

Z900E, Z900M, Z900R ZTrak™ Pro Series Gas

(Serial No. 080001 -)



JOHN DEERE

OPERATOR'S MANUAL

ZTrak™ Pro Series Gas Z900E,
Z900M, Z900R

OMUC18439E ISSUE A0 (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.

Introduction

Thank You for Purchasing a John Deere Product

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

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

Product Identification.....	4
Safety Labels with Text.....	5
Safety Labels without Text.....	10
Safety.....	15
Machine Cleanout.....	24
Operating Controls.....	25
Operating.....	27
Service Intervals.....	48
Service Lubrication.....	50
Service Engine.....	51
Service Transmission.....	65
Service Steering & Brakes.....	71
Service Mower.....	76
Service Electrical.....	82
Service Miscellaneous.....	87
Troubleshooting.....	91
Storage.....	98
Specifications.....	100
Warranty.....	107
John Deere Quality Statement.....	111
Service Record.....	113

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.

COPYRIGHT © 2020
DEERE & COMPANY
Moline, Illinois
All rights reserved.
Previous Editions
Copyright © 2017, 2016, 2018, 2019

Product Identification

Record Identification Numbers

ZTrak™ Z915E (Z900E Series), Z920M, Z930M, Z945M EFI, Z955M EFI, Z950M, Z960M (Z900M Series), Z930R, Z950R, Z955R, Z970R (Z900R Series)

PIN (080001-)

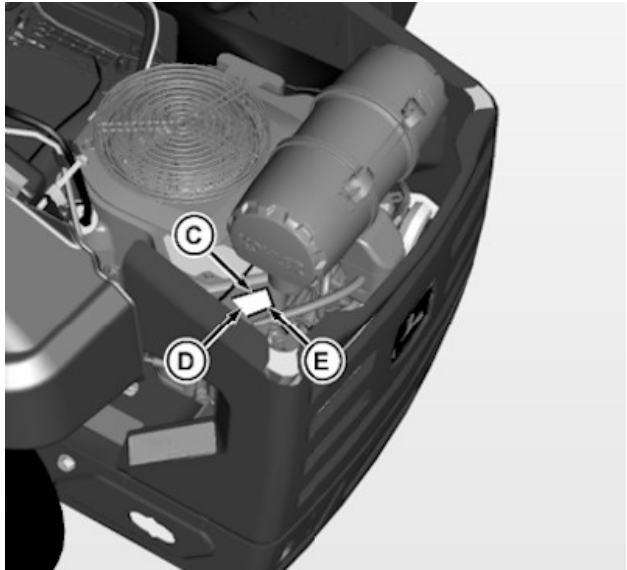
If you need to contact an Authorized Service Center for information on servicing, always provide the product model and serial number.

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.

DATE OF PURCHASE:

DEALER NAME:

DEALER PHONE:



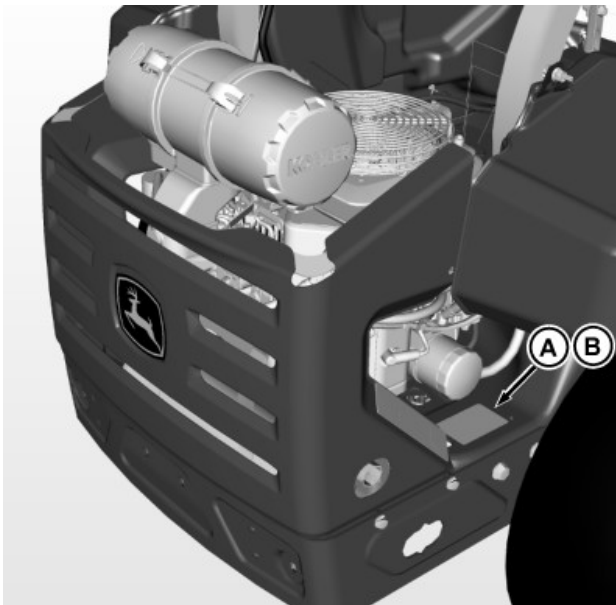
TCT011903—UN—25NOV14

Kohler Engine

ENGINE MODEL NUMBER (C):

ENGINE SPECIFICATION NUMBER (D):

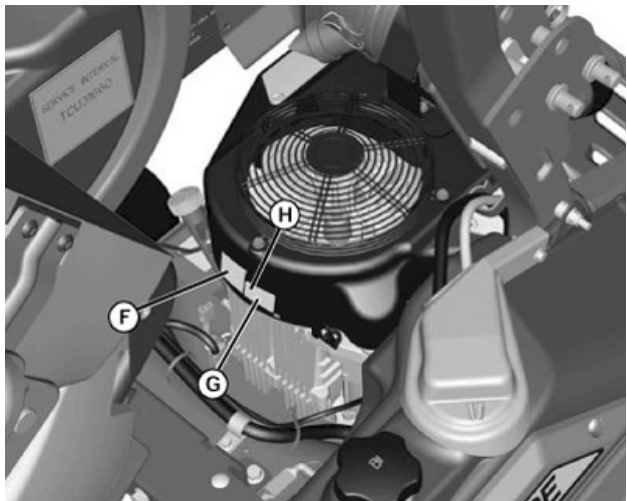
ENGINE SERIAL NUMBER (E):



TCT011902—UN—14NOV14

PRODUCT MODEL NUMBER (A):

PRODUCT IDENTIFICATION NUMBER (B):



TCAL43418—UN—21MAR13

Kawasaki Engine

ENGINE MODEL NUMBER (F):

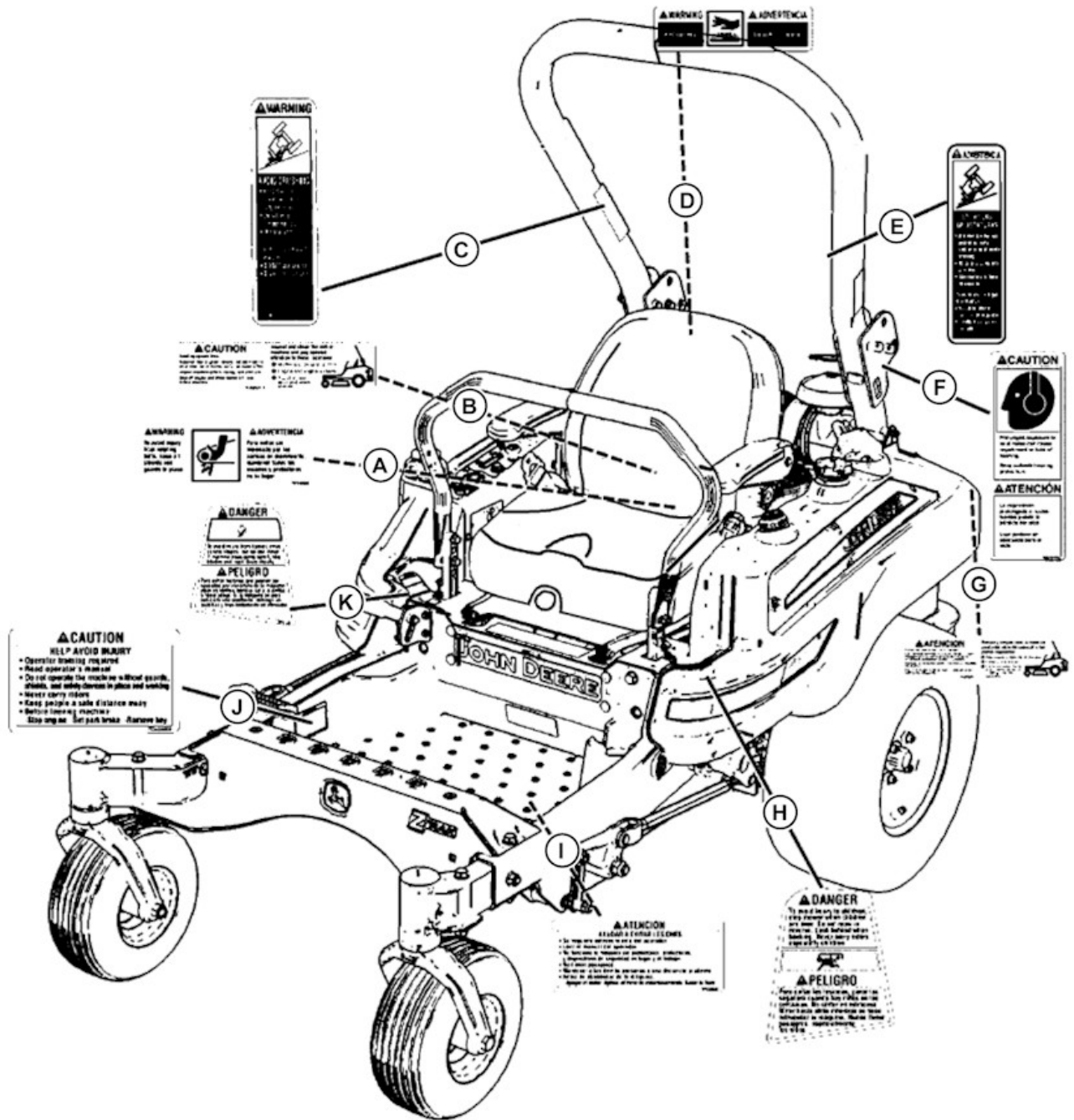
ENGINE SPECIFICATION NUMBER (G):

ENGINE SERIAL NUMBER (H):

MX00654,0000373-19-06JUN19

Safety Labels with Text

Safety Label Location (Machine)



TC100910—UN—06JUN19

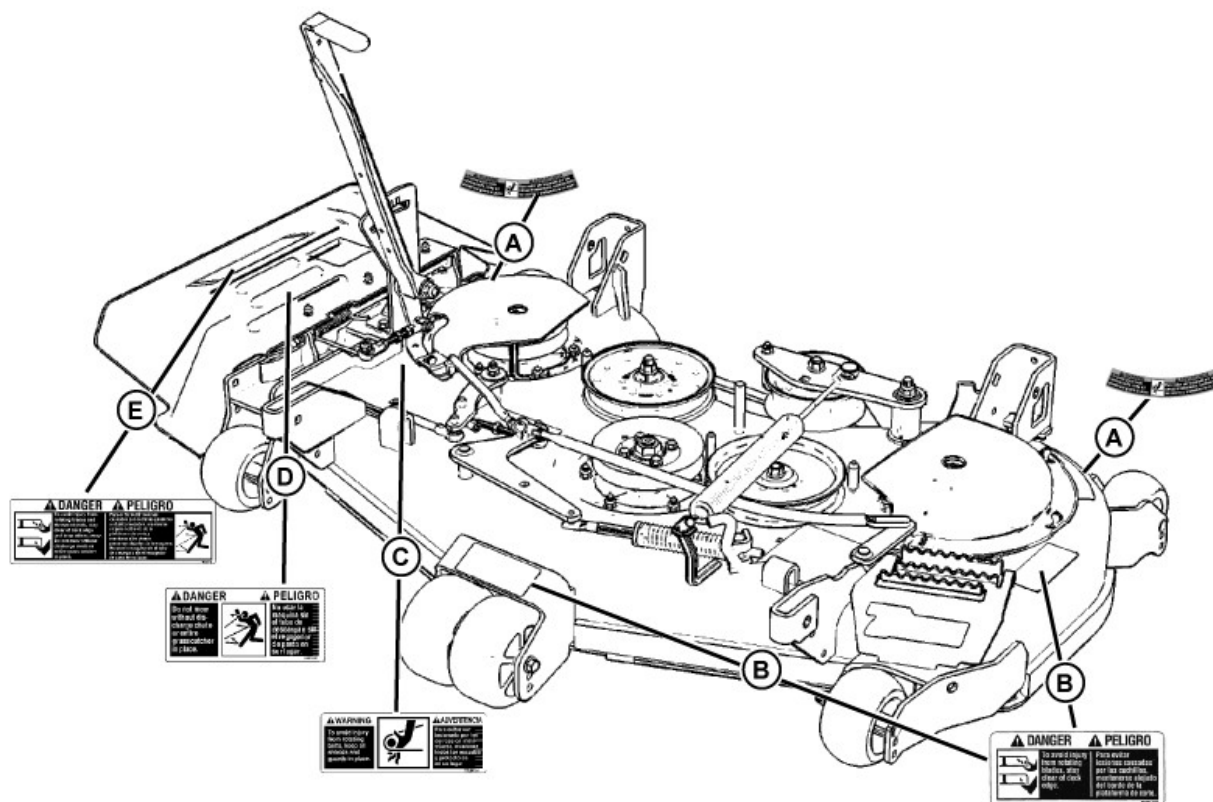
A—WARNING - TCU25390
 B—CAUTION - TCU34029
 C—WARNING - TCU13514
 D—WARNING - M134406
 E—WARNING (Spanish) - TCU13515
 F—CAUTION - TCU27738

G—CAUTION (Spanish) - TCU34030
 H—DANGER - TCU31665
 I—CAUTION (Spanish) - TCU24660
 J—CAUTION - TCU24659
 K—DANGER - TCU31666

MX00654,000038A-19-06JUN19

Safety Labels with Text

Safety Label Location (Mower)



A—WARNING - TCU24465
B—DANGER - M131739
C—WARNING - TCU51051

D—DANGER - M137637
E—DANGER - M131748

TCT011877—UN—16OCT14

OUC02004,0000ABF-19-14JUL17

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.

Safety Labels with Text

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

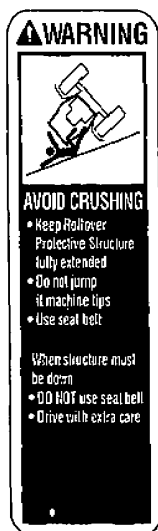
French or Spanish Safety Labels and Operator's Manual

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

WARNING



TCAL43420—UN—21MAR13

- Keep Rollover Protective Structure fully extended
- Do not jump if machine tips
- Use seat belt

When structure must be down

- DO NOT use seat belt
- Drive with extra care

MX00654,000019C-19-15OCT13

WARNING



TCAL43423—UN—21MAR13

Hot Surface

MX00654,000019F-19-15OCT13

CAUTION



TCAL43424—UN—21MAR13

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

MX00654,00001A0-19-15OCT13

DANGER



TCAL43425—UN—21MAR13

- To avoid injury to children, stop mower when children

Safety Labels with Text

are near. Do not mow in reverse. Look behind when backing. Never carry riders, especially children.

MX00654,00001A1-19-15OCT13

CAUTION



TCAL43431—UN—21MAR13

- Operator training required
- Read operator's manual
- Do not operate the machine without guards, shields, and safety devices in place and working
- Never carry riders
- Keep people a safe distance away
- Before leaving machine:
 - -Stop engine -Set park brake -Remove key

MX00654,00001A7-19-15OCT13

DANGER

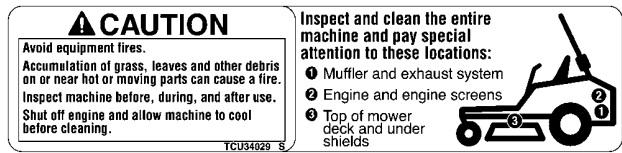


TCAL43432—UN—21MAR13

- To avoid injury from tipover, drive across slopes, not up and down. If machine stops going uphill, stop blades and back down slowly.

MX00654,00001A8-19-15OCT13

CAUTION



TCAL43433—UN—21MAR13

- 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 engine 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. Engine and engine screens
3. Top of mower deck and under shields

MX00654,00001A9-19-15OCT13

WARNING



TCAL43422—UN—21MAR13

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

MX00654,000019E-19-15OCT13

WARNING



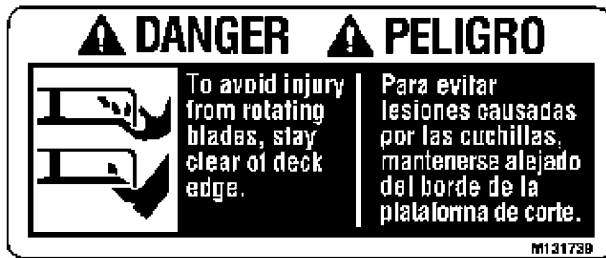
TCAL43426—UN—21MAR13

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

MX00654,00001A2-19-15OCT13

Safety Labels with Text

DANGER



TCAL43427—UN—21MAR13

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

MX00654,00001A3-19-15OCT13

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.

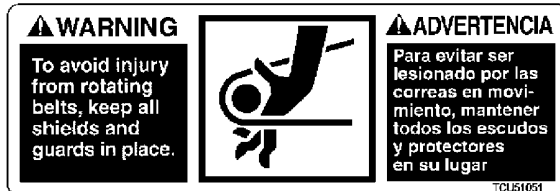
MX00654,00001A6-19-15OCT13

Certification

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

OUMX068,0000587-19-03FEB14

WARNING



TCAL43428—UN—21MAR13

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

MX00654,00001A4-19-15OCT13

DANGER



TCAL43429—UN—21MAR13

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

MX00654,00001A5-19-16SEP15

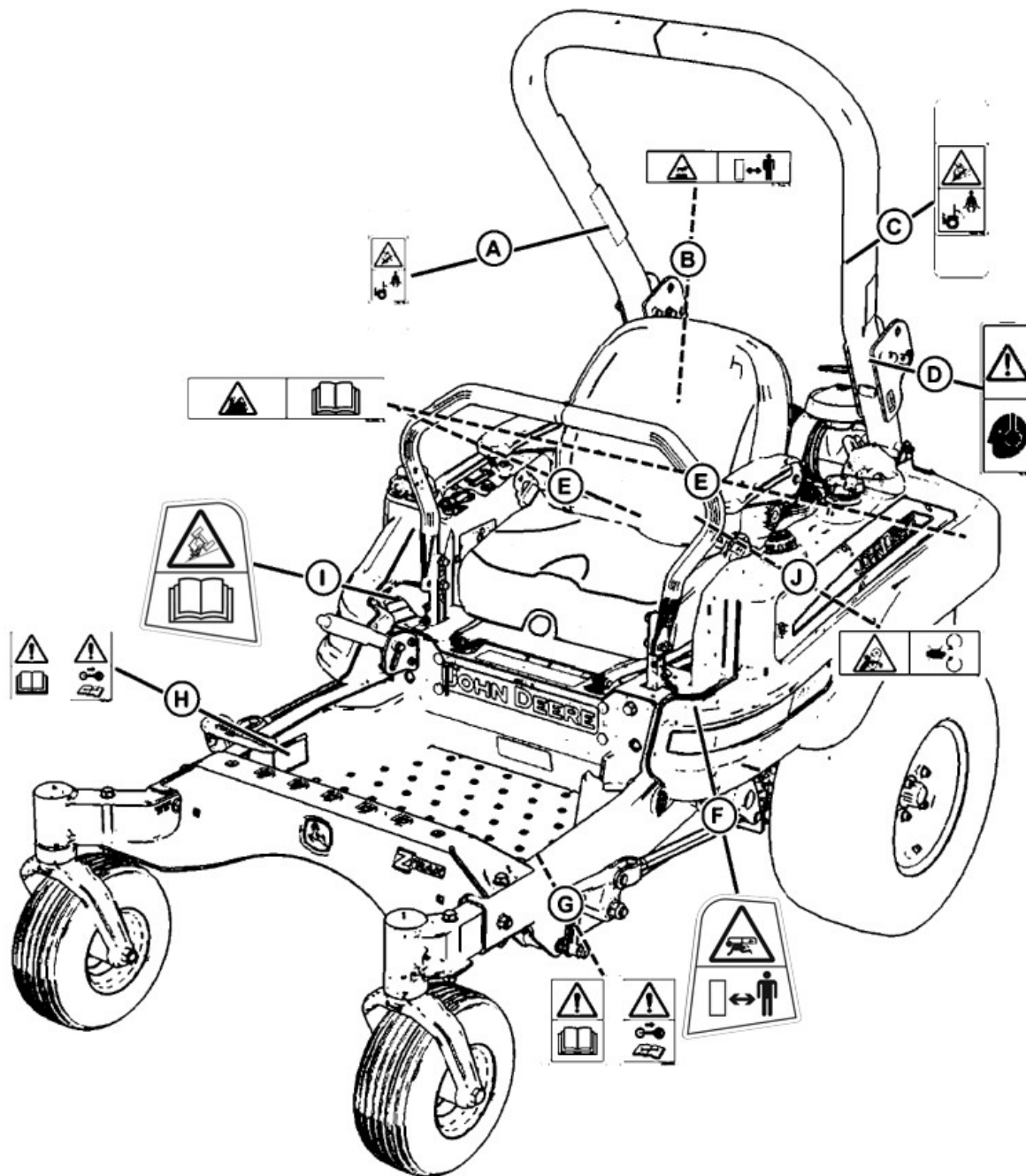
DANGER



TCAL43430—UN—21MAR13

Safety Labels without Text

Safety Label Location (Machine)



A—Avoid Crushing - TCU31702
B—Hot Surfaces - M137684
C—Avoid Crushing - TCU31702
D—Hearing Protection - TCU27739
E—Prevent Equipment Fires - TCU34033

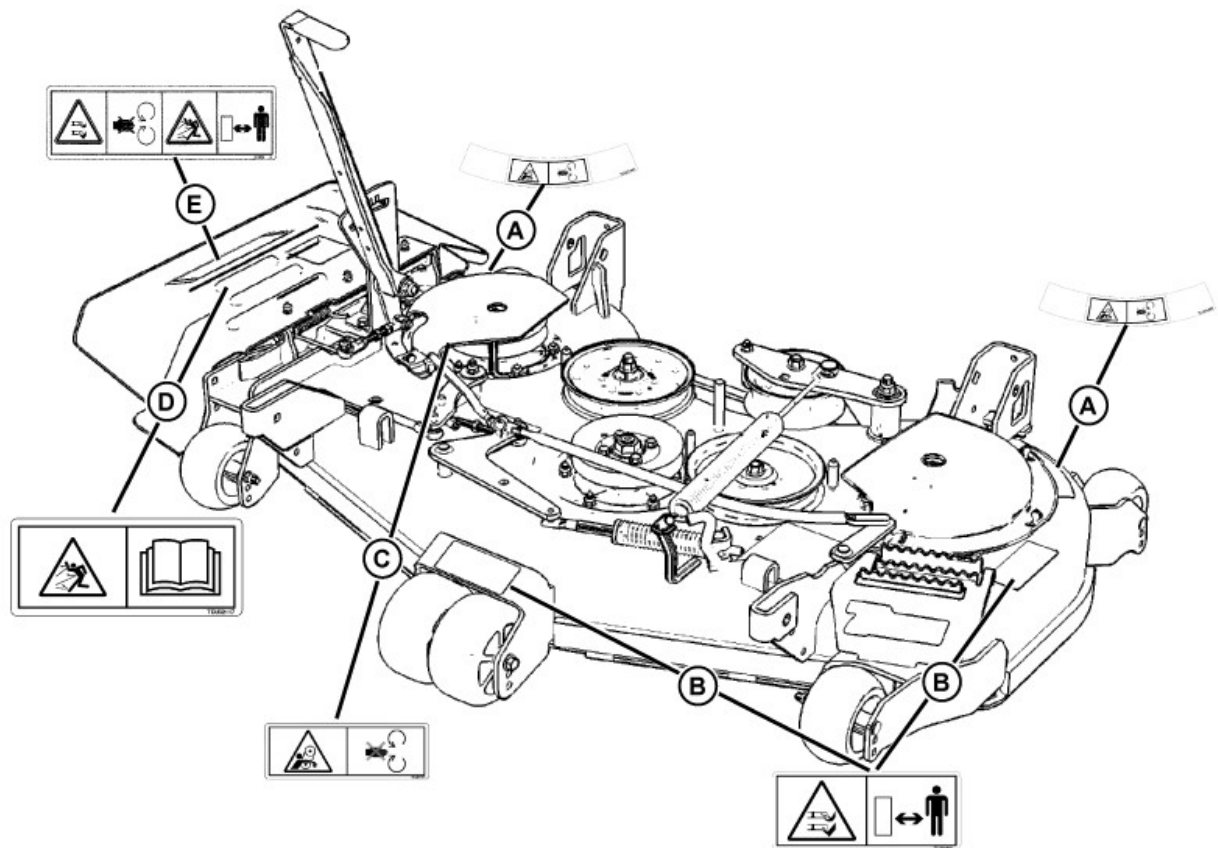
F—Avoid Injury - TCU34037
G—Avoid Injury - TCU31972
H—Avoid Injury - TCU31972
I—Avoid Tipping - TCU34035
J—Rotating Belt - TCU31701

TCT014253—UN—13JUL17

JK79365,00008D4-19-14JUL17

Safety Labels without Text

Safety Label Location (Mower)



TCT011879—UN—16OCT14

A—Rotating Belt - TCU31482
B—Rotating Blades - TCU31483
C—Rotating Belt - TCU31701

D—Thrown Objects - TCU32117
E—Rotating Blade/Thrown Object - M118040

OUC02004,0000AC2-19-14JUL17

Understanding the Machine Safety Labels without Text



TCT005498—UN—11SEP12

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

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

MX00654,0000389-19-21JUN18

Safety Labels without Text

Avoid Crushing



TCAL43435—UN—21MAR13

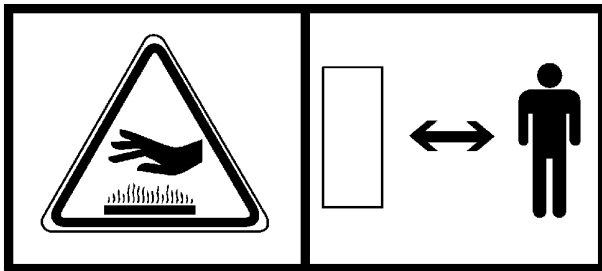
- Keep Rollover Protective Structure fully extended
- Do not jump if machine tips
- Use seat belt

When structure must be down:

- DO NOT use seat belt
- Drive with extra care

MX00654,00001AB-19-16OCT13

Hot Surfaces

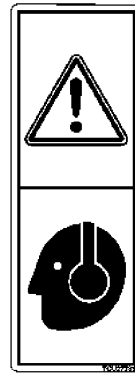


MXT008445—UN—27AUG13

Keep away from hot surfaces.

MX00654,00000D3-19-27AUG13

Avoid Injury From Exposure to Loud Noise

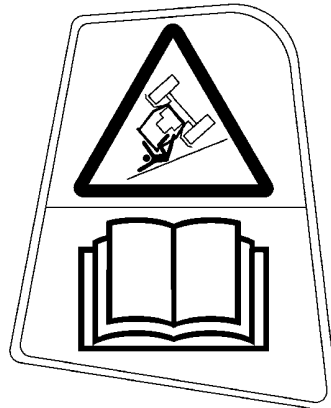


TCT007612—UN—05JUL13

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

OUMX068,00005B1-19-04NOV14

Avoid Tipping



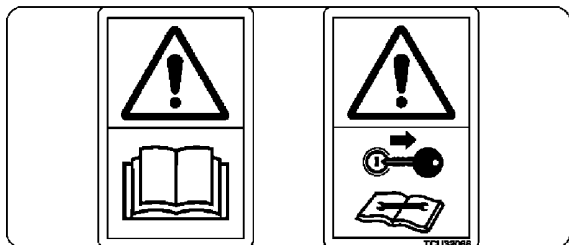
TCAL43439—UN—21MAR13

- To avoid injury from tipover, drive across slopes, not up and down. If machine stops going uphill, stop blades and back down slowly.

MX00654,00001AD-19-16OCT13

Safety Labels without Text

Avoid Injury



TCAL43440—UN—21MAR13

- Operator training required
- Read operator's manual
- Do not operate the machine without guards, shields, and safety devices in place and working
- Never carry riders
- Keep people a safe distance away
- Before leaving machine:
 - Stop engine -Set park brake -Remove key

MX00654,00001AE-19-16OCT13

Keep Children Away from Mower

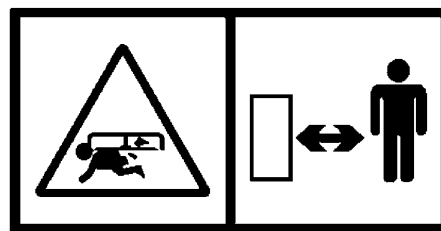


TCT014263—UN—13JUL17

- Mower can cause dismemberment or death.
- Stay a safe distance from the machine.
- Make sure that children stay clear of mower at all times when the engine is running.

JK79365,00008E2-19-13JUL17

Keep Children Away from Mower



MXAL42778—UN—09APR13

- Mower can cause dismemberment or death.
- Stay a safe distance from the machine.
- Make sure that children stay clear of mower at all times when the engine is running.

MX00654,000038D-19-01APR19

Avoid Injury from Equipment Fires

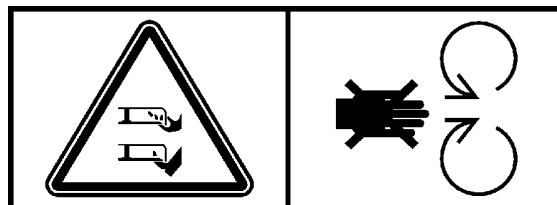


MXT018019—UN—04MAY16

- Avoid equipment fires.
- Accumulation of grass, leaves, and debris on or near hot or moving parts can cause a fire.
- Inspect and clean the entire machine before, during and after use.
- Shut off engine and allow machine to cool before cleaning.
- Carefully read Operator's Manual Machine Clean out section for details.

MX00654,0000390-19-24APR19

Avoid Injury from Rotating Blades



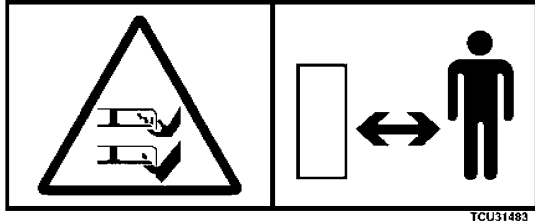
MXT018016—UN—03MAY16

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

MX00654,0000392-19-24APR19

Safety Labels without Text

Rotating Blades

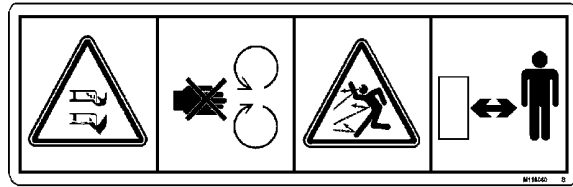


TCAL43442—UN—21MAR13

- To avoid injury from rotating blades, stay clear of deck edge.
- Do not mow without discharge chute or entire grass catcher in place.

MX00654,00001B1-19-16OCT13

Rotating Blades / Thrown Objects

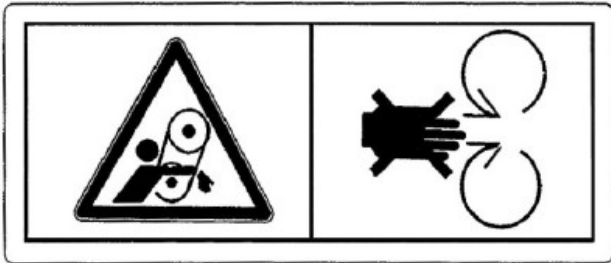


TCAL43445—UN—21MAR13

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

MX00654,00001AF-19-16OCT13

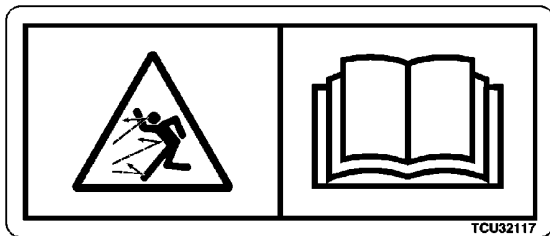
Avoid Injury From Rotating Belts



- Stay clear of moving belts.
- Do not operate machine without shields in place.

TH84124,0000070-19-07MAR14

Thrown Objects



TCAL43444—UN—21MAR13

- Stay clear of thrown or flying objects.
- Read operator's manual.

MX00654,00001B0-19-16OCT13

Safety

Operator Training Required

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

Safety

- Inspect machine before you operate. Be sure that hardware is tight. Repair or replace damaged, badly worn, or missing parts. Be sure that guards and shields are in good condition and fastened in place. Make any necessary adjustments before you operate.
- If equipped with a mower deck, before using, always visually inspect to see that the blades, blade bolts and the mower assembly are not worn and damaged. To preserve balance replace worn and damaged blades and bolts in sets.
- Keep safety labels visible when installing accessories and attachments.
- Do not wear radio or music headphones. Safe service and operation require your full attention.
- When machine is left unattended, stored, or parked, lower the cutting units or mower deck unless a positive mechanical lock is used.

MK71445,0000003-19-23MAR17

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.

OUC2005,0000213-19-05JUL17

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 or any other attachments.
3. Lower attachments to the ground.
4. Lock the park brake.
5. Stop the engine.
6. Remove the key.
7. Wait for engine and all moving parts to stop before you leave the operator's seat.
8. Close fuel shut-off valve, if your machine is equipped.
9. Disconnect the negative battery cable or remove the spark plug wire(s) (for gasoline engines) before servicing the machine.

OUC1023,0000035-19-21FEB13

Rotating Blades are Dangerous



MXAL41928—UN—18FEB13

HELP PREVENT SERIOUS OR FATAL ACCIDENTS:

- 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 and in reverse carefully. People, especially children, can move quickly into the mowing area before you know it.
- Before backing up, stop mower blades or

Safety

attachments and look down and behind the machine carefully, especially for children.

- Do not mow in reverse.
- Shut off blades when you are not mowing.
- Park machine safely before leaving the operator's station for any reason, including emptying the grasscatchers or unplugging the chute.
- The mower blades should stop in approximately five seconds when the mower is disengaged. If you believe that your blades may not be stopping in that period of time, take your machine to your authorized dealer where they can safely check and service your machine.

MP47322,00F4619-19-05JUL17

Protect Children

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

OOU2005,0000217-19-05FEB13

Avoid Tipping

Identify Slopes for Safe Operation

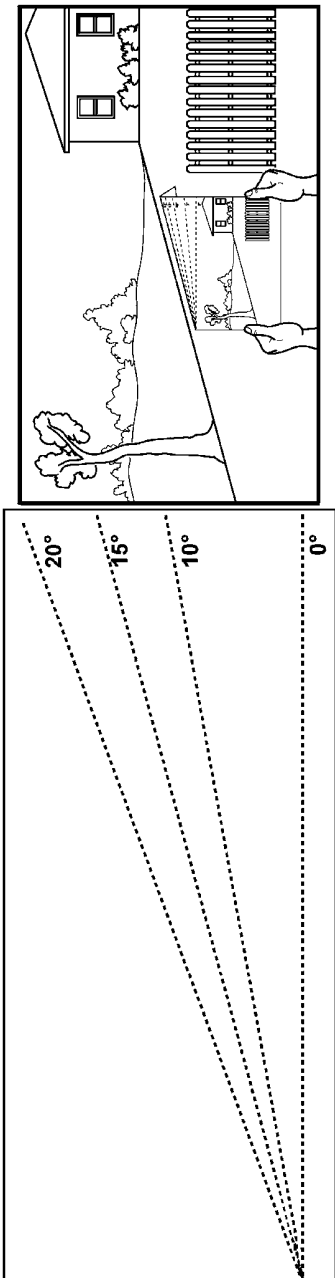
- Establish your own special procedures and rules for operating on slopes. These procedure must include a survey of all mowing sites to determine which slopes are safe for machine operation. Always use common sense and good judgement when performing this survey.
- Lay a straight piece of sturdy lumber 1.2 m (4 ft) long on the slope and measure the angle of the slope with an angle indicator or protractor level.
- Never mow or operate machine on slope angles greater than 20°.
- Exceeding the maximum recommended slope angle of 20° increases the risk of rollover accidents that can result in serious injury or death.
- Always consider potential turf conditions and slope angles when determining the risk of loss-of-control and tip-over accidents.
- On slope angles of 10° or less the risk of rollover is low, but as the slope angle increases to the John Deere recommended maximum of 20° the risk increases to a moderate level.
- The recommended slope angles are for a machine in its basic configuration. The basic configuration is mower deck only, no cab, MCS or other attachments. The addition of a cab, MCS or other attachments will increase the risk of a rollover and decrease the recommended operating slope.

Operate Safely on Slopes

- Slopes are a major factor related to loss-of-control and tip-over accidents, which can result in severe injury or death. Operation on all slopes requires extra caution.
- Use lower speeds while mowing and operating on slopes.
- If you feel uneasy on a hillside, do not mow it.
- Mow across slopes, not up and down.
- Watch for holes, ruts, bumps, rocks, or other hidden objects. Uneven terrain could overturn the machine. Tall grass can hide obstacles.
- Choose a low ground speed so you will not have to stop while on a slope.
- Rollover can occur before the tires lose traction.
- Use caution if mowing when grass is wet or slippery. Tires may lose traction. Tires may lose traction or slip on slopes even though the brakes are functioning properly.
- Avoid starting, stopping or turning on a slope. If the tires lose traction, disengage the PTO and proceed slowly down the slope.
- Keep all movement on slopes slow and gradual. Do not make sudden changes in speed or direction, which could cause the machine to roll over.

