “coverage”) or exemplary arising in connection with the sale or use of or inability to use the non-road equipment or engine for any other purpose.

b) No express emissions control system warranty is given by John Deere with respect to the equipment or engine except as specifically set forth in this document. Any emissions control system warranty implied by law, including any warranty of merchantability or fitness for a particular purpose, is expressly limited to the emissions control system warranty terms set forth in this document.

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

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Tire Warranty

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

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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.

SP66632,00043A7-19-10MAY17

Record Service Dates

Oil Change	Oil Filter Change (If Equipped)	Lubricate Machine	Air Cleaner Element Check/Clean	Fuel Filter Change

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