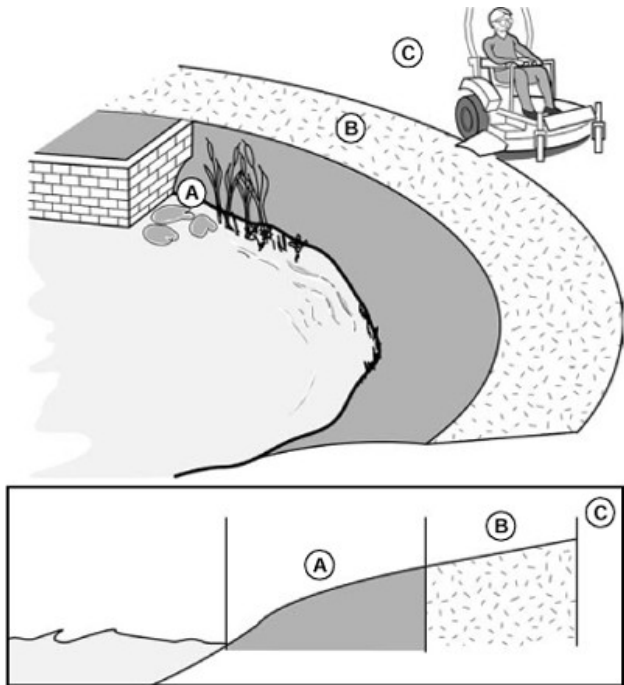
Safety

- Keep mower deck lowered to ground while operating on slopes. Raising mower deck while operating on slopes can cause machine to become unstable.



TCAL43869—UN—21MAR13

Operate Safely Near Edges



TCAL43870—UN—21MAR13

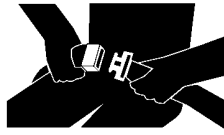
Example side view of slope and hazards, showing areas (A), (B), and (C)

- Do not mow or operate machine in areas adjacent to hazards that may cause the machine to roll over. The machine could suddenly lose traction, slide, and/or roll over if a wheel goes over the edge or if the edge breaks away.
- Hazards (A) include but are not limited to:
 - Drop-offs, ditches, embankments, or bodies of water and
 - Areas of unsafe slope, soft ground, edges along bodies of water, or area with holes, ruts, bumps, or other hidden objects.
- Maintain a buffer area (B) at least as wide as the machine between hazards (A) and the mowing area (C). Do not mow or operate the machine in the hazard area or buffer area.
- Use a walk-behind mower or string trimmer in and around areas (A) and (B).
- Only mow or operate the machine in the mowing area (C). Do not exceed the recommended slope operating angle. Refer to the "Operate Safely on Slopes" section.

OUMX068,0000A90-19-14NOV14

Safety

Use Seat Belt Properly



TCAL42361—UN—08MAR13

- Use a seat belt when operating with the folding Roll-Over Protective Structure (ROPS) in the upright position to minimize chance of injury from an accident, such as an overturn.
- Do not use a seat belt when operating with the folding ROPS in the folded position. Return the folding ROPS to the upright position as soon as possible.
- Never modify, disassemble or attempt to repair the seat belt.
- Replace entire seat belt if mounting hardware, buckle, belt, or retractor show signs of damage.
- Inspect seat belt and mounting hardware at least once a year. Look for signs of loose hardware or belt damage, such as cuts, fraying, extreme or unusual wear, discoloration, or abrasion. Replace only with John Deere-approved replacement parts.
- Layers of heavy clothing can interfere with proper positioning of the seat belt and can reduce the effectiveness of the seat belt.

OUMX068,0000A91-19-14NOV14

Rollover Protection System (ROPS) - Use and Maintenance

- Conforms to ISO21299:2009 for energy absorbing ROPs requirements.
- Never operate the machine without the ROPS installed.
- DO NOT remove the ROPS.
- The ROPS is an integral and effective safety device. Keep a folding ROPS in the raised and locked position and use the seat belt when operating the machine.
- Lower a folding ROPS temporarily only when absolutely necessary. Do not wear the seat belt when folded down.
- Be aware there is no rollover protection when a folded ROPS is in the down position.
- Be certain that the seat belt can be released quickly in the event of an emergency.
- Check the area to be mowed and never fold down a folding ROPS in areas where there are slopes, drop offs, ditches or embankments or bodies of water.
- Check carefully for overhead clearances (i.e. branches, doorways, electrical wires) before driving under any objects and do not contact them.
- Keep the ROPS in safe operating condition by periodically thoroughly inspecting for damage and

keeping all mounting hardware tight. Make certain all parts of the ROPS are installed correctly if the ROPS structure is loosened or removed for any reason. All ROPS hardware should be tightened to the proper torque per manufacturer's recommendations.

- Replace a damaged ROPS. Do not repair or revise. The protection provided by the ROPS will be impaired if the ROPS is subjected to structural damage, is involved in an overturn incident, or is in any way altered by welding, bending, drilling, or cutting. It must be replaced to maintain the manufacturer's certification of the structure
- Any alteration of ROPS must be approved by manufacturer.
- The seat is part of the ROPS safety zone. Replace only with John Deere-approved seat.

BB87125,00011CF-19-01NOV18

Keep Riders Off

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

OUC0205,000021B-19-05FEB13

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

Safety

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

Driving Safely on Public Roads

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

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

OUO2005,000021C-19-05FEB13

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 mowing, always wear substantial footwear and long trousers. Do not operate the equipment when barefoot or wearing open sandals.
- Wear a suitable protective device such as earplugs. Loud noise can cause impairment or loss of hearing.

TC00531,000021E-19-17MAY18

Towing Loads Safely

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

OUO1082,000634B-19-14FEB13

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

Safety

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

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

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

Safety

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

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

Safety

with your machine is responsible for providing the SDS for that product.

OUO2005,0000224-19-11OCT18

Machine Cleanout

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.

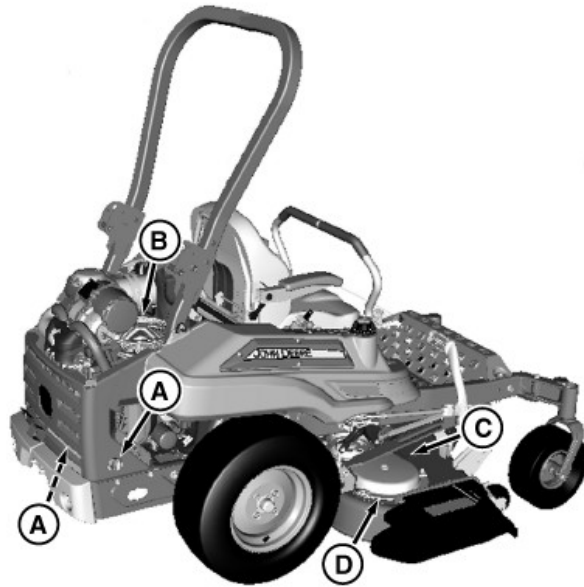
Besides proper maintenance the condition of the material being handled is the most significant factor contributing to fires. Dry, light and fluffy materials that can create a dust cloud are the most likely to catch fire. Debris can accumulate in various areas especially on horizontal surfaces. Conditions 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



TCT014244—UN—19JUN17

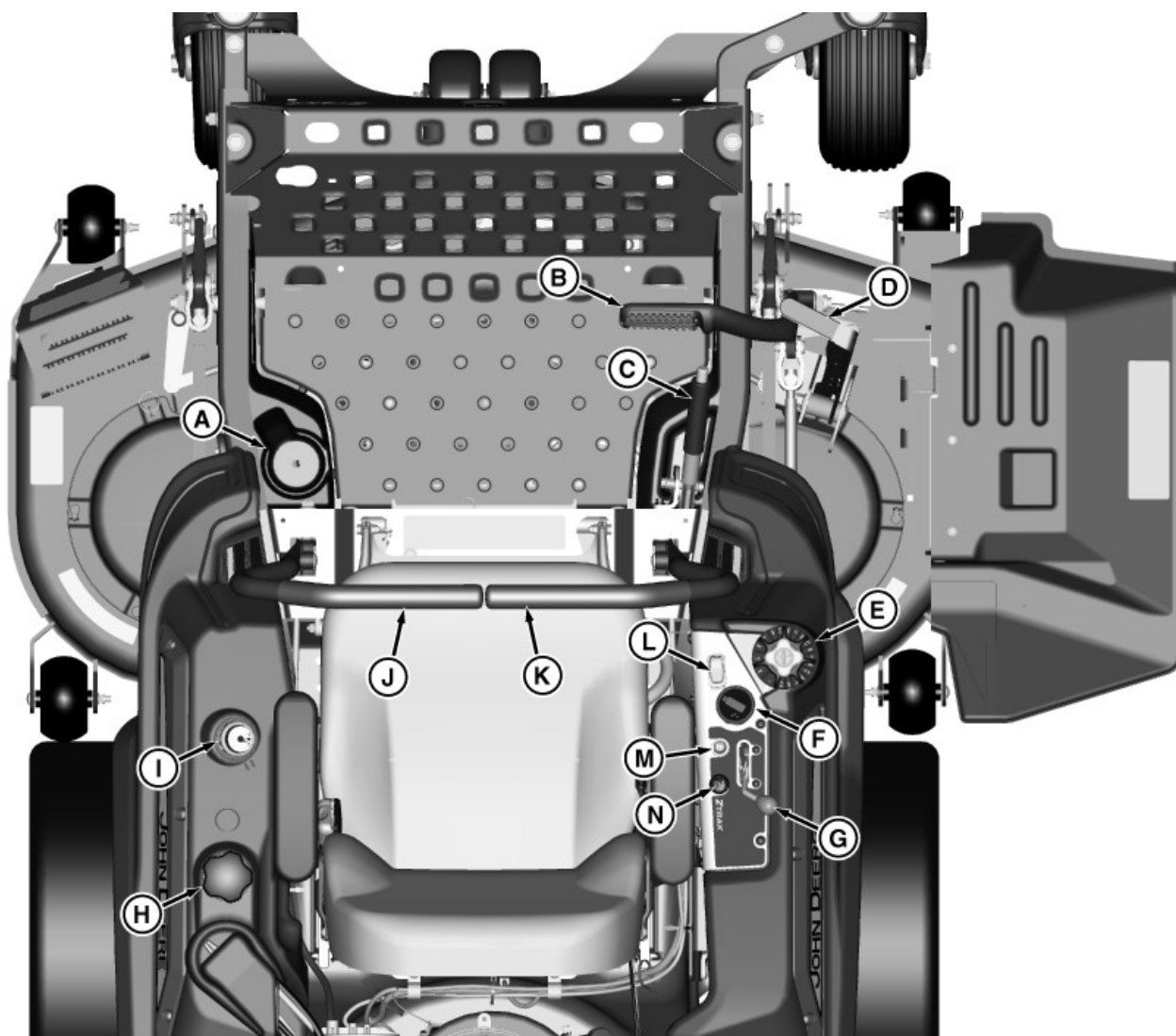
Inspect and clean the entire machine and pay special attention to these locations:

- Muffler and exhaust system (A).
- Engine and engine screens (B).
- Top of mower deck (C).
- Under shields (D).

JK79365,00008C9-19-19JUN17

Operating Controls

Z900E and Z900M Series



TCT013632—UN—24MAR16

A—Beverage Holder
B—Deck Height Adjustment Pedal
C—Park Brake Lever
D—MOD Lever
E—Height of Cut / Transport Lock Knob
F—Hourmeter
G—Engine Speed Control Lever

H—Fuel Tank Cap
I—Fuel Level Gauge
J—Left Motion Control Lever
K—Right Motion Control Lever
L—PTO Engagement Switch
M—Ignition Key Switch
N—Carburetor Choke Knob (not used on EFI engines)

MX52301,0000EDF-19-24MAR16

Operating

Daily Operating Checklist

- ☐ Test safety systems.
- ☐ Clean grass and debris from operator station foot platform.
- ☐ Remove grass and debris from operator platform, air intake screen, engine compartment, transmissions, fans, traction drive belt, and muffler area.
- ☐ Remove grass and debris from machine and mower deck.
- ☐ Remove mower deck belt shields. Clean grass and debris from belt area.
- ☐ Check all belts for damage or cracking.
- ☐ Make sure that all necessary guards and shields are safely and securely attached. Check for loose, missing, or damaged parts.
- ☐ Check mower level, cutting height, and blades.
- ☐ Check engine oil level.
- ☐ Check transmission oil level.
- ☐ Check for oil leaks.
- ☐ Check fuel level.
- ☐ Check engine air filter.
- ☐ Check wheel bolt torque. Tighten if necessary.
- ☐ Check tire air pressure. Check tires for damage or cracking.
- ☐ Test park brake.
- ☐ Check and adjust motion control linkages.
- ☐ Check for loose, damaged, or missing parts.
- ☐ Check battery.

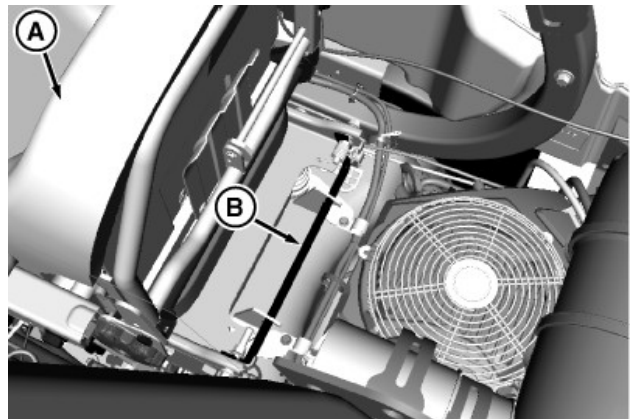
OUC02004,0000AF9-19-14NOV14

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.

BB87125,00011DF-19-04JUN13

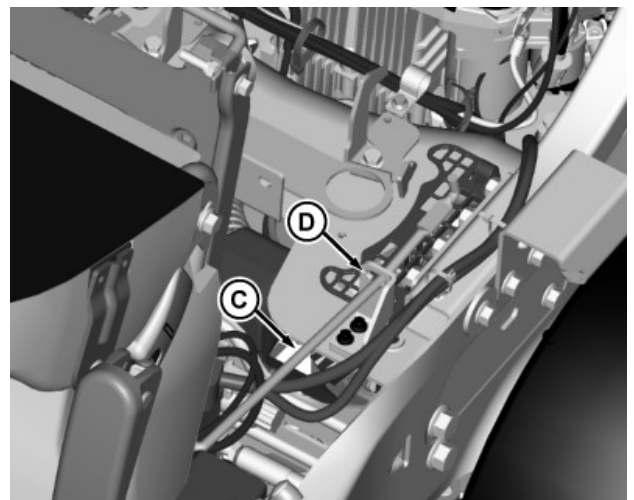
Raising and Lowering Operator Seat



TCT014245—UN—19JUN17

Raising the Seat

1. Park machine safely. (See Parking Safely in the SAFETY section.)
2. Stand on side of the machine. Lift seat (A) by lifting seat latch (B).



TCT011890—UN—27OCT14

3. Slide seat rod (C) through the bracket cutout (D).
4. Set the seat rod in the lower cutout of the bracket.

Lowering the Seat

1. Stand on the side of the machine.
2. Push seat forward slightly and reset seat rod into the top slide of the frame cutout.
3. Lower seat and return vehicle into service.

JK79365,00008CA-19-19JUN17

Operating

Mounting and Dismounting Machine Safely



TCAL43456—UN—21MAR13

When mounting and dismounting the machine, do so from the left side of the machine using the step (A) or the foot plate (B). Park machine safely (see Parking Safely in the SAFETY section) before dismounting. Do not mount or dismount the machine from the front.

Keep the foot plate clean.

BB87125,00011E1-19-04JUN13

Adjusting Deluxe Seat

1. Sit on the operator seat.



TCT013977—UN—25MAY16

2. Adjust seat position:

- a. Sit in seat.
- b. Push and hold the seat adjustment lever (A) to middle of seat.
- c. Slide forward or backward to desired position.

- d. Release lever.



TCT013978—UN—25MAY16

3. Seat ComfortGlide™ feature:

- a. Sit on seat.
- b. Push lever (A) to outside of seat to allow seat ComfortGlide™ feature.
- c. Push lever to middle of seat to disengage ComfortGlide™ feature.
- d. If ComfortGlide™ does not disengage, rise off seat and push lever to middle of seat.

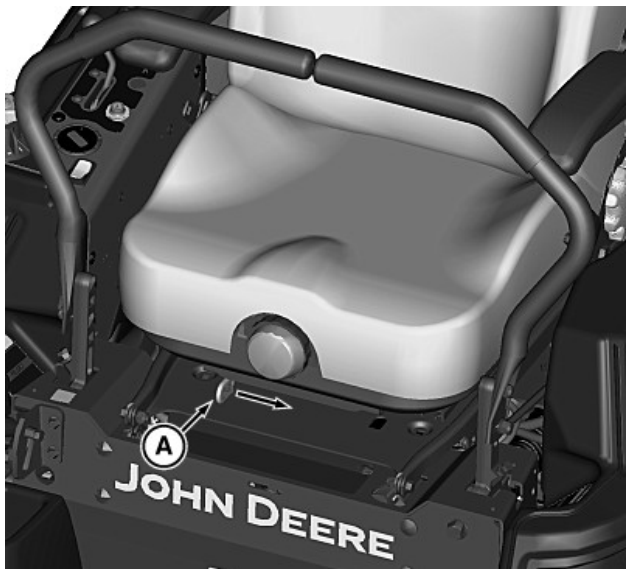
4. Release lever.

OUMX068,00014D8-19-25JUN18

Adjusting Suspension Seat

Adjust Seat Position

1. Sit on the operator's seat.



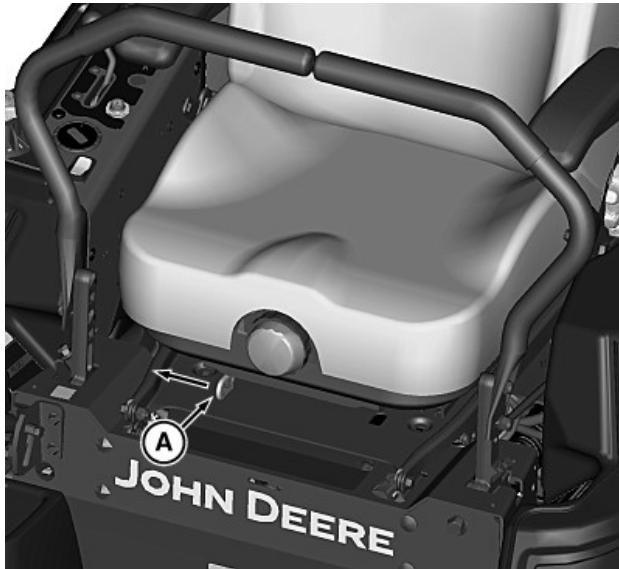
TCT015668—UN—17MAY18

Operating

2. Pull and hold seat lever (A) towards the middle of the seat.
3. Slide forward or backward to desired position.
4. Release lever.

Using ComfortGlide™ Feature

1. Sit on the operator's seat.



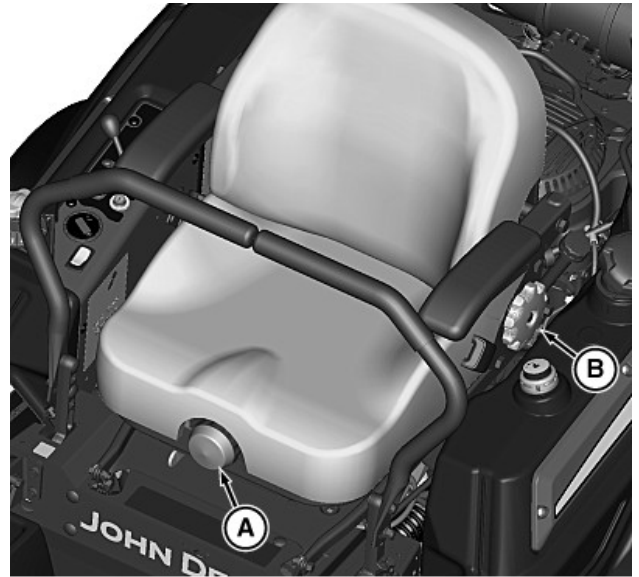
TCT015669—UN—17MAY18

2. Push seat lever (A) towards the outside of the seat.
3. Pull and hold seat lever towards the middle of the seat to disengage ComfortGlide™ feature.

NOTE: If ComfortGlide™ does not disengage, rise off the seat and push lever towards the middle of the seat.

4. Release the lever.

Adjust Ride Comfort



TCT015673—UN—17MAY18

1. Adjust seat weight knob (A) to the weight of the operator.



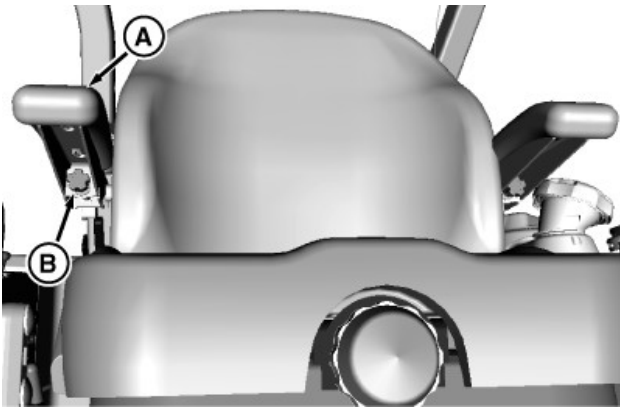
TCT015674—UN—17MAY18

2. Turn knob (B) to adjust the desired seat back position.
3. Turn lever (C) to adjust the desired lumbar support position.

BS62576,0002304-19-25JUN18

Operating

Adjusting Seat Armrests



TCT014248—UN—19JUN17

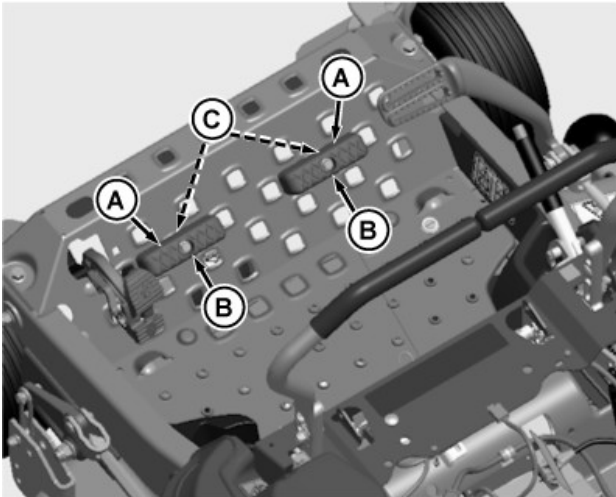
1. Raise each armrest (A).
2. Turn adjustment knob (B) clockwise to raise armrest and counterclockwise to lower armrest.
3. Lower armrests.

JK79365,00008CD-19-12JUL17

Adjusting Footrests (if equipped)

NOTE: The face of footrest is angled for comfort and is marked with a raised line to aid in getting both footrests oriented the same way. Marks can either be both up or down depending on preference.

1. Orient footrest to desired angle for comfort.



TC100256—UN—14JAN19

2. Place footrest (A) in desired opening of toe board. Avoid interference with foot brake or deck lift pedal.
3. Install bolts (B), washers and locknuts (C). Tighten to:

Specification

Foot Rest Bolt—Torque. 20 N·m (15 lb-ft)

4. Repeat for the other footrest.

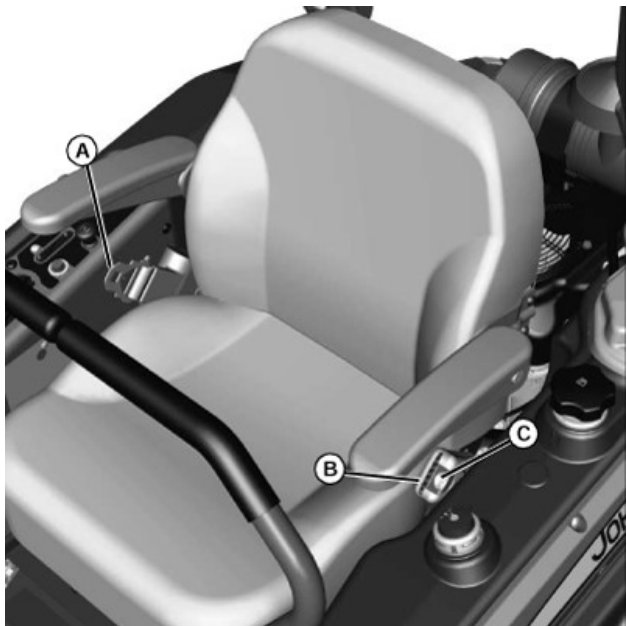
NOTE: Optional Kit available through your John Deere dealer.

MX00654,0000374-19-07JUN19

Using Seat Belt

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

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



TCAL43460—UN—21MAR13

1. Sit in seat.
2. Pull out seat belt buckle (A) and stretch across your lap in one nonstop motion.
3. Insert seat belt buckle into latch (B) until it locks.
4. To release seat belt, press button (C) until buckle comes out of latch.

BB87125,00011E5-19-04JUN13

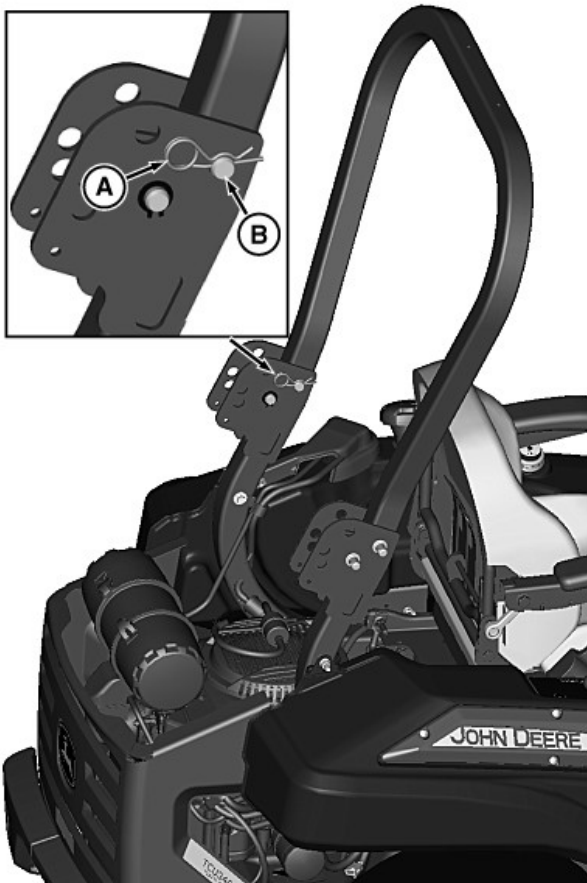
Raising and Lowering ROPS

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

Operating

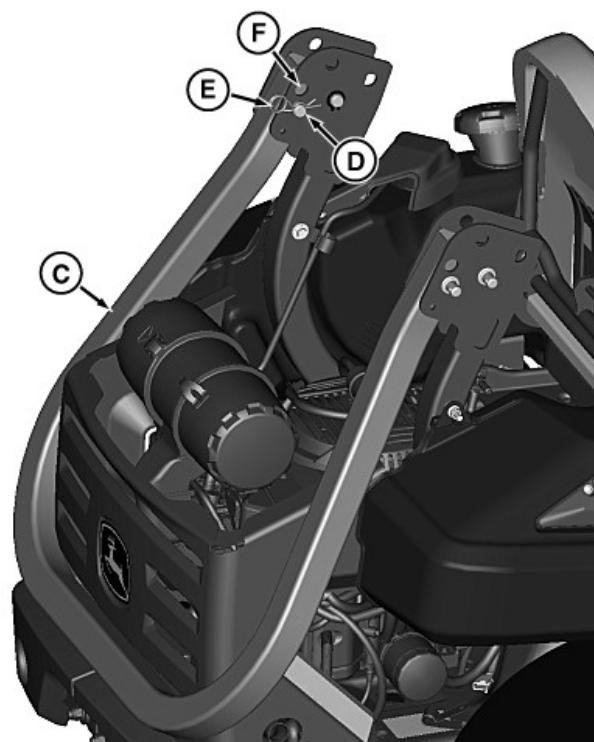
If ROPS must be folded to operate in a low clearance area, do not use seat belt. Raise ROPS and use seat belt as soon as conditions permit.

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



2. Remove spring pin (A) from the drilled pin (B) on left and right sides of ROPS.
3. Remove drilled pin from left and right sides of ROPS.

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

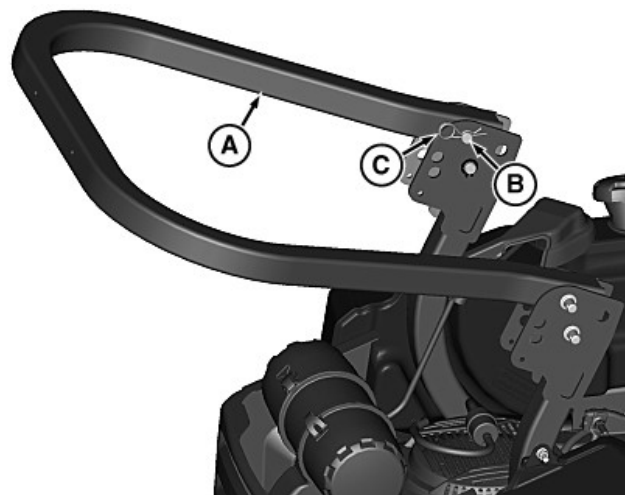


4. Pull ROPS rearward to lowered position (C).
5. Install drilled pins (E) and spring pins (D) back into holes in ROPS to secure in place.

NOTE: Holes (F) are not used.

Placing ROPS into Intermediate Position

NOTE: When a Material Collection System attachment is installed, the ROPS cannot be fully lowered. If the ROPS must be lowered, place it into the intermediate position.



1. With the spring pins and drilled pins removed, lower

Operating

the upper ROPS (A) rearward and install drilled pins (B) and spring locking pins (C) to secure position.

2. Repeat for the other side of ROPS.

BS62576,0002305-19-17MAY18

Determining Safe Slope Angles

CAUTION: Operating this machine on slopes can be dangerous. Rollover accidents can occur and can result in serious injury or death.

- John Deere has determined that the risk of rollover is low when this machine is operated on slopes of 10 degrees or less. The risk of rollover increases as the slope angle increases. **Never operate this machine on slopes greater than 20 degrees.**

- It is important to establish your own procedures and work rules for operating the machine on slopes. The procedures must include a survey of all mowing sites to determine which slopes can be operated on safely.

- Consider potential turf conditions, dips, and holes along with slope angles when determining a safe slope.

- Before allowing someone to operate this machine on a slope, make certain the slope is not too steep for safe operation.

- Make certain the operator is trained and capable of operating the machine safely on the slope.

1. Lay a straight piece of sturdy lumber 1.2 m (4 ft) long on the slope.
2. Measure the angle of the slope with an angle indicator or protractor level.
 - If slope is greater than 20°, do not mow.
 - If slope is 10° or less the risk for rollover is low.
3. Repeat procedure at several points on the slope to get an overall idea of the slope angle. Do not operate the machine on any areas that exceed the manufacturer's recommended slope angle.

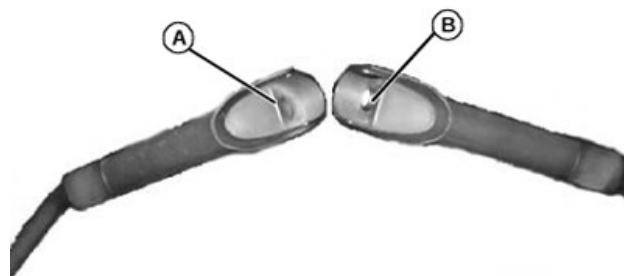
BB87125,00011E7-19-04JUN13

Using the Comfort and Convenience Package Controls (Z900R Series)

NOTE: Per design, the deck will lower if the lift button is held for 10 to 12 seconds or the machine is turned off.

Power Deck Lift

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



TCAL43464—UN—21MAR13

2. Push button (A) on left motion control lever to raise mower deck.

PTO Shut Off

NOTE: Once PTO has been shut off using the button on the right control lever, the PTO switch must be cycled off and on to re-engage PTO.

- Push button (B) on right motion control lever to shut off PTO.

OUC2004,0000AC7-19-23JUN15

Setting Mower Deck Cutting Height (E and M Series)

CAUTION: Rotating blades are dangerous and can cut fingers and toes. Stop engine, lock the park brake, and wait for blade to stop rotating before adjusting cutting height.

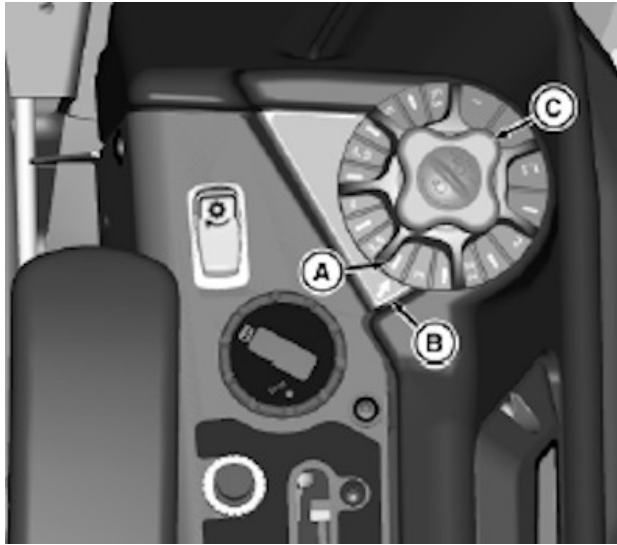
Cutting height can be adjusted from approximately 25 to 139 mm (1 to 5-1/2 in.). Each increment on the knob adjusts the height-of-cut (HOC) approximately 6 mm (1/4 in.).

The deck can also be raised and locked in a transport position, to provide maximum ground clearance when moving the machine from one area to another.

Adjusting

1. Park machine safely. (See Parking Safely in the SAFETY section.)
2. Disengage PTO.
3. Stop engine and lock park brake.
4. Raise mower deck using deck lift pedal.

Operating



5. With deck in raised position, adjust height of cut knob (A) to align cut height to index mark (B).
6. Release pedal to lower deck to desired setting.

Transport Lock

The deck can be locked in a transport position to give maximum ground clearance when the machine is moved to and from various work sites.

The transport lock should always be used if the deck needs to be in the transport position for more than 12 seconds.

The transport lock function allows the deck to be returned to the previous Height of Cut after being in the transport position.

1. Park machine safely. (See Parking Safely in the SAFETY section.)
2. Disengage PTO.
3. Stop engine and lock park brake.
4. Raise mower deck using deck lift pedal.
5. With deck in raised position, rotate knob (C) counter clockwise into the transport lock position.
6. Release pedal to lower deck to transport setting.

Release Transport Lock

1. Raise mower deck using deck lift pedal.
2. Rotate transport lock knob clockwise. Knob will release to off position.
3. Release pedal to lower deck to previous height of cut setting.

MX52301,0000F19-19-08APR16

Setting Mower Deck Cutting Height (R Series)

CAUTION: Rotating blades are dangerous and can cut fingers and toes. Stop engine, lock the park brake, and wait for blade to stop rotating before adjusting cutting height.

Cutting height can be adjusted from approximately 25 to 139 mm (1 to 5-1/2 in.). Each increment on the knob adjusts the height-of-cut (HOC) approximately 6 mm (1/4 in.).

The deck can also be raised and locked in a transport position, to provide maximum ground clearance when moving the machine from one area to another.

Adjusting

1. Park machine safely. (See Parking Safely in the SAFETY section.)
2. Disengage PTO.
3. Keep engine running and lock park brake.
4. Raise mower deck using deck lift pedal.



5. With deck in raised position, adjust height of cut knob (A) to align cut height to index mark (B).
6. Release pedal to lower deck to desired setting.

Transport Lock

The deck can be locked in a transport position to give maximum ground clearance when the machine is moved to and from various work sites.

The transport lock should always be used if the deck

Operating

needs to be in the transport position for more than 10 seconds only on Z900R Series that utilize the power deck lift.

The transport lock function allows the deck to be returned to the previous Height of Cut after being in the transport position.

1. Park machine safely. (See Parking Safely in the SAFETY section.)
2. Disengage PTO.
3. Stop engine and lock park brake.

NOTE: If machine is equipped with convenience package raise and lower deck with power lift switch located on left control lever.

4. Raise mower deck using deck lift pedal.
5. With deck in raised position, rotate knob (C) counter clockwise into the transport lock position.
6. Release pedal to lower deck to transport setting.

Release Transport Lock

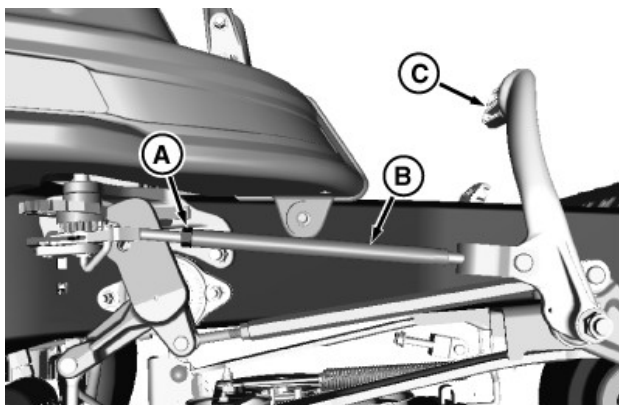
1. Raise mower deck using deck lift pedal.
2. Rotate transport lock knob clockwise. Knob will release to off position.
3. Release pedal to lower deck to previous height of cut setting.

BS62576,0001A81-19-08JUN15

Deck Lift Pedal Link Adjustment E and M series only

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

NOTE: If the maximum height of cut or transport lock cannot be engaged with the lift pedal (C) fully depressed, the lift link rod (B) can be adjusted to compensate for wear in the lift system and restore all height of cut engagement positions. The procedure can also be used to position the pedal closer to the operator.



TCT014249—UN—21JUN17

2. Lower the deck to minimum height of cut.
3. Loosen the jam nut (A).
4. Facing the rear of the machine, turn the link (B) clockwise to reduce the link length. Turn link 2-3 revolutions clockwise then check deck lift operation. Repeat until all height cut positions and transport lock can be engaged.
5. Once adjustment is complete use a backup wrench to hold the link stationary and tighten the jam nut to 50 N·m (36 lb·ft).

JK79365,00008D6-19-12JUL17

Adjusting Mower Deck - All Models

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

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

NOTE: Mower deck anti-scalp wheels should not contact the ground while adjusting deck.

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

IMPORTANT: Avoid machine damage, adjustment will be inaccurate if tires are not properly inflated.

2. Inflate tires to the correct pressure and be sure that left and right tire pressures are equal.
3. Raise the mower deck to the transport position.
4. Inspect mower blades for:
 - Blade sharpness.
 - Blade damage.
 - Bent blades.

Operating

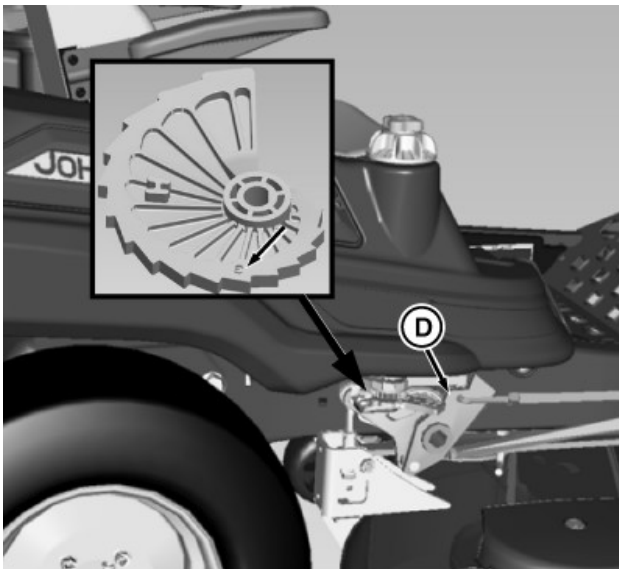
Checking Level and Height of Cut

NOTE: Mower deck anti-scalp wheels should not contact the ground.



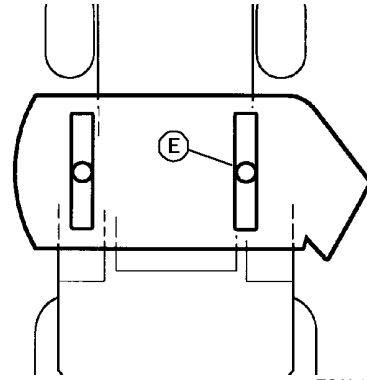
TCT012782—UN—26JUN15

1. Adjust height of cut knob (A) to align cut height position 3 (B) to index mark (C).



TCT007074—UN—10NOV13

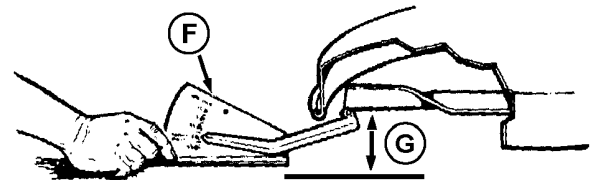
2. Confirm cutting height is at position 3, by checking that the deck height position finger (D) on the lift shaft is aligned with the lobe labeled 3.



TCAL43468—UN—21MAR13

3. Turn right blade (E) so blade tip points straight forward. Position left mower blade in the straight forward (front-to-rear) position.

NOTE: Use a short ruler or a leveling gauge (Part No. AM130907) (F) to check the mower blade level.



TCT011308—UN—18JUN15

4. Measure the distance from (G) on both left and right front blade tips to the ground. The front blade tip should be within specification from the ground.

Specification

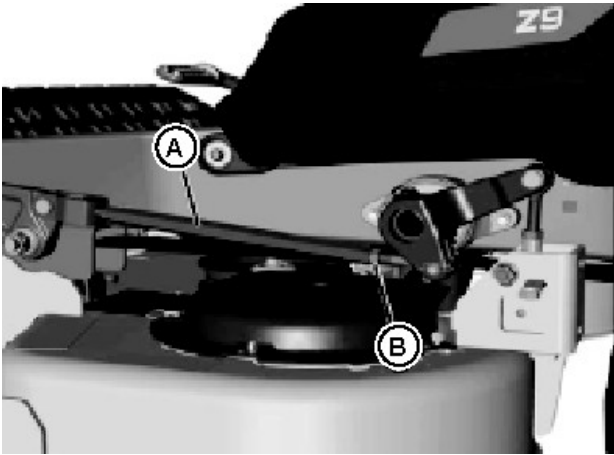
Left and Right Front Blade

Tip—Distance. 76 mm (+/- 3 mm) (3 in. +/- 1/8 in.)

If distance is incorrect See Adjusting Blade Tip Height. If it is correct, move on to Checking Blade Rake (Front to Rear Height).

Operating

Adjusting Blade Tip Height



TCT011316—UN—18JUN15

1. Loosen jam nut (B).
2. Turn rod tube (A) in small increments on each side of machine to adjust as needed so the left and right blade tips meet specification. Adjust each side simultaneously, one side then the other in small increments.

Specification

Left and Right Front Blade

Tip—Distance. 76 mm (+/- 3 mm) (3 in. +/- 1/8 in.)

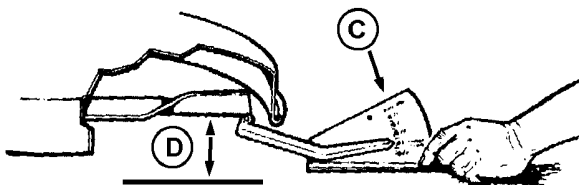
3. Tighten jam nut (B).

Checking Blade Rake (Front to Rear Height)

NOTE: If an adjustment was made to the front blade tip height, the blade rake will need to be checked.

1. Lower mower deck to 76 mm (3 in.) cutting height position.
2. Position right mower blade (discharge side) in straight forward (front-to-rear) position.
3. Measure from the right front blade tip to the ground.
4. Turn blade one hundred eighty degrees and measure from right rear blade tip to the ground.

NOTE: Use a short ruler or a leveling gauge (Part No. AM130907) (C) to check the mower blade level.



TCT011309—UN—18JUN15

5. The height (D) of the rear blade tip should be 3-6 mm (1/8-1/4 in.) higher than the front blade tip.
6. Repeat steps 1-5 for left blade
7. If the blade rake is not within the given tolerance then further adjustment is necessary.

Adjusting Blade Rake (Front-to-Rear)



TCT011315—UN—18JUN15

1. Loosen rear hanger jam nut (A).
2. Turn tube nut (B) at rear hangers to adjust front-to-rear level.
3. The rear of the blade tips should be 1/8-1/4 in. higher than front.
4. Tighten jam nuts to specification.

Specification

Jam Nut—Torque. 67 N·m (50 ft-lb)

5. Check blade rake. Repeat adjustment if needed.

BS62576,0001A82-19-19JUN15

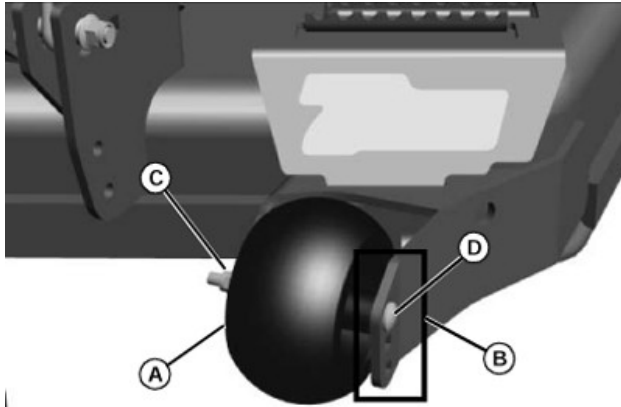
Adjusting Mower Deck Anti-Scalp Wheels

NOTE: The flattest cut is achieved by having all anti-scalp wheels adjusted off the ground. Check anti-scalp wheel adjustments each time the mower deck cutting height is changed.

It is recommended that all anti-scalp wheels be kept off the ground to minimize scuffing.

1. Inflate tires to correct pressure.
2. Adjust mower deck to desired cutting height.

Operating



TCAL43473—UN—21MAR13

3. Adjust anti-scalp wheel (A) to one of three positions (B):
 - a. Remove nut (C) and carriage bolt (D).
 - b. Adjust wheel up or down so it is approximately 6—13 mm (1/4—1/2 in) above the mowing surface.
4. Install wheel with attaching hardware.
5. Adjust all wheels to the same height.

BB87125,00011EC-19-14OCT16

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.

MP47322,00F4637-19-25APR19

Testing PTO Switch

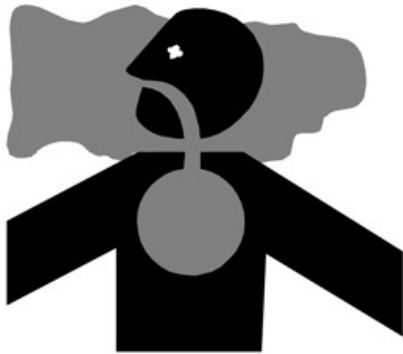
1. Sit on the operator seat.
2. Lock the park brake.
3. Push front of PTO switch down to engage.
4. Turn key switch to the start position.

Result Z900E Series: Engines will not start.

Result Z900M and Z900R Series: The engine will start but the PTO should not engage until the park brake is unlocked and the PTO switch is disengaged and engaged again.

MX52301,0000F43-19-17MAY16

Testing Safety Systems



MXAL42804—UN—09APR13

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

Do not run an engine in an enclosed area, such as a garage, even with doors or windows opened.

Move the machine to an outside area before running the engine.

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

Testing Park Brake Switch

1. Sit on the operator seat.
2. Unlock park brake.
3. Turn key switch to the start position.

Result: The engine must not crank.

OUC2004,0000ACA-19-22OCT14

Testing Seat Switch

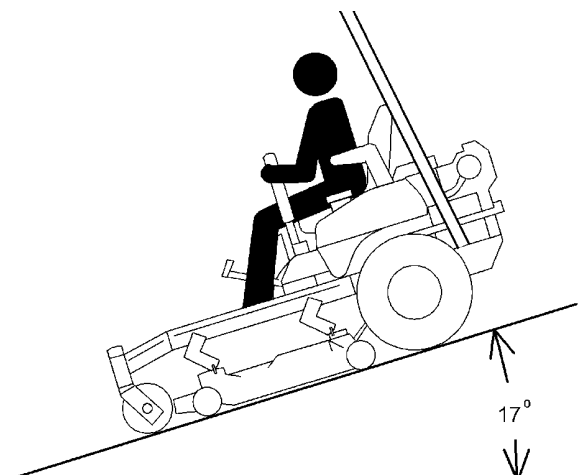
1. Sit on operator seat.
2. Start the engine.
3. Unlock park brake.
4. Push front of PTO switch down to engage.
5. Raise slightly off the seat.

Result: The engine must stop.

OUC2004,0000ACB-19-23JUN15

Operating

Testing the Park Brake



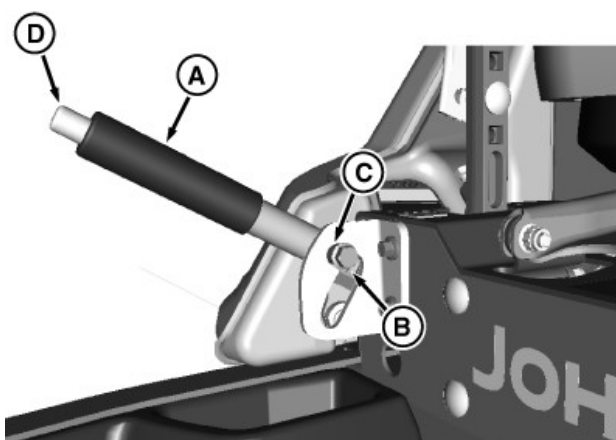
TCAL43475—UN—21MAR13

1. Stop machine on a 17° slope (30% grade). Stop the engine and lock the park brake.

Result: Park brake must hold the machine stationary. (Machine should move no more than 61cm (24 in.) in one hour.) If machine moves more than that, brakes need to be adjusted. See your John Deere Dealer or refer to Adjusting Park Brake in the Service Steering and Brakes section.

BB87125,00011F0-19-04JUN13

Park Brake Lever



TCT014251—UN—21JUN17

1. To lock the park brake, pull upward on park brake hand lever (A) fully so that latch (B) is retained into bracket slot (C).
2. To unlock the park brake, pull upward slightly on park brake handle lever (A), press in button (D) and fully lower lever. Release button on hand lever.

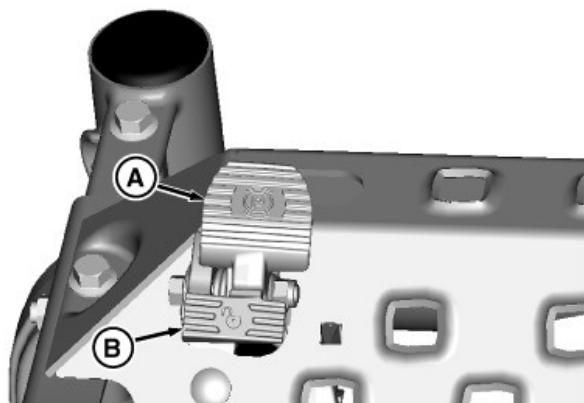
JK79365,00008CF-19-13JUL17

Using the Park Brake

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

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

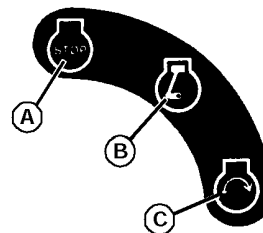
Park Brake Pedal



TCT014259—UN—13JUL17

1. To lock the park brake, press park brake pedal (A) fully down.
2. To unlock the park brake, press park brake release (B) with your heel.

Using Key Switch



TCAL43478—UN—21MAR13

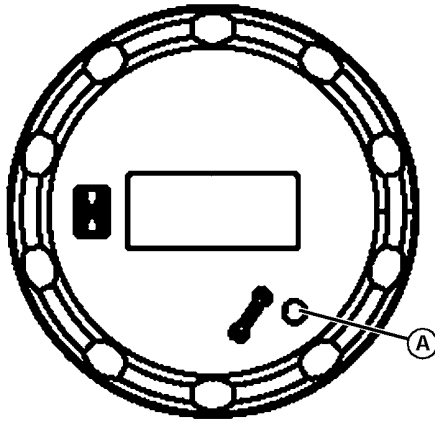
Key switch label.

- A— STOP Position - With key in STOP position, all switched power is off, and engine should not run.
- B— Run Position - Turn key from STOP to this position and all switched power circuits will be on.
- C— Start Position - Turn key to start position to crank the engine. Release key after engine has started and it will automatically return to the run position. The engine will continue to run.

BB87125,00011F2-19-04JUN13

Using Indicator Lights Z915E

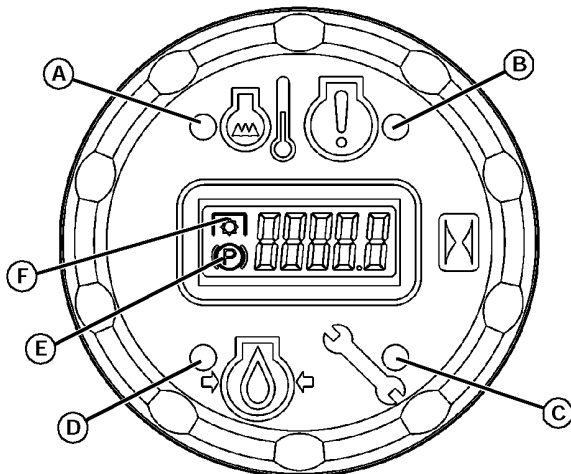
Operating



TCAL43479—UN—21MAR13

- Vehicle Diagnostic Indicator Light (A) is **not** used.

All Other Models



TCAL43480—UN—21MAR13

- **Engine Coolant Temperature Indicator Light (A)** is not used.
- **Engine Diagnostic Indicator Light (B)** is used for Z945M EFI, Z955M EFI and Z955R EFI engines only. Light is on if active engine diagnostic code is present. See your John Deere dealer.
- **Vehicle Diagnostic Indicator Light (C)** flashes a diagnostic code to help the operator identify operational and electrical problems. See DTC codes in TROUBLESHOOTING. See Vehicle Diagnostic Light Check in the SERVICE ELECTRICAL section.
- **Engine Oil Pressure Indicator Light (D)** glows when engine oil pressure is low. If light glows when engine is running, stop engine immediately. See your John Deere distributor.
- **Park Brake Switch Icon (E)** is visible when park brake lever is raised or foot pedal is pressed.

- **PTO Switch Icon (F)** is visible when PTO switch is activated.

MX00654,0000375-19-07JUN19

Using the PTO

Engage PTO:

NOTE: For Z900R models, the PTO will be disabled and not engage if the key switch is in the RUN and/or START position for 10 seconds or longer and the engine has not been started. Turn the key switch to the OFF position and then to the START position and start the engine within 10 seconds to allow the PTO to engage.

1. Move throttle lever to the 1/2 or 3/4 fast position.
2. Push front of PTO switch down to engage mower deck.
3. Move throttle lever forward to the fast position for mowing.

Disengage PTO:

- Push back of PTO switch down.

MX00654,0000186-19-16JUN15

Using the Throttle Lever

- Push throttle lever all the way forward to the fast position when mowing.
- Move throttle lever to the half throttle position when starting and warming the engine.
- Pull throttle lever to rear to slow position to idle engine. Do not run engine at slow idle any longer than necessary.

BB87125,00011F5-19-04JUN13

Using the Hour Meter

- The hour meter shows number of hours the machine has run.
- The service interval chart gives necessary service intervals. Use the hour meter and service interval chart to determine when machine will need service.

BB87125,00011F6-19-04JUN13

Using the Motion Control Levers

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

Operating

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.

The functions of the motion control levers are:

- Dual function neutral position.
- Steering.
- Acceleration.
- Braking.

Neutral Lock Position



TCAL43481—UN—21MAR13

- Forward and reverse movement of the motion control levers (A) is prevented when levers are moved to the neutral lock position.
- Operator can exit mower with the engine running when the PTO switch is disengaged, the motion control levers are in the neutral lock position and the park brake is locked.
- Motion control levers must be in the neutral lock position to safely enter and exit the operator seat.

Neutral Position



TCAL43482—UN—21MAR13

- Machine speed, motion, and direction can be controlled when the engine is running, motion control levers are in the neutral position (A), and the park brake is unlocked.

Forward and Reverse Travel

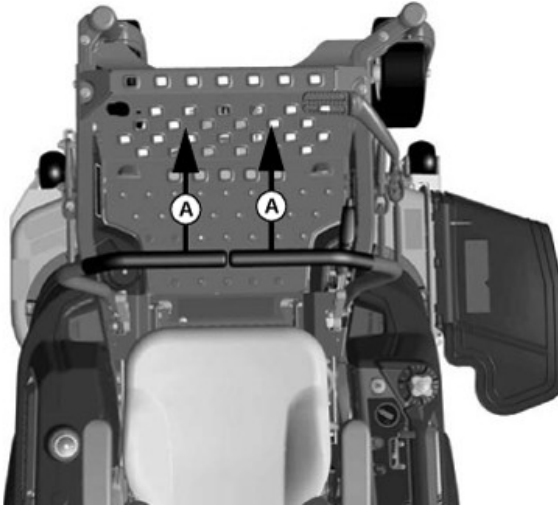
CAUTION: Children or bystanders may be injured by runover and rotating blades. Before traveling forward or rearward:

- Carefully check the area around the machine.
- Disengage the mower before backing up.

1. Move throttle lever to the fast position.
2. Unlock park brake.
3. Move both motion control levers from the neutral lock position inward to the neutral position.
4. Push the control levers forward to begin forward motion.
 - The farther forward the control levers are moved, the faster the machine will travel.
5. Pull both control levers rearward at the same time to begin reverse motion.
6. To stop motion, move both motion control levers forward or rearward until the machine comes to a stop.

Forward Travel

Operating



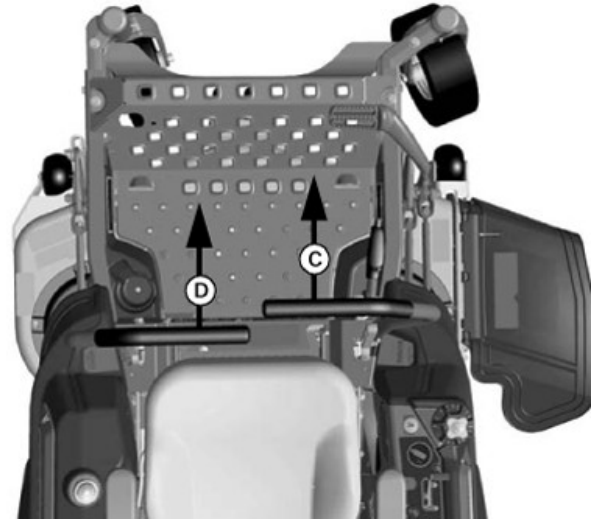
- Gradually move both motion control levers evenly forward (A) from neutral. To speed up, move the levers farther forward. To slow down smoothly, slowly move the levers toward neutral.

Reverse Travel

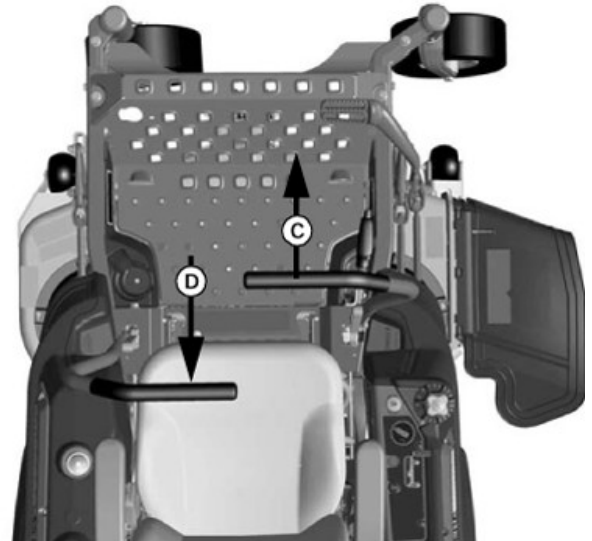


- Look down and behind, then gradually move both motion control levers evenly rearward (B) from neutral. To speed up, move the levers farther rearward. To slow down smoothly, slowly move the levers toward neutral.

Left Turn



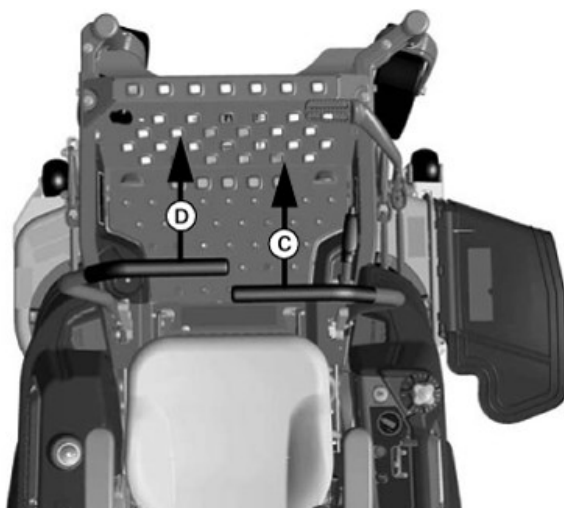
1. To turn slightly to the left, push right control lever (C) further forward than the left control lever (D).



2. To turn sharply to the left, push right control lever (C) forward and pull left control lever (D) rearward at the same time.

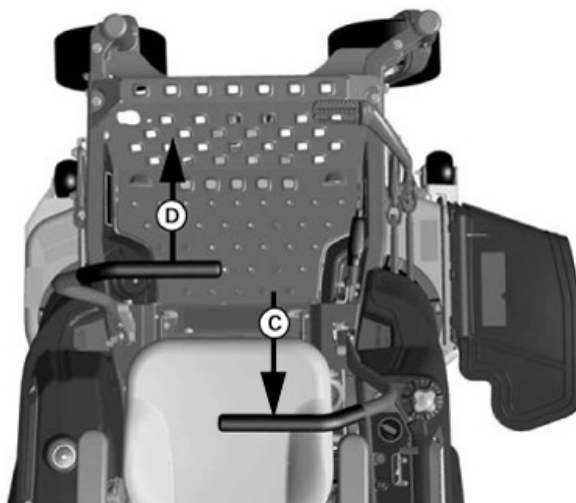
Right Turn

Operating



TCAL43487—UN—21MAR13

1. To turn slightly to the right, push left control lever (D) further forward than the right control lever (C).



TCAL43488—UN—21MAR13

2. To turn sharply to the right, push left control lever (D) forward and pull right control lever (C) rearward at the same time.

BB87125,00011F7-19-04JUN13

Starting the Engine

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

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

- Allow fresh outside air into the work area to clear the exhaust fumes out.

1. Sit on the operator seat.
2. Lock the park brake.
3. Push the back of PTO switch down to disengage the PTO.
4. Move throttle lever to set engine speed:
 - **Cold engine:** Set throttle lever at the 1/2 to 3/4 fast idle position.
 - **Warm /Hot engine:** Set throttle lever to the fast idle position.
5. Position choke knob (does not apply to EFI models):
 - **Cold engine:** Pull knob up and hold in the choke position.
 - **Warm/Hot engine:** If necessary, pull knob up and hold in choke position.

NOTE: The starter will shutdown after 20 seconds of cranking. The key can be cycled from OFF to start and the starter will begin cranking again. After three cycles of cranking for 20 seconds (60 total seconds) the controller activates a thermal shutdown until components cool down.

6. Turn key switch to the start position. If engine did not start:
 - Turn key to start position again for no more than 20 seconds.
 - Repeat the procedure if necessary.
7. Release key to the run position when the engine starts.

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

8. With engine started:
 - Push choke knob down to the off position (does not apply to EFI models).
 - Move throttle lever to the fast idle position.
 - Unlock park brake.

BB87125,00011F8-19-16JUN15

Engaging Mower

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

Operating

Keep hands and feet away from blades and discharge opening.

Do not mow in reverse unless absolutely necessary.

IMPORTANT: To help prevent damage to the PTO clutch:

- Do not engage PTO with throttle in the fast position.

1. Adjust the height of cut knob to the desired cutting height and lower the deck.
2. Start engine.
3. Move throttle lever to the 1/2–3/4 throttle position.
4. Unlock park brake.
5. Move both motion control levers to the neutral position.

NOTE: In cold weather or with a new machine, it may be necessary to engage the choke at the same time as the PTO switch to prevent the engine from stalling (does not apply to EFI models).

6. Push down front of PTO switch to engage mower deck.
7. Move throttle lever to the fast position.

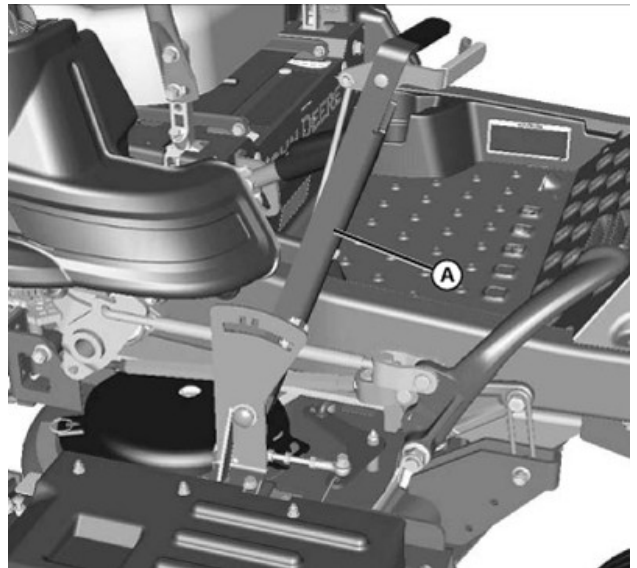
NOTE: The travel speed and turn rate will vary with the amount that the control levers are moved.

8. Push motion control levers forward slowly. Mow at a safe travel speed.
9. To stop machine motion, move both motion control levers in the opposite direction of motion until machine comes to a stop.

MX00654,00001CE-19-16JUN15

Operating Mulch-On-Demand Mower Deck (MOD) If Equipped

To Mulch:

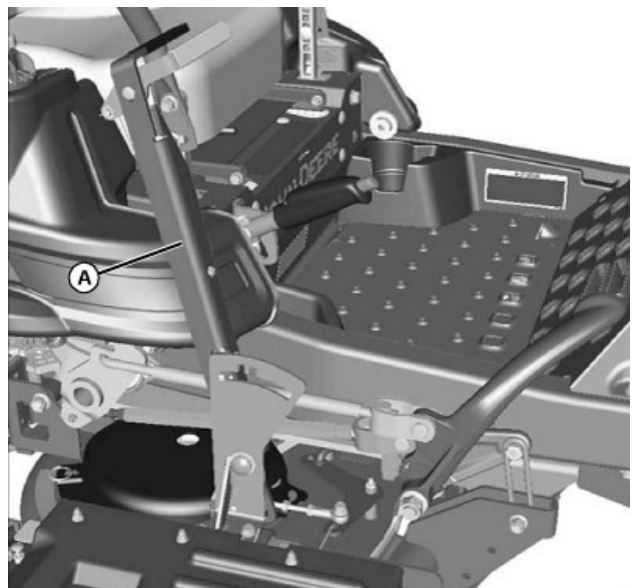


TCAL43489—UN—21MAR13

Lever position forward (closed) for mulch position.

1. Push deck mode lever (A) forward for the mulch position.

To Side Discharge:



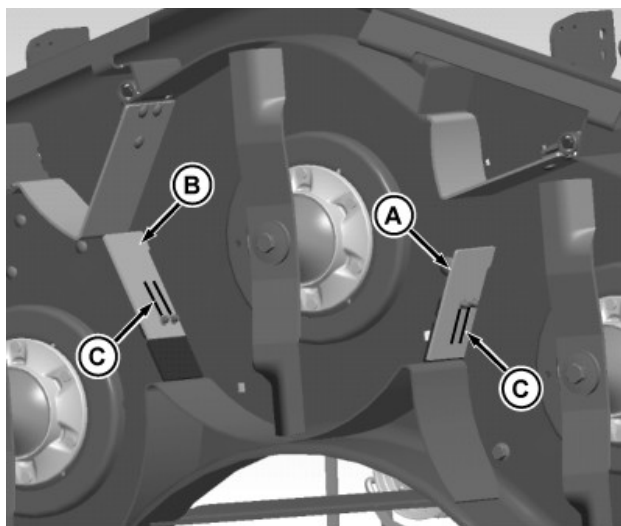
TCAL43490—UN—21MAR13

Lever position rearward (open) for side discharge position.

1. Pull deck mode lever (A) rearward for side discharge mode.

Adjusting Chamber Separators

Operating



TCT011893—UN—05NOV14

The Mulch-On-Demand Mower Decks are equipped with two adjustable chamber separators that can be used to control grass flow between blades.

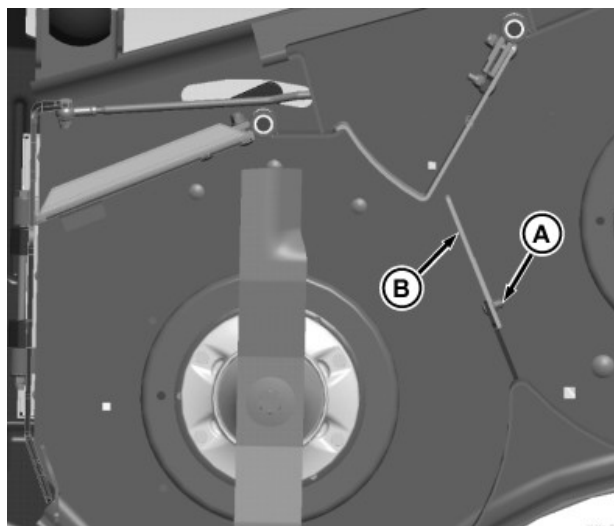
Depending on mowing conditions, chamber separators can be adjusted, or removed, to improve performance when mulching or side discharging.

Move chamber separators in the forward position (B) for best mulching performance; they should be in the rearward position (A) or removed when side discharging. However, any combination of chamber separators placements can be used at the customer's discretion.

Chamber separators are slotted (C) for ease of adjustment.

To Adjust or Remove Chamber Separators:

1. Park machine safely. (See Parking Safely in the SAFETY SECTION.)
2. Raise the mower deck to the highest position.
3. Raise front of machine with a safe lifting device. (See Lifting Machine in the SERVICE MISCELLANEOUS Section.)



TCT011900—UN—14NOV14

4. Loosen M6 locknut (A).

NOTE: If chamber separators are removed, store M6 locknut and M6 carriage bolt with chamber separators for later use.

5. Move chamber separators (B) in, out, or remove as required.
6. Secure with M6 locknut.
7. Repeat as necessary for second chamber separators.

OUC02004,0000ACD-19-20NOV14

Stopping 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.

1. Move the motion control levers to the neutral lock position.
2. Lock park brake.
3. Move the throttle lever between the middle and high idle position.
4. Turn key switch to STOP position.

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

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

5. Remove key.

BB87125,00011FB-19-04JUN13

Operating

Emergency Stopping (Motion Control Levers)

CAUTION: The machine may be unstable if stopped suddenly. Do not stop suddenly unless it is an emergency.

1. Return both motion control levers to the neutral position.
2. Depress brake pedal.
3. Stop mower blade rotation.
4. Turn key switch to stop (Off) position.
5. If possible, lock the park brake.

BB87125,00011FC-19-04JUN13

Moving Machine by Hand (Using the Bypass Pump Release Valves)

CAUTION: 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.

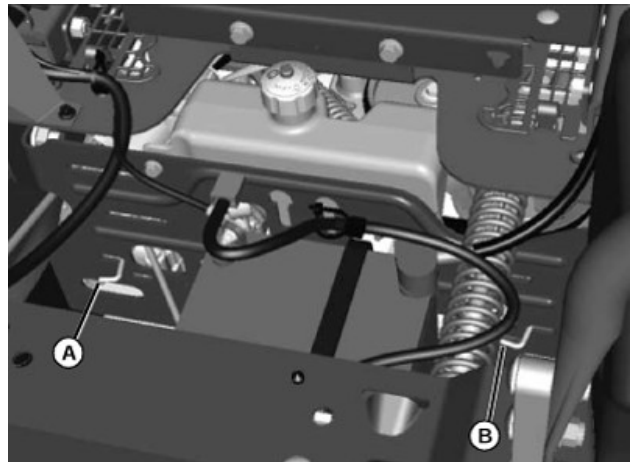
IMPORTANT: Transmission damage may occur if the machine is towed or moved incorrectly:

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

NOTE: Both bypass pump release valves must be fully closed (pushed inward towards rear of machine) during normal vehicle operation.

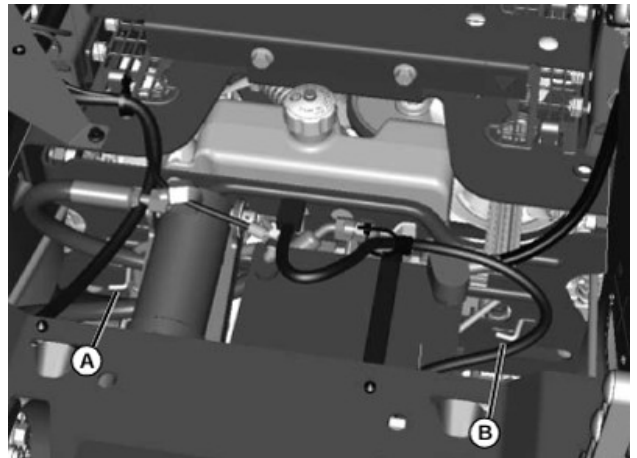
When the machine needs to be moved without starting the engine, use the bypass pump release valves:

1. Lock the park brake.
2. Lift operator seat and lock into position.



TCAL43492—UN—21MAR13

Z900E and Z900M Series Shown.



TCAL43493—UN—21MAR13

Z900R Series Shown.

3. On both transmissions pull the bypass levers (A and B) forward (towards the front of the machine) to the open position.
4. Unlock park brake.
5. Push machine to desired location. Due to hydraulic system drag, machine will move slowly.
6. Lock park brake.
7. Push both bypass levers (A and B) back (towards the rear of the machine) to the closed position.

MX52301,0000EE1-19-27JUN16

Transporting Machine on a Trailer

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

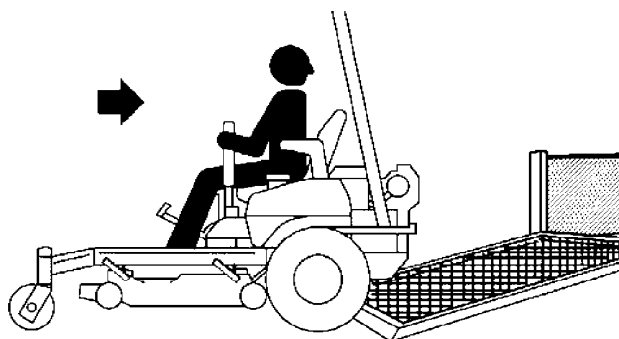
NOTE: Trailer capacity must exceed combined machine weight and attachment weight. (See Specifications section in Operator's Manual).

Operating

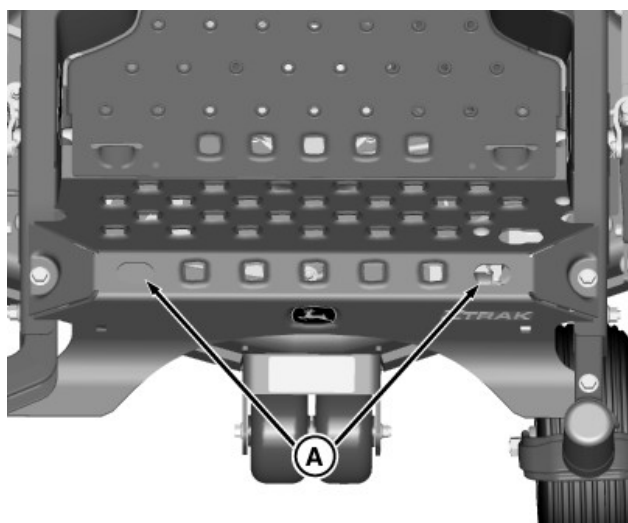
CAUTION: Use extra care when loading or unloading the machine onto a trailer or truck. Machine wheels can go off the ramp or trailer, causing the machine to tip over.

- To load, back slowly and in a straight line. Keep wheels away from drop-offs and edges.
- Do not use two separate loading ramps. Use a full width loading ramp at least 30 cm (12 in.) wider than machine to keep caster wheels from going off the ramp edge.
- Use a trailer with sides.

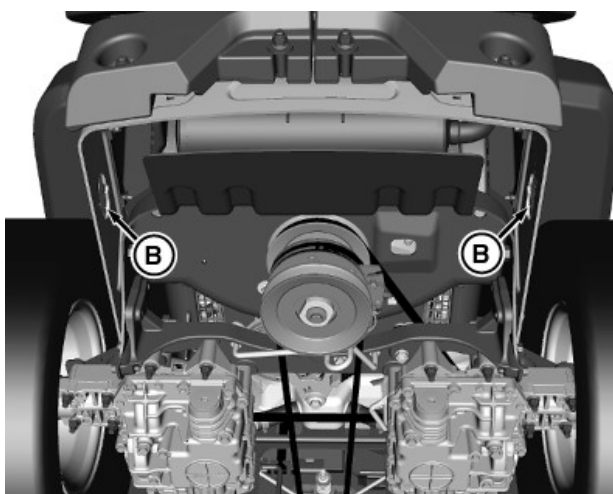
1. Park trailer on level surface.
2. Raise mower deck to the transport position.



3. Back machine onto heavy-duty trailer with full-width ramp.
4. Stop engine and lock park brake.
5. Lower mower deck completely.
6. Remove key.
7. If equipped, turn fuel shutoff valve to off position.



8. Fasten front of machine in elongated holes at both sides of the frame (A) to trailer with heavy-duty straps, chains, or cables. Straps must be directed down and outward from machine.



9. Fasten rear of machine at both sides of frame at points (B) to trailer with heavy-duty straps, chains, or cables. Straps must be directed down and outward from machine.

MX52301,0000EF7-19-24MAR16

Mowing Tips

- Mow grass with throttle lever in the full fast/mow position.
- Mow grass when it is dry.
- Keep mower deck and discharge chute clean.
- Properly level mower deck for a smooth cut.
- 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.
- Keep mower blades sharp. Dull blades will tear grass; tips of grass will then turn brown.
- Adjust cutting height to fit the conditions:
 - Normal mowing - adjust to remove only 1/3 of the grass at a time
 - Tall or wet grass - Mow twice. Cut grass at half desired height, then cut at desired height.
- Mow grass often. Short grass clippings will decay quickly.
- Adjust travel speed to match mowing conditions (see Mowing Travel Speeds):
 - Travel at slow speed when you mow thick, tall grass,
 - Make sharp turns or trim around objects.
- Use a different mowing pattern each time you mow.
- Overlap mowing paths 50 - 100 mm (2 - 4 in.).
- Drive over ridges and through shallow ditches straight-on, not at an angle.

MX00654,00001D1-19-10NOV13

Mowing Travel Speeds

Use slow travel speeds for:

- Slopes.
- Trimming.
- Close quarters.
- Tall grass.

Use faster travel speeds for:

- Normal mowing on level ground.

BB87125,0001200-19-04JUN13

Dismounting to Inspect Mower



CAUTION: Help prevent serious injury. Keep hands and feet away from blades and the discharge opening.

Do not step on either side of the mower deck when mounting and dismounting the machine. Mount and dismount the machine using the front foot plate.

1. Park machine on a hard, level surface.
2. Push down on back of PTO switch to disengage PTO.
3. Move motion control levers to the neutral lock position.
4. Lock park brake.
5. Stop engine and remove key. Wait for mower blades to stop turning before leaving operator's seat.

BB87125,0001201-19-16JUN15

Service Intervals

Servicing Your Machine

IMPORTANT: Avoid damage!

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.

High-pressure washing can cause damage to machine components. It is recommended that your vehicle be washed by hand or with a garden hose using mild soap.

Avoid spraying water with any great force near or into the following places:

- Air intake
- Electrical connections (including battery compartment)
- Wheel bearings
- Radiator (if equipped)
- Warning labels
- Other labels
- Ignition switch
- Instrument panel (gauges and switches)
- Breather/tube vents
- Mower spindles
- Mower idler bearings
- Transmission cooling fans

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

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

OUMX068,00006EF-19-22NOV16

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 pedals and/or steering control.
- Check seat belt.
- Check control cables.

After Each Use

- Check / fill fuel.
- Clean debris from machine.
- Clean debris from cooling system.
- Clean debris from the traction drive system.
- Clean debris from mower and/or attachment drive systems.
- Clean debris from the underside of the mower deck.
- Check mower drive belts.
- Check mower blades.
- Lubricate machine after washing. (See Service Lubrication for grease points)

Break In (After First 8 Hours)

- Check and tighten wheel hardware.

Break-In (After First 300 Hours)

- Change transmission oil and filters.

Every 50 Hours

- Lubricate deck components.
- Check air cleaner elements and replace as necessary.

Every 100 Hours

- Change engine oil and filter or annually.
- Check drive belt tension.
- Inspect mower drive belt.
- Remove panels, check and clean cooling fins and engine oil cooler (if equipped).
- Clean and check battery.
- Check, clean and re-gap spark plugs.

Every 300 Hours

- Check and adjust valve clearance (Kawasaki engines only).
- Replace primary air cleaner element.
- Replace plastic fuel filter (if equipped).

Every 500 Hours

- Replace secondary air cleaner
- Change transmission oil and filters. (Every 500 hrs after 300 hour Initial Break In).
- Check torque on ROPS hardware.
- Lubricate front caster wheel pivots.
- Remove cooling shroud and remove debris (or annually).

Service Intervals

Every 600 Hours

- Check and adjust valve clearance (Z945M, Z955M and Z955R).

Every 1000 Hours or Yearly

- Replace metal fuel filter (if equipped).
- Replace spark plugs.

MX00654,0000376-19-19MAY19

Service Lubrication

Grease

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

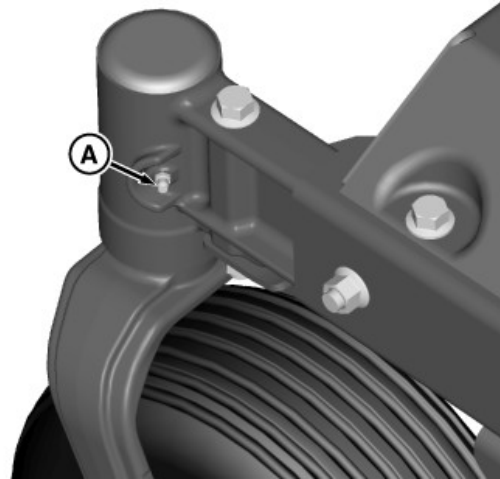
The following grease is recommended for service:

- John Deere Multi-Purpose HD Lithium Complex Grease
- Grease-Gard™ Premium Plus

Not all grease types are compatible; John Deere does not recommend mixing greases. If using any product other than the recommended grease in service, purge any remaining grease from the system before application. If not practical, grease twice as often until all old grease is purged from the system.

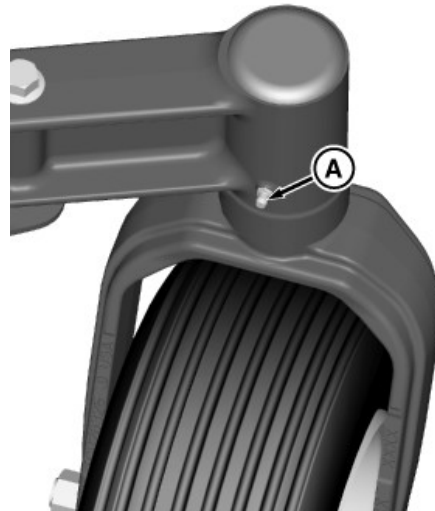
OUMX068,0000642-19-03APR19

Lubricating Front Caster Wheel Pivots



TCT013636—UN—24MAR16

Left Caster Wheel Shown

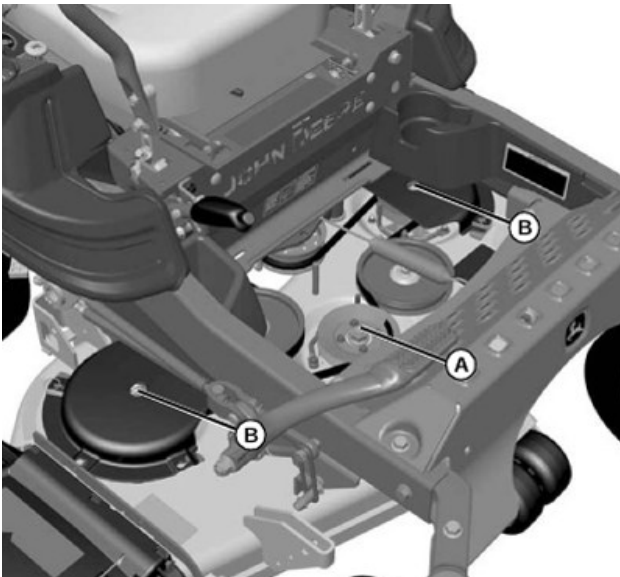


TCT013638—UN—24MAR16

Right Caster Wheel Shown

Lubricating Deck Components (Spindles)

NOTE: Removal of belt shields and foot plate is not necessary to lubricate the spindles.



TCAL43497—UN—21MAR13

- Lubricate one mower deck spindle grease fitting (A), located in the center of the deck.
- Lubricate two mower deck spindle grease fittings (B).

BB87125,0001207-19-10NOV13

1. Lubricate both front caster wheel pivot grease fittings (A) with John Deere Special Purpose HD Water Resistant NM Grease or John Deere Multi-Purpose HD Lithium Complex Grease.

MX52301,0000EF8-19-24MAR16

Service Engine

Emissions Service Information

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

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

Emission Control System Certification Label

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

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

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

Altitude Adjustment (Gasoline 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.

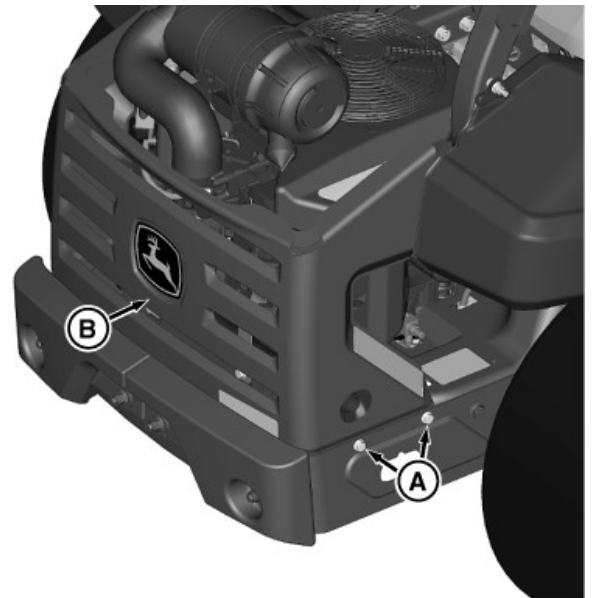
- Move the machine to an outside area before running the engine.
- Do not run an engine in an enclosed area without adequate ventilation.
- Connect a pipe extension to the engine exhaust pipe to direct the exhaust fumes out of the area.
- Allow fresh outside air into the work area to clear the exhaust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

BB87125,000120B-19-04JUN13

Removing Engine Access Grill

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

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



TCT012785—UN—09JUN15

2. Remove two bolts (A) on each side of machine.
3. Remove and set aside engine access grill (B).
4. Install engine access grill with four bolts.

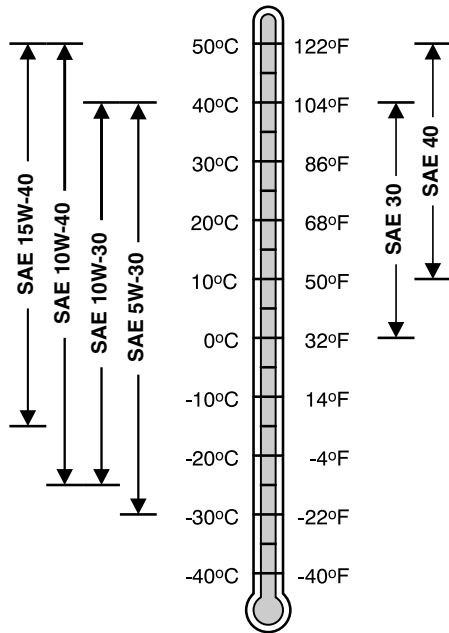
BS62576,0001A85-19-08JUN15

Service Engine

Gasoline Engine Oil

- ACEA Oil Sequence C3
- ACEA Oil Sequence C2
- ACEA Oil Sequence C1

DX,ENOIL2-19-20JUL15



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 oils are also recommended:

- John Deere Plus-4™
- John Deere Plus-50™ II

Other oils may be used if they meet one or more of the following:

- 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

*Turf-Gard is a trademark of Deere & Company
Plus-4 is a trademark of Deere & Company
Plus-50 is a trademark of Deere & Company*

Checking Engine Oil Level

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

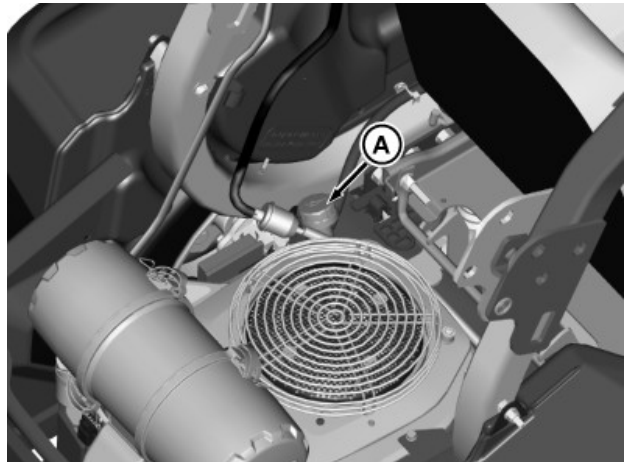
- Check oil level before operating.
- Check oil level when the engine is cold and not running.
- Park machine on a level surface.
- Keep oil level between the dipstick marks.
- Shut off engine before adding oil.

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

Make sure that engine is cold when checking engine oil level.

Kohler Engines with Push-in Dipsticks

1. Park machine safely. (See Parking Safely in the SAFETY Section.)
2. Allow engine to cool.
3. Clean area around dipstick before removing it.



TCT011901—UN—14NOV14

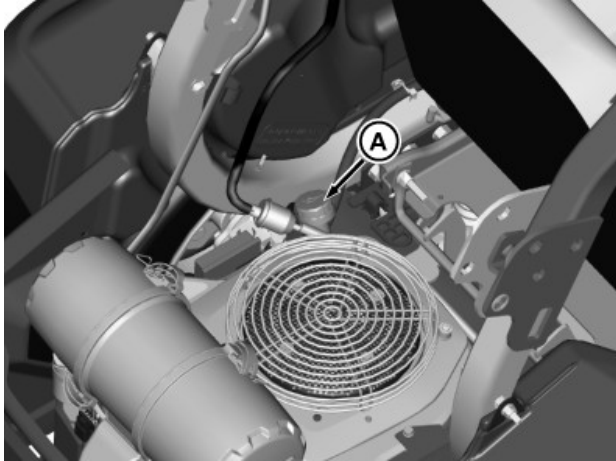
4. Remove dipstick (A). Wipe it clean.
5. Install dipstick and push it completely into tube.
6. Remove dipstick. Check oil level on dipstick; make sure that oil level is between the ADD and FULL marks.
 - If oil is low, add oil to bring oil level no higher than the FULL mark on dipstick.
 - If oil level is above the FULL mark, drain to the proper level.

Service Engine

7. Install dipstick.

Kohler Engines with Threaded Dipstick Cap

1. Park machine safely. (See Parking Safely in the SAFETY Section.)
2. Allow engine to cool.
3. Clean area around dipstick before removing it.

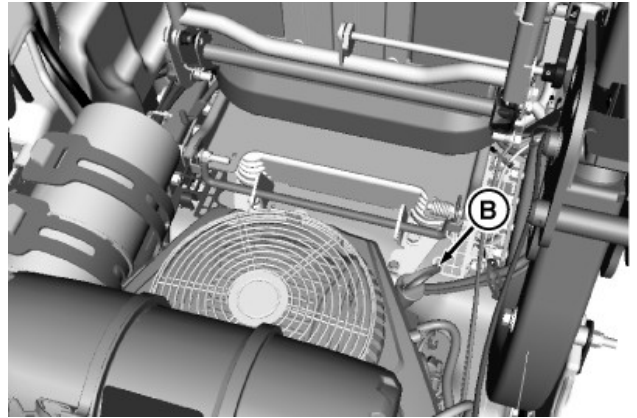


TCT011901—UN—14NOV14

4. Remove dipstick (A) from tube by unscrewing it. Wipe it clean.
5. Install dipstick in tube, but do not screw on to threads.
6. Remove dipstick. Check oil level on dipstick; make sure that oil level is between the ADD and FULL marks.
 - If oil is low, add oil to bring oil level no higher than the FULL mark on dipstick.
 - If oil level is above the FULL mark, drain to the proper level.
7. Install and tighten dipstick.
8. Start engine and run at slow throttle for approximately two minutes. Check for leaks around filter and drain plug.
9. Stop engine.

Kawasaki Engines

1. Park machine safely. (See Parking Safely in the SAFETY Section.)
2. Allow engine to cool.
3. Clean area around dipstick before removing it.



TCT014260—UN—13JUL17

4. Remove dipstick (B) from tube by unscrewing it. Wipe it clean.
5. Install dipstick in tube, but do not screw on to threads.
6. Remove dipstick. Check oil level on dipstick; make sure that oil level is between the ADD and FULL marks.
 - If oil is low, add oil to bring oil level no higher than the FULL mark on dipstick.
 - If oil level is above the FULL mark, drain to the proper level.
7. Install and tighten dipstick.
8. Start engine and run at slow throttle for approximately two minutes. Check for leaks around filter and drain plug.
9. Stop engine.

JK79365,00008E1-19-07JUN19

Changing Engine Oil and Filter

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

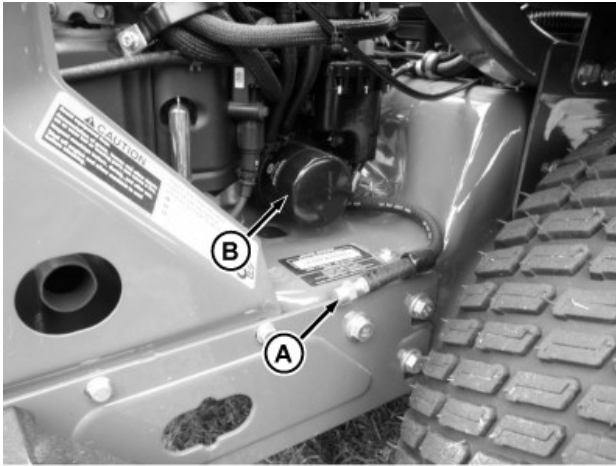
IMPORTANT: Change the oil more often if the vehicle is used in extreme conditions:

- Dusty conditions.
- Frequent slow or low-speed operation.
- Frequent short trips.

Kohler Engines

1. Run engine to warm oil.
2. Park machine safely on a level surface. (See Parking Safely in the SAFETY section.)
3. Put container under oil drain area.

Service Engine



TCT012786—UN—09JUN15

4. Remove drain plug (A) on end hose. Allow oil to drain into container.
5. After oil drains install the drain plug and remove the oil filter (B) and allow oil to drain into container. Tighten drain plug to specification.

Specification

Drain Plug—Torque. 13.6 N·m (120 lb-in.)

6. Apply a film of clean engine oil on gasket of new filter.
7. Install filter. Turn filter clockwise until gasket contacts mounting surface. Tighten by hand 3/4 turn more after gasket contact.



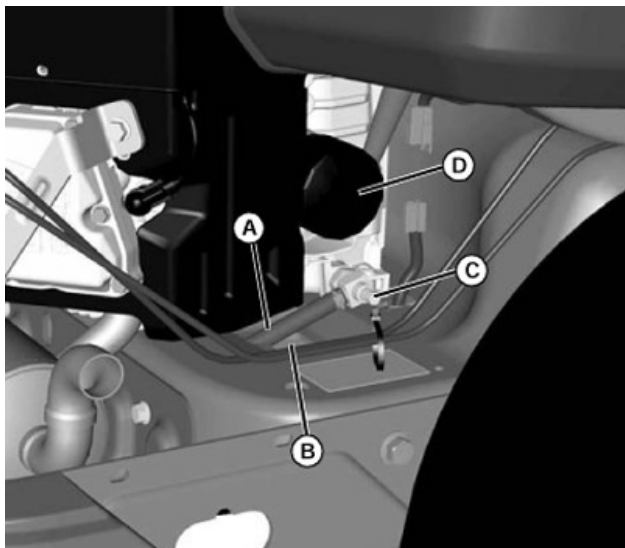
TCT012787—UN—09JUN15

8. Clean area around the oil dipstick (C).
9. Remove the dipstick.

10. Add oil, see the Specifications section for correct amount.
11. Install dipstick.
12. Start engine and run at slow throttle for approximately two minutes. Check for leaks around filter and drain plug.
13. Stop engine.
14. Check oil level:
 - Remove and wipe dipstick clean with a rag.
 - Install dipstick but do not screw onto threads.
 - Remove dipstick. Check oil level on dipstick; make sure that oil level is between the ADD and FULL marks. Add or remove oil if needed.
15. Install dipstick and tighten.

Kawasaki Engines

1. Run engine to warm oil.
2. Park machine safely on a level surface. (See Parking Safely in the SAFETY section.)
3. Put container under oil drain area.



TCAL43506—UN—21MAR13

Model Z920M shown.

4. Be certain hose (A) is installed into opening (B) in machine frame, and open oil drain plug valve (C). Allow oil to drain into container.
5. After oil drains close the drain plug and remove the oil filter (D). Tighten drain plug to specification.

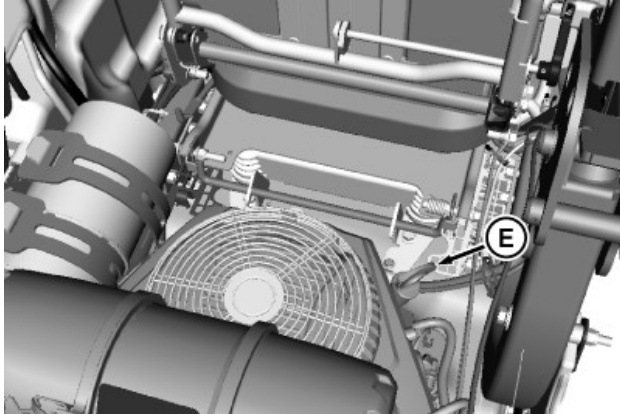
Specification

Drain Plug—Torque. 6.9 N·m (61 lb-in)

6. Apply a film of clean engine oil on gasket of new filter.
7. Install filter. Turn filter clockwise until gasket

Service Engine

contacts mounting surface. Tighten by hand 3/4 turn more after gasket contact.



TCT014254—UN—22JUN17

8. Clean area around the oil dipstick (E).
9. Unscrew and remove the dipstick.
10. Add engine oil (See Engine in the SPECIFICATION section).
11. Install and tighten dipstick.
12. Start engine and run at slow throttle for approximately two minutes. Check for leaks around filter and drain plug.
13. Stop engine.
14. Check oil level:
 - Remove and wipe dipstick clean with a rag.
 - Install dipstick but do not screw onto threads.
 - Remove dipstick. Check oil level on dipstick; make sure that oil level is between the ADD and FULL marks. Add or remove oil if needed.
15. Install dipstick and tighten.

JK79365,00008D5-19-13JUL17

Checking and Replacing Air Filtration System

IMPORTANT: Dirt and debris can enter the engine when removing the air cleaner elements. Service elements only at prescribed intervals.

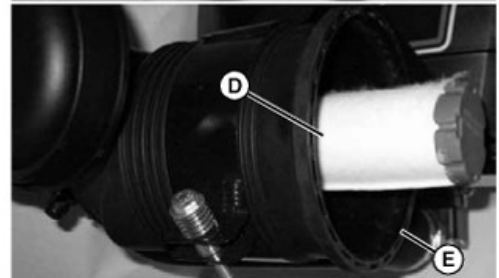
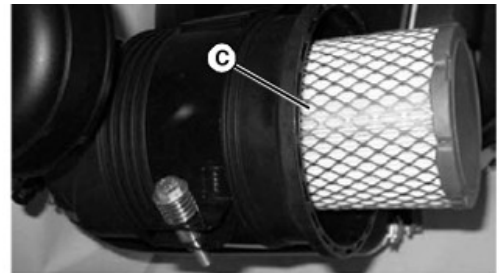
1. Park the machine safely. (See Parking Safely in the SAFETY section.)



TCAL43508—UN—21MAR13

Your model may be different from the model shown.

2. Unhook latches (A) and remove cover (B).



TCAL43509—UN—21MAR13

Your model may be different from the model shown.

3. Remove primary element (C) and secondary element (D).

NOTE: The air cleaner elements are not recommended to be cleaned.

- Do not wash air cleaner elements.
- Do not oil air cleaner elements.
- Do not use pressurized air to clean air cleaner elements.

4. Inspect air cleaner elements and replace if dirty or at specified intervals

- Replace the secondary element if dirty when the primary element is checked and replaced.

5. Clean the housing (E) with detergent and water. Dry thoroughly with a clean cloth.

Service Engine

NOTE: If the housing is damaged, it must be replaced.

6. Check the housing for deformation or other damage. The housing must seal well and permit only filtered air to reach the carburetor.
7. Check that no foreign material is obstructing the air passage.
8. Install new element(s).
9. Replace cover with the "up" mark on the cover at the twelve o'clock position and secure latches.

MX00654,00001D2-19-10NOV13

Cleaning Debris From Cooling System

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

NOTE: Checking, cleaning cooling fins and oil cooler must be performed every 100 hours.

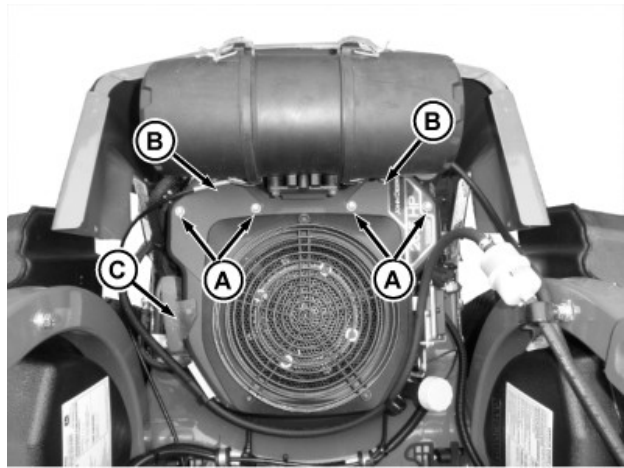
1. Park machine safely on a level surface. (See Parking Safely in the SAFETY section.)

IMPORTANT: To avoid damage from overheating, clean all debris from cylinder head cooling fins, oil cooler, and engine area as stated in the machine service intervals.

- The interval for cleaning debris from the engine compartment area is daily.
- Remove the cleanout panels and clean all debris from cylinder head cooling fins every 100 hours, or more frequently depending on operating conditions.
- The interval for removing the cooling shrouds and cleaning debris from complete cooling system is every 500 hours, or more frequently depending on operating conditions.

NOTE: After inspection, If all debris cannot be cleaned out after performing 100 Hour Interval, perform the Every 500 Hours interval.

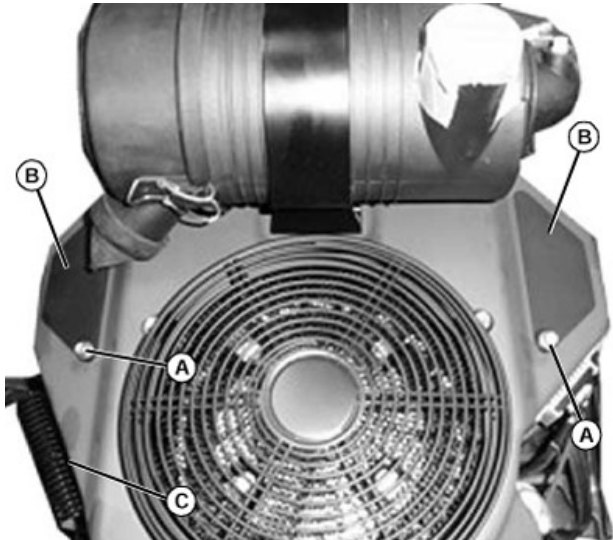
2. Remove covers:



TCT011981—UN—18NOV14

Z915E, Z945M EFI, Z955M EFI and Z955R

- Z915E, Z945M EFI, Z955M EFI and Z955R: Remove four screws (A) and two covers (B).



TCAL43513—UN—21MAR13

- All other models: Remove two screws (A) and two covers (B).

3. Remove spark plug wires.

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

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

4. With compressed air, thoroughly clean debris buildup.
5. Install spark plug wires.
6. Install two covers on shroud.
7. Raise seat.

Service Engine

8. Check and clean engine oil cooler (C) (if equipped) and blow out debris with compressed air.
9. Lower seat.

MX00654,0000377-19-19MAY19

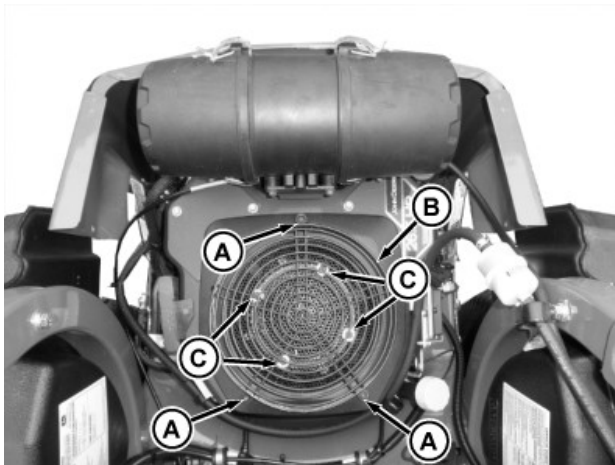
Remove Cooling Shroud and Remove Debris (Z915E)

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

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

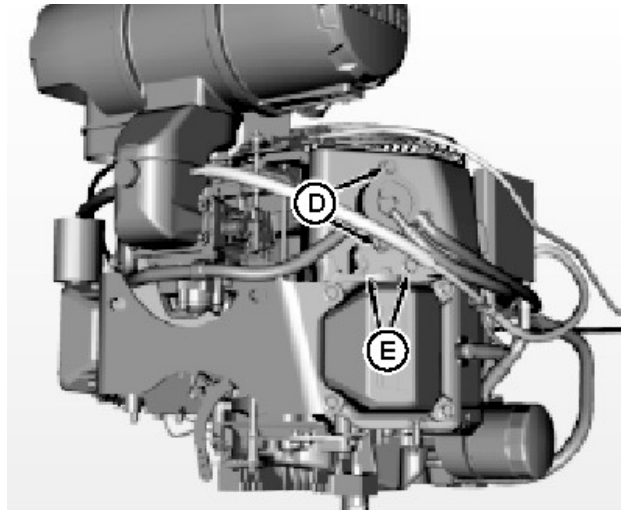
IMPORTANT: To ensure proper cooling, keep the engine cooling fins and surrounding area clean always. Operating the engine with obstructed cooling fins could cause engine damage due to overheating.

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



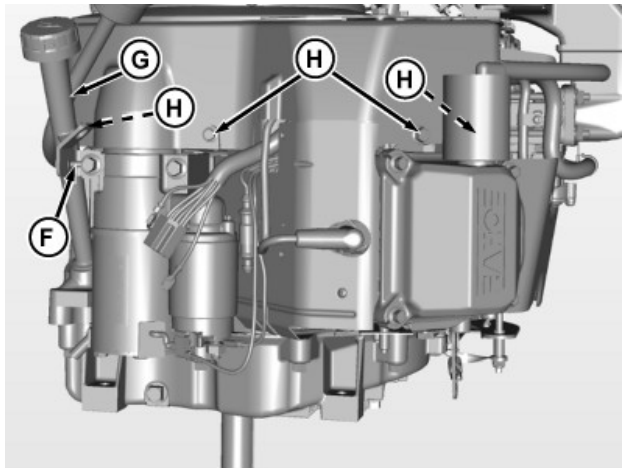
TCT011982—UN—18NOV14

4. Loosen and remove three socket head bolts (A) and remove fan screen guard (B).
5. Remove four hex head bolts (C), fan screen, and metal ring below fan screen.



TCT011311—UN—16JUN15

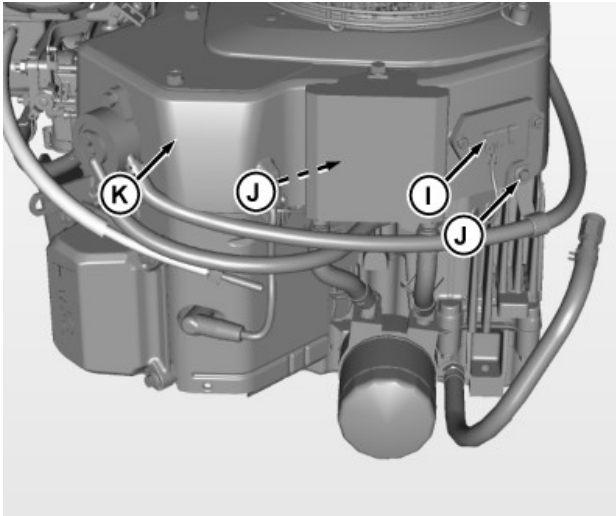
6. Remove two fuel pump bolts (D).
7. Remove two shroud/lift bracket bolts (E).



TCT011997—UN—20NOV14

8. Remove dip stick mounting bolt (F) and dipstick housing (G) from engine.
9. Remove four shroud bolts (H). Install dipstick housing (G) on engine and secure with one bolt (F).

Service Engine



TCT011998—UN—20NOV14

10. Remove wiring harness connector (I) from voltage regulator.
11. If engine is equipped with an oil cooler, remove mounting bolts.
12. Remove two shroud bolts (J). Lift shroud (K) upward and remove from engine.
13. Clean debris from engine area and all engine cooling fins.
14. Reverse steps to install shroud and tighten all hardware securely.
15. Install engine access grill.

MX52301,0000EE3-19-23MAR16

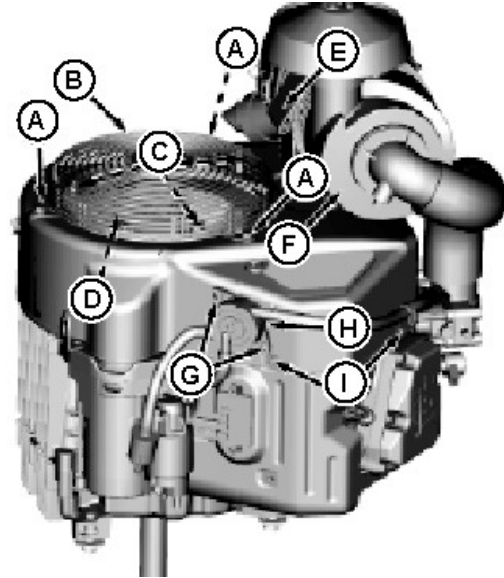
Remove Cooling Shroud and Remove Debris (Model Z920M)

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

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

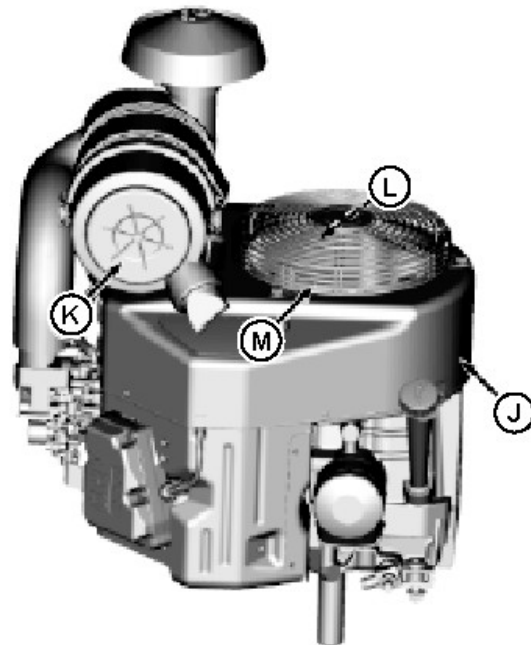
IMPORTANT: To ensure proper cooling, always keep the engine cooling fins and surrounding area clean. Operating the engine with obstructed cooling fins could cause engine damage due to overheating.

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



TCT011312—UN—17JUN15

4. Loosen and remove three hex socket head bolts (A) and remove fan screen guard (B).
5. Remove three hex head bolts (C) and remove fan screen (D).
6. Open air cleaner latch (E) and remove air cleaner assembly (F) from top of engine.
7. Remove two hex head bolts (G) and remove fuel pump (H).
8. Remove six engine shroud hex head bolts (I).



TCT011313—UN—17JUN15

9. Lift shroud (J) upward and remove from engine compartment.
10. Clean debris from engine area and all engine cooling fins.

Service Engine

11. Install engine shroud (J).
12. Install fuel pump.
13. Install air cleaner (K).
14. Install fan screen (L).
15. Install fan screen guard (M).
16. Tighten all hardware.
17. Install engine access grill.

OUO2004,0000AFF-19-16JUN15

Remove Cooling Shroud and Remove Debris (Models Z930M, Z950M, Z930R, Z950R, Z960M, Z970R)

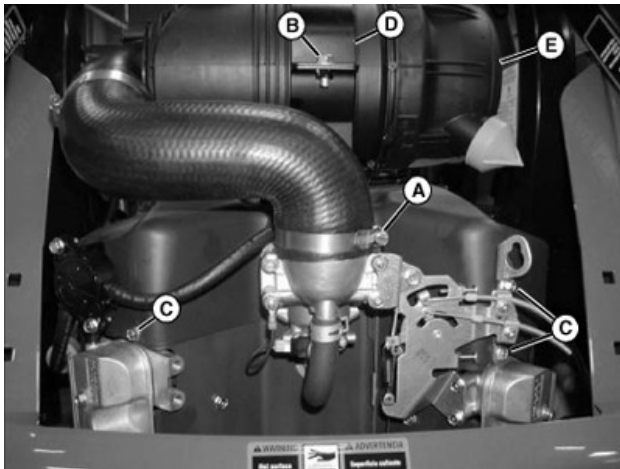
CAUTION: Compressed air can cause debris to fly a long distance.

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

IMPORTANT: To ensure proper cooling, keep the engine cooling fins and surrounding area clean at all times. Operating the engine with obstructed cooling fins could cause engine damage due to overheating.

NOTE: Your model may be different from the model shown.

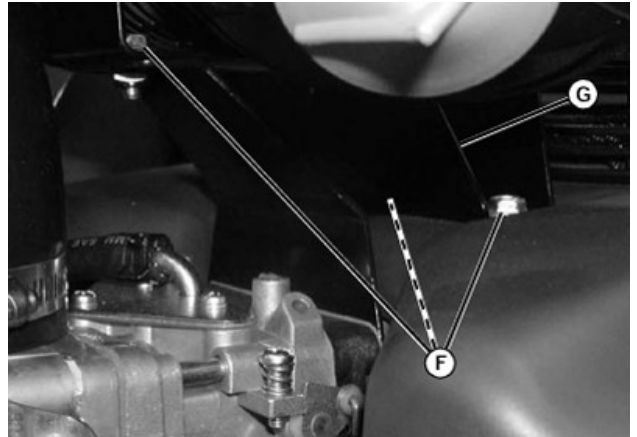
1. Park machine safely. (See Parking Safely in the SAFETY section.)
2. Allow machine to cool down.
3. Remove engine access grill.



TCAL43520—UN—21MAR13

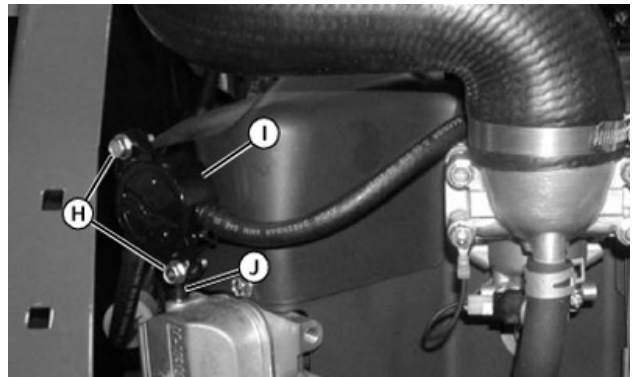
4. Loosen clamp (A), remove hex head bolts (B) and (C).

5. Lift bracket (D) and pivot air cleaner assembly (E) out leaving the intake hose connected.



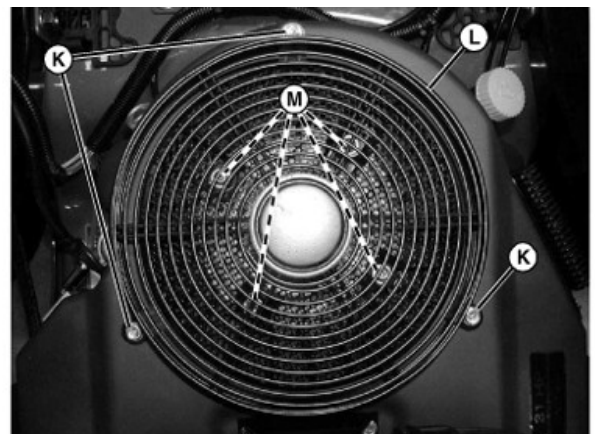
TCAL43521—UN—21MAR13

6. Remove the three hex head bolts (F) and air cleaner bracket (G).



TCAL43522—UN—21MAR13

7. Remove the two hex head bolts (H) fuel pump (I) and disconnect the vacuum hose (J).



TCAL43523—UN—21MAR13

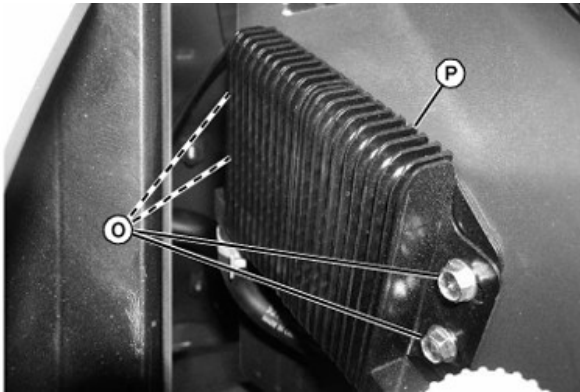
8. Remove the three hex head bolts (K) and fan shroud (L).
9. Remove the four hex socket head bolts (M) and the fan screen.

Service Engine



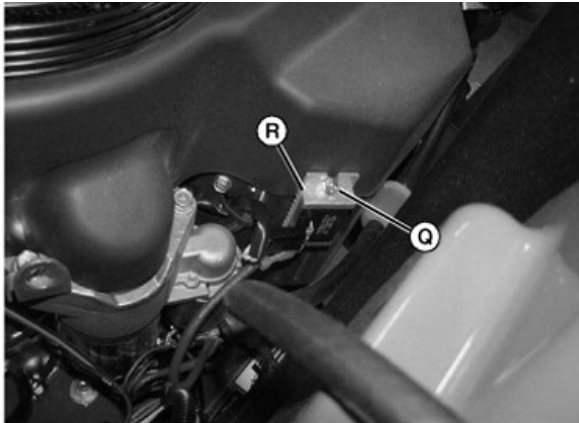
10. Remove the engine shroud bolts (N).

TCAL43524—UN—21MAR13



11. Remove the four hex head bolts (O) and remove oil cooler (P).
12. Clean oil cooler fins.

TCAL43525—UN—21MAR13



13. Z930M, Z930R and Z950R: Loosen the top hex head bolts (Q) to the voltage regulator (R).
14. Remove the engine shroud.
15. Clean the debris from the engine area and all engine cooling fins.
16. Install engine shroud.
17. Tighten voltage regulator top bolt.
18. Install oil cooler.
19. Install fan shroud.

TCAL43526—UN—21MAR13

20. Install fuel pump and connect vacuum hose.
21. Install air cleaner bracket.
22. Pivot air cleaner to proper position and tighten hardware.
23. Install engine access grill.

MX00654,0000193-19-16JUN15

Replacing Fuel Filter

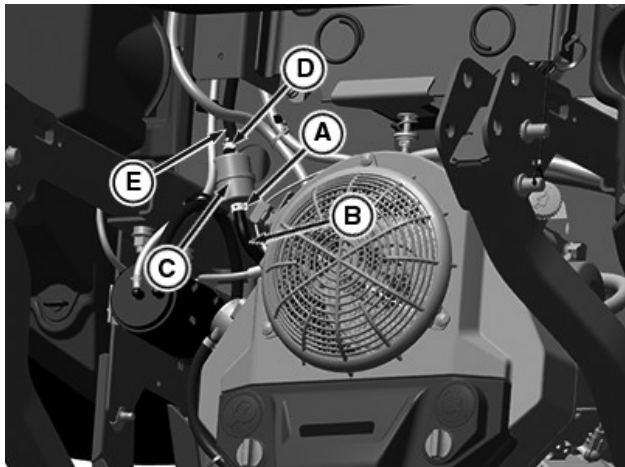
CAUTION: Fuel vapors are explosive and flammable:

- 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: Incorrect installation of fuel filter causes engine damage. Install the filter with the arrow pointing in the direction of fuel flow (towards the engine) for proper operation.

NOTE: Change fuel filter when fuel is low.

1. Park machine safely. (See Parking Safely in the SAFETY section.)
2. Allow engine to cool.
3. To catch any fuel that is left in the hoses, place a drain pan under hoses.
4. Slide clamp (A) down onto fuel hose (B) and disconnect fuel hose from the outlet side of the fuel filter (C). Drain gasoline into a properly marked container.



APY11723—UN—01AUG18

Z730M (Kawasaki Engine Shown)

Service Engine

- Slide clamp (D) up onto inlet fuel hose (E), and remove the fuel filter from the inlet fuel hose.
- Remove and discard filter.
- Install new fuel filter.
 - Make sure that fuel filter is installed with arrow pointing towards the engine in direction of fuel flow.
- Connect hoses to new fuel filter and secure each end with hose clamp.
- Route line through clip (F).

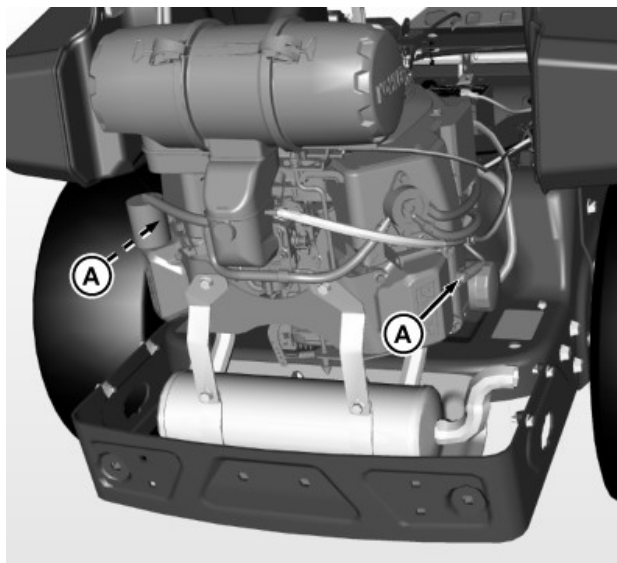
OUC02004,0000B02-19-30JUL18

Checking and Replacing Spark Plugs

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

IMPORTANT: Do not clean spark plug area with spark plug removed.

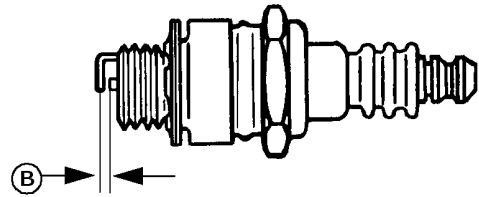
- Park machine safely. (See Parking Safely in the SAFETY section.)
- Clean area around both spark plugs.



TCT011990—UN—18NOV14

Model Z915E shown. Engine access grill removed for clarity.

- Disconnect the spark plug wire (A) from each plug.
- Remove and inspect spark plugs:
 - Clean each plug and check for damage, replace if necessary.
 - If plugs are in good condition, check gap.



TCAL43511—UN—21MAR13

- Check and adjust spark plug gap (B) to specification.

Specification

Spark Plug (Gasoline Engines)—Gap. 0.76 mm (0.030 in.)

Specification

Spark Plug (Propane Engines)—Gap. 0.64 mm (0.025 in.)

- Install spark plugs.

- Kohler Engines: Tighten to specification.

Specification

Spark Plug—Torque. 27 N·m (20 ft-lb)

- Kawasaki Engines: Tighten to specification.

Specification

Spark Plug—Torque. 22 N·m (16 ft-lb)

- Install both spark plug wires.

MG39705,00002CA-19-27DEC19

Checking Control Cables

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.

- Park machine safely on a level surface. (See Parking Safely in the Safety section.)

Service Engine

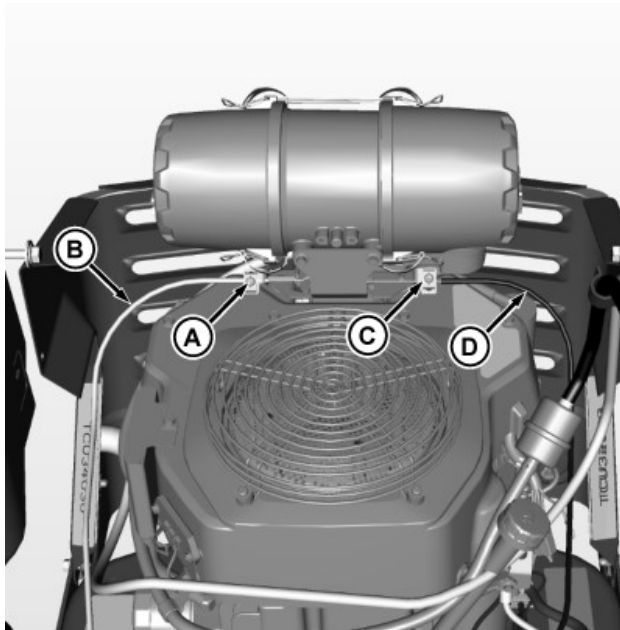


TCT012790—UN—26JUN15

2. Check for proper cable operation. Move choke knob (A) and throttle lever (B) from on to off/low to high positions while visually inspecting engine control panel.
3. If the choke knob and/or throttle lever does not have full travel within their slots, use following procedures:

Adjusting Choke and Throttle Cables (Z915E, Z945M EFI, Z955M EFI and Z955R EFI (Kohler Engines))

Throttle Cable Adjustment



TCT011991—UN—18NOV14

1. Loosen screw (A) for the throttle cable housing (B).

2. Move throttle lever all the way forward to the fast position. Move throttle lever backward 3.2 mm (1/8 in).
3. Pull throttle cable outer housing (B) away from the carburetor control plate until it stops. Tighten screw (A) to secure.
4. Verify cable operation and full range of throttle lever within the slot. Repeat if necessary.

Choke Cable Adjustment

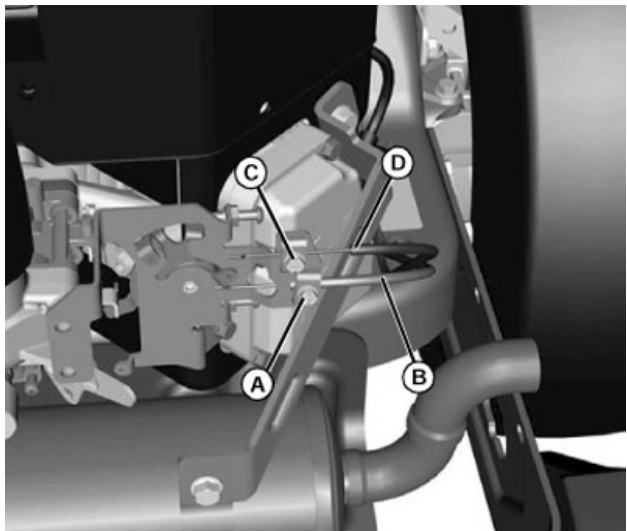
NOTE: No choke adjustment is needed for EFI engines.

1. Loosen screw (C) for the choke cable housing (D).
2. Pull choke knob (A) all the way up to the full choke position. Push choke knob down 3.2 mm (1/8 in).
3. Pull choke cable outer housing (D) away from the carburetor control plate until it stops. Tighten screw (C) to secure.
4. Verify cable operation and full range of choke knob. Repeat if necessary.

Z920M (Kawasaki Engine)

Throttle Cable Adjustment

1. Remove engine access grill.



TCAL43535—UN—21MAR13

2. Loosen screw (A) for the throttle cable housing (B).
3. Move throttle lever all the way forward to the full choke position. Move throttle lever backward 3.2 mm (1/8 in).
4. Pull throttle cable outer housing (B) away from the carburetor control plate until it stops. Tighten screw (A) to secure.
5. Verify cable operation and full range of throttle lever within the slot. Repeat if necessary.
6. Install engine access grill.

Choke Cable Adjustment

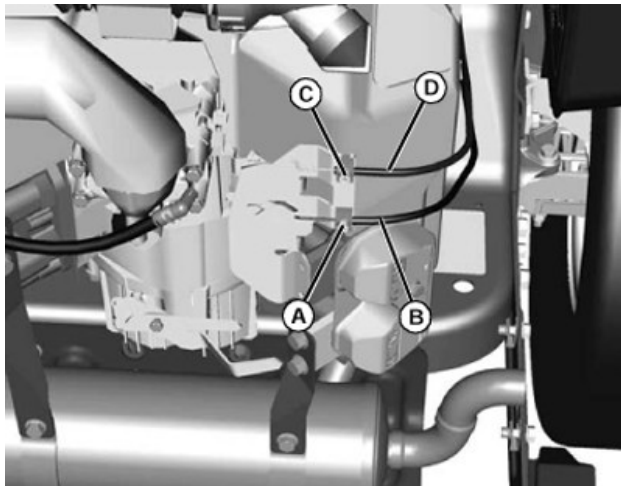
Service Engine

1. Remove engine access grill.
2. Loosen screw (C) for the choke cable housing (D).
3. Pull choke knob (A) all the way up to the full choke position. Push choke knob down 3.2 mm (1/8 in).
4. Pull choke cable outer housing (D) away from the carburetor control plate until it stops. Tighten screw (C) to secure.
5. Verify cable operation and full range of choke knob. Repeat if necessary.
6. Install engine access grill.

Z930M, Z950M, Z930R, and Z950R (Kawasaki Engines)

Throttle Cable Adjustment

1. Remove engine access grill.



Z930M Shown.

TCAL43536—UN—21MAR13

2. Loosen screw (A) for the throttle cable housing (B).
3. Move throttle lever all the way forward to the fast position. Move throttle lever backward 3.2 mm (1/8 in).
4. Pull throttle cable outer housing (B) away from the carburetor control plate until it stops. Tighten screw (A) to secure.
5. Verify cable operation and full range of throttle lever within the slot. Repeat if necessary.
6. Install engine access grill.

Choke Cable Adjustment

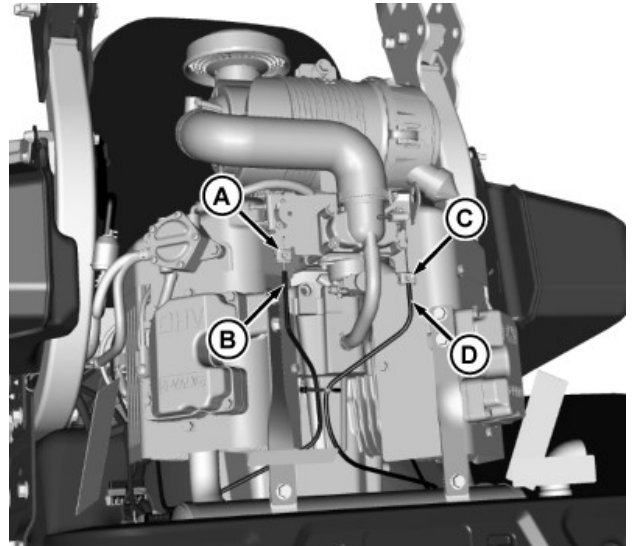
1. Remove engine access grill.
2. Loosen screw (C) for the choke cable housing (D).
3. Pull choke knob (A) all the way up to the full choke position. Push choke knob down 3.2 mm (1/8 in).
4. Pull choke cable outer housing (D) away from the carburetor control plate until it stops. Tighten screw (C) to secure.

5. Verify cable operation and full range of choke knob. Repeat if necessary.
6. Install engine access grill.

Z960M, and Z970R (Kawasaki Engines)

Throttle Cable Adjustment

1. Remove engine access grill.



TCT011887—UN—22OCT14

960M Shown

2. Loosen screw (A) for the throttle cable housing (B).
3. Move throttle lever all the way forward to the fast position. Move throttle lever backward 3.2 mm (1/8 in).
4. Pull throttle cable outer housing (B) away from the carburetor control plate until it stops. Tighten screw (A) to secure.
5. Verify cable operation and full range of throttle lever within the slot. Repeat if necessary.
6. Install engine access grill.

Choke Cable Adjustment

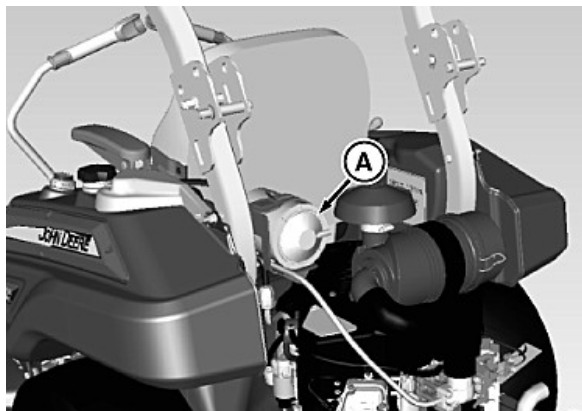
1. Remove engine access grill.
2. Loosen screw (C) for the choke cable housing (D).
3. Pull choke knob (A) all the way up to the full choke position. Push choke knob down 3.2 mm (1/8 in).
4. Pull choke cable outer housing (D) away from the carburetor control plate until it stops. Tighten screw (C) to secure.
5. Verify cable operation and full range of choke knob. Repeat if necessary.
6. Install engine access grill.

MX00654,0000378-19-07JUN19

Service Engine

Carbon Canister

NOTE: A non-serviceable carbon canister is only included on certain models.



TCT012788—UN—09JUN15

A carbon canister (A) is included as a non-serviceable component on certain model machines.

BS62576,0001A88-19-08JUN15

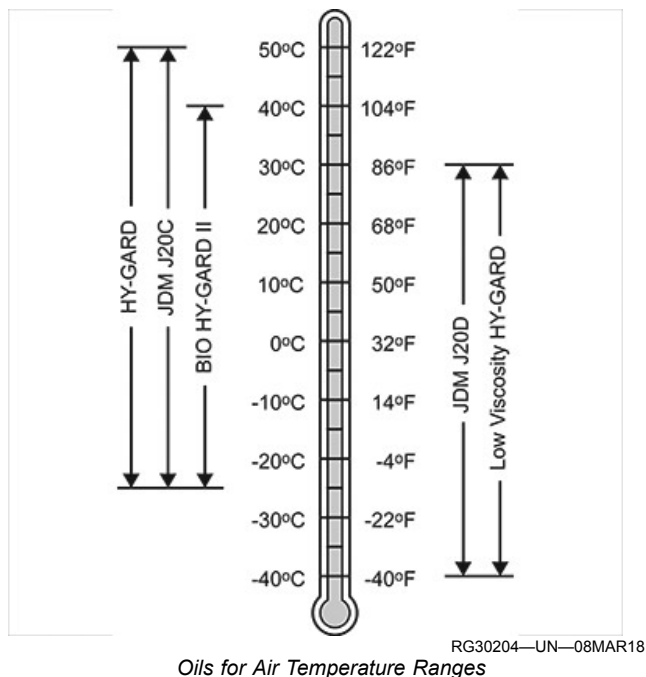
Spark Arrestor Maintenance (If Equipped)

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

Service Transmission

Transmission and Hydraulic Oil



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

The following oils are preferred:

- John Deere Hy-Gard™
- John Deere Low Viscosity Hy-Gard™

Other oils may be used if they meet one of the following:

- John Deere Standard JDM J20C
- John Deere Standard JDM J20D

Use John Deere Bio Hy-Gard™ II oil when a biodegradable fluid is required.¹

DX,ANTI-19-01JAN18

Checking Transmission Oil Level

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

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

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

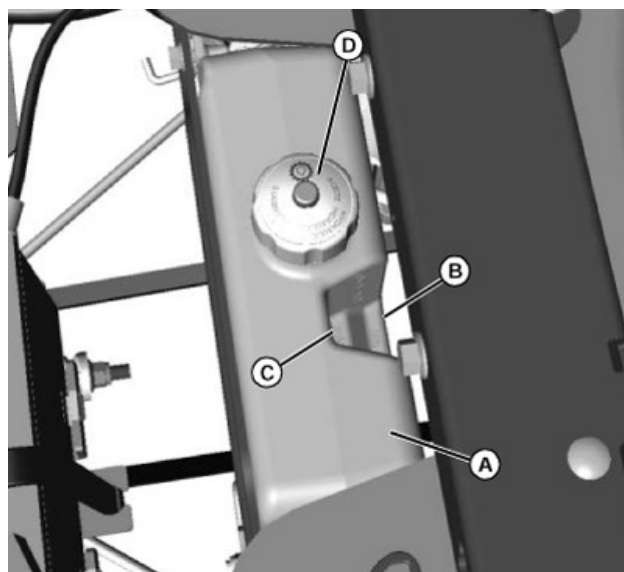
Hy-Gard is a trademark of Deere & Company
Bio Hy-Gard is a trademark of Deere & Company

¹ Bio Hy-Gard II meets or exceeds the minimum biodegradability of 80% within 21 days according to CEC-L-33-T-82 test method. Bio Hy-Gard II should not be mixed with mineral oils, because this reduces the biodegradability and makes proper oil recycling impossible.

1. Park machine safely. (See Parking Safely in the SAFETY section.)
2. Lift operator seat and lock into position.

IMPORTANT: Do not use chlorinated solvents or high pressure water to clean grass and debris from transmission reservoir cap.

3. Clean area around oil level markings and reservoir cap.



TCAL43539—UN—21MAR13

4. Check oil level in reservoir (A). Oil level should be between MIN (B) and MAX (C) on reservoir.
5. If oil is below MIN (B) on reservoir, remove cap (D) from reservoir and add oil until oil level is between MIN and MAX on reservoir.
6. Install cap on reservoir and hand tighten only. Do not overtighten cap.

MX00654,00001D4-19-10NOV13

Changing Transmission Oil and Filters

CAUTION: Escaping fluid under high pressure can penetrate the skin and cause serious injury. Avoid the hazard by relieving pressure before connecting 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.

Service Transmission

• 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. In the United States and Canada only, this information may be obtained by calling 1-800-822-8262.

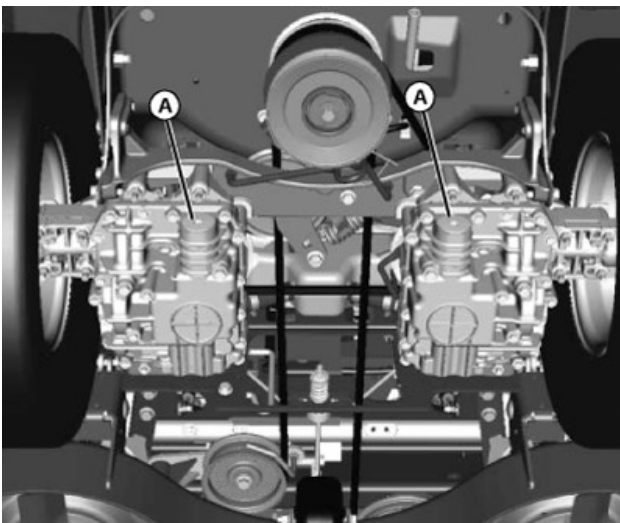
IMPORTANT: Contamination of hydraulic fluid could cause transmission damage or failure. Do not open oil reservoir cap unless absolutely necessary.

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

1. Park machine safely. (See Parking Safely in the SAFETY section.)
2. Allow engine and transmission oil reservoir to cool.
3. Place drain pan under both transmissions.

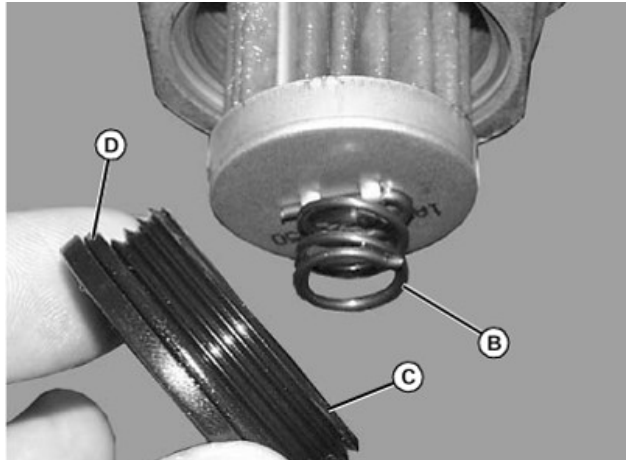
Z900E and Z900M Series

IMPORTANT: Do not use chlorinated solvents or high pressure water to clean grass and debris from filter caps.



TCAL43540—UN—21MAR13

1. Clean area around each filter cap (A).
2. Remove filter cap (A) and filter from each transmission. Discard filters.
3. Allow transmission oil to drain into a drain pan.
4. Apply a film of clean oil on gasket of each new transmission filter.



TCAL43541—UN—21MAR13

5. Install new filter into each transmission, with spring end (B) facing filter cap (C).
6. Replace O-ring (D) on the filter cap.
7. Install filter cap (removed earlier) and tighten to specification.

Specification

Filter Cap—Torque. 7.3 - 12.3 N·m (5.4 - 9 lb-ft)

8. Use a safe lifting device to raise the drive wheel off the ground. Support with jackstands.
9. Lift operator seat and lock into position.
10. Fill reservoir until oil level is between MIN and MAX marks on reservoir.
11. On both transmissions, pull the bypass levers back to the open position.
12. Rotate each drive tire by hand 1 full revolution forward and backward.
13. Check and fill reservoir until oil level is between MIN and MAX marks on reservoir.
14. Lower seat.
15. Start engine.
16. Allow engine to idle for 1 minute at low idle.
17. Push both motion control levers to full forward and hold for 5 seconds. Pull both control levers to full reverse and hold for 5 seconds. Repeat two additional times.
18. Stop the engine.
19. Push the bypass levers forward to the closed position.
20. Use a safe lifting device to raise the drive wheels off the ground. Remove the jackstands.

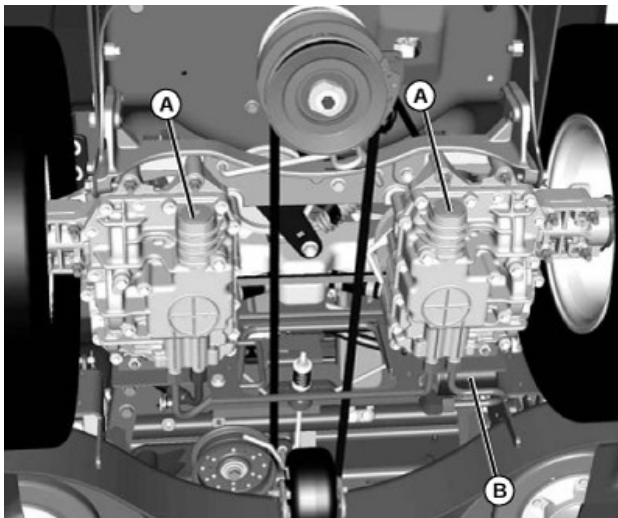
CAUTION: Help prevent serious bodily injury. Remain alert to other people and the surroundings when operating the machine.

Service Transmission

21. Start the engine.
22. Move throttle lever to the 3/4 fast idle position.
23. Unlock park brake.
24. Run engine in full throttle for 5 minutes and then cycle motion control levers forward and rearward several times. Check for leaks around filters.
25. Stop the engine. Check oil level. Add oil as necessary.

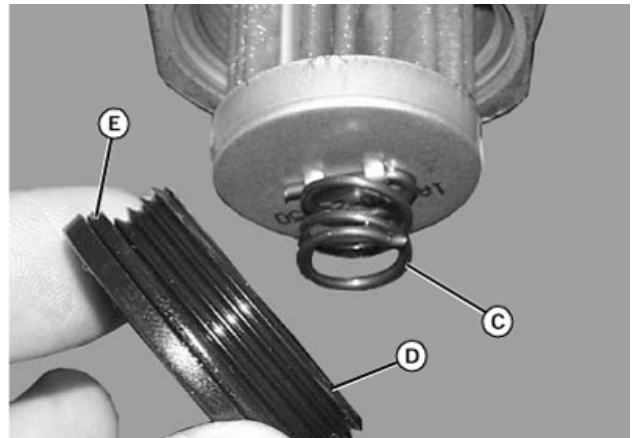
Z900R Series

IMPORTANT: Do not use chlorinated solvents or high pressure water to clean grass and debris from filter caps and hydraulic filter base.



TCAL43542—UN—21MAR13

1. Clean area around each filter cap (A) and hydraulic filter (B) base.
2. Remove filter cap (A) and filter from each transmission. Discard filters.
3. Remove inline hydraulic filter (B) from filter base.
4. Allow transmission oil to drain into a drain pan.
5. Apply a film of clean oil on gasket of new inline hydraulic filter and tighten onto filter base.
6. Apply a film of clean oil on gasket of each new transmission filter.



TCAL43543—UN—21MAR13

7. Install new filter into each transmission, with spring end (C) facing filter cap (D).
8. Replace O-ring (E) on the filter cap.
9. Install filter cap (removed earlier) and tighten to specification.

Specification

Filter Cap—Torque. 7.3 - 12.3 N·m (5.4 - 9 lb-ft)

10. Use a safe lifting device to raise the drive wheel off the ground. Support with jackstands.
11. Lift operator seat and lock into position.
12. Fill reservoir until oil level is between MIN and MAX marks on reservoir.
13. On both transmissions, pull the bypass levers back to the open position.
14. Rotate each drive tire by hand 1 full revolution forward and backward.
15. Check and fill reservoir until oil level is between MIN and MAX marks on reservoir.
16. Lower seat.
17. Start engine.
18. Allow engine to idle for 1 minute at low idle.
19. Push both motion control levers to full forward and hold for 5 seconds. Pull both control levers to full reverse and hold for 5 seconds. Repeat two additional times.
20. Stop the engine.
21. Push the bypass levers forward to the closed position.
22. Use a safe lifting device to raise the drive wheels off the ground. Remove the jackstands.

CAUTION: Help prevent serious bodily injury. Remain alert to other people and the surroundings when operating the machine.

23. Start the engine.

Service Transmission

24. Move throttle lever to the 3/4 fast idle position.
25. Unlock park brake.
26. Run engine in full throttle for 5 minutes and then cycle motion control levers forward and rearward several times. Check for leaks around filters.
27. Stop the engine. Check oil level. Add oil as necessary.

MX52301,0000EE7-19-23MAR16

Cleaning Debris From Traction Drive System

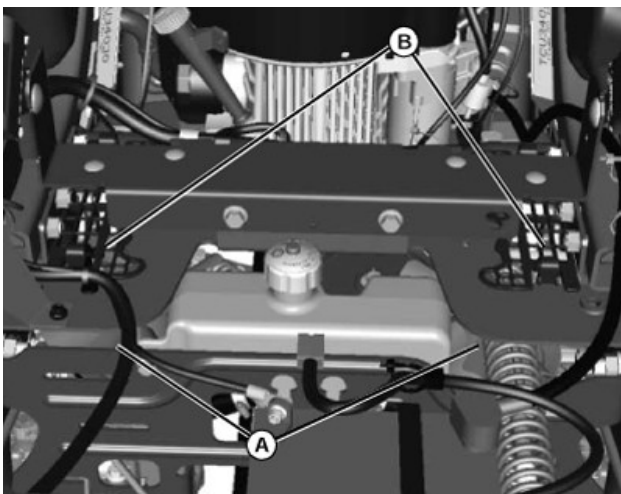
CAUTION: Compressed air can cause debris to fly a long distance.

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

IMPORTANT: To ensure proper cooling, keep the transmission cooling fins and surrounding area clean at all times. Operating the machine with obstructed cooling fins could cause transmission damage due to overheating.

1. Park machine safely. (See Parking Safely in the SAFETY section.)
2. Lift operator seat and lock into position.

IMPORTANT: Do not use chlorinated solvents or high pressure water to clean grass and debris from transmission fan, cooling fins and reservoir.



TCAL43544—UN—21MAR13

3. Clean cooling fins around exterior of transmissions and fans (A) with a rag, brush, or compressed air.

4. Clean transmission fan screens (B).

MX00654,00001D6-19-12NOV13

Checking and Replacing Traction Drive Belt

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

NOTE: The traction drive belt is self-adjusted using a spring tensioner and does not require a tension adjustment.

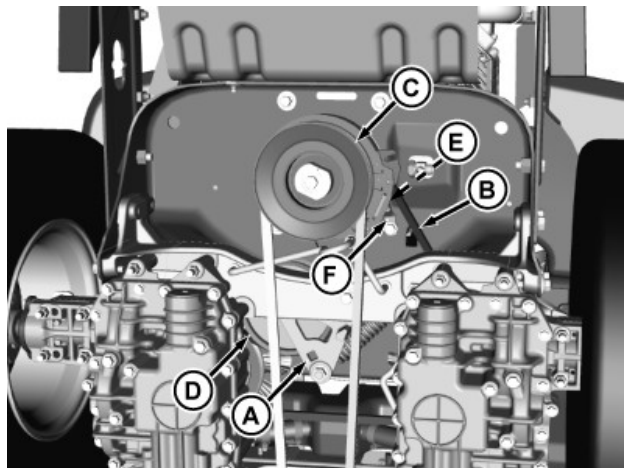
Checking Belt:

1. Park machine safely. (See Parking Safely in the SAFETY section.)
2. Inspect belt for excessive wear, damage or stretching while in position on the transmission pulley and drive belt tensioner pulley.

Replacing Belt

1. Remove mower deck belt. (See Replacing Mower Deck Drive Belt in SERVICE MOWER Section.)

CAUTION: Components are installed under spring tension. Wear eye protection and use proper tools when installing and removing components with spring tension.



TCT011888—UN—22OCT14

2. Insert a 1/2 in. drive extension tool into square hole (A) on tensioner arm, and rotate clockwise to release tension on belt (B).
3. While tensioner arm is rotated, remove traction drive belt from traction pulley (C).
4. Slowly rotate tensioner arm counterclockwise to release spring tension.
5. Remove belt from both transmission drive sheaves and idler pulley (D).

Service Transmission

6. Install belt onto drive pulley and idler pulley as shown.
7. Rotate tensioner arm clockwise and install traction drive belt into traction pulley. Release tension and verify belt routing is correct.
8. Verify that there is a 3.2 mm (1/8 in.) gap (E) between belt guide (F) and clutch pulley (C). If necessary, loosen bolt on belt guide and adjust to specification.

OUC2004,0000AD3-19-22OCT14

Checking and Adjusting Neutral Creep

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

Checking Motion Control Linkages

1. Park machine safely. (See Parking Safely in the SAFETY section.)
2. Raise rear of machine only enough for rear tires to rotate freely.

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.

3. Start engine.
4. Set throttle lever to the fast position.
5. Unlock park brake.
6. If the rear drive wheels begin to creep, an adjustment is required.

Adjusting Motion Control Linkages

NOTE: Perform adjustments with rear tires off the ground just enough so wheels can rotate.

1. Stop engine and lock park brake.



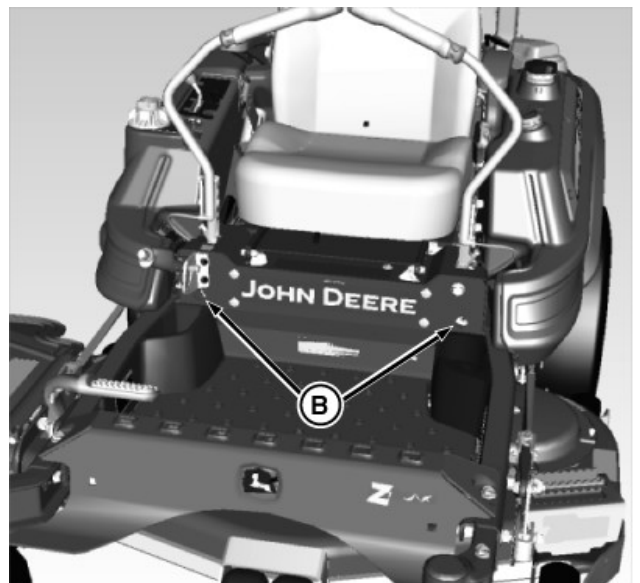
TCAL43481—UN—21MAR13

2. Move both motion control levers (A) to the neutral lock position.
3. Sit on seat.
4. Start engine.

CAUTION: Use extreme caution when adjusting for neutral creep. Drive wheels are free to spin when machine is raised off the floor and the engine is started.

Do not have engine running any longer than necessary to do adjustment. Shut off engine and remove key as soon as possible after adjustment is made.

5. Set throttle to fast idle position.
6. Unlock park brake.

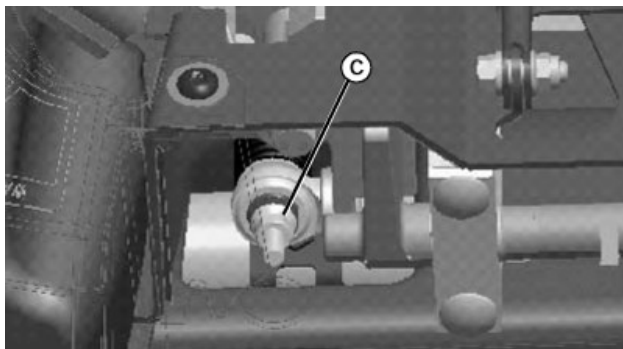


TCT007080—UN—12NOV13

7. Locate left and right motion control linkage adjustment points (B).
8. Be sure the right motion control linkage is in the

Service Transmission

neutral lock position. The right drive wheel must not turn. If it does turn, adjust the motion control linkage.

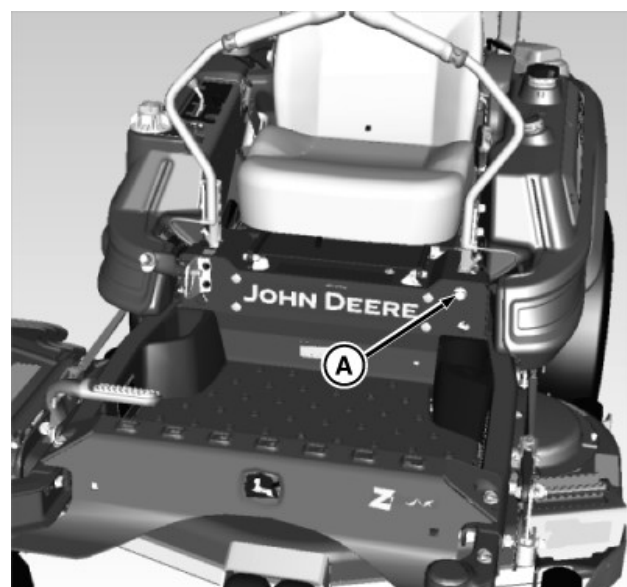


TCAL43548—UN—21MAR13

Front plate shown removed for clarity.

9. Adjust nut (C) on end of motion control linkage.
 - If wheel is spinning in forward direction, turn nut clockwise to bring wheel to a stop.
 - If wheel is spinning in reverse direction, turn nut counter-clockwise to bring wheel to a stop.
10. Move the right motion control lever completely forward and rearward in the slot and then back to the neutral lock-out position.
 - The drive wheels will slow down to ± 4 rpm. If the drive wheels are rotating faster than ± 4 rpm, repeat previous step.
11. Repeat procedure to adjust the left motion control linkage.
 - Drive wheels should not rotate when in neutral lock position.
12. Stop engine.
13. Move both motion control levers to the neutral lock position.
14. Lock park brake.
15. Dismount from the machine.
16. Lower machine.

MX00654,00001DA-19-12NOV13



TCT007081—UN—12NOV13

2. Turn the adjusting screw as required:
 - If machine tracks to right, turn adjusting screw (A) clockwise one rotation.
 - If machine tracks to left, turn adjusting screw (A) counter-clockwise one rotation.
3. Test vehicle for proper tracking.
4. Repeat the steps 2 and 3 as necessary to adjust the tracking.
5. Return vehicle to service.

MX00654,00001DB-19-12NOV13

Adjusting Tracking

If the machine does not track in a straight line while going forward, adjust the tracking:

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

Service Steering & Brakes

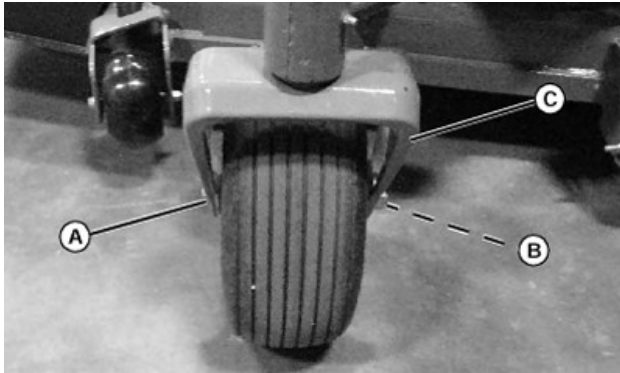
Removing and Installing Caster Wheels

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

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

Removing

1. Park machine safely. (See Parking Safely in the SAFETY section.)
2. Lift front of machine with a safe lifting device. (See Lifting Machine in the SERVICE MISCELLANEOUS Section.)



TCAL43550—UN—21MAR13

3. Remove hex nut (A) and wheel bolt (B).
4. Remove wheel from assembly yoke (C).

Installing

1. Install replacement wheel. Be sure bearing dust caps are installed.
2. Install wheel bolt (B) and hex nut (A).
3. Tighten nut and torque to specification.

Specification

Wheel Bolt—Torque. 37 Nm (27 Ft. lbs)

4. Lower machine.

MX00654,00001D7-19-12NOV13

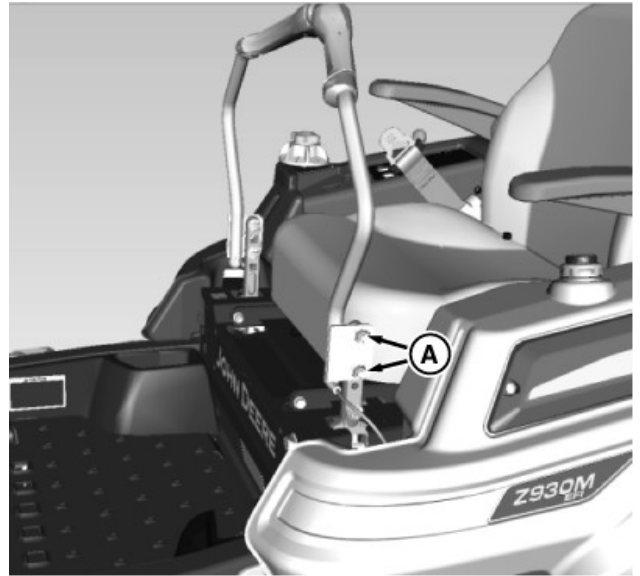
Checking and Aligning Motion Control Levers

Check Alignment

1. Park machine safely. (See Parking Safely in the SAFETY section.)
2. Move both motion control levers forward.
3. Check levers for equal alignment. If position of

control levers are unequal, an adjustment is necessary.

Alignment Procedure



TCT007082—UN—12NOV13

1. Loosen locknuts (A).
2. Slide both left and right motion control levers forward or rearward to desired position on control arm until levers are aligned.

NOTE: The control lever height can also be adjusted using this procedure. There are two height settings on the control arms.

3. Tighten locknuts.

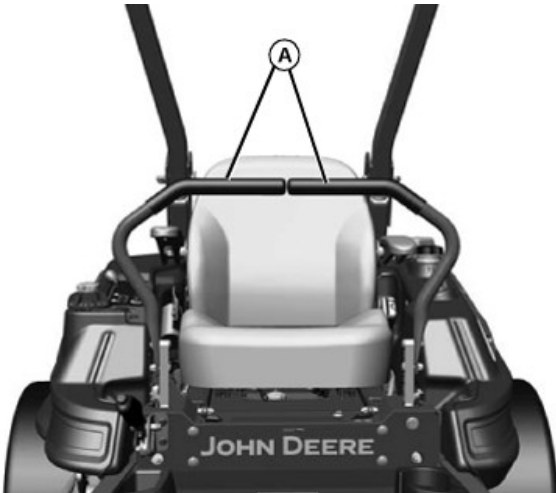
MX00654,00001DC-19-12NOV13

Checking and Adjusting Motion Control Levers Gap

Checking Alignment

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

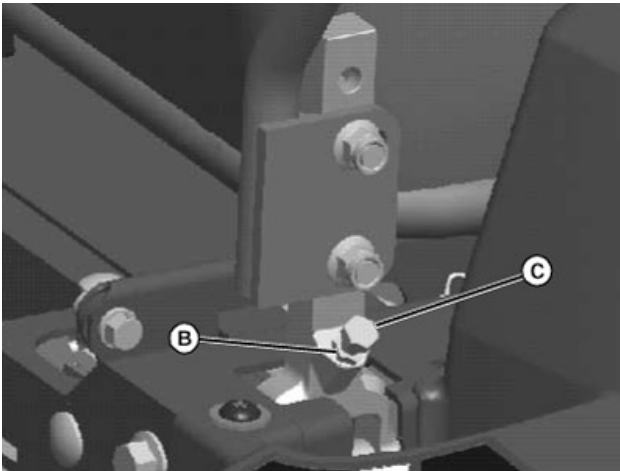
Service Steering & Brakes



TCAL43482—UN—21MAR13

2. Move motion control levers (A) inward to neutral position.
3. If the ends of the levers strike against each other while in the neutral position an adjustment is needed.

Adjustment Procedure



TCAL43553—UN—21MAR13

1. Loosen jam nuts (B).
2. Tighten left and right adjustment bolts (C) slightly to increase gap between handles. See the recommended gap specification for motion control levers.

Specification

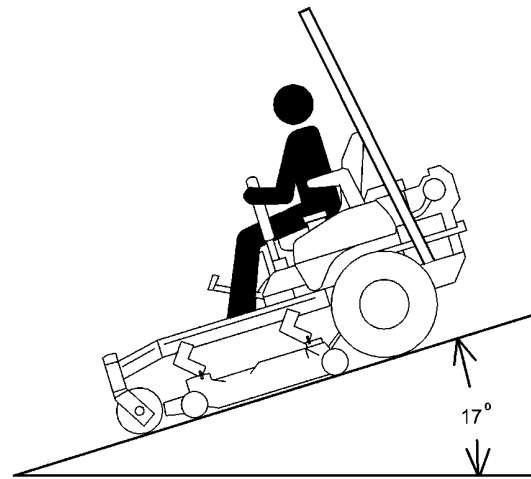
Motion Control Levers—Gap. 6-19 mm (1/4-3/4 in.)

3. Tighten jam nuts to hold adjustment bolts in place.

MX00654,00001DD-19-12NOV13

Checking and Adjusting Park Brake

Check Procedure—Brake Engaged



TCT005196—UN—28SEP12

1. Stop the machine on a maximum of 17° slope.
2. Lock park brake.

Results

If adjusted properly, the brakes must prevent the wheels from turning. If wheels turn, perform adjustment procedure.

Check Procedure—Brake Released

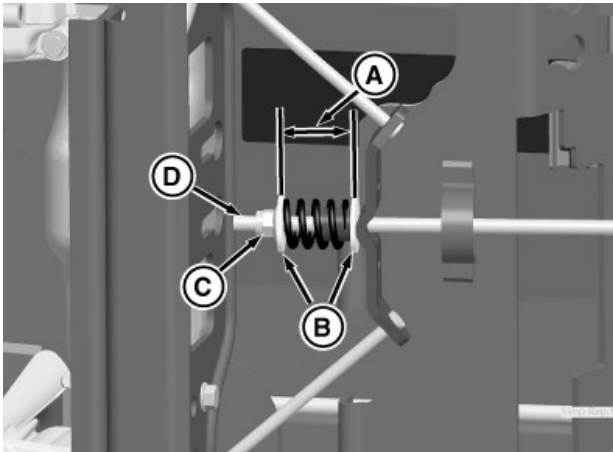
1. Park machine safely. (See “Park Machine Safely” in the Safety section.)
2. Start engine.
3. Unlock park brake.
4. Move both control levers forward.

Results

- If the brakes are adjusted properly, the drive wheels turn freely and the machine begins to travel forward. Adjust the brakes if needed.
- If the brakes are over-tightened, an audible hydrostatic whine occurs and the machine moves slowly. Adjust the brakes if needed.

Service Steering & Brakes

Park Brake Adjustment



TCT005197—UN—24SEP12

IMPORTANT: Right and left brakes must be adjusted evenly to ensure maximum brake performance and prevent uneven brake wear.

A park brake that is adjusted too tightly could damage the transmission or cause premature brake wear.

NOTE: Perform adjustment if neutral interlock system adequately restrains controls in neutral, but brake does not hold on slope.

1. Park machine safely. (See “Park Machine Safely” in the Safety section.)
2. Lock park brake.

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

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

IMPORTANT: Do not use rear grille as a lift point; using the grille could damage the frame.

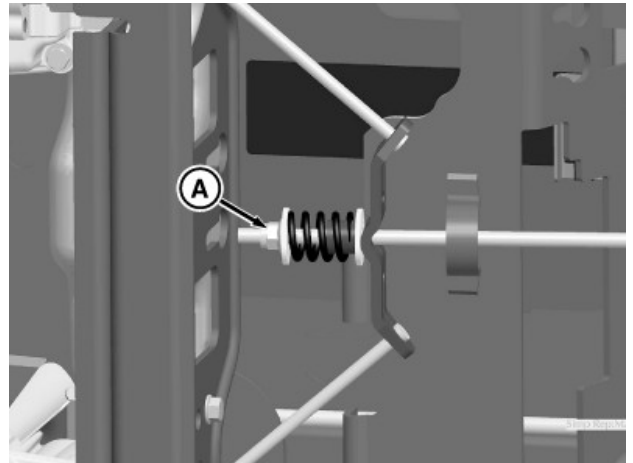
3. Lift rear of machine using a safe lifting device.
4. Measure the gap (A) between the two washers (B).
5. Tighten or loosen the brake equalizer adjustment nut (C) on park brake actuator rod (D) so that the gap (A) between the two washers meets specification:

Specification

Park Brake Washer
Gap—Length. 27—29 mm
(1-1/16—1-9/64 in.)

6. Test park brake.

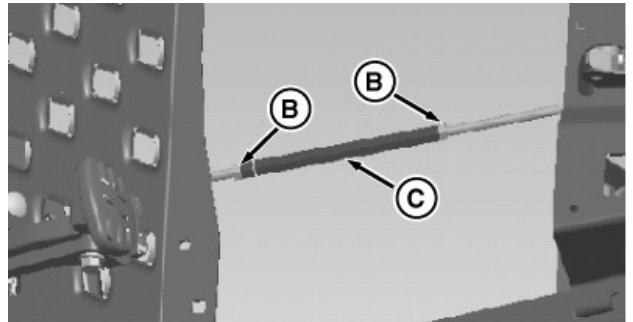
Neutral Interlock Adjustment—Brake Pedal



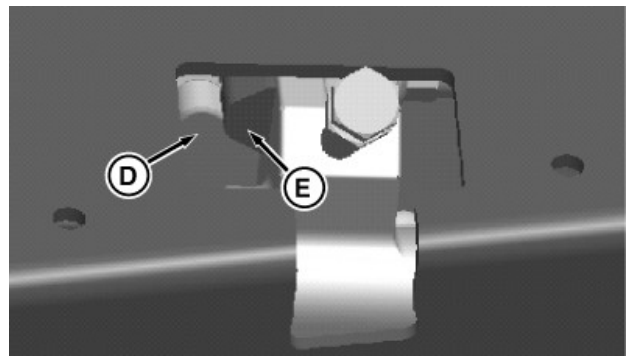
TCT005198—UN—24SEP12

NOTE: Perform adjustment only if neutral interlock system does not adequately lock control sticks in neutral, or if brake or steering system has been disassembled.

1. Park machine safely. (See “Park Machine Safely” in the Safety section.)
2. Unlock park brake.
3. Back off brake equalizer adjustment nut (A) to end of threaded rod, but do not remove.
4. Lock park brake.
5. Move control levers to the neutral lock position.



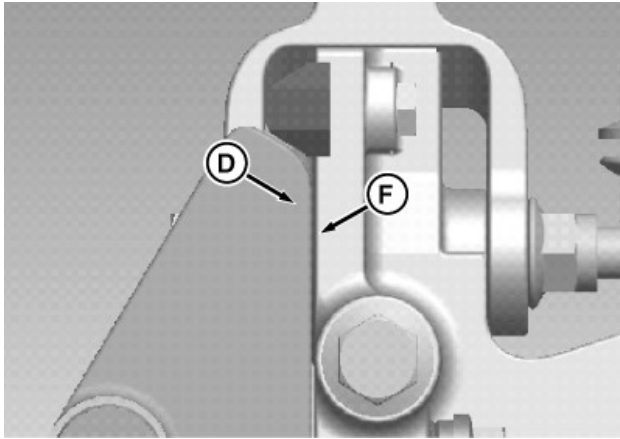
TCT005199—UN—05SEP12



TCT005200—UN—05SEP12

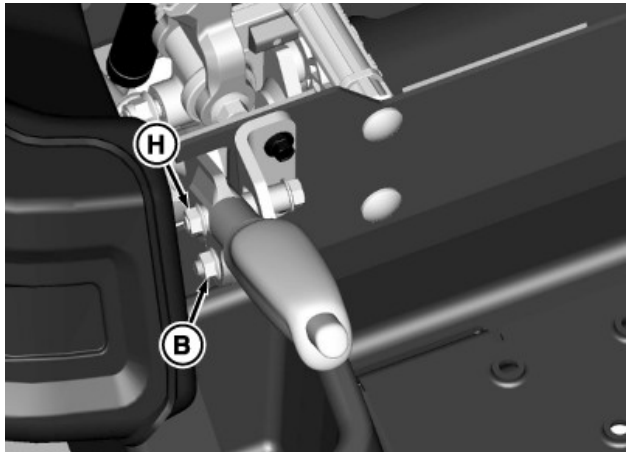
Control lever removed for clarity.

Service Steering & Brakes



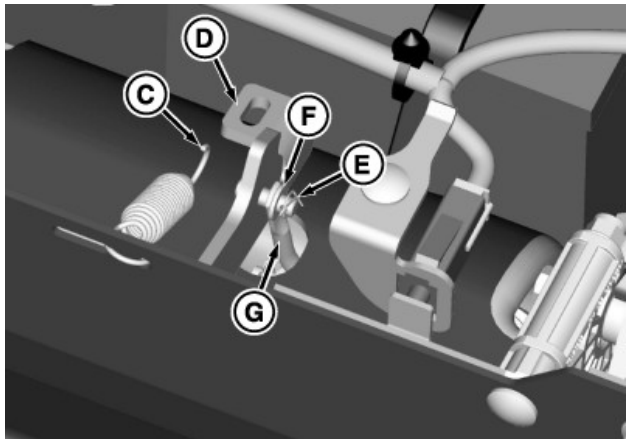
TCT005201—UN—05SEP12

Neutral Interlock Adjustment—Hand Brake



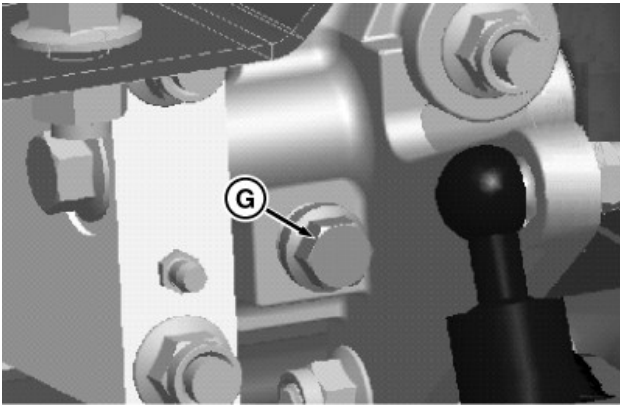
TCT006386—UN—25FEB13

6. Loosen nuts (B).
7. Adjust (shorten) turnbuckle (C) until cam (D) is fully engaged under control pivot wedge (E).
 - When adjusted properly, cam (D) and control surface (F) are parallel.
8. Verify that the control handle moves freely in and out of the slot in the frame before tightening nuts.
9. Adjust the equalizer nut. (See Park Brake Adjustment.)
10. Move control levers out to the neutral lock position.



TCT006387—UN—25FEB13

Components removed for clarity.



TCT005202—UN—05SEP12

11. Adjust control set screw (G) until you notice the control lever begin to move forward in the control slot.
12. Move control lever in and out to verify that it is not binding with the frame slot. Engage and release park brake.

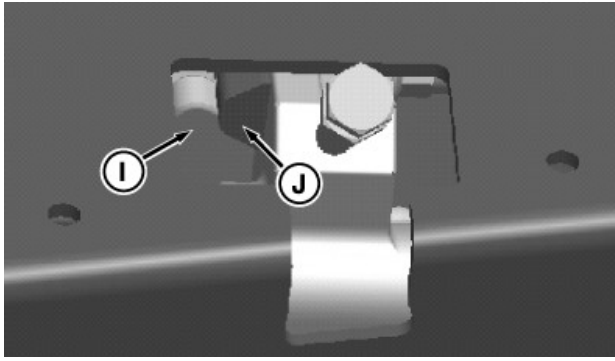
NOTE: Do not pull pedal back manually.

13. If brake pedal binds or does not fully release, back off the set screw one flat. Check pedal again for binding. If pedal still binds, back off the right-hand set screw by one flat. Repeat as necessary.

NOTE: Perform adjustment only if neutral interlock system does not adequately lock control sticks in neutral, or if brake or steering system has been disassembled.

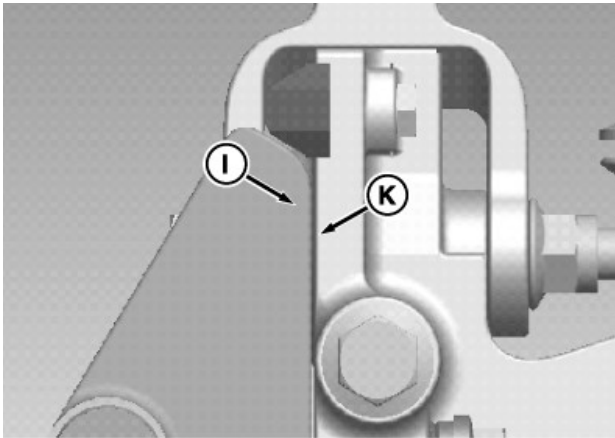
1. Park machine safely. (See “Park Machine Safely” in the Safety section.)
2. Tilt seat forward.
3. Loosen nut (B) on carriage bolt at the bottom of the park brake handle.
4. Disconnect end of spring (C) from the bracket (D).
5. Remove clip (E) and washer (F). Remove link (G) from the pin on the bracket.
6. Make sure that the bolt and nut (H) on park brake handle is tight.
7. Lock park brake.
8. Move control levers to the neutral lock position.

Service Steering & Brakes



TCT006390—UN—25FEB13

Control lever removed for clarity.



TCT006390—UN—25FEB13

9. Press down on the return shaft bracket (where the spring attaches), while simultaneously tightening the nut on the carriage bolt at the bottom of the handbrake.
 - Press down until cam (I) is fully engaged under control pivot wedge (J).
 - When adjusted properly, cam (I) and control surface (K) are parallel.
10. Attach the spring to the return shaft bracket.
11. Install the link onto the pin of the return shaft bracket. Secure with washer and clip.
12. Verify that the control handle moves freely in and out of the slot in the frame before tightening nuts.
13. Adjust the equalizer nut. (See Park Brake Adjustment.)
14. Move control levers out to the neutral lock position.

MX00654,0000051-19-17JUN15

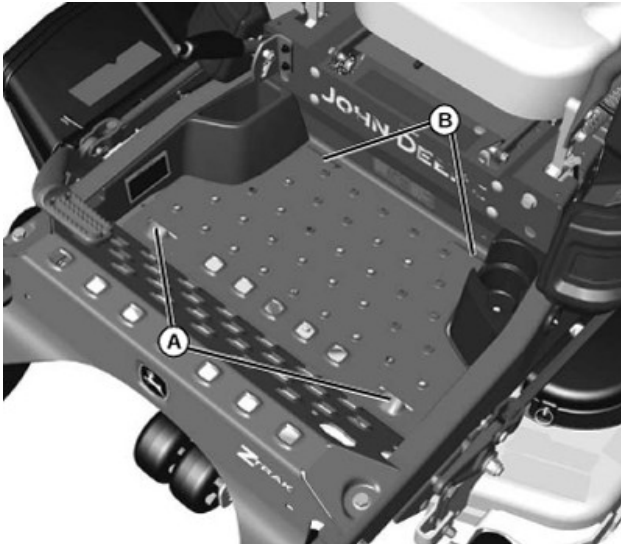
Service Mower

Removing and Installing Foot Plate

CAUTION: Always operate the mower with the foot plate installed. Operating with the foot plate removed can cause serious injury.

Removing Foot Plate

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



2. Rotate foot plate up using handles (A).
3. Remove foot plate.

Installing Foot Plate

1. Place tabs (B) of foot plate into slots in frame.
2. Lower foot plate.

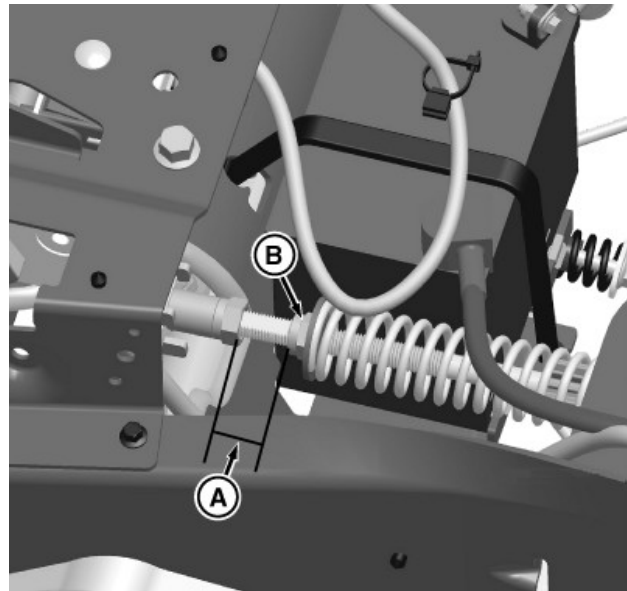
BB87125,0001226-19-04JUN13

Adjusting Deck Lift Spring Tension (E and M Series Machines)

NOTE: Deck lift spring tension is adjusted at the factory. If the effort required to raise or lower the mower deck is not satisfactory, an adjustment may be necessary.

Check Spring Tension

1. Park machine on a hard, level surface.
2. Stop engine and lock park brake.
3. Raise the mower deck to the transport position.
4. Lift operator seat and lock into position.



5. Measure length (A).

- Z900E Series Machines:

Machines without Material Collection System installed:

Deck	Recommended Factory Setting
48 , 54, 60 Inch	21 mm (0.8 in.)

Machines with Material Collection System Installed:

Deck	Recommended Factory Setting
48 Inch	57 mm (2.2 in.)
54 Inch	63 mm (2.5 in.)
60 Inch	74 mm (2.9 in.)

- Z900M Series Machine

Machines without Material Collection System Installed:

Deck	Recommended Factory Setting
72 Inch	31mm (1.2 in.)
60 Inch	21 mm (0.8 in.)
60 Inch - Mulch on Demand	18 mm (0.7 in.)
54 Inch	43 mm (1.7 in.)
54 Inch - Mulch on Demand	41 mm (1.6 in.)
48 Inch	31 mm (1.2 in.)
48 Inch - Mulch on Demand	21 mm (0.8 in.)

Machines with Material Collection System installed:

Deck	Recommended Factory Setting
72 Inch	65 mm (2.6 in.)
60 Inch	58 mm (2.3 in.)
60 Inch - Mulch on Demand	52 mm (2.0 in.)

Service Mower

54 Inch	87 mm (3.4 in.)
54 Inch - Mulch on Demand	78 mm (3.1 in.)
48 Inch	75 mm (3.0 in.)
48 Inch - Mulch on Demand	Demand 58 mm (2.3 in.)

Adjust Spring Tension

NOTE: Do not over tension the deck lift spring. If the spring is compressed too tightly, the mower deck will float too freely.

NOTE: Decrease deck lift spring tension if operating in rough terrain.

While looking from rear of machine:

- Turn hex nut (B) clockwise to increase deck lift spring.
- Turn hex nut (B) counterclockwise to decrease deck lift spring tension.

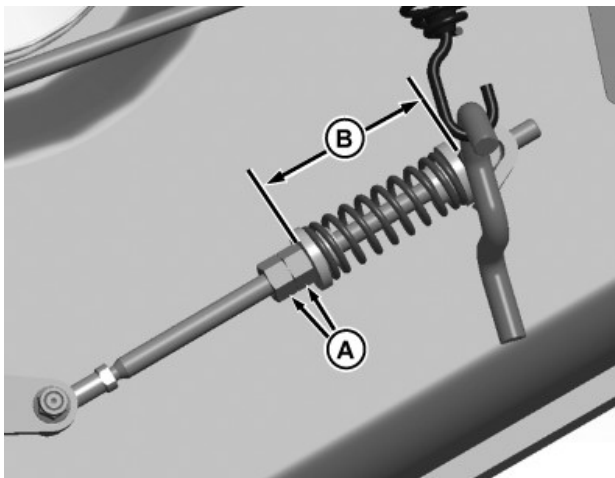
MX52301,0000EE8-19-13JUL17

Operating Mulch-On-Demand Mower Deck (MOD) If Equipped

Adjusting Spring Tension

NOTE: Only check if there are issues with the force when opening or closing baffles. Also check spring tension if the system is popping out of mulch/side discharge while mowing.

1. Park machine safely. (See Parking Safely in the SAFETY section.)
2. To adjust linkages, put deck in lowest position.
3. Put handle in mulch position.



TCT011894—UN—05NOV14

4. Measure tension spring. To adjust:

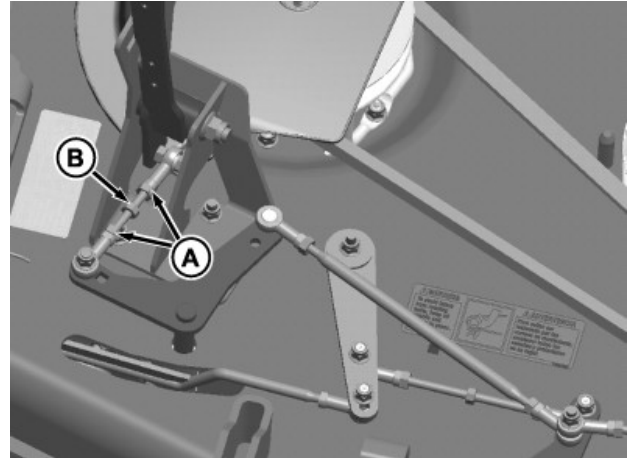
- Loosen nuts (A).

- Measure distance between outside of washers. Measurement (B) is 83 mm (3.3 in.)
- Tighten nuts (A).

Adjust Handle Force

NOTE: To adjust the handle position, adjust turnbuckle (B) by loosening nuts then turning turnbuckle.

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



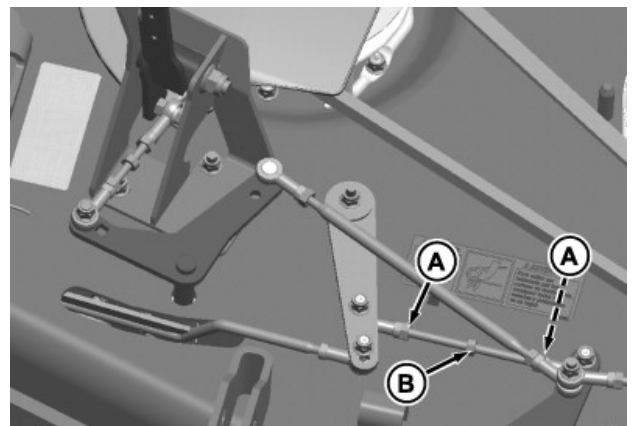
TCT011895—UN—25NOV14

2. Loosen two nuts (A).
3. Adjust turnbuckle (B) for handle position.
4. Tighten nuts (A).

Adjusting Discharge Baffle

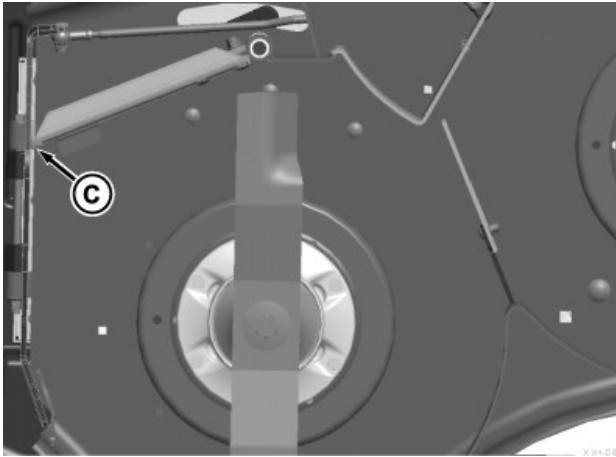
NOTE: Adjusting the discharge baffle helps with reducing windrowing in mulch mode.

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



TCT011751—UN—25NOV14

Service Mower



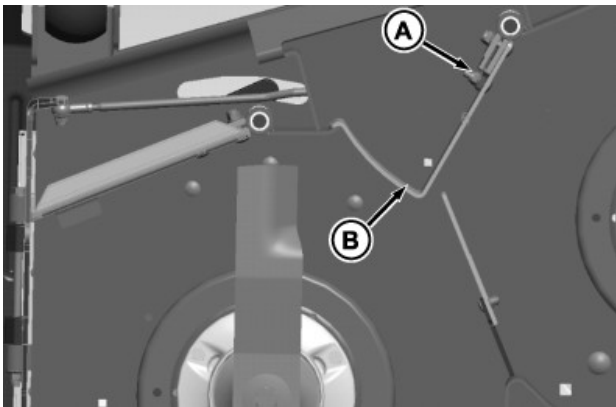
TCT011752—UN—25NOV14

2. Loosen two nuts (A).
3. Adjust turnbuckle (B) until gap (C) is closed.
4. Tighten nuts (A).

Adjusting Baffle Timing

NOTE: If the baffles are out of timing, or the system is not mowing correctly, check the following:

1. Put system in Mulch Mode.



TCT011904—UN—25NOV14

2. Loosen two nuts (A) slightly on each clamp for each baffle (B). Slide baffle closed until baffle hits the stop. Tighten nuts to 39 N·m (29 lb.-ft.).
3. Check discharge baffle gap and adjust if needed. (See “Adjusting Discharge Baffle” in this section.)

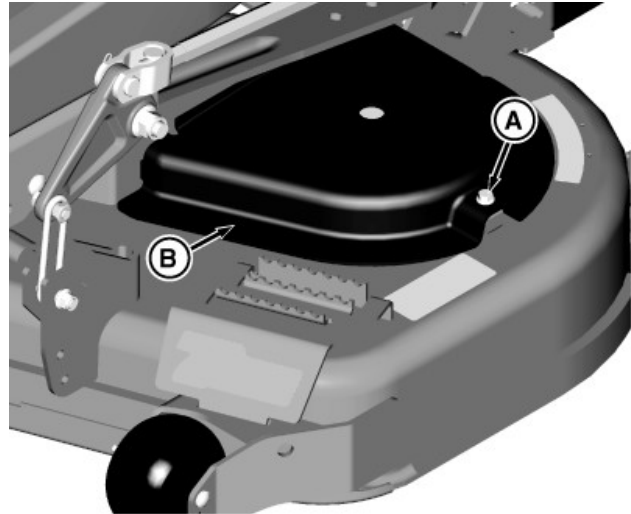
OJ02004,0000AEE-19-25NOV14

Removing and Installing Mower Deck Belt Shields

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

Removing Belt Shields

1. Park machine safely. (See Parking Safely in the SAFETY section.)
2. Lower mower deck to the lowest cutting height position.



TCT015376—UN—11JUL18

3. Remove bolt (A).
4. Remove belt shield (B).
 - Slide belt shield toward outside of deck to remove.
5. Repeat above steps for the other shield.

Installing Belt Shields

1. Slide belt shield (B) into position under frame.
2. Install bolt (A) and tighten securely.
3. Repeat above steps for the other shield.

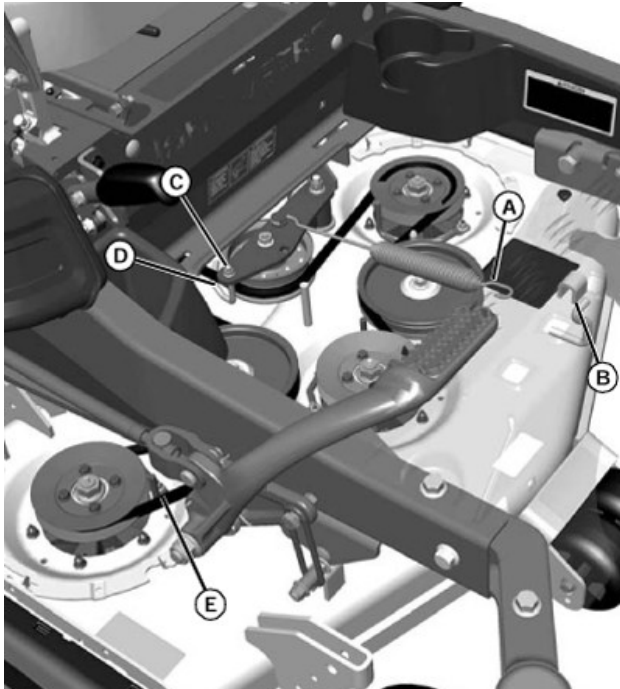
BB87125,0001227-19-13JUN18

Replacing Mower Deck Drive Belt

Removing Deck Drive Belt

1. Park machine safely. (See Parking Safely in the SAFETY section.)
2. Lower mower deck to the lowest cutting height position.
3. Remove mower deck belt shields.
4. Remove foot plate.

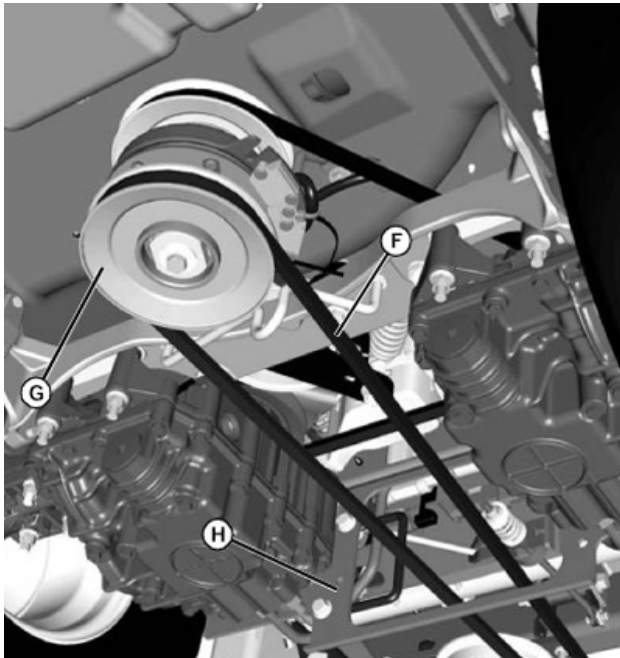
Service Mower



TCAL43561—UN—21MAR13

Frame parts shown removed for a more clarity only.

5. Remove spring (A) from stud (B) using spring puller.
6. Loosen hardware (C) from idler arm guide and spindle belt guide (D). Move belt guide (D) out of alignment slot and rotate it away from the pulley.
7. Remove belt (E) from the deck pulleys.

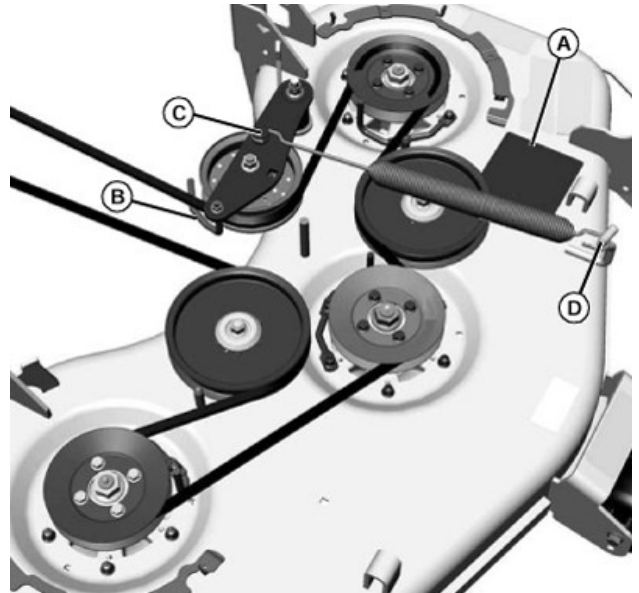


TCAL43562—UN—21MAR13

8. Remove belt (F) from PTO drive pulley (G) and through the window of the cross frame member (H).

Installing Deck Drive Belt

NOTE: If necessary, see drive belt installation label on mower deck.



TCAL43563—UN—21MAR13

1. Reinstall belt per belt installation label (A). Make sure there are no twists in the belt.
2. Make sure idler arm guide (B) is in its alignment slot and fully seated. Tighten guide hardware.
3. Install belt through the window of the cross frame member and into PTO drive pulley.
4. Make sure the spring is in the right orientation - long end toward (C). Hook short end on spring hook (D).
5. Install foot plate.
6. Adjust mower deck to a desired cutting height.

BB87125,0001228-19-04JUN13

Checking and Replacing Mower Blades

CAUTION: Do not work near raised mower deck unless it is safely supported.

Mower blades are sharp. Wrap blades or wear gloves when servicing.

Before performing any service function, wait for all moving parts to stop turning.

Disconnect battery or remove spark plug wire before making repairs.

IMPORTANT: When replacing mower blades always use genuine John Deere Service Parts.

NOTE: Only replace blades. Never straighten or weld them.

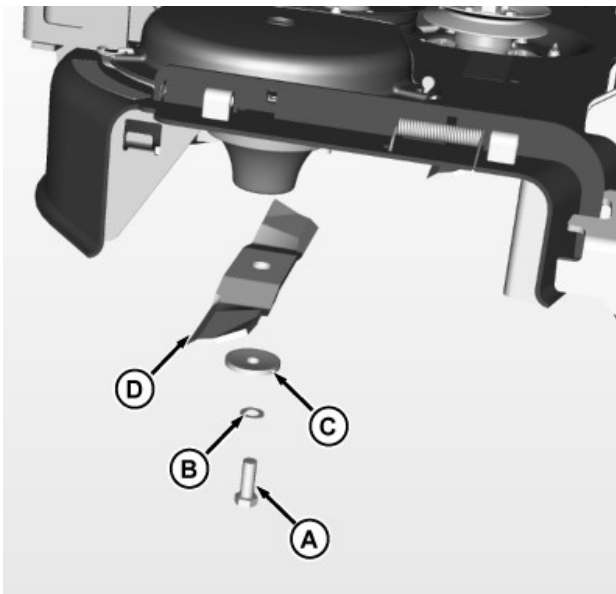
Service Mower

Checking Mower Blades

1. Park machine safely. (See Parking Safely in the SAFETY Section.)
2. Raise the mower deck to the transport position. (Also the 13.9 cm (5.5 in.) cutting height position.)
3. Raise front of machine with a safe lifting device. (See Lifting Machine in the SERVICE MISCELLANEOUS Section.)
4. Check mower blades:
 - Make sure that mower blades are sharp and free of any damage.
 - Inspect blades; sharpen/balance or replace as necessary.

Replacing Mower Blades

1. To prevent mower blades from spinning, use a wooden block.



TCT011992—UN—18NOV14

2. Remove screw (A), hardened washer (B), large concave blade washer (C), and blade (D).
3. Install replacement blade:

- Blade wing must face toward top of mower deck.

IMPORTANT: 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. 122 N·m (90 lb-ft)

4. Lower machine.
5. Adjust mower deck to a desirable cutting height.

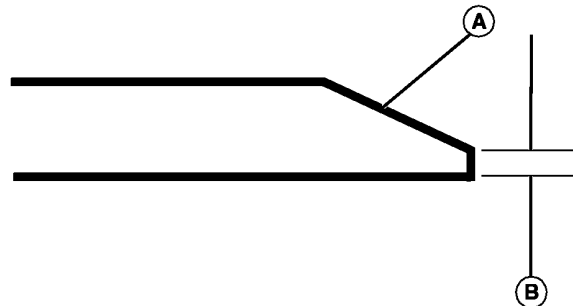
OUC02004,0000B05-19-20NOV14

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)

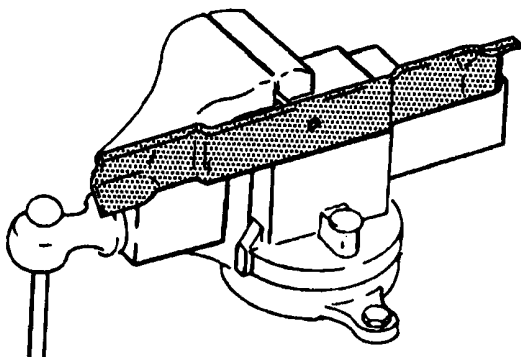
- Balance blades before installing.

MX00654,000039E-19-05JUL17

Balancing Blades

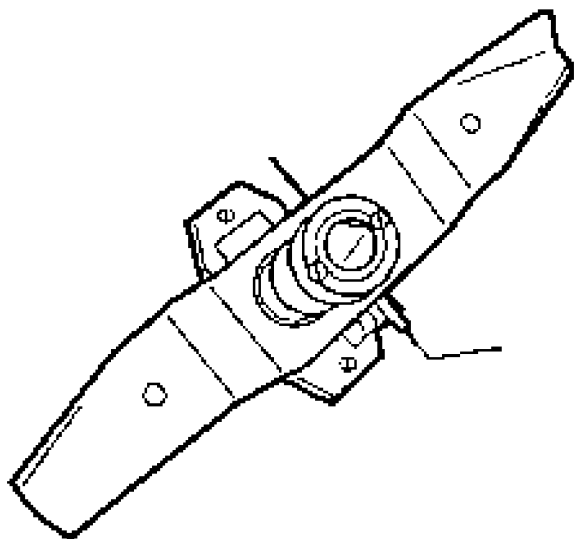
CAUTION: Avoid injury! Blades are sharp. Always wear gloves when handling blades or working near blades.

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.



TCT011317—UN—18JUN15

For your convenience, a blade balancing tool (B1SB9788) is available from your John Deere dealer.

MX00654,0000054-19-18JUN15

Service Electrical

Electrical

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

MP47322,00F466E-19-15MAR13

Service the Battery Safely



MXAL42869—UN—09APR13

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

To prevent the battery from exploding:

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

MP47322,00F466F-19-13JAN15

Checking the Battery (Sealed Batteries)

NOTE: Do not attempt to open, add fluid or service battery. Any attempt to do so will void warranty.

- Keep battery and terminals clean.
- Keep battery bolts tight.
- Keep small vent holes open.

IMPORTANT: This battery comes fully charged. If the machine is not used by the service expiration date indicated on the battery, charge the battery.

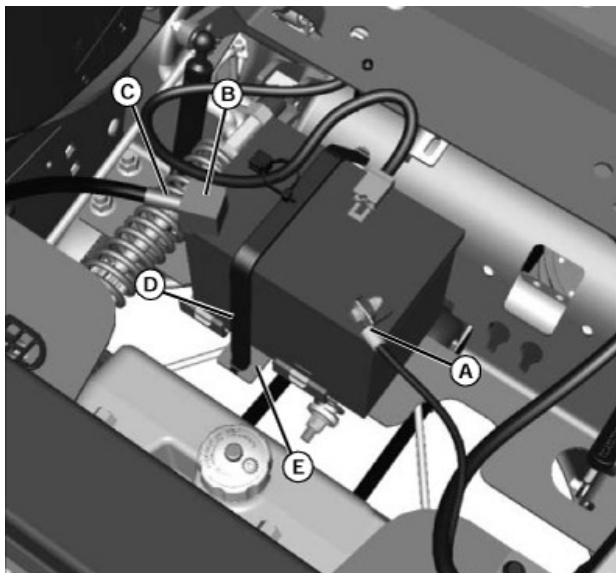
- Recharge, if necessary, at 6-10 amperes for 1 hour.

BB87125,000122E-19-04JUN13

Removing and Installing Battery

Removal

1. Park machine safely. (See Parking Safely in the SAFETY section.)
2. Raise and secure operator seat.



TCAL43568—UN—21MAR13

3. Disconnect negative (-) battery cable (A).
4. Remove red cover (B), and disconnect positive (+) battery cable (C).
5. Remove rubber strap (D) from frame tab (E).
6. Remove battery from machine.

Installation

Installation is done in the reverse order of removal.

- Clean all electrical connections.
- Tighten cables, install red cover on positive (+) cable, and install rubber strap.

BB87125,000122F-19-27FEB15

Cleaning Battery and Terminals

1. Park machine safely. (See Parking Safely in the SAFETY section.)
2. Disconnect and remove battery.
3. Wash battery with solution of four tablespoons of baking soda to one gallon of water. Be careful not to get the soda solution into the cells.
4. Rinse the battery with plain water and dry.
5. Clean terminals and battery cable ends with wire brush until bright.
6. Install battery.

Service Electrical

7. Attach cables to battery terminals, beginning with the positive cable, using washers and nuts.
8. Apply spray lubricant to terminal to prevent corrosion.

MP47322,00F4671-19-15MAR13

Using Booster Battery

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

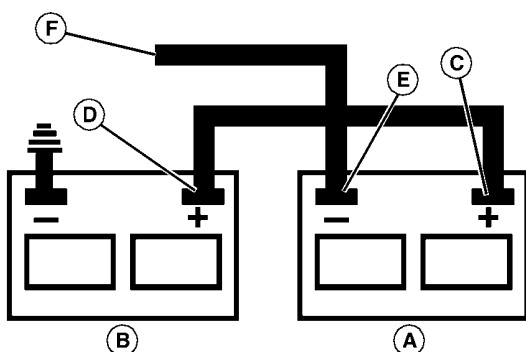
To prevent the battery from exploding:

- Do not smoke or have open flame near battery.
- Wear eye protection and gloves.
- Do not jump-start or charge a frozen battery. Warm battery to specification.

Specification

Battery—Temperature. 16°C (60°F)

- Do not connect the negative (-) booster cable to the negative (-) terminal of the discharged battery. Connect at a good ground location away from the discharged battery.



MXAL42872—UN—09APR13

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

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

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

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

4. Connect the other end (F) of negative (-) booster cable to a metal part of the disabled machine engine block away from battery.
5. Start the engine of the disabled machine and run machine for several minutes.
6. Carefully disconnect the booster cables in the exact reverse order: negative cable first and then the positive cable.

MP47322,00F4672-19-05JUN15

Replacing Fuses

IMPORTANT: Avoid Damage! When replacing fuses, be sure the replacement fuse has the same fuse rating and is installed in the correct location. Failure to do so could result in damage to the electrical harness and/or electrical components.

NOTE: The fuses are located on the left side of the engine compartment next to the starter.

Your machine utilizes several fuse options depending upon your Machine Model Series and Engine Model.

- All machines use one 20 amp fuse to protect the machine electrical system.
- Z900R Series use an additional 30 amp fuse to protect the machine lift system.
- Kohler carburetor engines have one 30 amp fuse to protect the engine charging system.
- Kohler EFI engines use two additional 10 amp fuses. One to protect EFI sensors one to protect MIL operations.
- Kawasaki FX730V engines use one fusible link to protect the engine charging system.

To remove fuse:

1. Remove cover from fuse holder and remove fuse.
2. Check metal clip in fuse window and discard fuse if clip is broken.
3. Install new fuse and place cover back onto fuse holder.

MX52301,0000F47-19-25MAY16

Diagnostic Light Check (All Models Except Z915E)

The electronic control unit provides a diagnostic light to help the operator identify operational and electrical problems by flashing a diagnostic code.

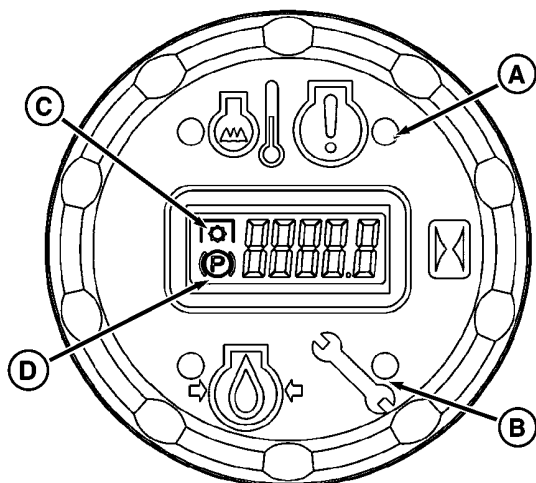
Service Electrical

Diagnostic “Real Time” Codes

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

NOTE: The operator can be seated on the machine or standing next to the machine.

2. Turn the key to the START position and release key to RUN mode.



TCT011743—UN—22NOV14

- A—Engine Diagnostic Indicator Light (A)** is used for Z945M EFI, Z955M EFI and Z955R EFI engines only. If active engine diagnostic code is present, light is on. See your John Deere dealer.
- B—Vehicle Diagnostic Indicator Light (B)** flashes a diagnostic code to help the operator identify operational and electrical problems.
- C—PTO Indicator Light (C)** flashes a diagnostic code to help the operator identify if PTO does not engage with PTO switch activated (raised).
- D—Park Brake Indicator Icon (D)** is used to help the operator identify if the Park Brake is engaged. Icon is visible with Park Brake engaged.

DIAGNOSTIC CODES*	
INTERLOCK VIOLATIONS	REAL-TIME FAULTS
1-2 BRAKE NOT ENGAGED	3-1 OVER VOLTAGE
1-3 PTO/MOW ENGAGED	3-3 WEAK BATTERY OR STARTER SYSTEM ISSUE
2-5 STARTER THERMAL PROTECT MODE 60-second Cool-Down Needed	3-7 OUTPUT FAULT DETECTED Check Engine Harness
2-6 ENGINE OVER TEMP PTO Disabled	
*Abbreviated list. See Operator's Manual for full list of codes & guidelines.	
CODIGOS PARA DIAGNOSTICO*	
INFRACCIONES DE INTERBLOQUEO	FALLAS DE TIEMPO REAL
1-2 FRENO NO APLICADO	3-1 SOBREVOLTAJE
1-3 TDF/CORTE ENGANADO	3-3 BATERIA DESCARGADA O PROBLEMA CON ARRANCADOR
2-5 MODO DE PROTECCION TERMICA DE ARRANCADOR Requiere 60 segundos de enfriamiento	3-7 FALLA DE SALIDA DETECTADA Revisar arnés del motor
2-6 SOBRETEMPERATURA DEL MOTOR TDF desactivada	
*Lista abreviada. Consultar el Manual del operador para una lista completa de códigos y pautas.	

TCT011744—UN—22NOV14

Diagnostic code label is on right side console beside operators seat.

3. If starter does not engage, use the diagnostic light (B) and diagnostic codes (E) to diagnose the problem.

- **BRAKE NOT ENGAGED (1-2)** diagnostic code: one flash, a short pause and two additional flashes. This code sequence indicates that the park brake switch has not been activated. Lock park brake to start engine.
- **STARTER THERMAL PROTECT MODE (2-5)** diagnostic code: two flashes, a short pause and five additional flashes. This code sequence indicates that the module has started a 60 second cool-down period to prevent the starter from overheating. Turn key switch to OFF position and let the starter cool down for at least 60 seconds before making another attempt to start engine.

4. Once the unit has started and/or while operating the machine, the following codes may occur:

NOTE: For safety, the PTO does not engage with the park brake locked and/or operator out of seat.

- **PTO/MOW ENGAGED (1-3)** diagnostic code: one flash, a short pause and three additional flashes. This code sequence can occur when the operator gets out of the seat while operating the machine with the PTO engaged. This code can be reset by turning off the PTO (knob) switch.
- **OVER VOLTAGE (3-1)** diagnostic code: three flashes, a short pause and one additional flash. This code sequence indicates that the vehicle control unit has detected a voltage higher than normal in the electrical system. If the problem is severe, the control unit may disable the PTO output to the PTO clutch. Check electrical wiring for loose connections, specifically the battery

Service Electrical

positive and negative, starter, and frame ground on engine block.

- **WEAK BATTERY OR STARTER SYSTEM ISSUE (3-3)** diagnostic code: three flashes, a short pause and three additional flashes. This code sequence indicates that the battery may have become too weak to turn the starter or that the vehicle control unit has detected an excessive current draw. Recharge the battery. If this does not remove the code, check that all starter circuit harness connections are secure and not “shorted” to ground.
- **OUTPUT FAULT DETECTED (3-7)** diagnostic code: three flashes, a short pause and seven additional flashes. This code sequence indicates that the vehicle control unit has detected an electrical problem in the engine wiring harness. The vehicle control unit's internal “resettable” fuse had tripped to protect the system. This will remain tripped until the fault is removed. Check engine wiring harness for pinched or frayed wires.

5. Refer to the troubleshooting section for additional diagnostic codes. If further diagnostic assistance is needed, refer to the Technical Manual or consult your John Deere distributor.

Diagnostic Test Mode

This is a troubleshooting mode that can be used to check the integrity of the switches, sensors, wiring, and hardware of the vehicle control unit. The diagnostic information is generated in the vehicle control unit and displayed through a flashing diagnostic code on the display module. Please refer to the troubleshooting section of this manual for more information.

MX00654,0000379-19-07JUN19

Drive Clutch Adjustment Procedure

NOTE: On a Z915E with a 48 or 54 inch mower deck, the clutches are not adjustable and will need to be replaced.

If drive clutch has worn to the extent that the existing air gap is too large to allow for complete clutch engagement, the brake shim can be removed to restore air gap and allow the clutch to continue to function properly.

NOTE: Verify that proper voltage and current are supplied to the clutch before proceeding.

1. Clean out any debris from under and around the entire clutch assembly.



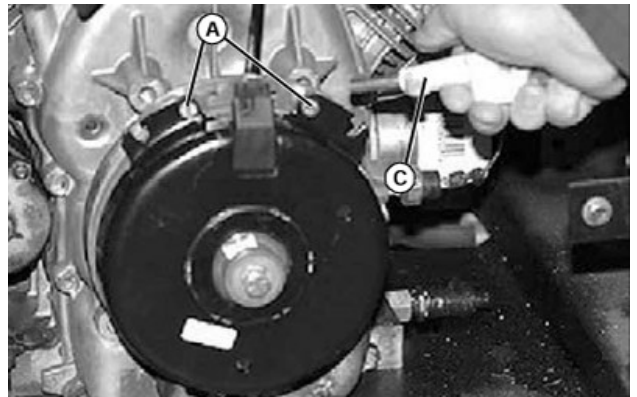
TCAL43573—UN—21MAR13

2. Loosen both M6 brake mounting bolts (A) 1/2 to 1 full turn.



TCAL43574—UN—21MAR13

3. Using needle nose pliers, or by hand, take hold of the tab and remove shim (B) (do not discard shim until proper clutch function has been confirmed).

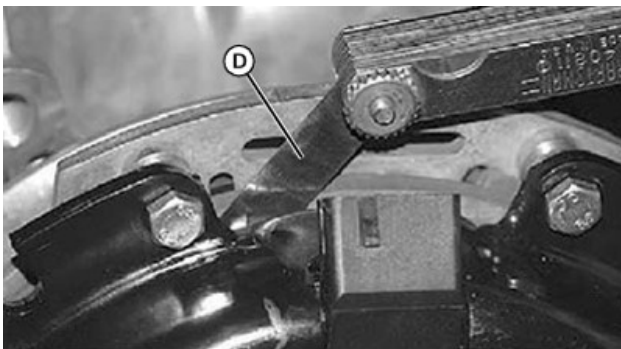


TCAL43575—UN—21MAR13

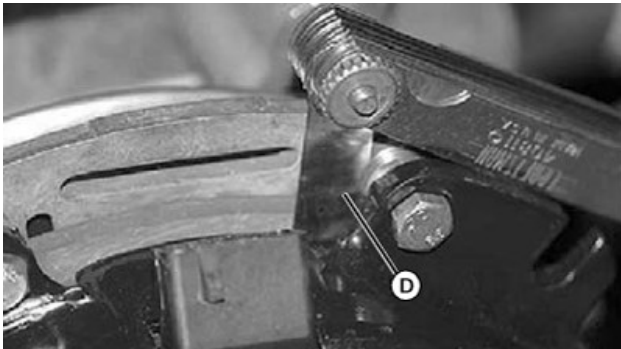
4. Using a pneumatic line (C), blow out any debris from under the brake pole and around the aluminum spacers.
5. Tighten each M6 brake mounting bolts (A) to specification

Specification

Brake Mounting Bolts—Torque. 13 N·m (115 lb-in.)



TCAL43576—UN—21MAR13



TCAL43577—UN—21MAR13

6. Using a 0.010 thick feeler gage (D), verify that a gap is present between the rotor and armature face on both sides of the brake pole as shown above.

- If the gap is less than 0.010, then reinstall the shim. Consult your local John Deere Dealer for service.
- If sufficient gap is present, then proceed to safety check outlined below.

7. Perform safety check:

- Observe deck from position on mower seat with engine running to be certain deck is not engaged with PTO switch off and clutch off. From same position, engage and disengage the PTO switch ten consecutive times to ensure proper function of the clutch.
- If clutch still does not engage, then consult your local John Deere Dealer for service.

MX52301,0000EEA-19-23MAR16

Service Miscellaneous

Using Proper Fuel and Stabilizer

IMPORTANT: Avoid damage! 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 that 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.

MP47322,00F4674-19-26MAY15

Filling Fuel Tank

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

- Shut engine off before filling fuel tank.
- Allow engine to cool before refueling.
- Do not smoke while handling fuel.
- Keep fuel away from flames or sparks.
- Fill fuel tank outdoors or in ventilated area.
- Clean up spilled fuel immediately.

- To prevent static electric discharge, use a clean, approved non-metal container.

IMPORTANT: Avoid damage! Dirt and water in fuel causes engine damage:

- Clean dirt and debris from the fuel tank opening.
- Use clean, fresh, stabilized fuel.
- To keep condensation out of the fuel tank, fill the fuel tank at the end of operation each day.
- If using a funnel, make sure it is plastic and has no screen or filter.

To prevent condensation and freezing during cold weather, fill fuel tank at the end of operation each day.

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 it clicks.

MP47322,00F4675-19-05JUL17

Checking Tire Pressure

 **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.
- Make sure that all tires are inflated to the recommended pressure, especially when operating on slopes. Low pressure can cause machine to become unstable on slopes.
- 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.

1. Check tires for damage.
2. Check tire pressure with an accurate low-pressure gauge. (See Specifications section for correct tire pressure.)

Service Miscellaneous

3. A lower pressure will improve traction and performance depending on turf conditions or if transport areas have steep inclines.
4. Add or remove air, if necessary.

MP47322,00F4677-19-05JUL17

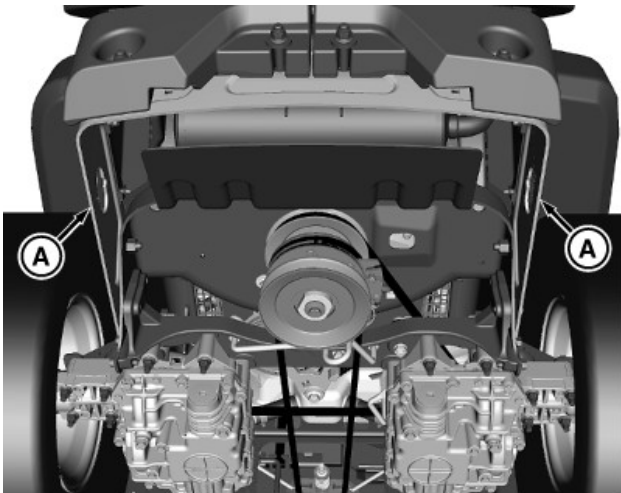
Lifting Machine

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

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

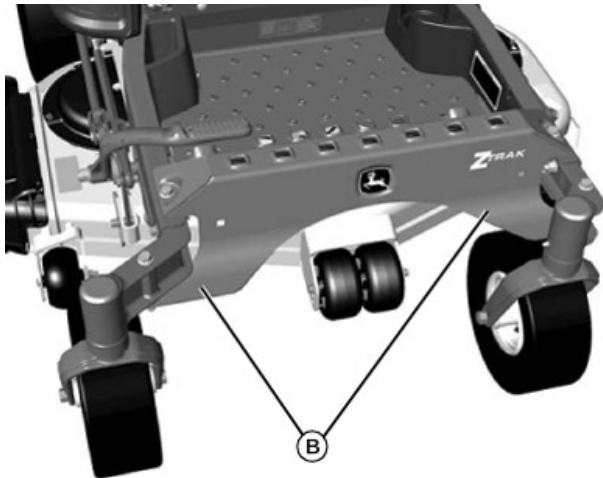
- Use a safe lifting device rated for the load to be lifted.
- Lower machine onto jack stands or other stable supports and block wheels before servicing.

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



TCT012789—UN—09JUN15

2. Safely lift rear of machine at vertical frame points (A). Place jack stands or other stable supports near lift locations.
3. If only lifting rear of machine, block front wheels remaining on ground to avoid movement of machine.



TCAL43579—UN—21MAR13

4. Safely lift front of machine at bottom of plates (B). Place jack stands or other stable supports near lift locations.
5. If only lifting front of machine, block rear wheels remaining on ground to avoid movement of machine.
6. To lower machine, lift front and/or rear of machine, and remove jack stands or supports. Lower machine.

BS62576,0001A89-19-08JUN15

Removing and Installing Rear Drive Wheels

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

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

Removing:

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

Service Miscellaneous



TCAL43580—UN—21MAR13

2. Slightly loosen four wheel nuts (A).
3. Lift machine with a safe lifting device. (See Lifting Machine in the SERVICE MISCELLANEOUS Section.)
4. Remove wheel nuts.
5. Remove wheel.

Installing:

1. Install new wheel.
2. Install and tighten alternately until recommended torque value is reached.
 - Tighten nuts to specification.

Specification

Wheel Nuts—Torque. 100 N·m (75 lb-ft.)

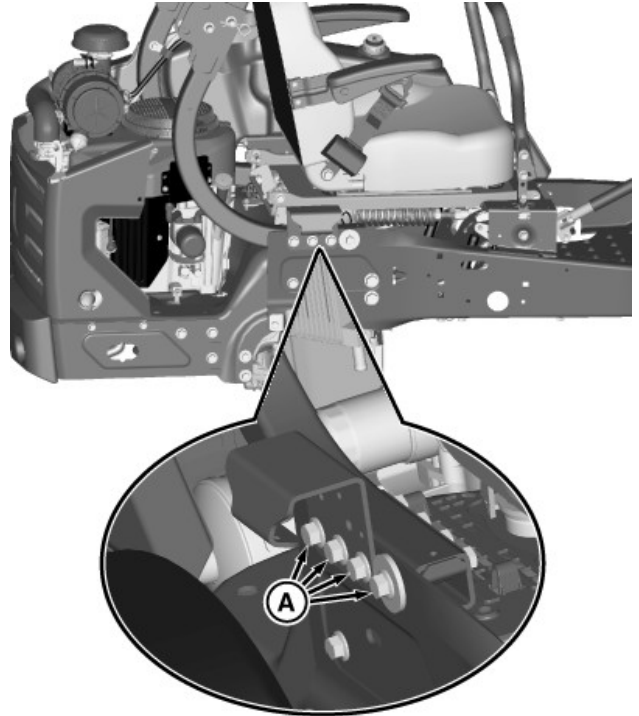
3. Lower machine.

BB87125,0001239-19-04JUN13

Checking ROPS Hardware

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

NOTE: When tightening ROPS hardware, tighten the bolt head side and not the nut.



TCT013634—UN—24MAR16

2. Tighten the four ROPS attaching bolts (A) on each side of ROPS to specification.

Specification

ROPS Attaching Bolts—Torque. 115 N·m (85 lb-ft)

MX52301,0000EF9-19-24MAR16

Cleaning Plastic Surfaces

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

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

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

Service Miscellaneous

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

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

MX00654,0000005-19-26MAY15

Cleaning and Repairing Metal Surfaces

Cleaning:

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

Repairing Minor Scratches (surface scratch):

1. Clean area to be repaired thoroughly.

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

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

Repairing Deep Scratches (bare metal or primer showing):

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

MP47322,00F467A-19-26MAY15

Troubleshooting

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	• Park brake unlocked or not adjusted correctly. • PTO is engaged. • Safety interlock switch(es) not engaged. • Starter motor or solenoid defective. • Battery weak or discharged (Low electronic control unit voltage). • Engine seized. • Faulty electronic control unit or sensor(s) • Loose or damaged wiring or connections. • Empty fuel tank. • Air filter restricted. • Clogged fuel tank filter, fuel line or vent line. • Defective fuel pump(s). • Faulty ignition coil/high tension lead. • Poor compression. • Defective head gasket. • Worn piston/piston rings stuck or not seated. • Worn or burned valves. • Worn cylinder bore. • Engine overheated. • Flywheel key sheared. • Intake system leak. • Pulse fuel pump vacuum leak. • Key switch not in proper position or faulty. • Stale or improper fuel / fuel level. • Plugged fuel filter. • Plugged air intake filter. • Spark plug wire is loose or disconnected. • Spark plug not gapped correctly. • Blown fuse. • Electrical problem - dead battery. • Choke adjusted incorrectly. See your John Deere dealer.
Engine Will Not Slow Idle	• Carburetion problems. See your John Deere dealer. • Bent or kinked throttle cable. • Bent governor control. • Incorrect governor idle control.
Engine Runs Rough or Stalls	• Plugged fuel filter. • Plugged air intake system. • Stale or improper fuel / fuel level. • Spark plug not gapped correctly. • Replace spark plug. • Choke adjusted incorrectly. See your John Deere Dealer.
Engine Knocks	• Engine oil level low. • Reduce load (Slower ground speed). • Fuel is bad. Fill tank with fresh fuel, correct octane. • Idle speed too slow. • Hydraulic lifter malfunction (For Z945M EFI, Z955M EFI and Z955R). • Internal wear or damage.
Engine Overheats	• Low oil level. • High oil level. • Warped cylinder head. • Worn or burned valves, or improper clearance. • Faulty electronic control unit. • Broken valve spring. • Defective head gasket. • Do not operate at slow idle. Operate at fast idle. • Cooling air intake screen is dirty. • Excessive engine load. • Air intake, cooling fins, oil cooler or cooling shrouds clogged. • Plugged air intake filter. • Operating at too fast ground speed for conditions.
Engine Lacks Power	• Plugged air intake system.

Troubleshooting

If	Check
	• Plugged fuel line or filter. • Improper type of fuel. Drain tank and fill with correct fuel. • Clean cooling fins to help prevent overheating. • Replace spark plug. • Stale fuel. • Dirty fuel injectors (Z945M EFI, Z955M EFI and Z955R). • Weak or faulty spark plug(s). • Throttle body loose or leaking at O-ring (Z945M EFI, Z955M EFI and Z955R). • Throttle body and throttle shaft worn (Z945M EFI, Z955M EFI and Z955R). • Low compression. • Worn or burned valves, or improper clearance. • Faulty ignition coil or high tension lead(s). • Warped cylinder head.
Engine Uses Too Much Oil	• Find and correct oil leaks. • Incorrect engine oil. • Plugged oil filter. • Plugged air intake filter. • Crankcase overfilled. • Clogged breather or broken breather reed. • Failed head gasket. • Worn or broken piston rings. • Worn valve stem(s), valve guide(s), and/or valve stem seals. • Worn cylinder bore(s). • Debris around cooling system.
Engine Backfires Through Muffler	• Throttle should be set at 1/2 throttle before turning off machine. • Exhaust leak. • Warped cylinder head. • Defective head gasket. • Intake valve burned or sticking.
High Fuel Consumption	• Improper type of fuel. • Plugged air intake system. • Operating at too fast ground speed for conditions. • Improper valve clearance. See your John Deere Dealer. • Restricted air intake system.

MX00654,000037A-19-19MAY19

Electrical System

If	Check
Starter Will Not Work	• Blown fuse. • Loose or corroded battery or ground connections. • Loose harness or ground connections to starter. • Park brake switch faulty or not adjusted properly. (See your John Deere Dealer) • Key switch or starter faulty. (See your John Deere Dealer) • Check that park brake is in proper position. • Low battery power - charge battery.
Battery Will Not Charge	• Loose or corroded battery or ground connections. • Dead cell in battery.
PTO Switch Does Not Work	• Blown fuse. • Failed switch. • Bad clutch. • Clutch air gap too large. Remove shim. • Failed regulator/rectifier. • Loose PTO clutch or switch connections. • Loose harness or ground connections.
Starter Turns Slowly	• Loose or corroded battery or ground connections. • Low battery power - charge battery.

Troubleshooting

	• Engine oil viscosity too heavy. • Transmission linkage adjustment problem or failure.
--	--

BB87125,000123E-19-07JUN13

Diagnostic Real-Time Codes (Z900M and Z900R Series)

NOTE: For further assistance with all Diagnostic Codes, refer to the Technical Manual and/or consult your John Deere dealer.

Electrical System "Interlock" Violations			
Real-Time Diagnostic Trouble Code Description	Diagnostic Code	Notes	Action Required to Remove Code:
Brake Not Locked	1 - 2	This code can occur under the following conditions: 1. When the engine is trying to be started without the brake pedal locked. NOTE: Machine will automatically shut down if the following occurs: 2. When the engine is running and operator gets out of seat without the brake locked.	• Verify the Park brake is locked.
PTO/Mow Engaged	1 - 3	NOTE: This will cause the PTO to be disabled. This code will occur only when getting out of the seat while operating the machine with the PTO engaged.	NOTE: For Safety, the PTO can not be engaged with the park brake locked or with the operator out of the seat. • Turn key switch to the OFF position.
Crank Time Exceeded (20 second limit)	2 - 4	This code will let the operator know the maximum cranking time of 20 seconds per crank has been exceeded.	• Return the key to the OFF or RUN
Starter Thermal Protect Mode, 60-second Cool- Down Needed	2 - 5	This code indicates that the module has started a 60- second cool-down period to prevent the starter from overheating.	• Turn the key switch to the OFF position and let the starter cool down for at least 60 seconds before making another attempt to start the engine.
Engine Oil Pressure Low, PTO Disabled (Z900R Series Only)	2 - 7	This code indicates that the internal engine oil pressure is low and to eliminate any extra load on the engine, the vehicle control unit will shut down the PTO circuit. The PTO will be disabled and not engage if the key switch is in the RUN and/or START position for 10 seconds or longer and the engine has not been started. Turn the key switch to the OFF position and then to the START position and start the engine within 10 seconds to allow the PTO to engage.	• Turn key switch to the OFF position • Check oil level in the engine. • Check oil pressure sender on the engine. • Check the harness wires from the oil pressure sender to the vehicle control unit, insure good connections.

Electrical System 'Fault' Violations

NOTE: For All "Fault" codes it is important to first check battery, starter, and ground connections.

- Codes and instructions as follows.

Electrical System Diagnostic Trouble Code Description	Diagnostic Code	Notes	Action Required to Remove Code:
---	-----------------	-------	---------------------------------

Troubleshooting

Electrical System 'Fault' Violations

NOTE: For All "Fault" codes it is important to first check battery, starter, and ground connections.

Over Voltage	3 - 1	This code indicates that the vehicle control unit has detected a voltage higher than normal in the electrical charging system.	Inspect the electrical harness for loose connections, specifically the battery positive and negative, starter, and frame ground (on engine block).
Low Voltage	3 - 2	This code will let the operator know that the battery is being depleted.	Check charging system connections.
Weak Battery OR Starter System Issue	3 - 3	This code indicates that the battery may have become too weak to turn the starter or that the vehicle control unit has detected an excessive current draw.	- Recharge the battery. - Check starter system connections and harness.
Starter or PTO Output Circuit is Shorted to Battery	3 - 4	This code indicates that the output circuit from the vehicle control unit for the start circuit or the PTO circuit is shorted to the battery.	Inspect electrical harness for pinched, chafed, or frayed wires.
PTO Output Over-Current	3 - 5	This code indicates that there is excessive current through the PTO circuit.	Inspect electrical harness for pinched, chafed, or frayed wires.
Output Fault Detected	3 - 7	This code indicates that the vehicle control unit has detected an electrical problem in the engine wiring harness and the vehicle control unit's internal resettable fuse has tripped to protect the system.	Inspect engine harness for pinched or chafed wires.
PTO Circuit Open	5 - 6	This code indicates that an open circuit exists between the PTO output from the module and the clutch coil ground.	- Turn key switch to the OFF position. - Inspect for a poor connection between switch contacts in the PTO switch, or an intermittent/open circuit in the harness connections between the module and the PTO clutch, or an open circuit in the PTO clutch coil winding.

OUO2004,0000AD6-19-22OCT14

Diagnostic Test Mode Codes (Z900M and Z900R) (With Machine OFF)

This mode is used to check the integrity of the switches, sensors, wiring, and hardware of the vehicle control unit. Diagnostic information is generated in the vehicle control unit and displayed through a flashing code on the display module (next to the wrench icon).

NOTE: Do not rotate the key past RUN to START mode during these three cycles.

Before entering the Diagnostic Test Mode, it is best to turn off all switch INPUTS (i.e., brake not locked, PTO

switch not in the on position, operator not in seat, etc.). Once all the INPUTS are off, the operator can enter the Diagnostic Test Mode by cycling the key switch quickly from OFF to RUN exactly three times. On the third cycle leave the key in the RUN mode.

Upon entering the Diagnostic Test Mode, the vehicle control unit will perform an automatic diagnostic check. If there are no system FAULTS and all the INPUTS are not detected, the display will flash a 1-1 Code.

See the chart below for instructions on how to remove the Fault/Input Codes in order to achieve a 1-1 Display.

Diagnostic Test Mode Code	Fault/Input Code Description	Action Needed to Remove Unwanted Codes:
3 - 7	Vehicle Control Unit's INTERNAL Resettable Fuse Tripped	- Inspect battery, starter, and ground connections. - Inspect engine harness for pinched or chafed wires.
3 - 1	Battery Voltage High	Inspect electrical harness for loose connections, specifically the battery positive

Troubleshooting

Diagnostic Test Mode Code	Fault/Input Code Description	Action Needed to Remove Unwanted Codes:
		and negative, the starter, and frame ground (on engine block).
3 - 2	Battery Voltage Low	• Check battery, starter, and ground connections. • Check charging system connections.
1 - 2	Key switch to START	Verify key switch is in RUN mode not START.
1 - 3	PTO (Knob) Switch Input ON	Turn OFF switch (knob in the down position).
1 - 4	Brake Switch Input ON	Unlock the brake pedal, check brake switch for engagement.
1 - 5	Seat Switch Input ON	De-activate seat switch (operator not in seat).
1 - 8 (Z900R Series Only)	Deck Lift Switch Input ON	Release the left lever arm button (black) switch.
1 - 9 (Z900R Series Only)	PTO Stop Switch ON	Release the right lever arm button (yellow) switch.

Diagnostic Test Mode Code	Fault/Input Code Description	Action Needed to Generate the Code:
2 - 2 (Z900R Series Only)	Engine Oil Pressure Switch ON (I.E. Closed)	Disconnect the harness connector at the oil pressure switch located on the engine.

Once the 1-1 Code has been achieved, the following steps should be performed to complete the Diagnostic

Test Mode INPUT CHECKS in order to verify electrical functionality for code.

Actions Required to Verify Electrical Functionality NOTE: INPUT actions can be performed in any order.	INPUT Description	Diagnostic Test Mode
Turn the KEYSWITCH to the START position. The 1-2 Code should flash. Return to RUN position.	Key switch to START	1 - 2
Pull the knob to activate the PTO switch. The 1-3 code should flash. Return PTO to OFF position.	PTO (Knob) Switch Input ON	1 - 3
Activate the BRAKE pedal. The 1-4 code should flash. De-activate the pedal.	Brake Switch Input ON	1 - 4
Sit on seat to activate the SEAT switch. The 1-5 code will should flash. Get out of the seat.	Seat Switch Input ON	1 - 5
Push the black button on the left lever arm to activate the DECK LIFT switch. The 1-8 Code should flash. Release the button.	Deck Lift Switch Input ON	1 - 8
Push the yellow button on the right lever arm to activate the PTO STOP switch	PTO Stop Switch ON	1 - 9
Requires removal of the harness connector at the oil pressure switch on the engine. This will generate the code.	Harness connection to the oil pressure switch is working.	2 - 2

If the Diagnostic Test Mode Codes cannot be achieved when applying the INPUT Actions listed above, inspect the applicable wiring harness connections and switch, or contact your local John Deere Dealer for further assistance or part replacement.

OUO2004,0000AD7-19-22OCT14

Troubleshooting

Machine

If	Check
Excessive Machine Vibration	• Engine speed too slow.
Machine Will Not Move With Engine Running	• Check park brake. • Transmission hydraulic oil level low. • Transmission oil cold - allow engine to warm. • Drive belt slipping or broken. • Bypass pump release valves open. • Traction drive belt damaged or worn. • Transmission problems. (See your John Deere Dealer.)
Machine Creeps With Engine Running and Motion Control Levers in a Neutral Position	• Check and adjust neutral creep.

BB87125,0001242-19-07MAR19

Brakes

If	Check
Machine levers are adequately locked in neutral when the park brake is engaged, but the machine creeps.	• Check and adjust neutral creep. • See Park Brake Adjustment. • Check and secure cables and hardware.
Machine levers have excessive fore-aft movement with the park brake engaged.	• Check and align motion control levers. • Check control levers for loose hardware or excessive wear.
Machine levers are adequately locked in neutral, and no creep exists, but the brake pedal will not fully release due to binding in the system.	• Back out neutral interlock adjustment set screws 1 flat and re-check system for binding. • Add grease to neutral interlock cam. • Check and align motion control levers.
Control levers rub/contact slots in the frame when moved to "out" position.	• Check and align motion control levers.
Brake pedal difficult to engage.	• Check and align motion control levers. • Add grease to neutral interlock cam.
Brake switch not engaging/disengaging	• Check and align motion control levers.

BB87125,0001243-19-05JUN13

Steering

If	Check
Steering Not Working	• Bypass pump release valves partially open. • Improper tire Inflation. • Hydrostatic transmission oil low.

BB87125,0001244-19-04JUN13

Mower

Discharge Chute Plugged		• Grass is wet - ground speed may need to be adjusted. • Raise cutting height. • Run engine at fast idle. • Ground speed too fast for conditions. • Correct installation of deck drive belt. • Incorrect blade.
Mower Deck Vibrates		• Run engine at fast throttle. • Loose hardware. • Check/replace deck drive belt.

Troubleshooting

		• Blade bolts are loose. • Blade not in pilot when installed. • Ground speed too fast for conditions. • Blades are bent or worn. • Sharpen and balance blades. • Remove belt shields and clean debris from pulleys. • Check pulleys for proper alignment or damage.
Mower Deck Belt Breaks		• Blade rake (Front-to-Rear adjustment) not within specifications. • Debris on deck or lodged in deck drive system. Clean as required. • Belt guide damaged or out of alignment. See Replacing Mower Deck Drive Belt, Installing Deck Drive Belt in the Service Mower Section. • Ground speed too fast for conditions.
Mower Blades Do Not Engage		• Deck drive belt slipping or broken, check belt for wear and replace if necessary. • Deck belt tension spring not installed or broken. • PTO switch failure. • Clutch air gap too large. Remove shim. • Fuse is blown. • Loose electrical connections.
Mower Deck Does Not Lift or Lower Easily		• Check lift assist spring settings. Adjust for more or less assistance when lifting. See Adjusting Deck Lift Spring Tension in the Operating Section. • Excessive debris build up.
Mower Deck Does Not Engage Transport Lock		• Inspect lift bushings and adjust manual lift link.
Mower Mows Unevenly		• Mower deck not properly leveled. • Ground speed too fast for conditions. • Run engine at fast throttle. • Reduce ground speed when making turns. • Sharpen or replace blades. • Change mowing pattern. • Check air pressure in all traction unit tires.
Poor Quality Cut		• Clean debris build-up from underside of deck. • Check blades for sharpness and damage. • Check discharge chute for damage. • Change blades. • Run engine at fast throttle. • Mowing too fast for grass conditions.
Mower Deck Does Not Lift (Z900R Series)		• Vehicle Control Unit Lift Circuit Overheat Protection Circuit Activated - Only use deck lift actuator button to lock deck - do not use to transport.
Mower Blade Stop Time Excessive		• Clutch air gap too large. Remove shim.
Mulch-On-Demand Baffles Are Out of Timing or System Not Mowing Correctly		• Adjust linkage for gate.
Mulch-On-Demand Handle Loose		• Check linkage adjustments. • Check gate bushings for wear.
Mulch-On-Demand Material Dispersion		• Check linkage adjustments. • Check gate bushings for wear. • Adjust and/or remove chamber separator baffles. • Clean debris build-up from underside of deck. • Check blades for sharpness and damage. • Check discharge chute for damage. • Change blades. • Run engine at fast throttle. • Mowing too fast for grass conditions.

MK71445,0000012-19-12JUL17

Storage

Storing Safety

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

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

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

MP47322,00F4680-19-06MAY15

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

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 is used for the season so little fuel is left in the fuel tank.

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

IMPORTANT: 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. To allow treated fuel mixture to circulate through the entire fuel system, run engine for a few minutes.

Engine:

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

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

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

Storage

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

OUO2004,0000B06-19-19NOV14

Removing Machine From Storage

1. Check tire pressure.
2. Check engine oil level.
3. Check battery electrolyte level if your battery is not maintenance free. Charge battery if necessary.
4. Install battery.
5. On gas engines: check spark plug gap. Install and tighten plugs to specified torque.
6. Lubricate all grease points.
7. Open fuel shut-off valve if your machine is equipped.
8. Run the engine 5 minutes without the mower or any attachments running to allow oil to be distributed throughout engine.
9. Be sure all shields and guards or deflectors are in place.

MP47322,00F4683-19-05JUL17

Specifications

Engine

For more information on Kohler Certified Power engines, see www.kohlerengines.com

For more information on Kawasaki Certified Power engines, see www.kawasakicriticalpower.com

Model Z915E

Engine Manufacturer	Kohler
Engine Model	CV742
Displacement	747 cc (45.6 in ³)
Cylinders	Two
Bore	83 mm (3.3 in)
Stroke	69 mm (2.72 in)
Compression Ratio	9.1:1
Speed, Fast Idle	3600 +/- 100 rpm
Speed, Slow Idle	1700 +/- 150 rpm
Valving	OHV
Valve Adjustment Clearance	Self-Adjusting Hydraulic Lifters
Oil Filter	Screw-On Type
Cooling Type	Air
Air Cleaner	Dual Stage Heavy-Duty Air Cleaner
Ignition Coil Air Gap	0.02—0.03 mm (0.008—0.012 in)
Spark Plug Gap	0.76 mm (0.030 in)
Spark Plug Torque	27 N·m (20 lb·ft)

Model Z920M

Engine Manufacturer	Kawasaki
Engine Model	FX730V
Displacement	726cc (44.3 in ³)
Cylinders	Two
Bore	78 mm (3.1 in)
Stroke	76 mm (3.0 in)
Compression Ratio	8.2:1
Speed, Fast Idle	3600 +/- 100 rpm
Speed, Slow Idle	1700 +/- 150 rpm
Valving	OHV
Oil Filter	Screw-On Type
Cooling Type	Air
Air Cleaner	Dual Stage Heavy-Duty Air Cleaner
Spark Plug Gap	0.76 mm (0.030 in)
Spark Plug Torque	22 N·m (16 lb·ft)
Ignition Coil Air Gap	0.20—0.40 mm (0.008—0.016 in)
Valve Adjustment Clearance	0.10—0.15 mm (0.004—0.006 in)

Model Z930M and Z930R

Engine Manufacturer	Kawasaki
Engine Model	FX801V
Displacement	852 cc (52 in ³)
Cylinders	Two
Bore	84.5 mm (3.33 in)
Stroke	76 mm (3 in)
Compression Ratio	8.2:1
Speed, Fast Idle	3600 +/- 100 rpm
Speed, Slow Idle	1700 +/- 150 rpm
Valving	OHV

Specifications

Oil Filter	Screw-On Type
Cooling Type	Air
Air Cleaner	Dual Stage Heavy-Duty Air Cleaner
Spark Plug Gap	0.76 mm (0.030 in)
Spark Plug Torque	22 N·m (16 lb·ft)
Ignition Coil Air Gap	0.20—0.40 mm (0.008—0.016 in)
Valve Adjustment Clearance	0.05—0.10 mm (0.002—0.004 in)

Model Z945M EFI

Engine Manufacturer	Kohler
Engine Model	ECV850
Displacement	824CC (50 in³)
Cylinders	2
Bore	86 mm (3.38 in)
Stroke	70.9 mm (2.79 in)
Compression Ratio	9.15:1
Speed, Fast Idle	3600 +/- 100 rpm
Speed, Slow Idle	2000 +/- 100 rpm
Valving	OHV
Oil Filter	Screw-On Type
Cooling Type	Air
Air Cleaner	Dual Stage
Spark Plug Gap	0.76 mm (0.030 in)
Spark Plug Torque	27 N·m (19.9 lb·ft)
Valve Adjustment Clearance	0.05—0.127 mm (0.002—0.005 in)

Model Z955M EFI and Z955R EFI

Engine Manufacturer	Kohler
Engine Model	ECV860
Displacement	824CC (50 in³)
Cylinders	2
Bore	86 mm (3.38 in)
Stroke	70.9 mm (2.79 in)
Compression Ratio	9.15:1
Speed, Fast Idle	3600 +/- 100 rpm
Speed, Slow Idle	2000 +/- 100 rpm
Valving	OHV
Oil Filter	Screw-On Type
Cooling Type	Air
Air Cleaner	Dual Stage
Spark Plug Gap	0.76 mm (0.030 in)
Spark Plug Torque	27 N·m (19.9 lb·ft)
Valve Adjustment Clearance	0.05—0.127 mm (0.002—0.005 in)

Model Z950M and Z950R

Engine Manufacturer	Kawasaki
Engine Model	FX850V
Displacement	852 cc (52 in³)
Cylinders	Two
Bore	84.5 mm (3.33 in)
Stroke	76 mm (3 in)
Compression Ratio	8.2:1
Speed, Fast Idle	3600 +/- 100 rpm

Specifications

Speed, Slow Idle	1700 +/- 150 rpm
Valving	OHV
Oil Filter	Screw-On Type
Cooling Type	Air
Air Cleaner	Dual Stage Heavy-Duty Air Cleaner
Spark Plug Gap	0.76 mm (0.030 in)
Spark Plug Torque	22 N·m (16 lb·ft)
Ignition Coil Air Gap	0.20—0.40 mm (0.008—0.016 in)
Valve Adjustment Clearance	0.05—0.10 mm (0.002—0.004 in)

Model Z960M

Engine Manufacture	Kawasaki
Engine Model	FX921V
Displacement	999 cc (61 in ³)
Cylinders	Two
Bore	89.2 mm (3.5 in)
Stroke	80 mm (3.2 in)
Compression Ratio	8.4:1
Speed, Fast Idle	3600 +/- 100 rpm
Speed, Slow Idle	1700 +/- 150 rpm
Valving	OHV
Oil Filter	Spin-On Type
Cooling Type	Air
Air Cleaner	Dual Stage Heavy-Duty Air Cleaner
Spark Plug Gap	0.76 mm (0.030 in)
Spark Plug Torque	22 N·m (16 lb·ft)
Ignition Coil Air Gap	0.20—0.40 mm (0.008—0.016 in)
Valve Adjustment Clearance	0.10—0.15 mm (0.004—0.006 in)

Model Z970R

Engine Manufacturer	Kawasaki
Engine Model	FX1000V (FXT00V)
Displacement	999 cc (61 in ³)
Cylinders	Two
Bore	89.2 mm (3.5 in)
Stroke	80 mm (3.2 in)
Compression Ratio	8.4:1
Speed, Fast Idle	3600 +/- 100 rpm
Speed, Slow Idle	1700 +/- 150 rpm
Valving	OHV
Oil Filter	Spin-On Type
Cooling Type	Air
Air Cleaner	Dual Stage Heavy-Duty Air Cleaner
Spark Plug Gap	0.76 mm (0.030 in)
Spark Plug Torque	22 N·m (16 lb·ft)
Ignition Coil Air Gap	0.20—0.40 mm (0.008—0.016 in)
Valve Adjustment Clearance	0.10—0.15 mm (0.004—0.006 in)

MX00654,000037B-19-27AUG19

Specifications

Drivetrain

Z915E, Z920M, Z930M, Z945M EFI, Z950M, Z955M EFI, Z960M

Type Independent Left and Right Hydrostatic Transmissions
Pump 13 cc (0.79 in³)
Motor 13 cc (0.79 in³)
Travel Speeds Hydrostatic, Variable Speed Up to 16 km/h (Up to 10 mph)

Z930R, Z950R, Z955R, Z970R

Type Independent Left and Right Hydrostatic Transmissions
Pump 13 cc (0.79 in³)
Motor 13 cc (0.79 in³)
Travel Speeds Hydrostatic, Variable Speed Up to 19 km/h (Up to 12 mph)

MX00654,000037C-19-19MAY19

Electrical System

Charging System (Z915E) 15 Amp regulated
Charging System (Z900M and Z900R Series) 20 Amp regulated
Ignition (CV742, ECV740 and ECV749 Engines) Digitally Controlled Battery-Coil Type
Ignition (FX730V, FX801V, FX850V, FX921V, FX1000V) Flywheel Magneto Transistor Type
Starter Solenoid Shift

MX52301,0000EED-19-23MAR16

Fuel System

Fuel Type (Regular Unleaded Fuel Machines)
..... Regular Unleaded (Minimum 87 Octane)
..... Ethanol Blended Fuel (Up to 10%)
..... MTBE Reformulated Fuel (Up to 15%)
Fuel Tank Location Left of Operator Seat

BS62576,0002300-19-18MAY18

Steering and Brakes

Steering Dual Control Levers
Brakes Hydraulic
Park Brake
Z900E and Z900M Series Hand Lever - Internal Wet Disk
Z900R Series Foot Pedal - Internal Wet Disk

MX52301,0000EF2-19-23MAR16

Specifications

Tires

Front (Z900E Series)	13 x 5.0-6
Front (Z900M and Z900R Series)	13 x 6.5-6
(48") Rear	24 x 9.5-12
(54", 60", 72") Rear	24 x 12-12
Inflation Front (Z900E Series)	124 kPa (18 psi)
Inflation Front (Z900M and Z900R Series)	N/A - semi-pneumatics
Inflation Rear	83 kPa (12 psi)

MX52301,0000EF3-19-23MAR16

Battery

Voltage	12 volt
CCA	300 amp
BCI Group Size	U1L

BB87125,0001250-19-04JUN13

Capacities

Fuel Tank	43.5 L (11.5 gal)
Z900R Series Transmission Oil (With Filters)	5 L (5.3 qt)
Z900E and Z900M Series Transmission Oil (With Filters)	4.5 L (4.8 qt)
Engine Oil	
Z915E - With Filter	1.6 - 1.8 L (1.7 - 1.9 qt)
Z930M EFI - With Filter	1.6 - 1.8 L (1.7 - 1.9 qt)
Z920M - With Filter	2.0 L (2.1 qt)
Z945M EFI, Z955M EFI and Z955R EFI- With Filter	2.6 L (2.7 qt)
Z930M, Z950M, Z930R, and Z950R - With Filter	2.3 L (2.4 qt)
Z960M and Z970R - With Filter	1.9 L (2.0 qt)

NOTE: All capacities are approximate.

MX00654,000037D-19-07JUN19

Travel Speeds at Full Engine RPM

Z915E, Z920M, Z930M, Z945M EFI, Z950M, Z955M EFI, Z960M	
Forward	0—16.1 km/h (0—10 mph)
Reverse	0—7.2 km/h (0—4.5 mph)
Z930R, Z950R, Z955R, Z970R	
Forward	0—19.3 km/h (0—12 mph)
Reverse	0—7.2 km/h (0—4.5 mph)

MX00654,000037E-19-19MAY19

Specifications

Dimensions

Wheel Base	1.35 m (53 in.)
Overall Height (ROPS Down)	1.19 m (47 in.)
Overall Height (ROPS Up)	1.85 m (73 in.)
Overall Length (48, 54 & 60-Inch Decks)	2.16 m (85 in.)
Overall Length (72-Inch Deck)	2.21 m (87 in.)
Overall Width (48-Inch Deck)	
Chute Up	1.37 m (54 in.)
Chute Down	1.57 m (62 in.)
Overall Width (54-Inch Deck)	
Chute Up	1.52 m (60 in.)
Chute Down	1.75 m (69 in.)
Overall Width (60-Inch Deck)	
Chute Up	1.68 m (66 in.)
Chute Down	1.88 m (74 in.)
Overall Width (72-Inch Deck)	
Chute Up	1.95 m (77 in.)
Chute Down	2.18 m (86 in.)

BB87125,0001253-19-04JUN13

Weight

*NOTE: Weight of machine depends on seat option.
Weight ranges shown cover all seat options.*

Z915E

48 in	499—503 kg (1100—1110 lb)
54 in	509—513 kg (1122—1132 lb)
60 in	530—534 kg (1168—1178 lb)

Z920M

48 in	547—565 kg (1207—1246 lb)
48 in MOD	562—571 kg (1238—1277 lb)
54 in	563—582 kg (1241—1284 lb)
60 in	568—586 kg (1253—1292 lb)

Z930M

54 in	580—597 kg (1278—1317 lb)
54 in MOD	596—614 kg (1315—1354 lb)
60 in	578—596 kg (1275—1314 lb)
60 in MOD	600—618 kg (1323—1362 lb)

Z930R

54 in	580—597 kg (1278—1317 lb)
54 in MOD	596—614 kg (1315—1354 lb)
60 in	585—603 kg (1290—1329 lb)

Z945M EFI

54 in	580—597 kg (1278—1317 lb)
54 in MOD	596—614 kg (1315—1354 lb)

Specifications

60 in	.578—596 kg (1275—1314 lb)
60 in MOD	.600—618 kg (1323—1362 lb)

Z950M

60 in	.578—596 kg (1275—1314 lb)
60 in MOD	.600—618 kg (1323—1362 lb)

Z950R

60 in	.587—605 kg (1294—1333 lb)
60 in MOD	.609—626 kg (1342—1381 lb)
72 In	.618—636 kg (1363—1402 lb)

Z955M EFI

54 in	.580—597 kg (1278—1317 lb)
54 in MOD	.596—614 kg (1315—1354 lb)
60 in	.578—596 kg (1275—1314 lb)
60 in MOD	.600—618 kg (1323—1362 lb)

Z955R

60 in	.585—602 kg (1290—1329 lb)
60 in MOD	.607—625 kg (1338—1377 lb)

Z960M

60 in	.582—600 kg (1283—1323 lb)
60 in MOD	.604—622 kg (1331—1371 lb)
72 In	.614—631 kg (1354—1391 lb)

Z970R

60 in	.592—611 kg (1305—1347 lb)
60 in MOD	.614—633 kg (1354—1396 lb)
72 In	.624—642 kg (1376—1415 lb)

MX00654,000037F-19-07JUN19

Recommended Lubricants

Engine Oil	Torq-Gard™ Turf-Gard™, Plus-4™ OR Plus-50™ II
Hydraulic Oil	HY-GARD™ J20C
Grease	John Deere Multi-Purpose SD Polyurea Grease

(Specifications and design subject to change without notice.)

Torq-Gard is a trademark of Deere & Company

Turf-Gard is a trademark of Deere & Company

Plus-4 is a trademark of Deere & Company

Plus-50 is a trademark of Deere & Company

OUO2004,0000B07-19-23JUN15

Warranty

Product Warranty

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

United States

Website:

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

Toll Free: 1-800-537-8233

Dealer Locator:

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

Canada

Website (English):

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

Website (French):

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

Toll Free: 1-800-537-8233

Dealer Locator:

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

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

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

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 2020 or 2021 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://www.deere.com/en/our-company/contact-us/>.

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

Warranty

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

Warranty

- 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.

MK71445,00001FB-19-05APR19

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.)

MX00654,0000314-19-21AUG14

Limited Battery Warranty For Factory Installed Batteries

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

TO SECURE WARRANTY SERVICE

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

FREE REPLACEMENT PERIOD

Any new battery which becomes unserviceable (not

merely discharged) due to defects in material or workmanship within the FREE REPLACEMENT PERIOD will be replaced free of charge. Installation costs will be covered by warranty if the unserviceable battery was installed by a John Deere factory or dealer and the replacement battery is installed by a John Deere dealer.

PRO RATA ADJUSTMENT (batteries with letter code identification only)

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

THIS WARRANTY DOES NOT COVER

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

LIMITATION OF IMPLIED WARRANTIES AND PURCHASER'S REMEDIES

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

NO DEALER WARRANTY

The selling dealer makes no warranty of its own and the dealer has no authority to make any representation or

Warranty

promise on behalf of John Deere, or to modify the terms or limitations of this warranty in any way.

WARRANTY TERMS TABLE

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

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

OUMX068,0000504-19-10MAY17

John Deere Quality Statement

John Deere Quality

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

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

Step 1

Refer to your operator's manual

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

Step 2

Contact your dealer

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

Step 3

Contact John Deere

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

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

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

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

SP66632,00043A7-19-10MAY17

Record Service Dates

[illegible]

113

Index

A		
Adjusting Tracking	70	
Adjustment, Altitude	51	
Air Filtration System, Servicing	55	
B		
Battery and Terminals, Cleaning	82	
Battery, Checking the	82	
Battery, Removing and Installing	82	
Battery, Service Safely	82	
Battery, Using Booster	83	
Belt Shields, Removing and Installing Mower Deck	78	
Belt, Checking and Replacing Traction Drive	68	
Belt, Replacing Mower Deck Drive	78	
Belt, Using the Seat	30	
Blades, balancing	80	
Blades, Checking and Replacing Mower	79	
Blades, sharpening	80	
Brake, Park check and adjust	72	
Bypass Pump Release Valves Using	45	
C		
Carbon Cannister	64	
Certification	9	
Comfort and Convenience Package, Using	32	
Controls, Operator Station(Z900E and Z900M Series)	25	
Controls, Operator Station(Z900R)	26	
Cooling System, Cleaning Debris	56	
Creep, Checking and Adjusting	69	
Cutting Height, Adjusting Mower Deck	32, 33	
D		
Deck Spindles, Lubricate Mower	50	
Diagnostic Light Check	83	
Drive Clutch, Adjustment	85	
E		
Engine		
Oil	52	
Starting	42	
Stopping	44	
Engine, Cleaning Debris(Z930M, Z930R, Z950R, Z960M, Z970R)	59	
Engine, Removing Rear Grill	51	
F		
Filter, Changing Engine Oil and	53	
Filters, Change Hydrostatic Transmission Oil and	65	
Fins, Cleaning Hydraulic Oil Cooler	68	
Foot Plate, Removing and Installing Mower Deck	76	
Front Caster Wheel Pivots, Lubricating	50	
Fuel and Stabilizer, Using Proper	87	
Fuel Filter, Replacing	60	
Fuel safety	22	
Fuel Storage	98	
Fuel Tank, Filling	87	
Fuses, Replacing	83	
G		
Grease	50	
H		
Hour meter		
Using	39	
Hydraulic oil	65	
I		
Identification Numbers	4	
Indicator lights		
Using	38	
Inspect		
Dismount mower	47	
K		
Key Switch		
Using	38	
L		
Labels, safety with text	6	
Labels, safety without text	11	
Level Mower Deck	34	
Levers, Checking and Aligning Motion		
Control	71	
Lifting Machine	88	
M		
Machine		
Moving by hand	45	
Machine, Mounting and Dismounting	28	
Metal Surfaces, Repairing and Cleaning	90	
Motion control levers		
Using	39	
Motion Control Levers, Checking and Adjusting Gap	71	
Mower Deck Anti-Scalp Wheels		
Adjusting	36	
Mulch-On-Demand		
Operating	43, 77	
O		
Oil		
Engine		
Gasoline.....	52	
Hydraulic	65	

Index

Transmission	65
Oil Level, Check Hydrostatic Transmission	65
Oil Level, Checking Engine	52
Operating Checklist, Daily	27
Operator Training Required	15

P

Park brake	
Testing	38
Park Brake	
Using	38
Park brake switch	
Testing	37
Park brake, check and adjust	72
Plastic And Painted Surfaces, Avoid Damage	
To	27
Plastic Surfaces, Cleaning	89
Preparation	15
PTO	
Using	39
PTO switch	
Testing	37

R

Record service dates	113
Replacement parts	2
ROPS Hardware, Tightening	89
ROPS, Raising and Lowering	30

S

Safety Label Location (No Text)	10, 11
Safety Label Location (Text)	5, 6
Safety labels, with text	6
Safety labels, without text	11
Safety Systems, Testing	37
Safety, tire	22
Seat switch	
Testing	37
Seat, Adjusting Armrests	30
Seat, Adjusting Deluxe Comfort	28
Seat, Adjusting Suspension	28
Seat, Raising and Lowering Operator	27
Service Information, Emissions	51
Service Intervals	48
Slope, Determining Safe Angles	32
Spark arrestor, using	16
Spark Plugs, Checking and Replacing	61
Stopping	
Emergency	45
Storage, Preparing Machine for	98
Storage, Removing Machine from	99
Storing Safety	98

T

Throttle Cable, Adjusting	61
---------------------------------	----

Throttle lever	
Using	39
Tips	
Mowing	46
Tire Pressure, Checking	87
Tow loads safely	20
Transmission oil	65
Transporting machine	
Trailer	45
Travel speeds	
Mowing	47
Troubleshooting chart	91

W

Warranty, product	107
Wheels, Removing and Installing Front	
Caster	71
Wheels, Removing and Installing Rear Drive	88

Notes
